City of Ketchum
Planning & Building

STAFF REPORT
KETCHUM PLANNING AND ZONING COMMISSION
OCTOBER 14, 2025 MEETING

PROJECT:	Swan Stream Alteration
FILE NUMBER:	P24-057
REPRESENTATIVE:	Chuck Brockway, Brockway Engineering (consultant)
OWNER:	Robert H and Sandra Swan (Trustees)
REQUEST:	Floodplain Development Permit for stream alterations to enhance river and floodplain function and rehabilitation of riparian areas.
LOCATION:	401 Northwood Way (Chateaux of Northwood, Lot 12)
ZONING:	General Residential Low Density (GR-L)
OVERLAY:	Floodplain Management Overlay
NOTICE:	A public meeting notice for the project was mailed to all owners of property within 300 feet of the project site and all political subdivisions on September 19, 2025. The notice was published in the Idaho Mountain Express on September 19, 2025. A notice was posted on the project site and the City's public notice webpage on September 29, 2025. The application materials were posted on the Planning and Building Active Applications webpage on September 30, 2025.
REVIEWER:	Morgan Landers, AICP – Director of Planning and Building Jen Zung – Harmony Engineering

EXECUTIVE SUMMARY

The property is located at 401 Northwood Way, at the corner of Northwood Way and Saddle Rd (the "subject property"). See Figure 1 for the location. The property is zoned General Residential Low Density (GR-L) and includes area within the Floodplain Management Overlay District. The subject property is accessed from Northwood Way, through 391 Northwood Way, also owned by the Swans. The subject property contains one single family residence built in 1991 according to the Blaine County Clerk and Recorder. The property borders the Big Wood River, with a side channel from the Big Wood River to the east along the Chateaux of Northwood Townhomes referred to as the east channel.

As described further in the Background section below, the subject property has a history of challenges resulting from significant flooding that occurred in 2017. The current condition of the property is significantly degraded, and large gravel bags have been in place since 2019, impacting the functionality and aesthetics of the riparian and floodplain areas. As outlined in the application narrative in Attachment A, the applicant is proposing a variety of alterations to the Big Wood River, adjacent to and within the subject property, to create a stable and permanent condition that minimizes the need for corrective action in the future. The analysis section of the report below goes into detail of the proposed actions and staff's analysis of the proposal.

Figure 1: Subject Property Location

Upon review of the proposed project, staff finds the project meets many of the floodplain development permit criteria. More specifically, the project is found to not reduce floodwater carrying capacity and preserves the inherent natural characteristics of the floodplain. Staff does believe there are areas in which the application can better meet the approval criteria. Conditions of approval have been recommended for Commission consideration. Additionally, some of the alteration areas are not on property owned by the applicant and will require cooperative agreements between multiple parties to implement certain aspects of the plan. A full review of all floodplain criteria can be found in Attachment F.

BACKGROUND

As noted above, the history of the subject property and flood management efforts is extensive, and many iterations have occurred. Below is a general timeline of what has occurred over the past decade in relation to the subject property.

2015 – Administrative Floodplain Development Permit issued for landscape improvements outside the floodplain and riparian boundaries.
2017 – Flooding occurred resulting in the destabilization of the east bank of the Big Wood, gravel deposits, and increased flood elevations.
2018 – Stream Alteration Permit approved (P18-131) – proposed improvements on subject property and property to the north.
2019 – Emergency Stream Alteration Permit approved (P19-044) – installation of sandbags that exist today (figure 2).
2019/2020 – Amended Stream Alteration Permit withdrawn (P19-138) – amended to remove improvements to the property north of the subject property.
2020 – Discussions began with Wood River Land Trust and Trout Unlimited


Figure 2 Gravel Bag Location

to conduct a comprehensive river reach study.
2023 – Discussions of stream alteration resumed between the city and property owner.
2024 – Stream Alteration Permit (P24-057) submitted June 20, 2024 – current application.

Ketchum Municipal Code (KMC) 17.88.200 requires that "If an emergency stream bank stabilization permit is granted, the applicant shall apply for a waterways design review/stream alteration permit under article I of this chapter within six months from the date of the issuance of the emergency stream bank stabilization permit." As shown above, a stream alteration permit was approved in 2018 but never constructed due to a dispute between the two property owners. Following the 2019 emergency permit, the applicant submitted an amendment to the 2018 permit to remove improvements on the adjacent property. Upon review of the permit, staff made a recommendation of denial. The application was withdrawn prior to public hearing with the Planning and Zoning Commission. In lieu of a new permit application, the city attempted to engage the neighbors through a collaborative effort with the Wood River Land Trust and Trout Unlimited. The goal being a larger reach study and alternative design approaches to address many persistent challenges in the area along the Big Wood such as degraded habitat, unstable banks, and diminished flow capacity, similar to the efforts being taken at the Warm Springs Preserve currently. That effort was not successful and concluded around 2021/2022.

The KMC states that "If a waterways design review/stream alteration permit under article I of this chapter and all other applicable state and federal agency permits are granted, the applicant shall then complete restoration of the affected property to City and state standards by either March 31 of the year following the issuance of the emergency stream bank stabilization permit or by another date specified by the administrator or other governmental agency". However, the code does not specify what to do in the event a permit is not granted. The city, exercising its enforcement discretion, elected to not initiate a formal enforcement process against the property owner as the city believed the property owner to be cooperating in good faith. In 2023 the property owner contacted city staff to gain resolution to the condition of the subject property garnering attention and igniting frustration among community members in the vicinity. A detailed survey was conducted of the project area in 2018 and again in 2023 to ensure that any changes in existing conditions were adequately accounted for.

Following collaborative discussions between staff and the applicant, the city received a new stream alteration permit on June 20, 2024. Upon deeming the application complete, staff conducted two rounds of review of the application. As the Big Wood River is considered a "water of the United States", the Army Corps of Engineers (ACE) was conducting a concurrent review of the application. Following the second round of review, changes to the design prompted a re-review by ACE. At that time, the applicant was notified that the area contained within Area 4 of Attachment B was considered a jurisdictional wetland and that impacts to that area were to be minimized below a certain threshold in order to be permitted. This caused a delay in the review while the applicant revised the proposed project to address the requirements by ACE. The applicant resubmitted the application in July 2025, which has been reviewed a third time by staff prior to scheduling the application with the Planning and Zoning Commission.

ANALYSIS

As the project occurs within the Floodplain Management Overlay District, it is subject to criteria and standards listed in KMC 17.88.050. Please see Attachment F for a full analysis of all applicable standards. Staff find the project to be in conformance with all standards, with conditions of approval, and have highlighted a few items below that result in proposed conditions of approval.

Overview
As noted above, the subject property is quite complex with multiple issues being addressed by the proposed application. The proposed stream alteration permit includes work in four main areas of focus (Figure 3):

- Area 1 – North Debris Jam (channel #2) – on City of Ketchum and Community Library property.
- Area 2 – Southern Debris Jam (channel #2) – on Community Library property.
- Area 3 – Southern Debris Jam (main channel) – partially on City of Ketchum property.
- Area 4 – Streambank alterations (main and east channel) wetland mitigation, and land reclamation – private property with temporary diversion on City of Ketchum property.

A detailed description of the work is included in the application narrative and project plans, Attachments A and B respectively.

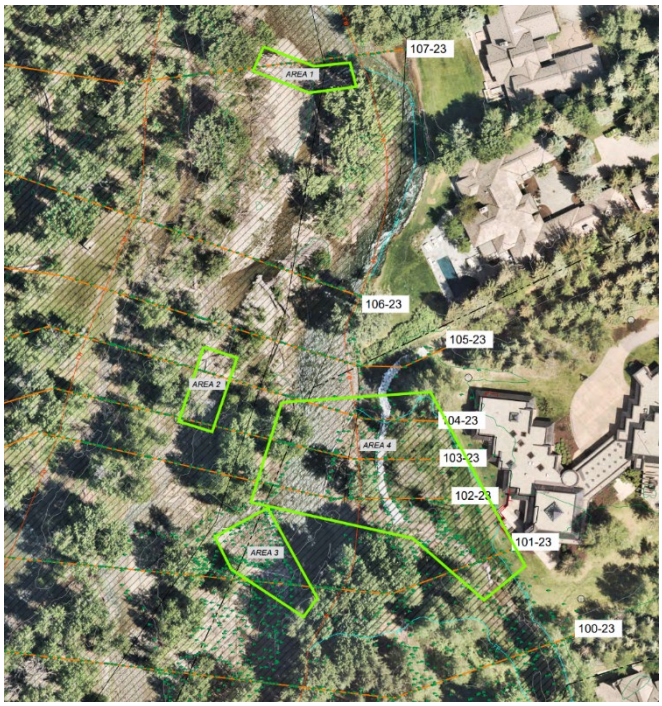


Figure 3: Areas of Focus

Jurisdictional Permits
KMC requires that all permits required by outside agencies must be obtained prior to submitting a floodplain development permit. A joint application was filed with ACE (Attachment C) and was approved on September 4, 2025 (Attachment D). A permit from the Idaho Department of Water Resources is not required for this work.

Flood Carrying Capacity/No-Rise/No Impact
The project includes laying back the banks of the Big Wood River adjacent to the property and installing bank stabilization. The proposed grading at the bank will increase the flood carrying capacity by increasing the conveyance area of the channel in these locations. As shown in Table 1 of the applicant's narrative, the total excavation in the Big Wood (Items 1-3) is 228 CY along the channel banks and the total fill is 155 CY within the eroded floodplain, resulting in a net increase in conveyance area.

Other factors that affect the flood carrying capacity include channel roughness, slope, and alignment, which are not being modified with this project. The effective flow rates from the Federal Emergency Management Agency (FEMA), which are lower than the preliminary flow rates, were used since small channel modifications will have a greater impact under lower flows and this allowed for better evaluation of the no-rise requirement.

A hydraulic analysis using standard engineer practices was completed that showed no increase in the 1% annual chance flood elevations between existing and proposed conditions measured to the nearest 0.00 ft. A No Rise Certificate was submitted and stamped by an Idaho Professional Engineer PE.

A No Adverse Impact statement based on hydraulic modeling and sealed by an Idaho PE has been provided. Adverse impacts could be caused by changes in flood heights, velocity, flood carry capacity, inundation extent, or sedimentation or erosion potential. In comparing the existing and proposed condition hydraulic models, the flood heights will be reduced as discussed in criterion 15 and flood carry capacity is unchanged as discussed in criterion 6. Velocity changes range from a reduction of 0.06 ft/s to an increase of 0.09 ft/s within the project reach. There is a small increase of 0.01 ft/s at cross section 106, just upstream of the project site, but the velocity remains below the acceptable range for the bank protection that consists of 12–24-inch diameter rock that was placed along this bank in 2023.

East Bank Stabilization
Based on the survey work completed in 2023, and in comparison with the 2018 survey data, the majority of the deposited gravel has naturally attenuated out of the area of concern. However, some gravel remains that channelizes certain sections of the river and limits flood conveyance. The east bank of the Big Wood, adjacent to the subject property, is proposed to be stabilized with log barbs that provide habitat and direct flow to the center of the channel, and a rock toe to provide stability and protection during large flood events. The channel velocity is expected to range from 3.6 to 4.7 ft/s through the project reach during the 1% annual chance event and the toe rock protection proposed is estimated to withstand average channel velocities up to 8.8 ft/s.

The toe rock will be placed at the toe of the slope, below the ordinary high-water mark, and covered with topsoil and landscaping to establish a natural condition of the river and riparian area. The log barbs help reduce near bank velocities to reduce erosion and stabilize the bank. The willow plantings stabilize the soils on the upper portion of the bank while providing stream shading to enhance habitat. Geogrid materials are proposed at the northern end of Area 4 where the natural flow path of the river overtops the bank during large flood events. The purpose of the geogrid material is to assist in soil stabilization during flood events with high water velocities. The project plans note that the geogrid material will be installed and covered with approximately four inches of topsoil.

Staff does not believe this amount of topsoil is sufficient to promote adequate revegetation. Staff also has concerns of the material remaining in place during spring runoff events and daylighting geogrid material, which would not comply with the floodplain development criteria. Staff has included recommended conditions of approval related to the proposed planting plan in the report below. In addition to those recommendations, the following condition of approval is recommended:

- The applicant shall install the geogrid material at a depth that provides a minimum of eight inches of topsoil in all locations. 12 inches of topsoil is preferred to better support the revegetation of the disturbed areas. The applicant shall conduct an additional analysis and provide such to the Planning and Building Department for review, to determine if 12 inches of topsoil can be placed without jeopardizing the No Rise and No Adverse Impact certifications currently achieved by the project. Based on the results of the analysis, staff may require additional topsoil be placed in key areas to increase success rates for revegetation and bank stability.

Side Stream Stabilization (East Channel)
Historically, the east channel would see moderate flows during spring runoff, through mid-summer, but was not a primary conveyor of water year-round. Following 2017, flows into the east channel have increased, which creates potential risk for downstream property owners. Most of the residences immediately downstream of the subject property have structures located within the 25-foot riparian area. Allowing a substantial river channel in this area would create risk of further degradation of the stream and cause continued erosion of the channel toward the residences, jeopardizing structures in the future. The project proposes to restore and stabilize the east channel in a way that returns the channel to pre-2017 conditions, maintaining intermittent flows and not encouraging further development of a year-round channel of the river in that location.

Groundwater Pumping
Prior to the 2017 flood, small sump pumps in the crawl space were used occasionally. Following the 2017 flood, groundwater seepage into the crawlspace increased to a level where the small sump pumps were no longer adequate. In fall 2020, a groundwater dewatering system was installed by the property owner. This system includes two large sump pumps with discharge pipes that divert groundwater and create a depression in the water table sufficient to keep groundwater from seeping into the crawl space. One sump pump is located at the north end of the structure and discharges water into the Big Wood River at the north end of the property. The second sump pump is located on the south end of the structure and discharges water into the east channel.

The Clean Water Act prohibits persons from discharging pollutants (oil, dirt, human waste, or chemicals) through a point source (pipe, ditch, channel, etc.) into a "water of the United Sates" without a permit. However, the dewatering system is not subject to a permit requirement by the Idaho Department of Water Resources (IDWR) or the Idaho Department of Environmental Quality (DEQ) because the sumps draw clean water directly from the water table, rather than pumping dirty water from a crawlspace without manufactured or natural filtering systems in place.

However, per Section 17.88.050.E.3 of the city's floodplain regulations, "No permanent development shall occur within the 25-foot riparian zone, with the exception of approved stream stabilization work and restoration work associated with permit issued under this title, or exceptions as described below: a. Access to a property where no other primary access is available; b. Emergency access required by the fire department; c. A single defined pathways or staircases for the purpose of providing access to the river channel and in order to mitigate multiple undefined social paths; and d. Development by the City of Ketchum." The KMC defines development broadly, including permanent infrastructure related to the discharge of water.

During review of the application, staff raised the issue of the discharge pipes with the applicant. The applicant represents that removal of the sump pumps and discharge pipes entirely would jeopardize the foundation of the structure as it would leave the foundation unprotected during flooding events. In other parts of the city, homeowners often utilize temporary sump pumps in crawl spaces and discharge dirty water into the city's right-of-way. The applicant evaluated an option to reroute the north discharge pipes to consolidate the discharge locations into the east channel. This proposal requires a significant amount of piping and land disturbance. Staff appreciate the effort to minimize impacts to riparian areas, however, staff believe that removal and proper reinstallation of the northern discharge pipes in their current location is the best course of action. The existing pipes sit at the surface and visually impact the aesthetic of the bank and riparian areas, improperly discharging water and creating additional erosion. Replacement and proper installation of the pipes a minimum of 18 inches below surface would remove the visual impact, further minimize erosion, and not impact the ability of the riparian area to establish properly.

Debris Jam Removal

There are three areas where debris jams are proposed to be removed from the river. These are Areas #1, #2, and #3 on the site map and are further described in the application narrative. The benefit of debris removal is that it eliminates obstructions to water flood conveyance and increases flood carrying capacity along the reach. However, debris removal is not always seen as a best practice as river reaches are generally encouraged to function as naturally as possible with little intervention. Debris jams also provide refuge and habitat for aquatic species.

In review of the proposed debris jam removal, staff agrees with the applicant that the removal of the three debris jams will have a positive impact on the river reach. Areas #1 and #2, located within channel #2, are limiting the conveyance of water through the channel. Channel #2, and channel #3 to the west, have historically acted as the primary relief valve for the Big Wood River in this area, reducing the amount and velocity of water flowing through the main and east channels. This in turn reduces the impact on properties along the east bank of the Big Wood where there has been continued erosion and bank stabilization issues for many years. As noted, Areas #1 and #2 are entirely on property not owned by the applicant and would require additional coordination and approvals by the city and the Community Library. The application was routed to the City Arborist, City Engineer, and city administration departments to evaluate the debris removal on city property. All city departments are supportive of the approach. The city has engaged the Community Library in discussions to determine support or lack thereof for the project. At the time of this staff report, the applicant has filed a written request to the Community Library for review by the Nature Conservancy, the official land stewardship manager of the Hemingway property and associated conservation easement.

If an agreement cannot be reached between the applicant, city, and the Community Library in support of the proposal, the debris jams in Areas #1 and #2 can remain with no adverse impact to downstream properties and

the No Rise Certificate remains valid. Staff believes that the debris removal is a benefit but is not a critical component of the project. Staff recommends the following condition of approval:

- Prior to removal of debris in Areas #1 and #2, the applicant shall obtain written approval of the scope of work and written authorization for access and construction on property not owned by the applicant. If no such approval can be obtained, the scope of work identified for Areas #1 and #2 shall not be completed. Approval for work conducted on City of Ketchum property requires approval of an encroachment permit by the Ketchum City Council.

Regarding the debris removal in Area #3, staff is supportive of the removal to encourage flood conveyance and discourage sediment deposits in the area. Removal of the debris in Area #3 will also reinforce the goals of managing the amount of water that pushed into the east channel, thereby reducing the volume and velocity of water through that channel. This removal also further protects property owners south of the subject property within the Chateaux of Northwood Townhomes. Increased water conveyance in the east channel has caused erosion over time and many of the structures within that subdivision are less than 25 feet from the ordinary high-water mark of the east channel.

As mentioned above, woody debris is an important element of healthy riparian and aquatic ecosystems. As part of the proposed debris removal, the applicant is proposing to keep high-quality pieces of wood that are not rotten or unsuitable to be used in the riparian restoration work proposed. Wood barbs will be embedded along the bank in the riparian area to assist in habitat creation and naturalization of the riparian area. The applicant narrative states that rotted or unsuitable wood from debris jam removal will be hauled away, however, staff believes it should be placed in other higher elevation areas within the floodplain rather than hauled and disposed of. Staff recommends the following condition of approval:

- As part of debris removal activities, any rotted or unsuitable wood removed from debris jams shall be placed within the vicinity of the project area to decompose naturally rather than being hauled off and disposed.

Wetlands and Land Restoration

Prior to the 2017 flood event the area east of the eastern bank of the main channel of the Big Wood River (Area #4) was largely in a manicured, non-native state. Groundcover was largely turfgrass with minimal shrubs and trees. Turfgrass extended across the property to the bank of the river on the bank that abuts the main channel of the Big Wood River. Following the 2017 flood, the stream alteration permit that was approved had no delineated wetlands identified by the ACE and no wetland impacts or proposed mitigation. The land reclamation request, similar to what is proposed today, was considered a “repair of uplands” in the 2018 permit approval.

The repair provision that the previous approval was under is only valid for a short duration following a flood event. Due to the time that has lapsed since the 2018 approval, the repair provision is no longer available as a permitting approach. Additionally, the soils, hydrology, and plant species have begun to reclaim the area into a more natural riparian and wetland condition. As such, the ACE considers a large portion of Area #4 to now be a jurisdictional wetland. The ACE allows for limited disturbance of jurisdictional wetlands provided the area disturbed is less than 0.10 acre, or 4,356 acres of total disturbance. However, the KMC states that, “Where development is proposed that impacts any wetland the first priority shall be to move development from the wetland area. Mitigation strategies shall be proposed at time of application that replace the impacted wetland area with an equal amount and quality of new wetland area or riparian habitat improvement”.

As shown on the Area #4 site plan, the proposed project includes three areas pertinent to reviewing compliance with this standard:

- Riparian Restoration Area – approximately 3,160 SF (includes areas between the 25 ft riparian boundary to the toe of the slope)
- Undisturbed Wetlands – 4,008 SF

- Wetland Fill Area – 3,330 SF (includes all fill areas outside the 25 ft riparian boundary)

The applicant is requesting latitude from the Commission to allow for the reclamation of property lost during the 2017 flood. As noted above, prior to 2017, there were no wetlands contained on the property and the majority of the vegetation was turf grass with little to no riparian area. The applicant has proposed a middle ground approach to the current condition with the preservation of 4,008 SF of newly designated wetlands that will remain untouched and restoration of approximately 3,160 SF of riparian area that did not previously exist. The only work that will be conducted within the preserved wetland area is the removal of the existing gravel bags and revegetation of the areas under the gravel bag locations.

The landscape plan provided in the application materials was submitted with the initial application and has not been updated to reflect the proposal outlined above. The planting proposed within the wetland fill area includes some shrubs but consists primarily of Scottish Links fescue, which is a turf grass commonly used in golf course applications. Although drought tolerant and known to be very hardy, staff does not believe the proposal to be an appropriate planting choice. Blaine County has an approved Riparian and Wetland Planting List (Attachment E) that recommends plant species based on location and inundation conditions present. The City of Ketchum does not have a separately adopted plant list, and relies on the Blaine County list for guidance on how to achieve high quality riparian and wetland restoration.

If the proposed wetland and riparian restoration areas are deemed adequate by the Commission, the wetland fill areas would be considered "Dry Riparian/Mesic Meadow" which means that the area would be temporarily flooded or saturated for short durations. Staff recommends that the area be revegetated using a blend of grasses identified in the Blaine County plant list for those specific applications. Staff recommends the following conditions of approval:

- The applicant shall revise the landscape plan dated June 7,2024 to reflect the Commission approved extents of wetland fill and revise the planting plan to reflect a mix of appropriate shrubs and grasses outlined in the 2021 Blaine County Wetland and Riparian Plant List for "Dry Riparian" areas. The revised plan shall be provided to the Planning and Building Department for final review and approval prior to any installation.
- The landscape plan shall be revised to include information regarding the protection and irrigation of the disturbed and revegetated areas to ensure success rates are achieved. Irrigation shall be provided, either permanently or temporarily, for a minimum of two growing seasons. Permanent irrigation is not permitted within the 25-foot riparian zone.

Riparian Area

KMC states, "The Waterways Review District includes all parcels containing lands that are within 25 feet of the mean high-water mark as measured horizontally from the mean high-water mark of any waterway. Waterways include the Big Wood River, Trail Creek, and Warm Springs Creek, and any and all channels having year-round or intermittent flow. These lands within 25 feet of the mean high-water mark area also known as the riparian zone that is regulated by the City of Ketchum". This language requires that areas along the Big Wood River and the east channel be restored to establish appropriate riparian areas along both. However, in previous determinations by former city staff and the Commission, through permit reviews and approvals, riparian restoration of the east channel has not been required.

The applicant proposes significant riparian restoration along the Big Wood River, including a portion of the east channel where it connects to the Big Wood. But it proposes a less intense applicant of toe rock and root barbs along the remaining portions of the east channel. As noted above, most of the area along the east channel is now considered a jurisdictional wetland, much of which is to remain undisturbed. There is a small stretch toward the easternmost property line that is proposed to be filled as discussed above.

Based on KMC, staff believe the east channel does contain a 25-foot riparian zone as the channel will have intermittent flow. Staff believe that the current proposal by the applicant is sufficient. Following completion, the east channel will flow during medium to high-water periods, however, will likely not flow during low water times. As seen over the past seven years, the area along the east channel has re-established itself naturally and will likely continue to do so in the areas left undisturbed. The conditions of approval recommended above related to planting within the wetland fill areas encourage selection of plant species suitable for dry riparian areas, which the east channel will be during many months.

In general, staff is supportive of the stream alteration and bank stabilization proposed for the project, however, staff believe that additional consideration of the planting plan within the riparian area is warranted. The application narrative provides an overview of the planting plan, planting methods, and coverage targets for the various zones, including two zones specific to the riparian area. Zone #2 is the area within the 25-foot riparian area between the ordinary mean high-water mark and the 25-foot boundary. Zone #3 is the area from the ordinary mean high-water mark down to the toe of the channel.

Healthy riparian areas are characterized by a hierarchy of plants (grasses, shrubs, and trees) of varying species creating a dynamic biodiverse environment that enhances habitat areas for aquatic and avian species, stabilizes riverbanks, and promotes improved water quality. This stretch of the Big Wood River is a specific microclimate with significant shade and habitat refuge. Trees are a critically important and prevalent species on this stretch of the Big Wood as they provide shade and habitat refuge. The proposed planting plan for Zones #2 and #3 are limited to riparian grasses and shrubs with no proposed trees and low planting densities. Additionally, the planting method proposes to install grasses through a hydroseed method that is not always successful in riparian or floodplain applications. Finally, the proposed seed mixes for the riparian area are drought tolerant and hearty, but not specific to riparian areas.

To ensure the best degree of success in this critical area, staff recommends the following conditions of approval:

- The landscape plan shall be revised as follows and submitted to the Planning and Building Department for review, comment, and final approval prior to installation of any landscaping:
    - Include a minimum of five trees within Zone #2 of a species identified in the Blaine County Wetland and Riparian Plant List appropriate for the zone immediately behind the streambank. The landscape plan shall also be revised to increase the planting density of shrubs within Zone #2 area from six per 1,000 SF to 10 per 1,000 SF.
    - Include a minimum of five trees within Zone #3 of a species identified as bank stabilizers in the Blaine County Wetland and Riparian Plant List. Cottonwood trees located at the top of the slope are preferred, however, other species may be considered. Grouping of trees may be appropriate provided the locations of trees are strategically placed to maximize bank stabilization at key pressure point locations (south end of bank stabilization).
    - Require a minimum of two staggered rows of willows at a spacing no greater than five feet. Coyote Willows are preferred at the toe of the slope, however, a similar species may be considered.
    - Propose a new grass mix for the riparian area with species identified in the Blaine County Wetland and Riparian Plant List for undergrowth grasses and forbs in riparian areas. The landscape plan shall also be revised to propose an alternate planting method for grasses such as hydro mulch, intermittent plug planting, or other methods with greater success rates in riparian areas.
    - Identify temporary fencing requirements for trees and shrubs for a minimum of three growing seasons to ensure adequate success rates of plantings.

Timing of Construction and Construction Management
Construction within the stream can only be conducted during certain times of year, ideally during the lowest flow periods of the stream. If approved, the applicant intends to complete construction this fall. However, that may not be possible due to the time necessary to comply with all proposed conditions of approval prior to construction. Staff recommends the following conditions related to the timing of construction:

- The applicant shall make every reasonable effort to complete the project in 2025. In the event the project cannot be completed in 2025, the large gravel bags running the length of the Big Wood shall be removed and the disturbed area stabilized no later than November 15, 2025. The applicant shall provide a temporary site stabilization plan for review and approval by the city's Floodplain Administrator prior to construction. Upon completion of sandbag removal, the applicant shall notify city staff that work has been completed and schedule an on-site visit with staff to confirm compliance with the approved stabilization plan.
- Work that is not completed in 2025 shall be completed in 2026 no earlier than peak spring runoff periods and no later than October 15, 2026.
- Prior to start of construction in 2025 or 2026, the applicant shall submit a comprehensive construction management plan for review and approval by the City Engineer. The construction management plan must address all applicable requirements of KMC Chapter 15.06 – Construction Activity Standards.

STAFF RECOMMENDATION:
Staff recommend **approval** of the Floodplain Development Permit application (File No. P24-002) subject to the following conditions:

1. The terms of this approval shall be per the provisions of KMC 17.88.050.D.3.G – Terms of Approval.
2. This approval is only for the scope of work outlined in the application narrative and project plans dated September 25, 2025 and October 9, 2025 respectively and as conditioned hereon.
3. Any modification to approved plans as referenced in this approval shall be considered an amendment to this permit, and may require a public hearing, considered for review under the requirements of KMC 17.88.050.D.
4. The applicant shall install the geogrid material at a depth that provides a minimum of eight inches of topsoil in all locations. Twelve inches of topsoil is preferred to better support the revegetation of the disturbed areas. The applicant shall conduct an additional analysis and provide such to the Planning and Building Department for review, to determine if 12 inches of topsoil can be placed without jeopardizing the No Rise and No Adverse Impact certifications currently achieved by the project. Based on the results of the analysis, city staff may require additional topsoil be placed in key areas to increase success rates for revegetation and bank stability.
5. Prior to removal of debris in Areas #1 and #2, the applicant shall obtain written approval of the scope of work and written authorization for access and construction on property not owned by the applicant. If no such approval can be obtained, the scope of work identified for Areas #1 and #2 shall not be completed. Approval for work conducted on City of Ketchum property requires approval of an encroachment permit by the Ketchum City Council.
6. As part of debris removal activities, any rotted or unsuitable wood removed from debris jams shall be placed within the vicinity of the project area to decompose naturally rather than being hauled off and disposed.
7. The landscape plan shall be revised as follows and submitted to the Planning and Building Department for review, comment, and final approval prior to installation of any landscaping:
    a. The applicant shall revise the landscape plan to reflect the Commission approved extents of wetland fill and revise the planting plan to reflect a mix of appropriate shrubs and grasses outlined in the 2021 Blaine County Wetland and Riparian Plant List for "Dry Riparian" areas.
    b. The landscape plan shall be revised to include information regarding the protection and irrigation of the disturbed and revegetated areas to ensure success rates are achieved. Irrigation shall be provided, either permanently or temporarily, for a minimum of two growing seasons. Permanent irrigation is not permitted within the 25-foot riparian zone.

c. Include a minimum of five trees within Zone 2 of a species identified in the Blaine County Wetland and Riparian Plant List appropriate for the zone immediately behind the streambank. The landscape plan shall also be revised to increase the planting density of shrubs within the Zone #2 area from six per 1,000 SF to 10 per 1,000 SF.
d. Include a minimum of five trees within Zone #3 of a species identified as bank stabilizers in the Blaine County Wetland and Riparian Plant List. Cottonwood trees located at the top of the slope are preferred, however, other species may be considered. Grouping of trees may be appropriate provided the locations of trees are strategically placed to maximize bank stabilization at key pressure point locations (south end of bank stabilization).
e. Require a minimum of two staggered rows of willows at a spacing no greater than five feet. Coyote Willows are preferred at the toe of the slope, however, a similar species may be considered.
f. Propose a new grass mix for the riparian area with species identified in the Blaine County Wetland and Riparian Plant List for undergrowth grasses and forbs in riparian areas. The landscape plan shall also be revised to propose an alternate planting method for grasses such as hydro mulch, intermittent plug planting, or other methods with greater success rates in riparian areas.
g. Identify temporary fencing requirements for trees and shrubs for a minimum of three growing seasons to ensure adequate success rates of plantings.

8. The applicant shall make every reasonable effort to complete the project in 2025. In the event the project cannot be completed in 2025, the large gravel bags running the length of the Big Wood shall be removed and the disturbed area stabilized no later than November 15, 2025. The applicant shall provide a temporary stabilization plan for review and approval by the city's Floodplain Administrator prior to removal. Upon completion of gravel bag removal, the applicant shall notify city staff that work has been completed and schedule an on-site visit with staff to confirm compliance with the approved stabilization plan.
9. Work that is not completed in 2025 shall be completed in 2026 no earlier than peak spring runoff periods and no later than October 15, 2026.
10. Prior to start of construction in 2025 or 2026, the applicant shall submit a comprehensive construction management plan for review and approval by the City Engineer and City Floodplain Administrator. The construction management plan must address all applicable requirements of KMC Chapter 15.06 – Construction Activity Standards.
11. The Administrator shall conduct site inspections of work in progress. The Administrator shall make as many inspections of the work as may be necessary to ensure that the work is being done according to the terms of this permit, approved plans, and KMC 17.88. In exercising this power, the Administrator has a right, upon presentation of proper credentials, to enter the property at any reasonable hour for the purposes of inspection or other enforcement action.
12. If construction or improvements differ from the approved plans, such work may be subject to removal or require an amendment to the permit at the applicant's expense.
13. Following project completion, upon an annual inspection, if 80% or fewer of the plants indicated on the Landscape Plan have not survived, the property owner shall re-install new plantings. This includes ground cover and grasses, shrubs, and trees.
14. No use of restricted use chemicals or soil sterilants are permitted within one hundred feet (100') of the mean high-water mark on the subject property at any time (KMC 17.88.040.C.3).
15. All applications of herbicides and/or pesticides within one hundred feet (100') of the mean high-water mark, but not within twenty-five feet (25') of the mean high-water mark, must be done by a licensed applicator and applied at the minimum application rates (KMC 17.88.040.C.4).
16. Application times for herbicides and/or pesticides shall be limited to two (2) times a year; once in the spring and once in the fall unless otherwise approved by the City Arborist (KMC 17.88.040.C.5).

17. It shall be unlawful to dump, deposit, or otherwise cause any trash, landscape debris ,or other material to be placed in any stream, channel, ditch, pond, or basin that regularly or periodically carries or stores water.

RECOMMENDED MOTION:
"I move to approve the Floodplain Development Permit application for work on and around 401 Northwood Way, as conditioned, and approve the Findings of Fact, Conclusions of Law, and Decision."

ATTACHMENTS:

A. Application and Narrative
B. Project Design Drawings
C. Army Corps of Engineers Joint Application
D. Army Corps of Engineers Approval Letter
E. Blaine County Wetland and Riparian Plant List
F. Draft Findings of Fact, Conclusions of Law, and Decision

City of Ketchum

ATTACHMENT A:

Application and Narrative

OFFICIAL USE ONLY	
File Number:	P24-057
Date Received:	6/20/24
By:	GB
Fee Paid:	$5,700
Approved Date:	
Denied Date:	
By:	

Floodplain Development Permit Application

Submit completed application and documentation to planningandzoning@ketchumidaho.org Or hand deliver to Ketchum City Hall, 191 5th St. W. Ketchum, ID If you have questions, please contact the Planning and Building Department at (208) 726-7801. To view the Development Standards, visit the City website at: www.ketchumidaho.org and click on Municipal Code. You will be contacted and invoiced once your application package is complete.

When is a Floodplain Development Permit Application required?

The Floodplain Management Overlay Zoning District boundaries are represented on the official zoning map of the City.

All land within the external boundary of the special flood hazard area (SFHA) and all parcels with any portion thereof affected by said SFHA shall be considered to be within the Floodplain Management Overlay Zoning district.

All land areas within the external boundary of the SFHA shall be considered to be within the floodplain subdistrict of the Floodplain Management Overlay Zoning District. The City may make necessary interpretations of the boundary based upon the recommendation of the City Engineer or other expert.

All land areas within the external boundary of the regulatory floodway shall be considered to be within the floodway subdistrict of the Floodplain Management Overlay Zoning District. The City may make necessary interpretations of the boundary based upon the recommendation of the City Engineer or other expert.

NOTE: This permit is required for all properties containing 100 year floodplain area and Riparian Setbacks

PROPERTY OWNER INFORMATION
Property Owner Name(s):Sandra Swan
Property Owner's Mailing Address:8 Brittany Meadows Atherton, CA 94027-0000
Phone:
Email:emtiswan@comcast.net
PROJECT INFORMATION
Project Name:River and Riparian Restoration Project - Swan Property
Project Representative's Name (main point of contact for project):Charles G. Brockway, P.E.
Project Representative's Phone:208-736-8543
Project Representative's Mailing Address:2016 Washington Ave. N Suite #4 Twin Falls, ID 83301
Project Representative's Email:charles.g.brockway@brockwayeng.com
Architect's name, phone number, e-mail:N/A
Landscape Architect's name, phone number, e-mail:N/A
Environmental consultant's name, phone number, e-mail:N/A
Engineer's name, phone number, e-mail:See above
Project Address:401 Northwood Way, Ketchum, ID 83340
Legal Description of parcel:T.04N R.17E Sec.12 SE 1/4 NE 1/4 SE 1/4, Tax Parcel No.: RPK04310000120
Lot Size:4.320 acres
Zoning District:City
Overlay Zones – indicate all that apply: ■ Floodplain ■ Floodway ■ Riparian Zone ☐ Avalanche ☐ Mountain
Brief description of project scope:See attached narrative for project description and scope.
Value of Project: $50,000
TYPE OF PROJECT – indicate all that apply:

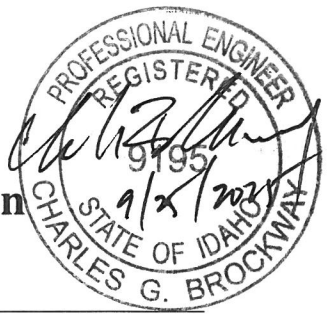
☐ New Building in Floodplain	☐ Building Addition in Floodplain	☐ Emergency Streambank Stabilization / Stream Alteration	☐ Other. Please describe:
■ Floodplain Development	■ Streambank Stabilization / Stream Alteration		
PROPOSED SETBACKS – if project is a new building or an addition to an existing building			
Front:N/A	Side:N/A	Side:N/A	Rear:N/A
ADDITIONAL INFORMATION			
Will fill or excavation be required in floodplain, floodway or riparian zone? Yes ■ No ☐			
If Yes, Amount in Cubic Yards: Fill: CY Excavation: CY Please see attached narrative for full breakdown.			
Will Existing Trees or Vegetation be Removed? Yes ■ No ☐			
Will new trees or vegetation be planted? Yes ■ No ☐			

Applicant agrees in the event of a dispute concerning the interpretation or enforcement of the Floodplain Management Overlay Application, in which the City of Ketchum is the prevailing party, to pay reasonable attorney fees, including attorney fees on appeal, and expenses of the City of Ketchum. I, the undersigned, certify that all information submitted with and upon this application form is true and accurate to the best of my knowledge and belief.

Signature of Owner/Representative

June 6, 2024
Date

River and Riparian Restoration Project for the Swan Property: Stream Alteration and Floodplain Development Permit Applications - Amended



Charles G. Brockway, Ph.D., P.E.
Brockway Engineering

Revised September 25, 2025

This narrative incorporates the Amendment dated July 17, 2025 that was submitted separately to the agencies.

A. Background

Flooding in the Big Wood River in 2017 caused major erosion damage to the applicant's property, destabilized the east bank of the river, and deposited large quantities of gravel in the channel due to the formation of a massive debris dam. The resulting elevated flood heights led to inundation of the property even at very low river flows, as well as increased groundwater levels requiring installation of a foundation dewatering system. Erosion of the applicant's property was only temporarily restrained by emergency placement of gravel bags, but the damage continued in subsequent high-flow periods. At the same time, high flows in the past two years have beneficially mobilized the majority of the previously-deposited gravel, but a debris dam is now forming in the same fashion as it did in 2017.

B. Project objectives

The objectives of the proposed stream restoration project include:

1. Restore the applicant's property.
2. Reduce the risk of erosion of applicant's land and the need for future stream restoration projects and permitting.
3. Allow the floodplain on the applicant's land to function properly as it has historically – inundating at the same frequency but no greater, and performing an appropriate riparian functions.
4. Stabilize the east river bank to prevent ongoing erosion and deposition.
5. Restore the river channel conveyance capacity.
6. Restore the high-water conveyance function of the East Channel as it has functioned historically.

This property is in a platted subdivision lot, and the house is within a platted building envelope. The owner is aware of the risks and obligations of building near a floodplain, but no property owner is ever obligated to allow property to be destroyed. She has both a right and an obligation to protect her property – both land and structures, from undue

flood risk. The owner understands the function of the 100-year floodplain and does not intend to reduce its capacity or degrade its proper function. Yet, if nothing is done to properly stabilize this reach, the river may continue its avulsion to the east and create a major river channel through the applicant's property, decimating its value and putting both the applicant's residence and downstream residences on the East Channel at much greater risk.

C. Current river topography

To provide data to support the project modeling and to evaluate the current state of the river, an extensive survey was commissioned from Alpine Enterprises and completed October 2023. This survey consisted of eight cross-sections spanning the entire floodplain and extending upstream and downstream of the project area, plus hundreds of individual ground shots to define important features. These cross sections and shots can be seen on the project drawings.

The most important finding revealed by the survey is that the river is now flowing in four major channels of roughly comparable size. This is a significant change that has occurred since the previous survey was conducted in 2018. The braiding of the channel in this reach is a function of the low gradient, the accumulation of debris, and the subsequent deposition of gravel. In terms of the objectives of the proposed project, this is a positive finding since the additional flow paths will tend to reduce the total flow in the channel against the applicant's property.

The channels are noted on the project drawings, and for reference are numbered from east to west: Channel #1 is the easternmost channel against the applicant's property, Channel #2 is the next channel to the west, and Channels #3 and #4 are the two western channels. Channels #3 and #4 in particular have significantly grown in size since the 2018 survey. These two channels come together between cross sections 101-23 and 102-23, and the remaining channels come together south of the project, forming a single channel flowing southward toward Warm Springs bridge.

These channels are to be distinguished from the small channel known as the East Channel, which is a minor high-flow channel that flows past the Chateau at Northwood condominiums. This channel will continue to be referred to as the East Channel for continuity with previous work.

Another important finding of the survey is that the majority of the gravel deposition caused by the 2017 debris dam (described in more detail below), has been naturally mobilized and transported downstream. In comparing the 2023 survey with the 2018 survey, the channel at Sections 102-23, 103-23, and 104-23, which were largely blocked in 2018, are now mostly free-flowing. This is important because it will allow much less gravel to be removed to accomplish the project objectives.

D. Project components

The proposed components of the project are described below and illustrated on the drawings included with the permit application.

D.1. Removal of debris blockages to restore Channel #2 capacity.

This work will take place within Areas 1 and 2 on the project site plan.

A substantial debris dam has formed at the entrance to Channel #2 at Section 107-23, about 300 feet upstream of the applicant's project. Opening this channel will tend to induce greater flow in Channel #2 and less flow in Channel #1, reducing the risk to both the applicant's property and the properties north of her land.

Another area of blockage that consists of debris and gravel is located in Channel #2 approximately 260 feet downstream of the channel entrance at Sections 104-23 and 103-23. Clearing of this area will increase the cross-flow from Channel #1 to Channel #2, relieving some pressure on the east bank.

Where suitable, the woody debris will be utilized in the bank stabilization element (Section D.4.).

D.2. Removal of the incipient major debris dam at location of the 2017 dam.

This work will take place within Area 3 on the project site plan.

The 2017 debris dam was the instigator of the problem now faced by the applicant. A major dam formed, backing up the water and causing 2 to 3 feet of gravel deposition in Channel #1. This dam also caused a cross channel to be cut from Channel #1 to #2, which was a beneficial development. This debris was removed in 2018, which allowed Channel #1 to flow freely and has led to the majority of the gravel deposition being mobilized and cleared naturally. Now, however, both Channel #1 and the cross channel are partially blocked by debris and debris accumulation is happening in a manner nearly identical to what occurred in 2017. The cross channel is blocked by a major tree directly across its entrance, with only a narrow flow path remaining. If not addressed, this partial debris dam will undoubtedly catch other floating debris, leading to the formation of a debris dam similar to the 2017 dam. This channel must be kept clear to allow it to continue naturally mobilizing and transporting the remaining legacy 2017 gravel deposition. This component of the project is absolutely necessary – if a debris dam forms again during a flooding situation and gravel is deposited like it was in 2017, the project will be back where it started six years ago.

Where suitable, the woody debris will be utilized in the bank stabilization element (Section D.4.).

D.3. Restoration of eroded land

This work will take place within Area 4 on the project site plan.

This component will involve removing existing gravel bags and restoring eroded turf and riparian areas. This area must still be allowed to function as a flood plain, but must be adequately protected from erosion. Original grade was estimated from the topographic survey data collected in 2017 and 2018, in which the surveyor was directed to obtain ground shots from obvious pre-flood points such as bases of trees, undisturbed turf areas, etc.

The Corps of Engineers now considers most of Area 4 to be jurisdictional wetlands, and it is necessary to remain under the 0.10 acre threshold so that the activity may be covered by Nationwide Permit 18. Sawtooth Environmental was retained to evaluate the site and delineate an approximate wetland line, which is shown on the revised site plan.

The restoration will include three types of treatment, as shown on the site plan Revision C:

1. Re-graded, restored and protected area near the bank and in the area where the most significant sheet flow will occur as the river bank overtops during high water. The reclaimed area must be able to withstand shallow sheet flow without downcutting, which could allow the river to make a new channel directly through the applicant's property as it is currently doing. To accomplish the erosion protection, geogrid will be used as depicted on the project plans. The geogrid is a subsurface erosion control matting that is 4" tall, with a honeycomb pattern that is filled with soil and planted with vegetation amongst the honeycomb cells. The product is then covered and will not be visible

2. Re-graded and restored land that will not involve placement of the geotextile. This area will receive sheet flow but is less at risk of erosion.

3. Undisturbed wetland. This is the central area of the floodplain restoration and is slightly lower than surrounding land. It is the main region of sheet flow during high water events. This area has established very well with native vegetation and should be self-sustaining the established vegetation will provide a degree of erosion protection.

The reclaimed area will be revegetated in accordance with the revegetation plan described in Section G. The revegetation plan represents a significant improvement compared to pre-2017 conditions, and it is noteworthy that the type and density of appropriate riparian vegetation will exceed that of nearby neighboring properties.

D.4. Stabilization of the east river bank

This work will take place within Area 4 on the project site plan.

The east bank has been greatly damaged and is unstable. This component of the project involves modest removal of accumulated legacy gravel from the 2017 event to create a defined bank, and placement of log barbs embedded in the east bank of the river and projecting into water at the toe of the slope. Between the barbs, toe logs, rock, and additional wood will be placed. Where suitable, reclaimed woody debris harvested from the debris jams will be incorporated into the bank stabilization. Some of this wood may be rotted or unsuitable and will be hauled away. Field determinations will be made of the suitability of wood for use in the bank protection.

The benefits of the bank stabilization action include erosion protection, encouraging the high velocity flow to remain waterward of the bank, encouraging the river to curve westward, and improving habitat. Log barbs have been used with greater frequency along the Big Wood River in the past decade, and have proven to provide good stabilization with greater habitat benefits. The toe rock proposed in the plan will be embedded in the toe and will not be evident in the visual appearance. The applicant has no desire to create any semblance of a riprapped bank.

As a stopgap measure, the bank stabilization will include a line of buried rock set approximately 10 to 15 feet back from the top of bank, completely hidden from view. The objective of this element is to provide a final backstop against downcutting or bank migration in the event of a severe, unforeseen occurrence that causes the bank to fail. As a backstop measure, it typically never comes into play but provide extra insurance with no environmental impact. This approach has been used on the Big Wood.

Between Sections 104 and 105, the bank stabilization will incorporate the discharge pipes from the foundation dewatering system for the residence. On the applicant's property, adjacent groundwater is coincident with the river level at this location. The dewatering system consists of sumps located outside of the building footprint, pumping clean groundwater only, drawing the water table down to protect the foundation system. The dewatering system does not pump water directly from crawl spaces or any other area that is exposed to potential contamination. As such, DEQ has determined that provided the pumped water is free of pollutants there is no discharge permit required. Further, no water permit is required from IDWR since dewatering is excluded from water permitting requirements. Operation of the system will typically occur only during the high water in the spring, typically 30 to 60 days in duration. During very low-water seasons, the system will not operate. This element is being included in the permit application because the pipes in question are located within the floodplain and riparian setback and therefore must be permitted.

D.5. Restoration and stabilization of the East Channel

This work will take place within Area 4 on the project site plan.

Water should be allowed to flow into East Channel, but the entrance to the channel has been eroded and is now at risk of down-cutting and allowing excessive flow to occur in the channel, potentially allowing partial river capture to occur. The flood risk to owners of property along the channel has been elevated significantly for this reason. During 2022 and 2023, very large amounts of water entered the channel even though these years were not extreme flood events. The objective of this project element is twofold: 1) to reestablish the channel as a functioning river feature that will provide both flood conveyance during high flows; and 2) provide water supply to maintain the riparian values provided by the channel during non-flood moderate river flows as it has for many years. The intent is to put the channel back in essentially the same configuration as it was historically, but with sufficient protection at the entrance.

The work involves re-grading the unstable entrance section of the channel and downstream approximately 80 feet from the river downstream, reestablishing the proper channel geometry. It is very important that the east channel not be allowed to become a major channel of the river, as there are multiple residences situated extremely close to the east channel, and some have experienced bank erosion. To stabilize the entrance to the channel, a buried rock sill with embedded root wads will be placed. The purpose is to prevent the entrance from down-cutting, thereby allowing excessive flow into the channel and potential causing a partial river capture. This stabilization can be done with buried stone and root wads.

An analysis of the magnitude and duration of flow in the East Channel with the proposed channel geometry is provided in Section H.4. The geometry was selected to allow lower flow to occur as it has historically, thereby maintaining riparian functionality, while still passing higher flows to allow the channel to operate as a flood channel as it has historically. This analysis resulted in a two-stage entrance geometry as described in Section H.4.

The East Channel work also will include protecting the south boundary of reclaimed land, which is also the north bank of the East Channel. The reason for this action is twofold: 1) water that sheet flows southeasterly over the reclaimed area during a flood will flow into the east channel, which will cause rivulets and erode the bank if not protected, and 2) the east channel flow itself could undercut and erode the southern boundary of the reclaimed area. The treatment does not need to be a heavy treatment but will include a modest amount of buried toe rock, not visible, and root wads.

D.6. Removal of downed trees

This work will take place within Area 4 on the project site plan.

Beavers have cut three trees which have fallen across Channel #1. These trees are about 4 to 8 inches in diameter. They are ripe to mobilize and will likely catch on the debris dam forming as described in #2 above. These trees are sound and can likely be utilized in the other project elements.

E. Quantities

Quantities of excavation and fill were calculated for the project components and are shown in Table 1. OHW was assumed to be the line existing prior the 2017 discrete event.

Table 1. Quantities.

Project Component	River Length (ft)	Plan Area (acres)	Total excavation (cu. yd.)	Excavation below OHW (cu. yd.)	Total fill (cu. yd.)	Fill below OHW (cu. yd.)
1. Channel #2 capacity enhancement	n/a	0.081	115	69	0	0
2. Removal of debris dam at Section 101	n/a	0.064	113	113	0	0
3. Restoration of eroded land in floodplain	n/a	0.10	0	0	155	0
4. Bank protection and stabilization – east river bank	252	0.058	0	0	183	183
5a. East channel entrance sill	15	0.0028	12	12	12	12
5b. East channel sedimentation removal	80	0.017	46	46	0	0
5b. East channel bank protection	123	0.023	0	0	57	57
Temporary bypass and coffer	n/a	0.0048	0	0	23	16
TOTALS		1.05	301	240	431	268
TOTALS (not including temporary work)		1.04	301	240	563	252

Notes:
Eroded land restoration: Fill volume is for reclamation of land within floodplain.
Bank stabilization: Length is north-south length, fill is toe protection and logs.
East channel entrance sill: Length is the north-south length of the east channel entrance protection.
East channel bank protection: Length is west-east along north bank of East Channel.

F. Water Bypass and Construction

The project work area will be dewatered to the extent possible in order to reduce or turbidity impacts and to allow proper grade and geometric control on all features of the project without the interferences of flooded conditions. This will be accomplished by placing "supersack" 3'x3'gravel bags or concrete blocks along the north property line and diverting the flow across the divide between Channels #1 and #2. A natural flow path exists here, but minor work may be needed to grade the area and induce the Channel #1 flow into Channel #2. This may include relocating a log across the flow path and minor regrading. Material removed for the bypass channel will be temporarily placed on the gravel bar just adjacent to the channel. At the end of the project the gravel bags will be removed and the stockpiled material will be placed back into the excavated bypass channel.

Construction of the project will involve equipment working in the river. This activity will be minimized to the extent possible but there is no other feasible means of accomplishing the project. Standard practices will be utilized relative to fueling of equipment to remain a minimum of 50 feet from ordinary high water.

G. Revegetation Plan

The project is divided in three revegetation zones according to the treatment received: the restored land area outside of the riparian zone but not including the undisturbed wetland area, the riparian zone 25 feet from mean high water line of the Big Wood River, excluding the East Channel, and the bank stabilization zone consisting of the bank slope after treatment. Each vegetative treatment is described below. Consultation was made with the owner's landscape professional, Ben Young Landscape Architects (BYLA), to refine the species to be planted in each zone.

The revegetation plan represents a significant improvement compared to pre-2017 conditions, and it is noteworthy that the type and density of appropriate riparian vegetation will exceed that of nearby neighboring properties.

Zone 1: Reclaimed land outside of the 25-foot riparian zone but not including the undisturbed wetland area:

Grasses
Match original vegetation: Scottish Links Fine Fescue by Magic Valley Sod.

Shrubs – plant at density of three (3) per 1,000 ft^2, approximately 20 shrubs total

Golden currant	*Ribes aureum*
Red-osier dogwood	*Cornus sericea*
River alder shrub	*Alnus incana*
Woods rose	*Rosa woodsii*

Zone 2: Riparian zone within 25 feet of post-project mean high water line of Big Wood River

Riparian Grasses (approximately equal proportions)	
Idaho fescue	*Festuca idahoensis*
Streambank wheatgrass	*Agropyron riparium*
Creeping red fescue	*Festuca rubra*
Bluebunch wheatgrass	*Pseudoroegneria spicata*
Silky lupine	*Lupinus sericeus*

Shrubs – plant at density of six (6) per 1,000 ft^2, approximately 35 shrubs total	
Golden currant	*Ribes aureum*
Red-osier dogwood	*Cornus sericea*
River alder shrub	*Alnus incana*
Woods rose	*Rosa woodsii*

Zone 3: Bank stabilization

Plant cuttings at spacing no greater than five (5) feet within the bank stabilization from the toe of the slope to the top of the bank, along the entire river length of the treatment.

Booth willow	*Salix boothii*
Geyer willow	*Salix geyeria*
Pacific willow	*Salix lasiandra*

Planting Methods and Coverage

The owner's landscape professional will be retained to oversee and/or perform the revegetation work in accordance with the specifications herein.

The reclaimed area will be topped with 4 inches of organic-rich topsoil and graded to provide an adequate seed bed. Grasses will be planted by the hydroseed method at 25 lb/acre or as recommended by the landscape professional. Broadcast application will only be used in areas unreachable by hydroseeding equipment.

Shrubs will typically be 5-gallon containerized nursery stock, planted in accordance with accepted practices for containerized plantings. The geotextile material will be cut to allow the full required diameter for each planting.

Willow plantings within the bank stabilization will be made at a target spacing of 5 feet, with the willows placed deep enough to reach permanent water.

H. Hydraulic Analysis and Discussion of River Changes since 2017

H.1. HEC-RAS model overview

Hydraulic modeling using HEC-RAS 4.1 was performed for the project to assess conditions during the 100-year event of 2,880 cfs, which is the FEMA effective base flow for the reach. Direction from the City was to use this flow even though a higher flow is being used by FEMA for the remapping study currently in progress. Cross-sections from the FEMA 2024 draft modeling were used as the baseline, and eight new cross-sections were developed using the survey data from August 2023 described above to reflect current conditions through the project reach. The project is located between FEMA Sections EN and EM.

An Existing Conditions model was developed by inserting the new cross-sections and adjusting reach lengths accordingly. Post-Project models were developed to incorporate both the restoration of land within the floodplain, the proposed channel work, and the bank stabilization actions. Two Post-Project models were developed: one with all of the work proposed herein, and one that excludes the debris removal in Channel #2.

Because the new sections span four channels with heavy vegetative growth between channels and on the overbanks, horizontally-varied roughness coefficients were used. Refinement of the coefficients was based on the seminal work by Chow (1959), which includes Equation 5-12 as a procedure for developing roughness values for natural stream channels:

$$n = (n_0 + n_1 + n_2 + n_3 + n_4)m_5$$

Using Table 5-5,

$n_0 = 0.028$	baseline for coarse gravel channels
$n_1 = 0.010$	moderate surface irregularity
$n_2 = 0.012$	size and shape of channel cross-section alternating occasionally
$n_3 = 0.015$	moderate effect of obstructions such as debris, logs, boulders
$n_4 = 0$	relatively little vegetation growth in the channels themselves
$m_5 = 1.000$	minor meandering

This procedure results in a channel n-value of 0.065. The value for the heavy vegetative growth areas and overbank was selected from Table 5-6 as 0.10.

Historically FEMA has used 0.04 and 0.08 for the channel and overbank, respectively. In the 2024 draft work, FEMA reduced all coefficients and adopted 0.030 to 0.035 for the channel and 0.050 to 0.065 for the overbanks. These values are too low for the conditions on the ground. FEMA indicated in its meetings with the local communities that even if its 100-year flow was too high, it was "compensating" by reducing the roughness coefficients to try to match observed inundation in 2017. It is unfortunate that

FEMA did this, because the correct procedure is to select roughness coefficients that reflect real channel conditions, not to use them as correction factors to compensate for an erroneously high flow value.

H.2. River changes since 2017

As noted, the 2017 flood caused major geomorphologic changes in the river, including a massive gravel deposition upstream of a debris dam at Section 101. The topographic survey in 2018 characterized these features. Significant changes in the river have occurred since the 2018 survey, as evidenced by the August 2023 survey and the hydraulic modeling discussed above. Basic findings are as follows:

The river now consists of four distinct channels, all of which carry flow during flood events.

The western two channels are deeper and larger than the eastern two in the southern portion of the study area, and appear to now be the major channels.

The gravel deposition at the Swans caused by the debris dam in 2017 has been substantially removed by the river. Down-cutting of 1.0 to 2.5 feet has occurred, and it is expected that additional down-cutting will likely occur, barring additional debris dams.

New channels have been created on the island on the applicant's property (Sections 100-23 and 101-23), likely as a result of the higher water level caused by the gravel deposition, as well as the denuding of bank vegetation material in this area.

At 2,880 cfs, the 2023 existing conditions water surface elevations at the applicant's property are lower than the 2018 existing conditions by approximately 0.3 to 1.0 feet.

Due to the gravel mobilization and the development of the four main channels, the overall capacity of these reach is significantly greater.

H.3. Model Runs

HEC-RAS runs were made for existing conditions, post-project conditions (including the reduction of wetland fill described herein), and post-project conditions but assuming that the debris removal in Channel #2 does not occur. For all three of these scenarios, an encroachment run was also made by manually programming the encroachment stations at their limits on the effective FIRM. To achieve model stability, an interpolated section was calculated between Sections 106 and 107 at river station 6034.

The results are shown in Tables 2a and 2b.

Table 2a. HEC-RAS model results for existing and post-project conditions (unencroached) during the 100-year flood of 2,880 cfs. Model runs for project include with and without removal of debris within Channel #2.

Section	River Station	Existing Conditions		Post-Project				Post-project without Channel #2 debris removal			
		WSE (ft)	Channel velocity (ft/s)	WSE (ft)	Channel velocity (ft/s)	WSE Change*	Velocity Change	WSE (ft)	Channel velocity (ft/s)	WSE Change*	Velocity Change
107-23	6128	5832.04	5.01	5831.95	4.66	-0.09	-0.35	5832.04	5.01	0.00	0
Interp	6034	5831.07	4.29	5831.03	4.32	-0.04	0.03	5831.07	4.29	0.00	0
106-23	5940	5830.07	4.65	5830.06	4.69	-0.02	0.04	5830.07	4.66	-0.01	0.01
105-23	5874	5829.27	4.45	5829.16	4.72	-0.11	0.27	5829.23	4.54	-0.04	0.09
104-23	5829	5828.76	3.68	5828.64	3.75	-0.12	0.07	5828.74	3.64	-0.02	-0.04
103-23	5784	5828.23	4.36	5828.18	4.12	-0.04	-0.24	5828.21	4.35	-0.02	-0.01
102-23	5743	5827.83	4.03	5827.82	3.97	-0.01	-0.06	5827.82	3.97	-0.01	-0.06
101-23	5640	5826.96	3.86	5826.96	3.86	0.00	0	5826.96	3.86	0.00	0
100-23	5551	5826.49	3.09	5826.49	3.09	0.00	0	5826.49	3.09	0.00	0

* WSE difference calculated by subtracting WSEs computed to nearest 0.001' and rounding to nearest 0.01'

Table 2b. HEC-RAS model results for existing and post-project conditions (encroached, floodway run) during the 100-year flood of 2,880 cfs. Model runs for project include with and without removal of debris within Channel #2. Note that channel velocity is not relevant for floodway runs and is not included in table.

Section	River Station	Existing Condition Floodway Run	Post-Project Floodway Run		Post-project without Channel #2 debris removal Floodway Run	
		WSE (ft)	WSE (ft)	WSE Change*	WSE (ft)	WSE Change*
107-23	6128	5832.05	5832.01	-0.04	5832.06	0.00
Interp	6034	5831.32	5831.26	-0.05	5831.31	-0.01
106-23	5940	5830.41	5830.36	-0.05	5830.38	-0.03
105-23	5874	5829.76	5829.62	-0.14	5829.69	-0.07
104-23	5829	5829.33	5829.21	-0.12	5829.27	-0.06
103-23	5784	5828.93	5828.88	-0.05	5828.89	-0.04
102-23	5743	5828.40	5828.39	-0.01	5828.39	-0.01
101-23	5640	5827.59	5827.59	0.00	5827.59	0.00
100-23	5551	5827.14	5827.14	0.00	5827.14	0.00

* WSE difference calculated by subtracting WSEs computed to nearest 0.001' and rounding to nearest 0.01'

The Post-Project models indicate no change or a slight reduction in flood heights compared to the Existing Conditions model during the 100-year event. Changes in channel velocity are negligible. The model indicates that the project meets the required "no-rise" criteria for work within a regulatory floodway.

The model also indicates that the inundated area of the east 100-year floodplain on the applicant's property will be essentially the same as delineated by FEMA, i.e. no loss of floodplain value will occur. The model predicts the floodplain will begin to be inundated at a flow of 2,000 cfs. The model predicts the overland flow in the left overbank (east floodplain) during the 100-year event ranges from 157 to 203 cfs from Section 104 down to Section 102. In short, the floodplain conveyance is being adequately preserved.

The following model output reports are included with this narrative:

1. Cross-sections showing existing and proposed geometry (reflecting both land reclamation, channel excavation, and bank stabilization). Water surface elevations are shown on the cross-sections for the 100-year flow of 2880 cfs.

2. Longitudinal profile showing computed water surface profiles.

3. Output tables showing results for both the existing and post-project conditions.

H.4. Analysis of magnitude and duration of flow to East Channel

The East Channel entrance has received sedimentation in the amount of 1.0 to 2.5 feet, blocking most of the flow. The objective of the East Channel work is to preserve the historical functionality of the channel, but no data exists on amount or frequency of flow in the channel. Therefore, a reasonable judgment must be made to ensure the channel will continue to provide both a low-flow riparian maintenance function as well as a flood carrying function. The entrance elevation and geometry must be set so that flow will occur through a reasonable period of the summer as it has historically, but not all the time because the channel has likely dewatered during low flows in the river. Toward these ends, the project drawings depict a two-stage channel geometry at the entrance, designed to allow a low base flow to occur during low river levels while allowing the channel to also safely function as a high-flow flood channel as it has historically.

The magnitude of flow in the East Channel is a function of the elevation of water in the river and geometry of the channel entrance. A higher river level will cause a greater flow in the channel, and a lower channel entrance elevation will allow both a larger flow and a longer duration flow as the river recedes. The post-project HEC-RAS model was used to calculate a water surface elevation at the channel entrance for a range of river flows from 100 to 1000 cfs. A rating curve, or relationship between river elevation and East Channel flow, was developed assuming the channel entrance acts as a compound broad-crested

weir. With these tools, the flow in the East Channel can be estimated for any flow in the Big Wood River at the site, as illustrated in Figure 1.

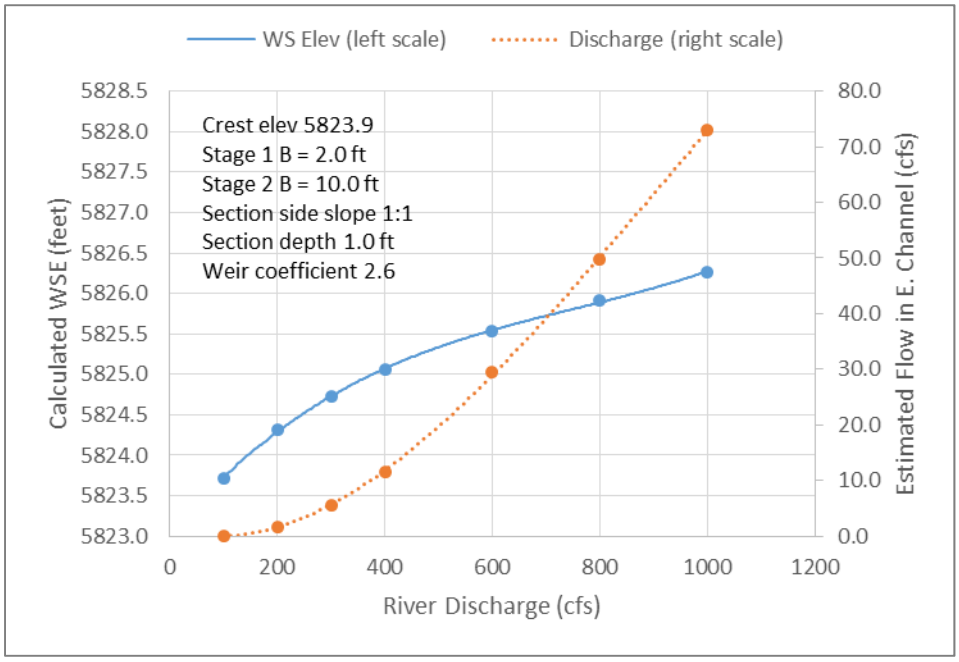


Figure 1. Calculated water surface elevation at East Channel entrance (Section 102), and corresponding channel discharge based on compound broad-crested weir with geometry as indicated.

A time series of daily flow in the Big Wood River at the project site was determined by adding the daily flows at the USGS gauge near Ketchum, upstream of the confluence with North Fork, and the USGS gauge on North Fork. The period of record is 2011-2023, limited by the available data at the North Fork gauge. In determining whether the East Channel flows are reasonable for a given entrance design, the important period is the summertime, excluding the spring and early-summer high runoff period when the channel will flow no matter what geometry is selected and in fact the entire "island" may be swamped. Therefore, a partial series of daily river flows was created by including only the period July 1 – October 31 for each year of record.

For each day in the partial series, the flow in the East Channel was estimated, and pertinent statistics calculated. Different geometries and channel elevations were investigated, resulting in a selected crest elevation of 5823.9, with a low-flow section bottom width of 2 feet and a high-flow section bottom width of 10 feet. Based on channel elevations downstream of the blocked entrance, ±5823.9 appears to be consistent with the likely pre-2017 elevations at the entrance. The final recommended design results in the hydrographs shown in Figure 2, and the statistics shown in Table 3. It is estimated that the channel will be active for an average of 45 days beyond July 1, with a mean flow during the active period of 4.2 cfs. During drought years, the channel will

flow very little and during high years flow will remain through the fall. This pattern appears likely to be in line with historical channel function.

Again, there is no historical data on East Channel flows, so the above analysis represents only a reasonable judgment. In addition, it must be understood that there is always a risk of geomorphologic change. In particular, the recent development of the west channels observed in the river may continue to occur, potentially shifting water away from the east side and negatively affecting the flows in the East Channel.

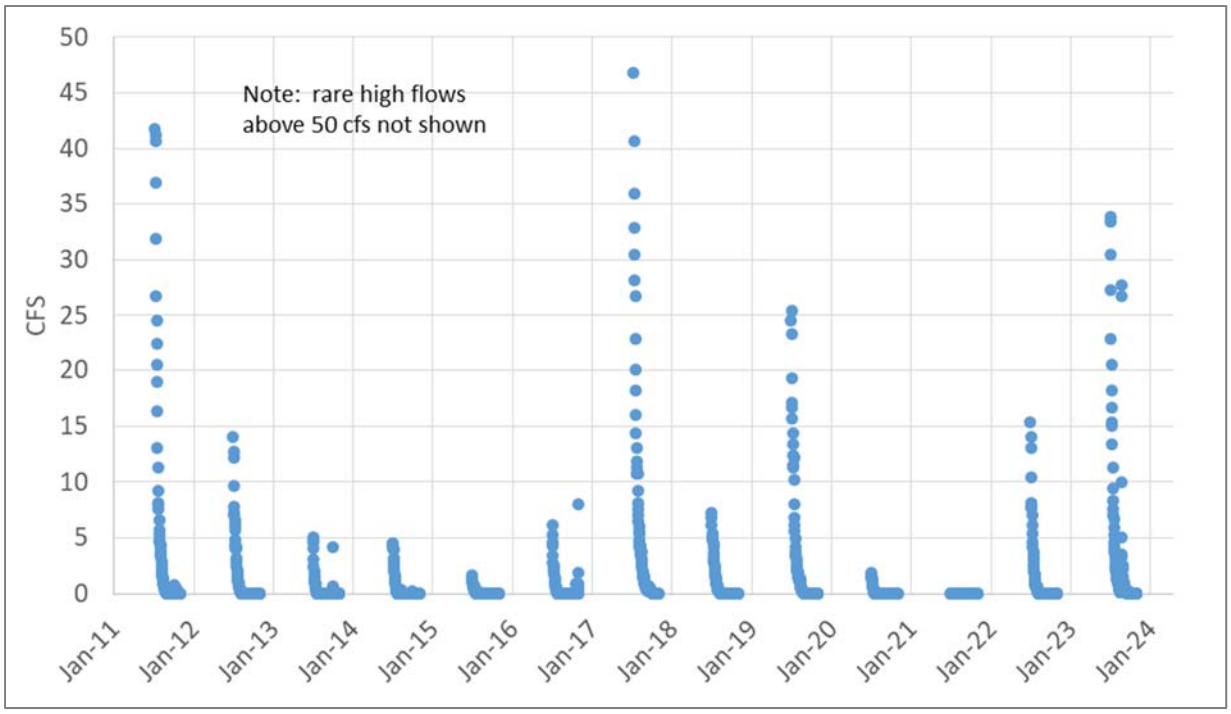


Figure 2. Estimated flow in East Channel, July 1 – October 31, for the 2011-2023 period of record. Rare high flows above 50 cfs not shown.

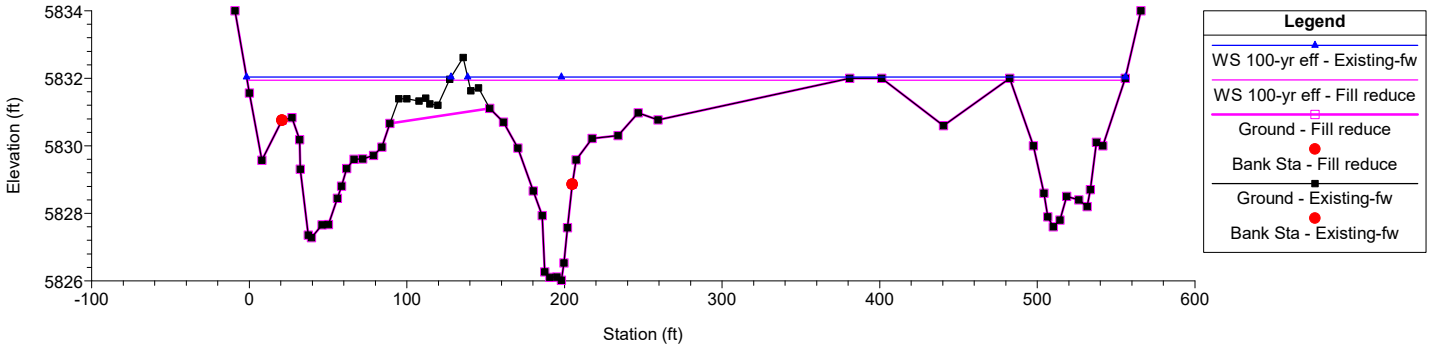
Table 3. Annual estimates of flow pattern in East Channel.

Year	Mean flow when active (cfs)	Duration (days from July 1)	Cutoff date
2011	18.8	73	12-Sep
2012	3.2	42	12-Aug
2013	1.5	27	28-Jul
2014	1.3	35	5-Aug
2015	0.5	22	23-Jul
2016	1.6	37	7-Aug
2017	11.7	100	9-Oct
2018	2.1	43	13-Aug
2019	4.9	64	3-Sep
2020	0.7	19	20-Jul
2021	0.0	2	3-Jul
2022	3.0	44	14-Aug
2023	5.4	83	22-Sep
Overall mean	**4.2**	**45**	**15-Aug**

HEC-RAS Model Results

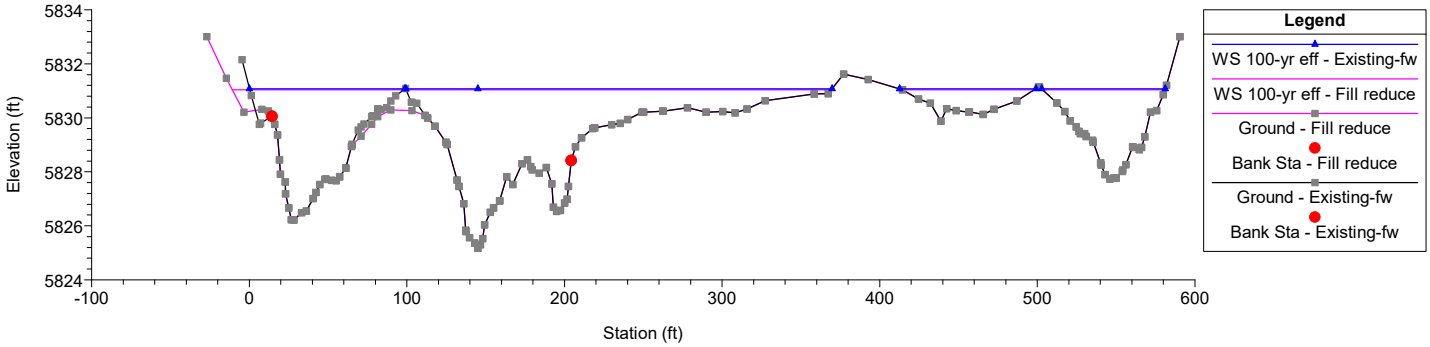
Swan23 Plan: 1) Existing-fw 2) Fill reduce

RS = 6128 Section 107-23



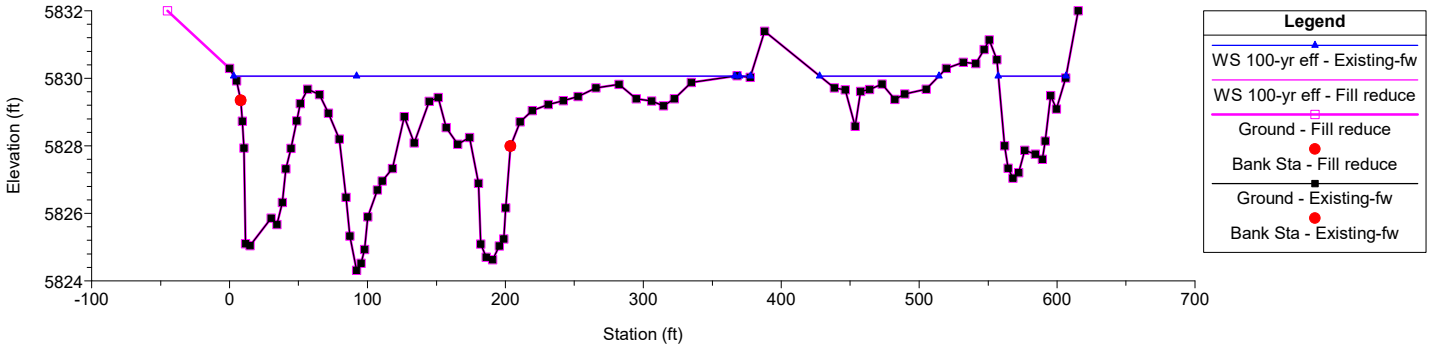
Swan23 Plan: 1) Existing-fw 2) Fill reduce

RS = 6034.*



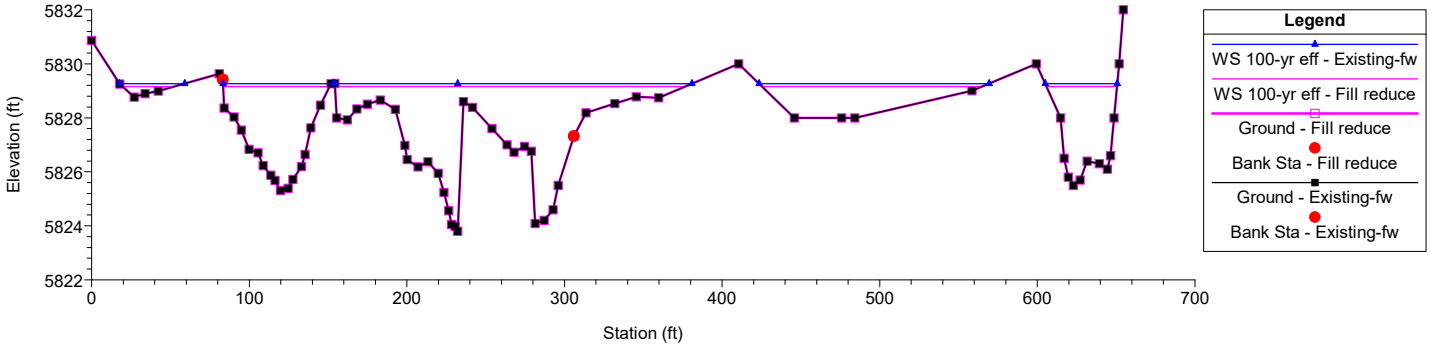
Swan23 Plan: 1) Existing-fw 2) Fill reduce

RS = 5940 Section 106-23



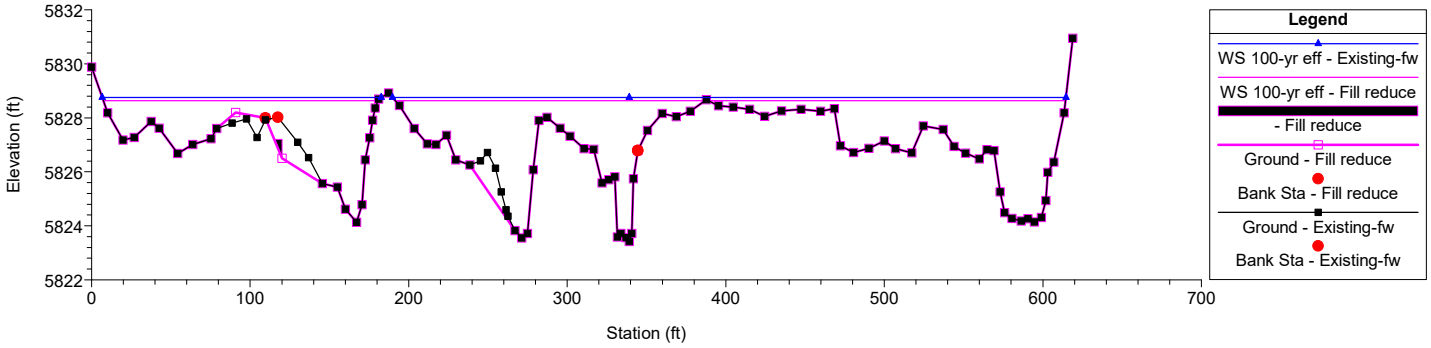
Swan23 Plan: 1) Existing-fw 2) Fill reduce

RS = 5874 Section 105-23



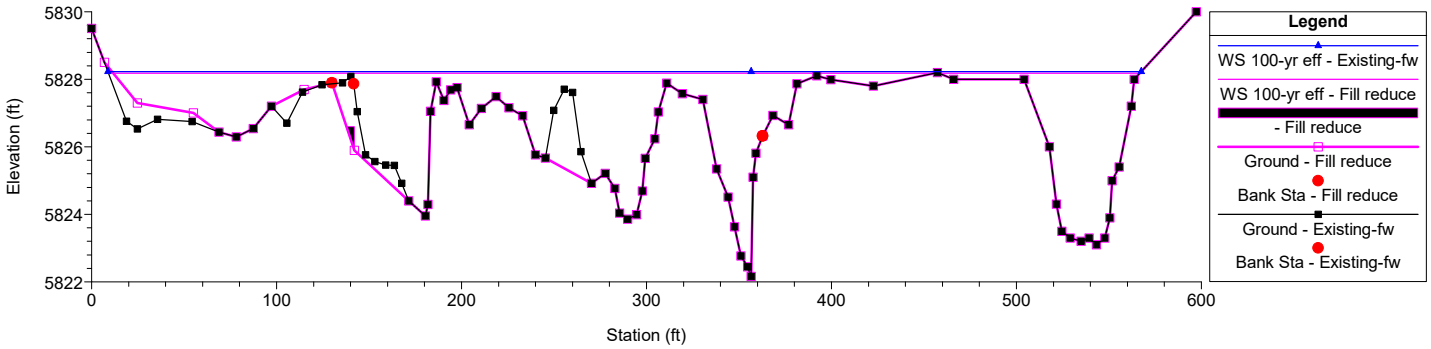
Swan23 Plan: 1) Existing-fw 2) Fill reduce

RS = 5829 Section 104-23



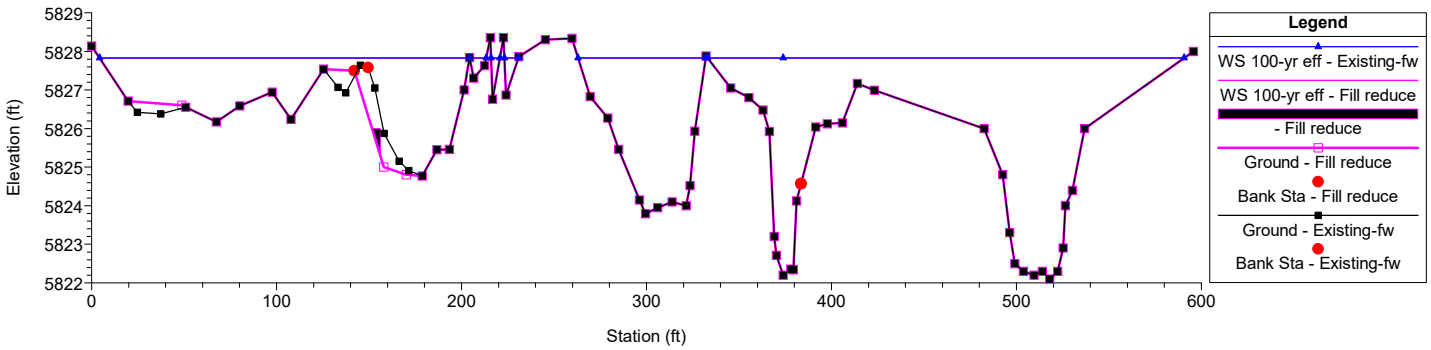
Swan23 Plan: 1) Existing-fw 2) Fill reduce

RS = 5784 Section 103-23



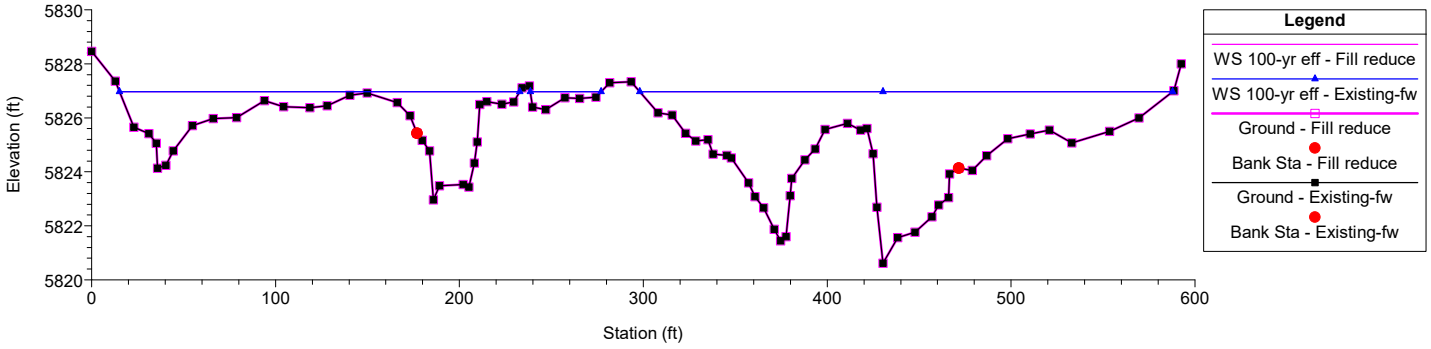
Swan23 Plan: 1) Existing-fw 2) Fill reduce

RS = 5743 Section 102-23



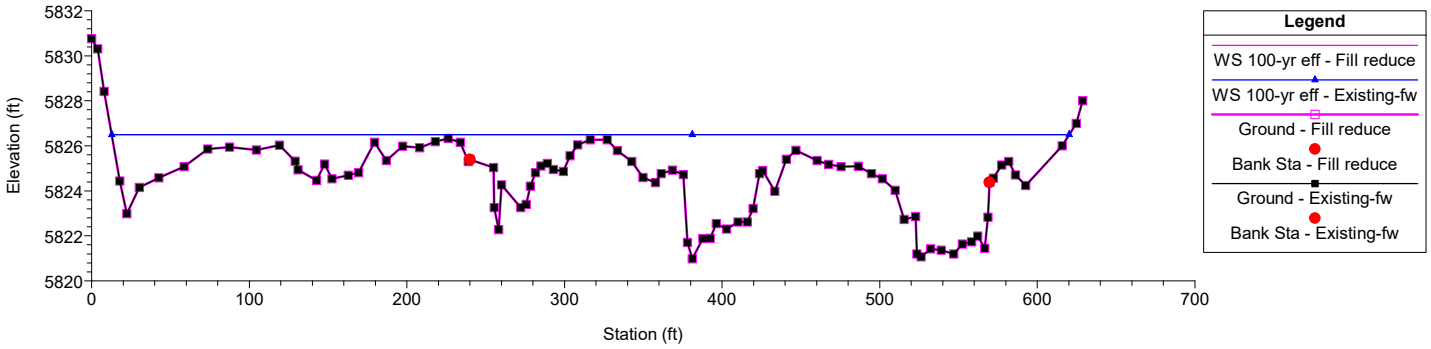
Swan23 Plan: 1) Existing-fw 2) Fill reduce

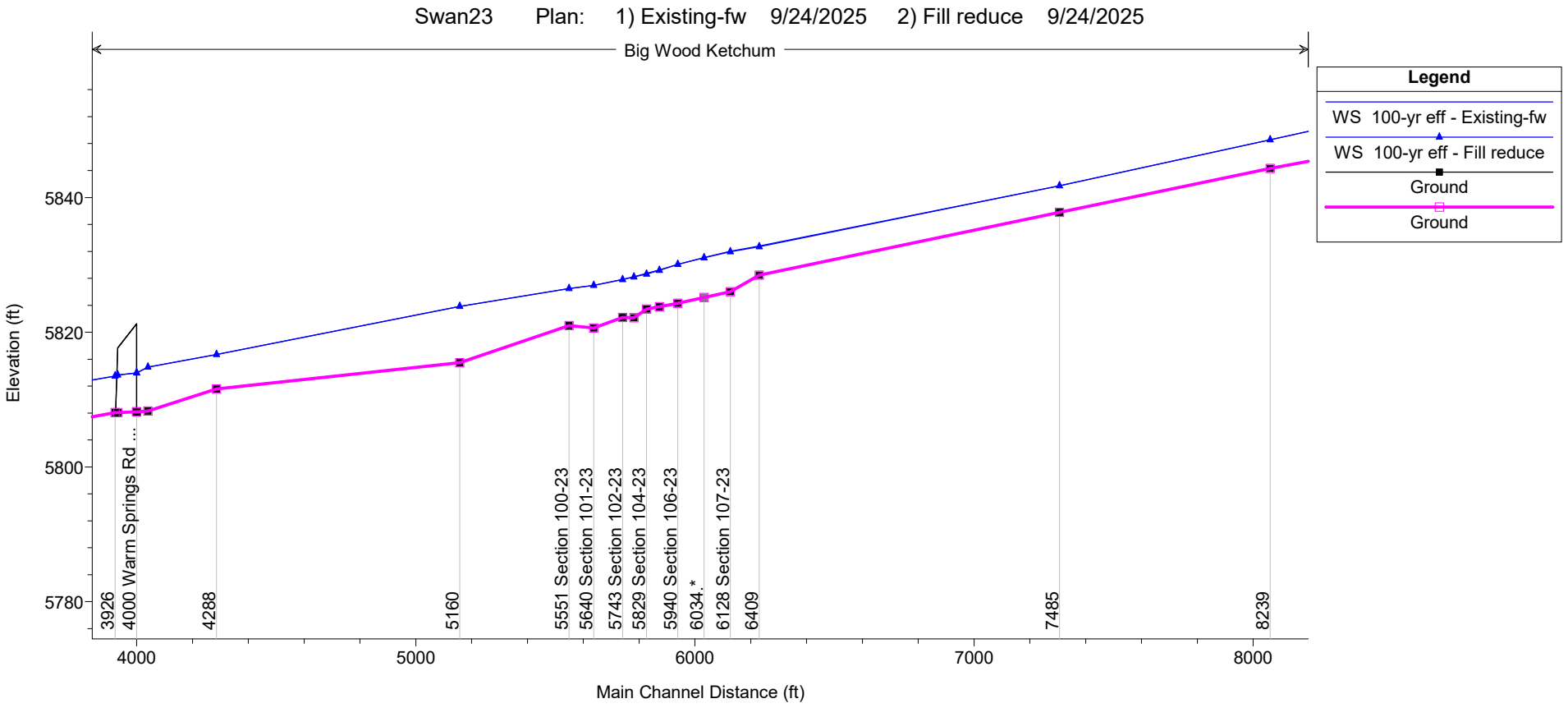
RS = 5640 Section 101-23



Swan23 Plan: 1) Existing-fw 2) Fill reduce

RS = 5551 Section 100-23




Swan23 Plan: 1) Existing-fw 9/24/2025 2) Fill reduce 9/24/2025
Big Wood Ketchum
Legend
WS 100-yr eff - Existing-fw
WS 100-yr eff - Fill reduce
Ground
Ground
Elevation (ft)
5840
5820
5800
5780
3926
4000 Warm Springs Rd ...
4288
5160
5551 Section 100-23
5640 Section 101-23
5743 Section 102-23
5829 Section 104-23
5940 Section 106-23
6034.*
6128 Section 107-23
6409
7485
8239
4000
5000
6000
7000
8000
Main Channel Distance (ft)

HEC-RAS Output: Existing Conditions Model Swan23.p03

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Ketchum	16278 EW	Effective100	2880	5919.01	5922.852	5922.85	5924.21	0.012534	9.4	317.53	130.42	0.99
Ketchum	14986	Effective100	2880	5904.92	5911.054	5910.35	5911.68	0.00453	7.17	537.22	200.84	0.62
Ketchum	14683 EV	Effective100	2880	5902.95	5908.167	5908.17	5909.62	0.010158	10.1	342.58	133.82	0.92
Ketchum	13393 EU	Effective100	2880	5889.56	5897.443	5897.44	5898.35	0.004511	8.79	690.95	499.46	0.73
Ketchum	12189 ET	Effective100	2880	5878.4	5884.421	5884.42	5886.03	0.006891	10.29	318.4	140.61	0.9
Ketchum	11461	Effective100	2880	5871.81	5877.923	5877.92	5879.16	0.008055	9.4	393.45	179.45	0.93
Ketchum	10983	Effective100	2880	5867.71	5875.383		5875.96	0.001639	6.15	498.49	139.27	0.46
Ketchum	10952 ES	Effective100	2880	5866.87	5875.016	5873.04	5875.83	0.002557	7.22	398.64	78.68	0.57
Ketchum	10950	Bridge										
Ketchum	10900	Effective100	2880	5867.43	5873.322	5873.32	5875.25	0.012007	11.14	258.5	68.02	1.01
Ketchum	10635 ER	Effective100	2880	5865.73	5870.157	5870.02	5871.58	0.008301	9.72	327.81	123.98	0.85
Ketchum	9404 EQ	Effective100	2880	5853.18	5859.092	5858.95	5860.18	0.010084	9.1	413.85	231.81	0.84
Ketchum	8239 EP	Effective100	2880	5844.33	5848.565	5848.34	5849.56	0.00874	8.59	399.51	158.33	0.84
Ketchum	7485 EO	Effective100	2880	5837.8	5841.756	5841.76	5842.6	0.009615	8.49	498.21	329.6	0.87
Ketchum	6409 EN	Effective100	2880	5828.48	5832.784		5833.22	0.006342	6.7	718.07	439.97	0.7
Ketchum	6128 107-23	Effective100	2880	5826.02	5832.04		5832.33	0.01287	5.01	852.2	547.07	0.58
Ketchum	6034.*	Effective100	2880	5825.17	5831.07		5831.31	0.011134	4.29	875.54	533.94	0.45
Ketchum	5940 106-23	Effective100	2880	5824.31	5830.07		5830.37	0.010527	4.65	772.09	507.05	0.49
Ketchum	5874 105-23	Effective100	2880	5823.8	5829.27		5829.53	0.012734	4.45	809.26	529.7	0.51
Ketchum	5829 104-23	Effective100	2880	5823.42	5828.76		5828.91	0.008146	3.68	1075.25	600.76	0.42
Ketchum	5784 103-23	Effective100	2880	5822.16	5828.23		5828.46	0.011475	4.36	902.69	558.72	0.52
Ketchum	5743 102-23	Effective100	2880	5822.2	5827.83		5828.01	0.009538	4.03	990.16	548.2	0.49
Ketchum	5640 101-23	Effective100	2880	5820.62	5826.96		5827.16	0.007284	3.86	944.86	545.82	0.44
Ketchum	5551 100-23	Effective100	2880	5820.98	5826.49		5826.62	0.0048	3.09	1138.23	607.41	0.35
Ketchum	5160 EM	Effective100	2880	5815.48	5823.814	5823.81	5824.88	0.004191	9.47	632.6	464.4	0.64
Ketchum	4288 EL	Effective100	2880	5811.59	5816.696	5816.7	5818.55	0.011323	10.92	265.88	72.8	0.98
Ketchum	4043	Effective100	2880	5808.29	5814.812	5813.25	5815.6	0.0034	7.18	421.67	119.25	0.56
Ketchum	4002 EK	Effective100	2880	5808.2	5813.945	5813.16	5815.26	0.006631	9.3	324.63	80.48	0.75
Ketchum	4000	Bridge										
Ketchum	3926	Effective100	2880	5808.06	5813.494	5812.8	5814.66	0.006126	8.73	343.72	89.99	0.74
Ketchum	3733 EJ	Effective100	2880	5806.65	5812.15	5812.15	5813.3	0.008145	8.8	403.29	276.5	0.82
Ketchum	3114 EI	Effective100	2880	5800.28	5807.418	5806.5	5808.19	0.006355	7.18	437.35	141.42	0.64
Ketchum	2559 EH	Effective100	2880	5797.6	5802.226	5802.23	5803.11	0.014175	7.63	410.67	275.16	0.94
Ketchum	1325 EG	Effective100	2880	5786.28	5791.017		5791.49	0.006278	5.62	569.2	309.16	0.61
Ketchum	742	Effective100	2880	5780.97	5785.36	5785.36	5786.98	0.009207	10.21	282.04	87.61	1
Ketchum	3 EF	Effective100	2880	5777.51	5784.19	5782.17	5784.34	0.000863	3.71	1505.21	834.15	0.29

HEC-RAS Output: Existing Conditions Model - Floodway Data Swan 23.p06

Floodway stations manually entered based on effective model and FIRM

Reach	River Sta	Profile	Top Wdth / Area (ft)	(sq ft)	Vel Total (ft/s)	W.S. Elev (ft)	Base WS (ft)	Prof Delta WS (ft)
Ketchum	16278 EW	FW	130.31	317.15	9.08	5922.849	5922.852	0
Ketchum	14986	FW	187.63	531.1	5.42	5911.031	5911.054	-0.02
Ketchum	14683 EV	FW	129.58	346.62	8.31	5908.2	5908.167	0.03
Ketchum	13393 EU	FW	160.79	401.34	7.18	5897.413	5897.443	-0.03
Ketchum	12189 ET	FW	127.61	304.84	9.45	5884.387	5884.421	-0.03
Ketchum	11461	FW	164.57	378.67	7.61	5877.934	5877.923	0.01
Ketchum	10983	FW	106.65	498.54	5.78	5875.384	5875.383	0
Ketchum	10952 ES	FW	78.68	398.68	7.22	5875.017	5875.016	0
Ketchum	10950 BR U	FW	78.67	398.52	7.23	5875.015	5875.014	0
Ketchum	10950 BR D	FW	77.86	347.03	8.3	5874.542	5874.541	0
Ketchum	10900	FW	68.01	258.44	11.14	5873.321	5873.322	0
Ketchum	10635 ER	FW	90.79	288.26	9.99	5870.004	5870.157	-0.15
Ketchum	9404 EQ	FW	205.49	451.6	6.38	5859.284	5859.092	0.19
Ketchum	8239 EP	FW	140.67	360.12	8	5848.409	5848.565	-0.16
Ketchum	7485 EO	FW	166	416.82	6.91	5842.914	5841.756	1.16
Ketchum	6409 EN	FW	92	306.26	9.4	5833.909	5832.784	1.13
Ketchum	6128 107-23	FW	177.65	381.03	7.56	5832.05	5832.036	0.02
Ketchum	6034.*	FW	557.82	1009.19	2.85	5831.32	5831.073	0.24
Ketchum	5940 106-23	FW	213.8	641.79	4.49	5830.41	5830.071	0.33
Ketchum	5874 105-23	FW	253	668.97	4.31	5829.76	5829.267	0.49
Ketchum	5829 104-23	FW	251	696.49	4.14	5829.33	5828.756	0.57
Ketchum	5784 103-23	FW	262	703.43	4.09	5828.93	5828.226	0.7
Ketchum	5743 102-23	FW	279	614.43	4.69	5828.40	5827.831	0.57
Ketchum	5640 101-23	FW	297	773.49	3.72	5827.59	5826.963	0.63
Ketchum	5551 100-23	FW	306	922.06	3.12	5827.14	5826.493	0.65
Ketchum	5160 EM	FW	95	379.14	7.6	5823.710	5823.814	-0.1
Ketchum	4288 EL	FW	72.8	265.88	10.83	5816.696	5816.696	0
Ketchum	4043	FW	108.21	428.55	6.72	5814.876	5814.812	0.06
Ketchum	4002 EK	FW	73.2	343.38	8.54	5814.118	5813.945	0.17
Ketchum	4000 BR U	FW	73	336.69	8.55	5814.113	5813.942	0.17
Ketchum	4000 BR D	FW	80.7	365.27	7.88	5813.873	5813.655	0.22
Ketchum	3926	FW	80.7	356.09	8.09	5813.759	5813.494	0.27
Ketchum	3733 EJ	FW	100.1	315.21	9.14	5812.042	5812.15	-0.11
Ketchum	3114 EI	FW	110.7	403.1	7.14	5807.501	5807.418	0.08
Ketchum	2559 EH	FW	160.58	354.13	8.13	5802.149	5802.226	-0.08
Ketchum	1325 EG	FW	192.45	504.89	5.7	5791.047	5791.017	0.03
Ketchum	742	FW	87.61	282.04	10.21	5785.36	5785.36	0
Ketchum	3 EF	FW	292	1047.59	2.75	5784.19	5784.19	0

HEC-RAS Output: Post-Project Model, Reduced Wetland Fill Swan23.p08

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # C	WSE chang (ft)
Ketchum	16278 EW	100-yr eff	2880	5919.01	5922.852	5922.85	5924.21	0.012534	9.4	317.53	130.42	0.99	0.00
Ketchum	14986	100-yr eff	2880	5904.92	5911.054	5910.35	5911.68	0.00453	7.17	537.22	200.84	0.62	0.00
Ketchum	14683 EV	100-yr eff	2880	5902.95	5908.167	5908.17	5909.62	0.010158	10.1	342.58	133.82	0.92	0.00
Ketchum	13393 EU	100-yr eff	2880	5889.56	5897.443	5897.44	5898.35	0.004511	8.79	690.95	499.46	0.73	0.00
Ketchum	12189 ET	100-yr eff	2880	5878.4	5884.421	5884.42	5886.03	0.006891	10.29	318.4	140.61	0.9	0.00
Ketchum	11461	100-yr eff	2880	5871.81	5877.923	5877.92	5879.16	0.008055	9.4	393.45	179.45	0.93	0.00
Ketchum	10983	100-yr eff	2880	5867.71	5875.383		5875.96	0.001639	6.15	498.49	139.27	0.46	0.00
Ketchum	10952 ES	100-yr eff	2880	5866.87	5875.016	5873.04	5875.83	0.002557	7.22	398.64	78.68	0.57	0.00
Ketchum	10950	Bridge											0.00
Ketchum	10900	100-yr eff	2880	5867.43	5873.322	5873.32	5875.25	0.012007	11.14	258.5	68.02	1.01	0.00
Ketchum	10635 ER	100-yr eff	2880	5865.73	5870.157	5870.02	5871.58	0.008301	9.72	327.81	123.98	0.85	0.00
Ketchum	9404 EQ	100-yr eff	2880	5853.18	5859.092	5858.95	5860.18	0.010084	9.1	413.85	231.81	0.84	0.00
Ketchum	8239 EP	100-yr eff	2880	5844.33	5848.565	5848.34	5849.56	0.00874	8.59	399.51	158.33	0.84	0.00
Ketchum	7485 EO	100-yr eff	2880	5837.8	5841.756	5841.76	5842.6	0.009615	8.49	498.21	329.6	0.87	0.00
Ketchum	6409 EN	100-yr eff	2880	5828.48	5832.685		5833.18	0.007364	7.05	675.44	423.46	0.75	-0.10
Ketchum	6128 107-23	100-yr eff	2880	5826.02	5831.95		5832.2	0.012041	4.66	844.1	527.89	0.54	-0.09
Ketchum	6034.*	100-yr eff	2880	5825.17	5831.03		5831.28	0.010192	4.32	873.56	540.42	0.45	-0.04
Ketchum	5940 106-23	100-yr eff	2880	5824.31	5830.06		5830.36	0.010749	4.69	764.22	500.25	0.5	-0.02
Ketchum	5874 105-23	100-yr eff	2880	5823.8	5829.16		5829.45	0.014886	4.72	753.4	506.96	0.55	-0.11
Ketchum	5829 104-23	100-yr eff	2880	5823.42	5828.64		5828.81	0.008022	3.75	1041.79	594.46	0.42	-0.12
Ketchum	5784 103-23	100-yr eff	2880	5822.16	5828.18		5828.4	0.009433	4.12	907.07	553.01	0.48	-0.04
Ketchum	5743 102-23	100-yr eff	2880	5822.2	5827.82		5828	0.009256	3.97	993.6	547.43	0.48	-0.01
Ketchum	5640 101-23	100-yr eff	2880	5820.62	5826.96		5827.16	0.007284	3.86	944.86	545.82	0.44	0.00
Ketchum	5551 100-23	100-yr eff	2880	5820.98	5826.49		5826.62	0.0048	3.09	1138.23	607.41	0.35	0.00
Ketchum	5160 EM	100-yr eff	2880	5815.48	5823.814	5823.81	5824.88	0.004191	9.47	632.6	464.4	0.64	0.00
Ketchum	4288 EL	100-yr eff	2880	5811.59	5816.696	5816.7	5818.55	0.011323	10.92	265.88	72.8	0.98	0.00
Ketchum	4043	100-yr eff	2880	5808.29	5814.812	5813.25	5815.6	0.0034	7.18	421.67	119.25	0.56	0.00
Ketchum	4002 EK	100-yr eff	2880	5808.2	5813.945	5813.16	5815.26	0.006631	9.3	324.63	80.48	0.75	0.00
Ketchum	4000	Bridge											
Ketchum	3926	100-yr eff	2880	5808.06	5813.494	5812.8	5814.66	0.006126	8.73	343.72	89.99	0.74	0.00
Ketchum	3733 EJ	100-yr eff	2880	5806.65	5812.15	5812.15	5813.3	0.008145	8.8	403.29	276.5	0.82	0.00
Ketchum	3114 EI	100-yr eff	2880	5800.28	5807.418	5806.5	5808.19	0.006355	7.18	437.35	141.42	0.64	0.00
Ketchum	2559 EH	100-yr eff	2880	5797.6	5802.226	5802.23	5803.11	0.014175	7.63	410.67	275.16	0.94	0.00
Ketchum	1325 EG	100-yr eff	2880	5786.28	5791.017		5791.49	0.006278	5.62	569.2	309.16	0.61	0.00
Ketchum	742	100-yr eff	2880	5780.97	5785.36	5785.36	5786.98	0.009207	10.21	282.04	87.61	1	0.00
Ketchum	3 EF	100-yr eff	2880	5777.51	5784.19	5782.17	5784.34	0.000863	3.71	1505.21	834.15	0.29	0.00

HEC-RAS Output: Post-Project Model, Reduced Wetland Fill - Floodway Data Swan23.p08 Profile 2

Floodway stations manually entered based on effective model and FIRM

Reach	River Sta	Profile	Top Wdth (ft)	Area (sq ft)	Vel Total (ft/s)	W.S. Elev (ft)	Base WS (ft)	Prof Delta (ft)	WSE chg from exist
Ketchum	16278 EW	FW	130.31	317.15	9.08	5922.849	5922.852	0	0.00
Ketchum	14986	FW	187.63	531.1	5.42	5911.031	5911.054	-0.02	0.00
Ketchum	14683 EV	FW	129.58	346.62	8.31	5908.2	5908.167	0.03	0.00
Ketchum	13393 EU	FW	160.79	401.34	7.18	5897.413	5897.443	-0.03	0.00
Ketchum	12189 ET	FW	127.61	304.84	9.45	5884.387	5884.421	-0.03	0.00
Ketchum	11461	FW	164.57	378.67	7.61	5877.934	5877.923	0.01	0.00
Ketchum	10983	FW	106.65	498.54	5.78	5875.384	5875.383	0	0.00
Ketchum	10952 ES	FW	78.68	398.68	7.22	5875.017	5875.016	0	0.00
Ketchum	10950 BR U	FW	78.67	398.52	7.23	5875.015	5875.014	0	0.00
Ketchum	10950 BR D	FW	77.86	347.03	8.3	5874.542	5874.541	0	0.00
Ketchum	10900	FW	68.01	258.44	11.14	5873.321	5873.322	0	0.00
Ketchum	10635 ER	FW	90.79	288.26	9.99	5870.004	5870.157	-0.15	0.00
Ketchum	9404 EQ	FW	205.49	451.6	6.38	5859.284	5859.092	0.19	0.00
Ketchum	8239 EP	FW	140.67	360.12	8	5848.409	5848.565	-0.16	0.00
Ketchum	7485 EO	FW	166	416.82	6.91	5842.914	5841.756	1.16	0.00
Ketchum	6409 EN	FW	92	306.26	9.4	5833.909	5832.69	1.22	0.00
Ketchum	6128 107-23	FW	188	413.16	6.97	5832.01	5831.947	0.06	-0.04
Ketchum	6034.*	FW	565.55	1002.1	2.87	5831.26	5831.032	0.23	-0.05
Ketchum	5940 106-23	FW	213.8	631.46	4.56	5830.36	5830.055	0.3	-0.05
Ketchum	5874 105-23	FW	253	633.27	4.55	5829.62	5829.159	0.46	-0.14
Ketchum	5829 104-23	FW	251	710.86	4.05	5829.21	5828.641	0.56	-0.12
Ketchum	5784 103-23	FW	262	749.34	3.84	5828.88	5828.184	0.69	-0.05
Ketchum	5743 102-23	FW	279	625.76	4.6	5828.39	5827.823	0.57	-0.01
Ketchum	5640 101-23	FW	297	773.49	3.72	5827.59	5826.963	0.63	0.00
Ketchum	5551 100-23	FW	306	922.06	3.12	5827.14	5826.493	0.65	0.00
Ketchum	5160 EM	FW	95	379.14	7.6	5823.71	5823.814	-0.1	0.00
Ketchum	4288 EL	FW	72.8	265.88	10.83	5816.696	5816.696	0	0.00
Ketchum	4043	FW	108.21	428.55	6.72	5814.876	5814.812	0.06	0.00
Ketchum	4002 EK	FW	73.2	343.38	8.54	5814.118	5813.945	0.17	0.00
Ketchum	4000 BR U	FW	73	336.69	8.55	5814.113	5813.942	0.17	0.00
Ketchum	4000 BR D	FW	80.7	365.27	7.88	5813.873	5813.655	0.22	0.00
Ketchum	3926	FW	80.7	356.09	8.09	5813.759	5813.494	0.27	0.00
Ketchum	3733 EJ	FW	100.1	315.21	9.14	5812.042	5812.15	-0.11	0.00
Ketchum	3114 EI	FW	110.7	403.1	7.14	5807.501	5807.418	0.08	0.00
Ketchum	2559 EH	FW	160.58	354.13	8.13	5802.149	5802.226	-0.08	0.00
Ketchum	1325 EG	FW	192.45	504.89	5.7	5791.047	5791.017	0.03	0.00
Ketchum	742	FW	87.61	282.04	10.21	5785.36	5785.36	0	0.00
Ketchum	3 EF	FW	292	1047.59	2.75	5784.19	5784.19	0	0.00

HEC-RAS Output: Post-Project Model, Reduced Wetland Fill, No Channel 2 Work Swan23.p07

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # C	WSE chang (ft)
Ketchum	16278 EW	100-yr eff	2880	5919.01	5922.852	5922.85	5924.21	0.012534	9.4	317.53	130.42	0.99	0.00
Ketchum	14986	100-yr eff	2880	5904.92	5911.05	5910.35	5911.68	0.004548	7.18	536.44	200.63	0.62	0.00
Ketchum	14683 EV	100-yr eff	2880	5902.95	5908.167	5908.17	5909.62	0.010158	10.1	342.58	133.82	0.92	0.00
Ketchum	13393 EU	100-yr eff	2880	5889.56	5897.443	5897.44	5898.35	0.004511	8.79	690.95	499.46	0.73	0.00
Ketchum	12189 ET	100-yr eff	2880	5878.4	5884.421	5884.42	5886.03	0.006891	10.29	318.4	140.61	0.9	0.00
Ketchum	11461	100-yr eff	2880	5871.81	5877.923	5877.92	5879.16	0.008055	9.4	393.45	179.45	0.93	0.00
Ketchum	10983	100-yr eff	2880	5867.71	5875.383	5873.21	5875.96	0.001639	6.15	498.49	139.27	0.46	0.00
Ketchum	10952 ES	100-yr eff	2880	5866.87	5875.016	5873.04	5875.83	0.002557	7.22	398.64	78.68	0.57	0.00
Ketchum	10950	Bridge											0.00
Ketchum	10900	100-yr eff	2880	5867.43	5873.322	5873.32	5875.25	0.012007	11.14	258.5	68.02	1.01	0.00
Ketchum	10635 ER	100-yr eff	2880	5865.73	5870.157	5870.02	5871.58	0.008301	9.72	327.81	123.98	0.85	0.00
Ketchum	9404 EQ	100-yr eff	2880	5853.18	5859.092	5858.95	5860.18	0.010084	9.1	413.85	231.81	0.84	0.00
Ketchum	8239 EP	100-yr eff	2880	5844.33	5848.565	5848.34	5849.56	0.00874	8.59	399.51	158.33	0.84	0.00
Ketchum	7485 EO	100-yr eff	2880	5837.8	5841.756	5841.76	5842.6	0.009615	8.49	498.21	329.6	0.87	0.00
Ketchum	6409 EN	100-yr eff	2880	5828.48	5832.784	5831.98	5833.22	0.006342	6.7	718.07	439.97	0.7	0.00
Ketchum	6128 107-23	100-yr eff	2880	5826.02	5832.04	5831.26	5832.33	0.01287	5.01	852.2	547.07	0.58	0.00
Ketchum	6034.*	100-yr eff	2880	5825.17	5831.07	5829.85	5831.31	0.011134	4.29	875.54	533.94	0.45	0.00
Ketchum	5940 106-23	100-yr eff	2880	5824.31	5830.07	5828.93	5830.37	0.010603	4.66	769.37	504.71	0.49	-0.01
Ketchum	5874 105-23	100-yr eff	2880	5823.8	5829.23	5828.41	5829.5	0.013391	4.54	789.28	520.76	0.53	-0.04
Ketchum	5829 104-23	100-yr eff	2880	5823.42	5828.74	5827.46	5828.89	0.007762	3.64	1078.25	599.66	0.41	-0.02
Ketchum	5784 103-23	100-yr eff	2880	5822.16	5828.21	5826.88	5828.45	0.011539	4.35	885.58	555.85	0.52	-0.02
Ketchum	5743 102-23	100-yr eff	2880	5822.2	5827.82	5826.47	5828	0.009255	3.97	993.85	547.87	0.48	-0.01
Ketchum	5640 101-23	100-yr eff	2880	5820.62	5826.96	5825.74	5827.16	0.007284	3.86	944.86	545.82	0.44	0.00
Ketchum	5551 100-23	100-yr eff	2880	5820.98	5826.49	5825.1	5826.62	0.0048	3.09	1138.23	607.41	0.35	0.00
Ketchum	5160 EM	100-yr eff	2880	5815.48	5823.814	5823.81	5824.88	0.004191	9.47	632.6	464.4	0.64	0.00
Ketchum	4288 EL	100-yr eff	2880	5811.59	5816.696	5816.7	5818.55	0.011323	10.92	265.88	72.8	0.98	0.00
Ketchum	4043	100-yr eff	2880	5808.29	5814.812	5813.25	5815.6	0.003402	7.18	421.62	119.23	0.56	0.00
Ketchum	4002 EK	100-yr eff	2880	5808.2	5813.944	5813.16	5815.26	0.006633	9.3	324.6	80.48	0.75	0.00
Ketchum	4000	Bridge											
Ketchum	3926	100-yr eff	2880	5808.06	5813.493	5812.8	5814.66	0.006131	8.74	343.63	89.99	0.74	0.00
Ketchum	3733 EJ	100-yr eff	2880	5806.65	5812.15	5812.15	5813.3	0.008145	8.8	403.29	276.5	0.82	0.00
Ketchum	3114 EI	100-yr eff	2880	5800.28	5807.352	5806.5	5808.16	0.00676	7.32	427.97	141.15	0.66	-0.07
Ketchum	2559 EH	100-yr eff	2880	5797.6	5802.22	5802.22	5803.11	0.012738	7.67	409.23	259.06	0.91	-0.01
Ketchum	1325 EG	100-yr eff	2880	5786.28	5791.017	5790.17	5791.49	0.006278	5.62	569.2	309.16	0.61	0.00
Ketchum	742	100-yr eff	2880	5780.97	5785.36	5785.36	5786.98	0.009207	10.21	282.04	87.61	1	0.00
Ketchum	3 EF	100-yr eff	2880	5777.51	5784.19	5782.17	5784.34	0.000863	3.71	1505.21	834.15	0.29	0.00

HEC-RAS Output: Post-Project Model, Reduced Wetland Fill, No Channel 2 Work - Floodway Data

Floodway stations manually entered based on effective model and FIRM Swan23.p08 Profile 2

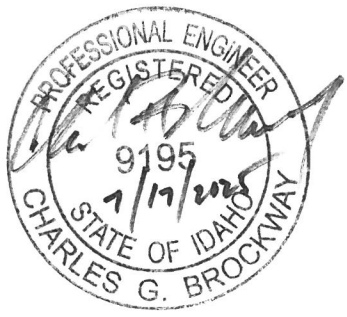
Reach	River Sta	Profile	Top Wdth (ft)	Area (sq ft)	Vel Total (ft/s)	W.S. Elev (ft)	Base WS (ft)	Prof Delta (ft)	WSE chg from exist
Ketchum	16278 EW	FW	130.31	317.15	9.08	5922.849	5922.852	0	0.00
Ketchum	14986	FW	187.64	531.19	5.42	5911.032	5911.05	-0.02	0.00
Ketchum	14683 EV	FW	129.58	346.62	8.31	5908.2	5908.167	0.03	0.00
Ketchum	13393 EU	FW	160.79	401.34	7.18	5897.413	5897.443	-0.03	0.00
Ketchum	12189 ET	FW	127.61	304.84	9.45	5884.387	5884.421	-0.03	0.00
Ketchum	11461	FW	164.57	378.67	7.61	5877.934	5877.923	0.01	0.00
Ketchum	10983	FW	106.65	498.43	5.78	5875.383	5875.383	0	0.00
Ketchum	10952 ES	FW	78.67	398.6	7.23	5875.016	5875.016	0	0.00
Ketchum	10950 BR U	FW	78.66	398.45	7.23	5875.014	5875.014	0	0.00
Ketchum	10950 BR D	FW	77.82	346.81	8.3	5874.539	5874.541	0	0.00
Ketchum	10900	FW	68.03	258.64	11.14	5873.324	5873.322	0	0.00
Ketchum	10635 ER	FW	90.84	288.53	9.98	5870.007	5870.157	-0.15	0.00
Ketchum	9404 EQ	FW	205	450.7	6.39	5859.28	5859.092	0.19	0.00
Ketchum	8239 EP	FW	140.71	360.74	7.98	5848.414	5848.565	-0.15	0.00
Ketchum	7485 EO	FW	166	416.9	6.91	5842.915	5841.756	1.16	0.00
Ketchum	6409 EN	FW	92	306.26	9.4	5833.909	5832.78	1.13	0.00
Ketchum	6128 107-23	FW	177.72	381.64	7.55	5832.06	5832.036	0.02	0.00
Ketchum	6034*	FW	557.32	1005.65	2.86	5831.31	5831.073	0.24	-0.01
Ketchum	5940 106-23	FW	213.8	636.15	4.53	5830.38	5830.065	0.31	-0.03
Ketchum	5874 105-23	FW	253	650.32	4.43	5829.69	5829.229	0.46	-0.07
Ketchum	5829 104-23	FW	251	706.34	4.08	5829.27	5828.735	0.53	-0.06
Ketchum	5784 103-23	FW	262	718.18	4.01	5828.89	5828.208	0.68	-0.04
Ketchum	5743 102-23	FW	279	625.76	4.6	5828.39	5827.823	0.57	-0.01
Ketchum	5640 101-23	FW	297	773.49	3.72	5827.59	5826.963	0.63	0.00
Ketchum	5551 100-23	FW	306	922.06	3.12	5827.14	5826.493	0.65	0.00
Ketchum	5160 EM	FW	95	379.14	7.6	5823.710	5823.814	-0.1	0.00
Ketchum	4288 EL	FW	72.8	265.88	10.83	5816.696	5816.696	0	0.00
Ketchum	4043	FW	108.21	428.55	6.72	5814.876	5814.812	0.06	0.00
Ketchum	4002 EK	FW	73.2	343.38	8.54	5814.118	5813.944	0.17	0.00
Ketchum	4000 BR U	FW	73	336.69	8.55	5814.113	5813.941	0.17	0.00
Ketchum	4000 BR D	FW	80.7	365.27	7.88	5813.873	5813.654	0.22	0.00
Ketchum	3926	FW	80.7	356.09	8.09	5813.759	5813.493	0.27	0.00
Ketchum	3733 EJ	FW	100.1	315.21	9.14	5812.042	5812.15	-0.11	0.00
Ketchum	3114 EI	FW	110.7	403.1	7.14	5807.501	5807.352	0.15	0.00
Ketchum	2559 EH	FW	160.58	354.13	8.13	5802.149	5802.22	-0.07	0.00
Ketchum	1325 EG	FW	192.45	504.89	5.7	5791.047	5791.017	0.03	0.00
Ketchum	742	FW	87.61	282.04	10.21	5785.36	5785.36	0	0.00
Ketchum	3 EF	FW	292	1047.59	2.75	5784.19	5784.19	0	0.00

Project Drawings

Large-format submitted separately

Amendment dated July 17, 2025

(this was submitted as a standalone document, but has been incorporated into the project narrative at the request of the Idaho Department of Water Resources)



Amendment to River and Riparian Restoration Project for the Swan Property

July 17, 2025

This amendment concerns permit applications submitted on June 10, 2024 for the Swan project in Ketchum, Idaho. The project design has been changed so that Area 4 of the project, i.e. restoration of the eroded floodplain, will involve a fill area of 0.10 acres or less. This change affects Section D.3. of the original narrative dated June 7, 2024. No other changes are being made to the project.

The reason for this change is that the Corps of Engineers now considers most of Area 4 to be jurisdictional wetlands, and it is necessary to remain under the 0.10 acre threshold so that the activity may be covered by Nationwide Permit 18. Sawtooth Environmental was retained to evaluate the site and delineate an approximate wetland line, which is shown on the revised site plan.

The restoration will include three types of treatment, as shown on the site plan Revision C:

1. Re-graded, restored and protected area near the bank and in the area where the most significant sheet flow will occur as the river bank overtops during high water. This area will be protected with the subsurface geotextile as previously contemplated in order to prevent the downcutting that has previous occurred.

2. Re-graded and restored land that will not involve placement of the geotextile. This area will receive sheet flow but is less at risk of erosion.

3. Undisturbed wetland. This is the central area of the floodplain restoration and is slightly lower than surrounding land. It is the main region of sheet flow during high water events. This area has established very well with native vegetation and should be self-sustaining the established vegetation will provide a degree of erosion protection.

Specific changes to the project documents are as follows:

1. Site plan for Area 4 (Drawing #3) is replaced with Revision C of the drawing included herein. All other drawing sheets are unchanged.

2. Line 3 of Table 1 of the narrative dated June 7, 2024 is changed to read as follows:

Project Component	River Length (ft)	Plan Area (acres)	Total excavation (cu. yd.)	Excavation below OHW (cu. yd.)	Total fill (cu. yd.)	Fill below OHW (cu. yd.)
3. Restoration of eroded land in floodplain	n/a	0.10	0	0	155	0

3. The project revegetation plan is revised to remove plantings from the undisturbed wetland area. This area is to remain undisturbed.

F:\Projects\Swan, Sandra\2023 Project\CAD\1436-02-2018-SAP-C(TRIAL).dwg

NATIONWIDE PERMIT QUALIFICATION:

NWP-13
BANK STABILIZATION
LESS THAN 500' AND 1.0 CY/FT

NWP-18
WETLAND DISTURBANCE NOT EXCEEDING 0.1 AC

NOTE: ADJUSTMENTS MAY BE MADE IN THE FIELD, BUT NATIONWIDE PERMIT LIMITS WILL NOT BE EXCEEDED.

LEGEND

- FP — 100-YEAR EFFECTIVE FLOODPLAIN
- APPROX. WETLANDS BY SAWTOOTH ENVIRONMENTAL
- SURVEYED CROSS SECTIONS
- APPROX. POST-PROJECT GROUND CONTOURS
- 5826.4 — APPROX. POST-PROJECT FINISH GRADE ELEV.
- WETLAND / FLOODPLAIN RE-GRADE & FILL, WITH GEOGRID 0.040 ACRES
- WETLAND / FLOODPLAIN RE-GRADE & FILL 0.060 ACRES (NWP-18)
- WETLAND UNDISTURBED (NWP-18) 0.092 ACRES

106-23
105-23
104-23
103-23
102-23
101-23

TEMPORARY BYPASS FLOW PATH
SMOOTHLY TRANSITION TO EXISTING BANK AT NORTH PROPERTY LINE
TEMPORARY WATER BYPASS USING 3'X3' SUPERSACKS
EXISTING SUMP AND PUMPS
(2) 6" BURIED PIPES, DISCHARGE FROM GROUNDWATER DEWATERING SUMP
25' RIPARIAN SETBACK POST-PROJECT
MHW POST-PROJECT
RECLAIM ERODED LAND TO PRE-2017 LEVELS, INCLUDE GEOTEXTILE OUTSIDE OF RIPARIAN ZONE (SEE SHEET 4)
RE-GRADE BANK & CHANNEL, NSTALL STABILIZATION MEASURES
AREA 4
NEW TOE OF BANK
EAST CHANNEL ENTRANCE SILL
BANK TREATMENT
REMOVE GRAVEL BAGS AND RESTORE FOOTPRINT
PROTECTION OF NORTH BANK OF EAST CHANNEL
AREA 3
PIPE OUTLETS, 6" FLAP GATES

N
0 16 32
Scale in Feet

NOT FOR CONSTRUCTION

NOT FOR CONSTRUCTION

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REV	DESCRIPTION	DATE	APPD.
C	REDUCED WETLAND DISTURBANCE	7/17/2025	
A	ISSUED FOR PERMITTING	6/7/2024	

DESIGNED CGB | DRAFTED CGB

SCALE AS SHOWN (18 X 24 DWG ONLY)

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(208) 736-8543

SWAN, SANDRA
RIVER RESTORATION 2024

PROJECT # 1436-03-2023

AREA 4 SITE PLAN

DWG # 3

REV C

Engineering "No-Rise" Certification

(for projects located in a mapped floodway)

44 CFR 60.3(d)(3) requires that local communities participating in the National Flood Insurance Program "Prohibit encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge;"

This is to certify that I am a duly qualified engineer licensed to practice in the State of Idaho. Pursuant to the above regulation, this further certifies that the attached data and hydraulic modeling support the fact that the proposed River and Riparian Restoration Project as Amended September 25, 2025 pertaining to the Swan Property, at 401 Northwood Way, will not increase the base flood (100-year flood) elevation on the Big Wood River at published sections in the Flood Insurance Study for Blaine County, Idaho dated November 26, 2010 and will not increase the 100-year flood elevations at unpublished cross-sections in the vicinity of the project.

Seal:

City of Ketchum

ATTACHMENT B:

Project Design Drawings

F:\Projects\Swan, Sandra\2023 Project\CAD\1436-02-2018-SAP-A.dwg

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REV	DESCRIPTION	DATE	APPD.
A	ISSUE FOR PERMITTING	6/7/2024	

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SWAN, SANDRA
RIVER RESTORATION 2024

PROJECT # 1436-03-2023

OVERALL SITE PLAN AND SECTIONS

DWG # 1

REV A

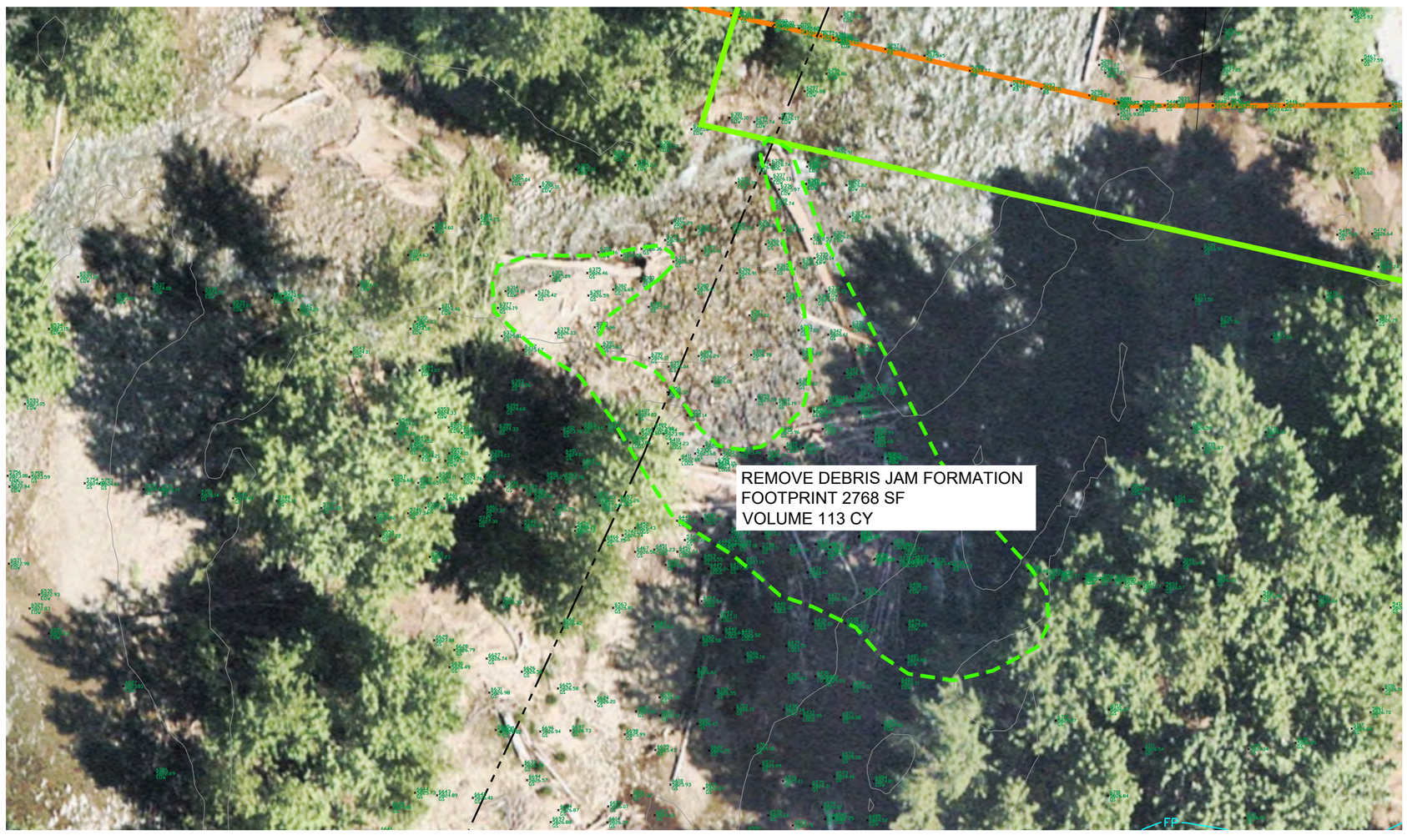
F:\Projects\Swan, Sandra\2023 Project\CAD\1436-02-2018-SAP-A.dwg

AREA 1: CHANNEL #2 ENTRANCE

SCALE: 1" = 10'

AREA 2: CHANNEL #2 BLOCKAGE

SCALE: 1" = 10'



AREA 3: DEBRIS JAM FORMATION

SCALE: 1" = 20'

NOT FOR CONSTRUCTION

N

SCALE AS SHOWN

REV	DESCRIPTION	DATE	APPD.
A	ISSUE FOR PERMITTING	6/7/2024	

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RIVER RESTORATION 2024

PROJECT # 1436-03-2023

AREAS 1-3 SITE PLANS

DWG # 2

REV A

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NATIONWIDE PERMIT QUALIFICATION:

NWP-13
BANK STABILIZATION
LESS THAN 500' AND 1.0 CY/FT

NWP-18
WETLAND DISTURBANCE NOT EXCEEDING 0.1 AC

NOTE: ADJUSTMENTS MAY BE MADE IN THE FIELD, BUT NATIONWIDE PERMIT LIMITS WILL NOT BE EXCEEDED.

LEGEND

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- WETLAND / FLOODPLAIN RE-GRADE & FILL, WITH GEOGRID 0.040 ACRES
- WETLAND / FLOODPLAIN RE-GRADE & FILL 0.060 ACRES (NWP-18)
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106-23
105-23
104-23
103-23
102-23
101-23

TEMPORARY BYPASS FLOW PATH
SMOOTHLY TRANSITION TO EXISTING BANK AT NORTH PROPERTY LINE
TEMPORARY WATER BYPASS USING 3'X3' SUPERSACKS
EXISTING SUMP AND PUMPS
25' RIPARIAN SETBACK POST-PROJECT
(2) 6" BURIED PIPES, DISCHARGE FROM GROUNDWATER DEWATERING SUMP
MHW POST-PROJECT
RECLAIM ERODED LAND TO PRE-2017 LEVELS, INCLUDE GEOTEXTILE OUTSIDE OF RIPARIAN ZONE (SEE SHEET 4)
RE-GRADE BANK & CHANNEL, NSTALL STABILIZATION MEASURES
AREA 4
NEW TOE OF BANK
EAST CHANNEL ENTRANCE SILL
BANK TREATMENT
REMOVE GRAVEL BAGS AND RESTORE FOOTPRINT
PROTECTION OF NORTH BANK OF EAST CHANNEL
(2) 6" BURIED PIPES, DISCHARGE FROM GROUNDWATER DEWATERING SUMP
PIPE OUTLETS, 6" FLAP GATES

N

0 16 32
Scale in Feet

NOT FOR CONSTRUCTION

NOT FOR CONSTRUCTION

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A	ISSUED FOR PERMITTING	6/7/2024	

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PROJECT # 1436-03-2023

AREA 4 SITE PLAN

DWG # 3

REV C

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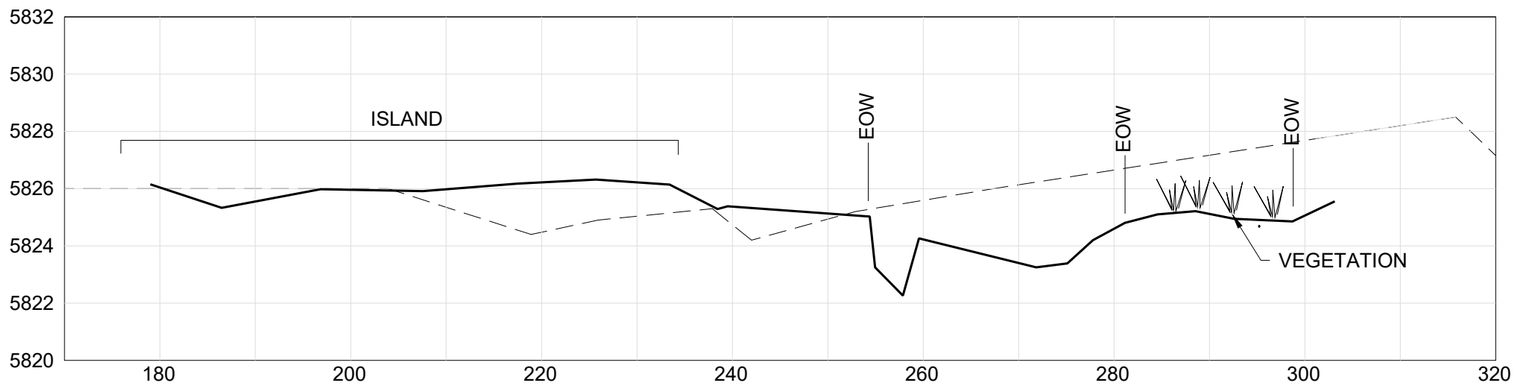
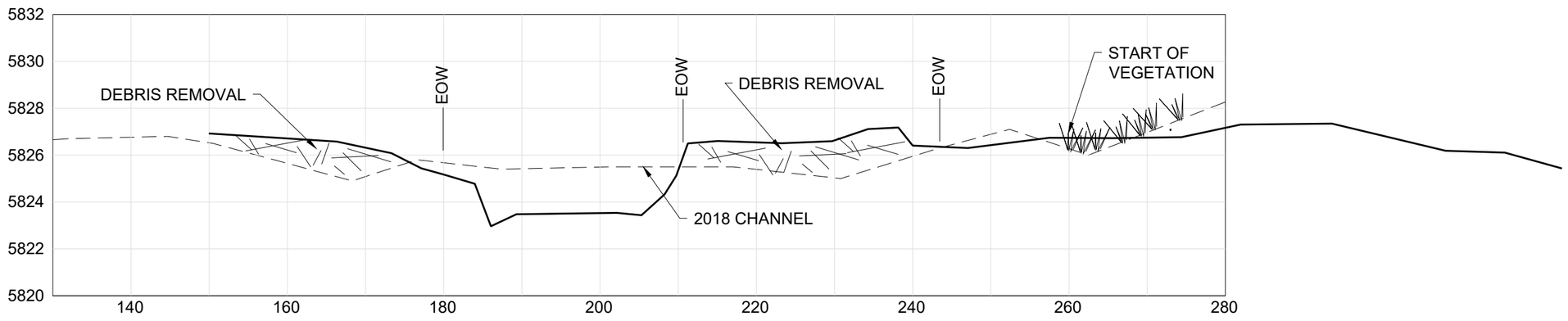


C.0 | 1 | 3

SECTION 100

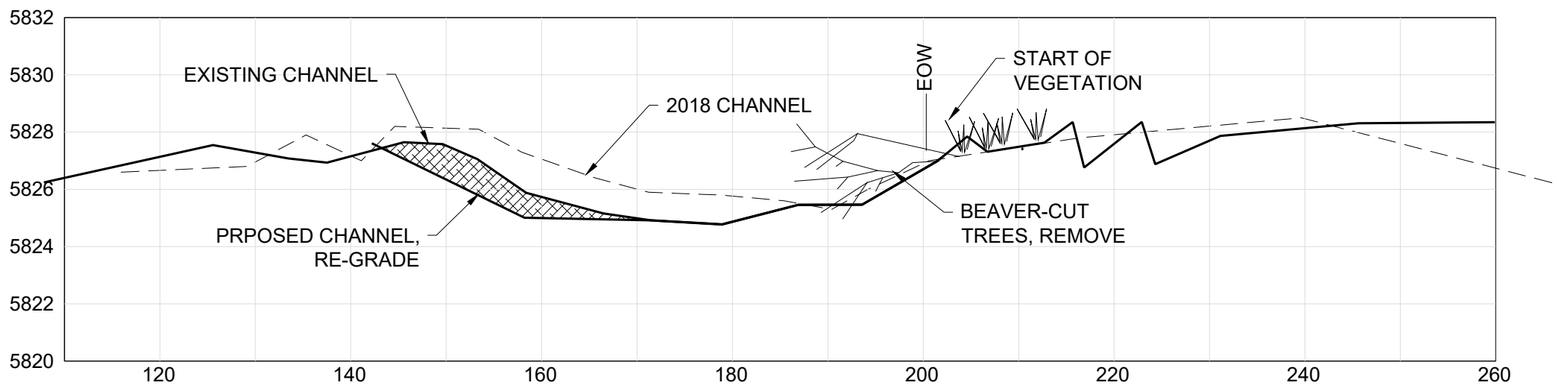
HORIZONTAL SCALE: 1" = 15'
VERTICAL SCALE: 1" = 5'



C.1 | 1 | 3

SECTION 101

HORIZONTAL SCALE: 1" = 15'
VERTICAL SCALE: 1" = 5'



C.2 | 1 | 3

SECTION 102

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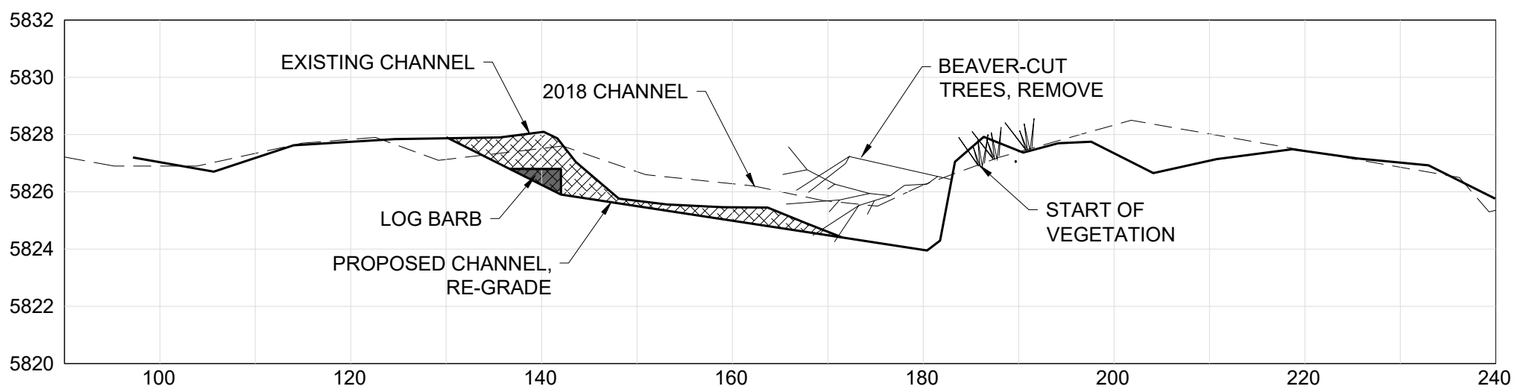
VERTICAL SCALE: 1" = 5'



C.3 | 1 | 3

SECTION 103

HORIZONTAL SCALE: 1" = 15'
VERTICAL SCALE: 1" = 5'

LEGEND

———	EXISTING 2023 AND PROPOSED CHANNEL
EOW	EDGE OF WATER AT TIME OF 2023 SURVEY
– – – – – – – –	OLD CHANNEL AFTER 2017 FLOOD AND DEPOSITION - SURVEYED JULY 17, 2018

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	APPD.
A	ISSUED FOR PERMITTING	6/7/2024	

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SWAN, SANDRA
RIVER RESTORATION 2024

CROSS SECTIONS 1

PROJECT # 1436-03-2023

DWG # 4

REV A

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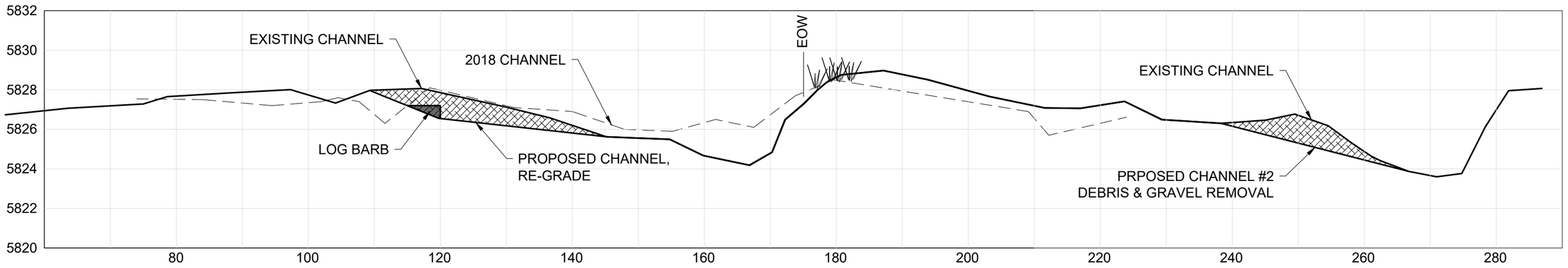

C.4 / 1 | 3

SECTION 104

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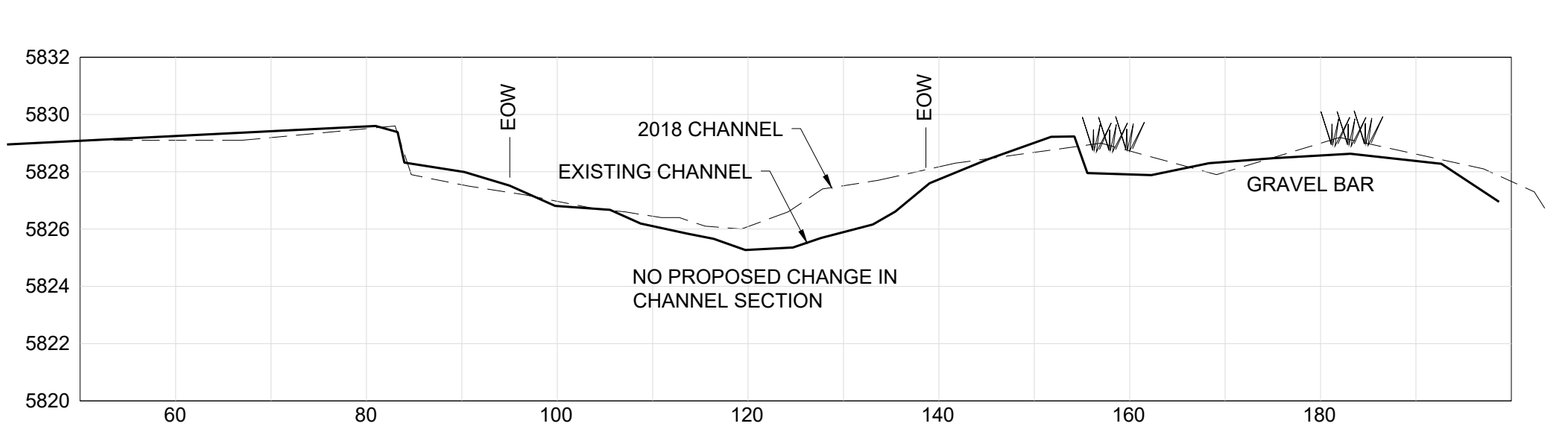
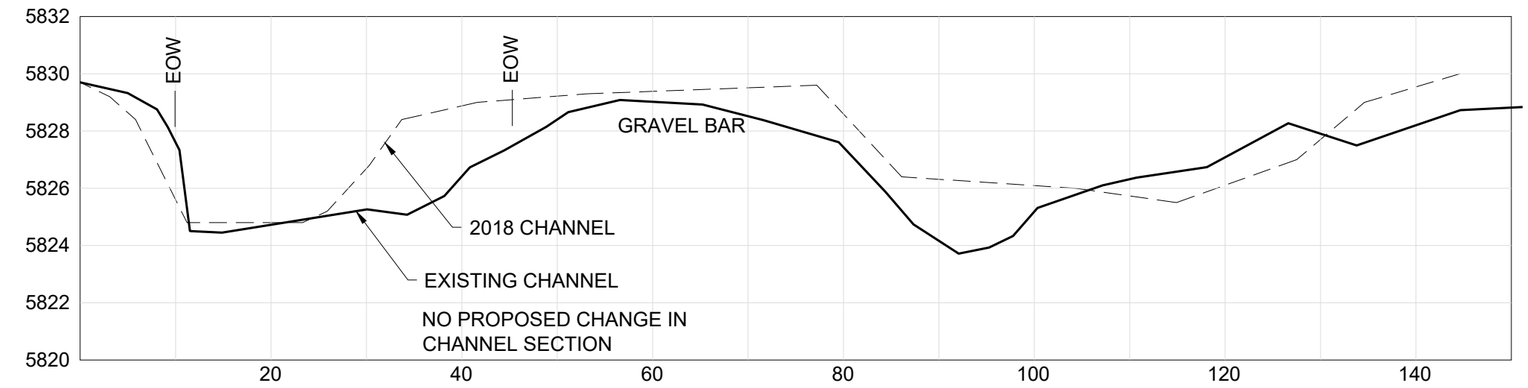
VERTICAL SCALE: 1" = 5'



C.5 / 1 | 3

SECTION 105

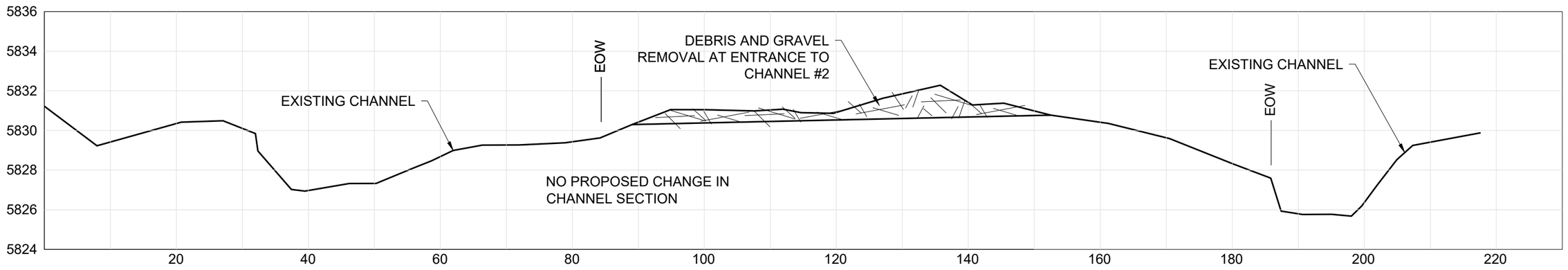
HORIZONTAL SCALE: 1" = 15'
VERTICAL SCALE: 1" = 5'



C.6 / 1 | 3

SECTION 106

HORIZONTAL SCALE: 1" = 15'
VERTICAL SCALE: 1" = 5'



C.4 / 1 | 3

SECTION 107

HORIZONTAL SCALE: 1" = 15'
VERTICAL SCALE: 1" = 5'

LEGEND

———	EXISTING 2023 AND PROPOSED CHANNEL
EOW	EDGE OF WATER AT TIME OF 2023 SURVEY
– — – — – — –	OLD CHANNEL AFTER 2017 FLOOD AND DEPOSITION - SURVEYED JULY 17, 2018

NOT FOR CONSTRUCTION

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SWAN, SANDRA
RIVER RESTORATION 2024

PROJECT # 1436-03-2023

CROSS SECTIONS 2

DWG # 5

REV A

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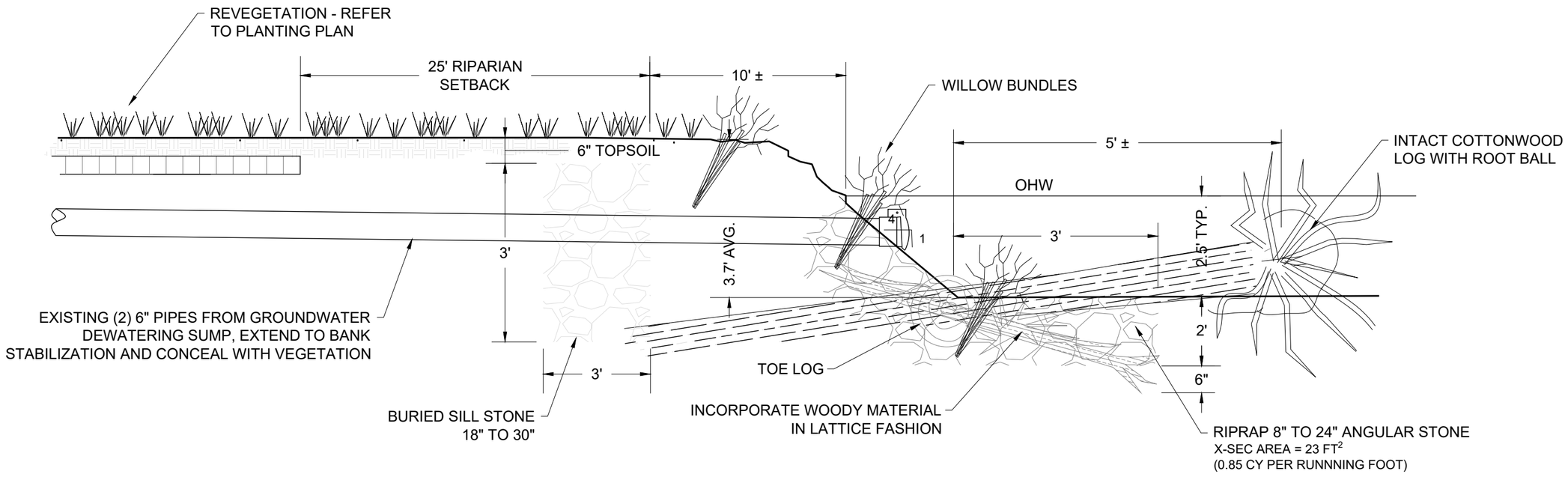
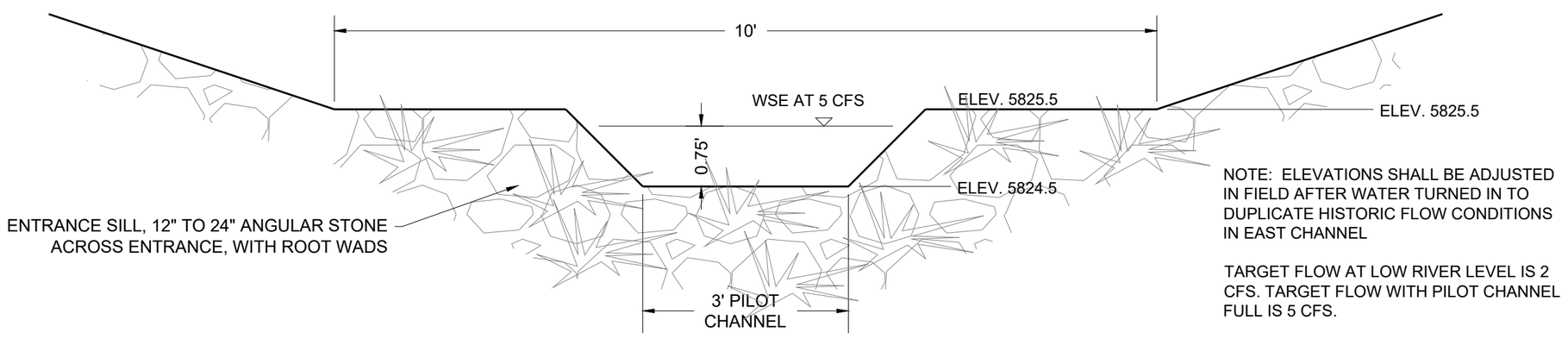


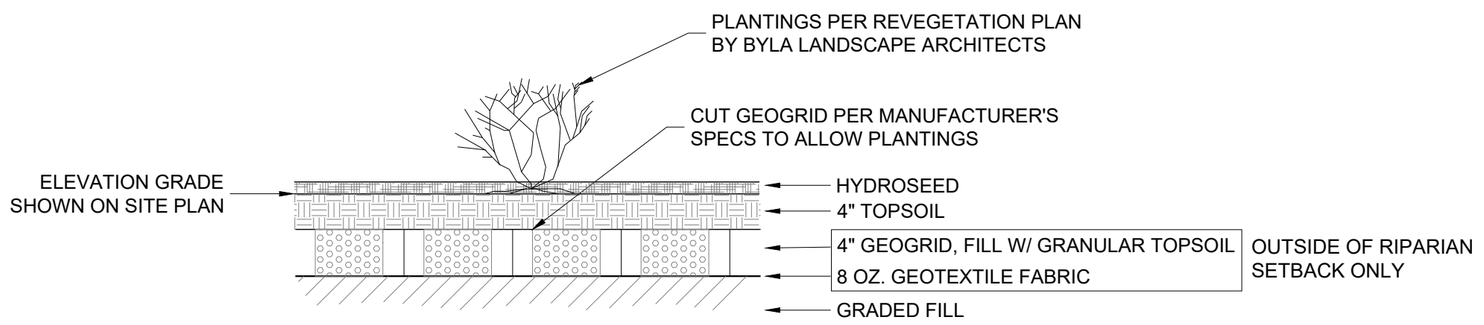
2 BANK TREATMENT - MAIN RIVER
1 | 2
SCALE: N.T.S.



NOTE: ELEVATIONS SHALL BE ADJUSTED IN FIELD AFTER WATER TURNED IN TO DUPLICATE HISTORIC FLOW CONDITIONS IN EAST CHANNEL

TARGET FLOW AT LOW RIVER LEVEL IS 2 CFS. TARGET FLOW WITH PILOT CHANNEL FULL IS 5 CFS.

B EAST CHANNEL ENTRANCE SECTION
1 | 2
SCALE: N.T.S.



3.2 LAND RECLAMATION TREATMENT
1 | 2
SCALE: N.T.S.

NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	APPD.
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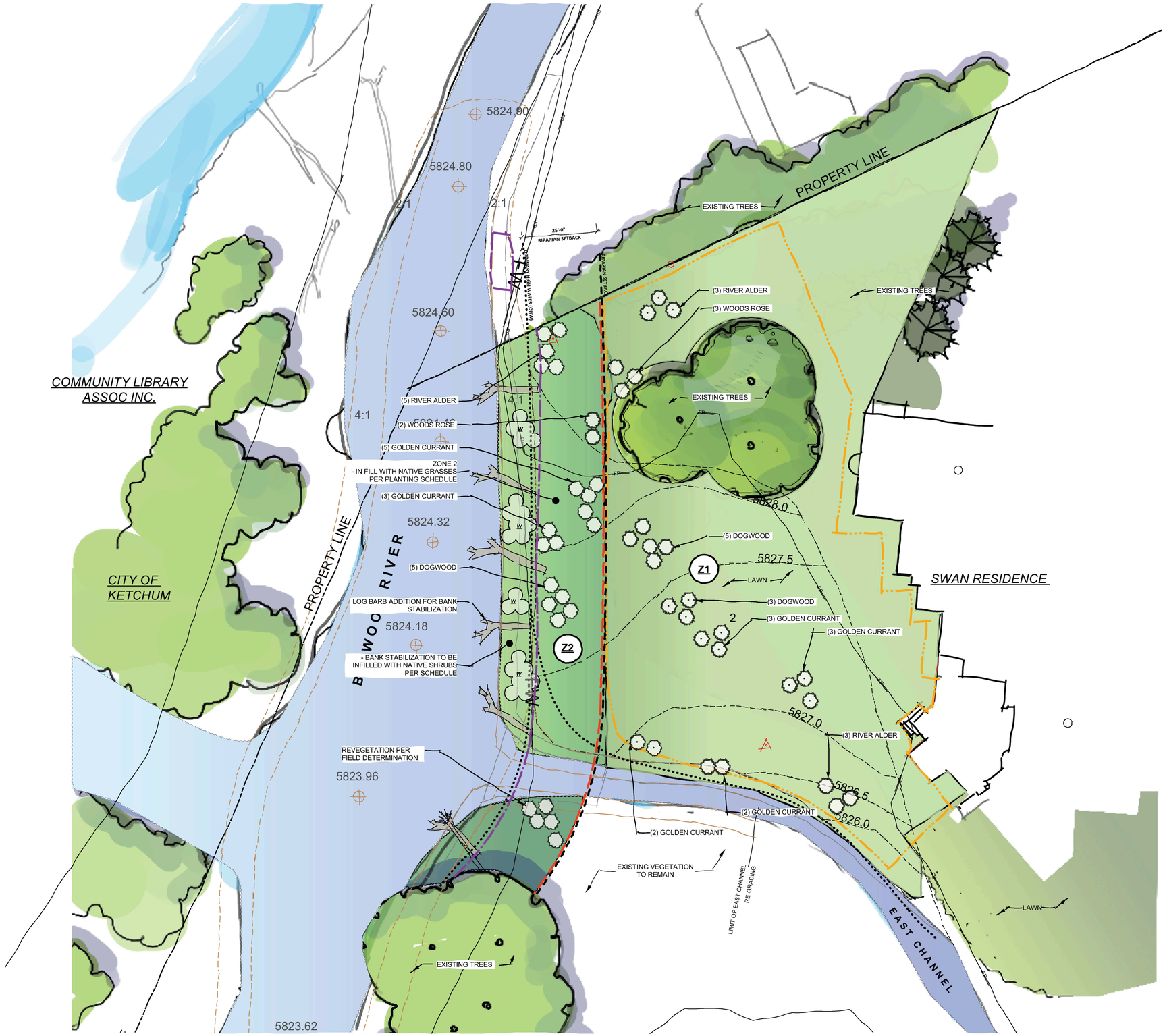
SWAN, SANDRA
RIVER RESTORATION 2024

PROJECT # 1436-03-2023

DETAILS

DWG # 6

REV A



REVEGETATION PLAN LEGEND

Symbol	Definition
	Property Line
Z1	ZONE 1 - NON RIPARIAN RECLAIMED LAND & DISTURBED AREAS
Z2	ZONE 2 - 25' RIPARIAN ZONE
	BANK STABILIZATION
	ORDINARY HIGH WATER (OHW)
	25' RIPARIAN SETBACK

REVEGETATION PLAN - PLANTING SCHEDULE

ZONE 1 - Reclaimed Land Outside of 25' Riparian Zone

SHRUBS: (3) Placed per every 1,000 Sq. Ft.

QTY.	Botanical Name	Common Name
5	Ribes aureum	Golden Currant
10	Cornus sericea	Red-osier dogwood
5	Alnus incana	River Alder
5	Rosa woodsi	Woods Rose
GRASSES		
Lawn	Blend: Scottish Links	

ZONE 2- Riparian Zone w/ 25' of Big Wood River

SHRUBS: (6) Placed per every 1,000 Sq. Ft.

QTY.	Botanical Name	Common Name
10	Ribes aureum	Golden Currant
10	Cornus sericea	Red-osier dogwood
5	Alnus incana	River Alder
3	Rosa woodsi	Woods Rose
Riparian Grasses		
	Botanical Name	**Common Name**
	Festuca idahoensis	Idaho Fescue
	Agropyron riparium	Streambank Wheatgrass
	Festuca rubra	Creeping Red Fescue
	Pseudoroegneria spicata	Bluebunch Wheatgrass
	Lupinus sericeus	Silky Lupine
Bank Stabilization		
SHRUBS: Placed 5' apart maximum (W)		
	Botanical Name	**Common Name**
	Salix boothi	Booth Willow
	Salix geyeria	Geyer Willow
	Salix lasiandra	Pacific Willow

PLAN NOTES:

1. THIS PLAN IS A GRAPHIC REPRESENTATION OF THE PROPOSED RESTORATION PLAN BY BROCKWAY ENGINEERING DATED JUNE 7, 2024. APPROXIMATE SHRUB LOCATIONS SHOWN.
2. ALL NATIVE WOODY VEGETATION SHALL BE PLANTED WITHIN BANK STABILIZATION (ZONE 3) AT INTERVALS NO GREATER THAN 5 FEET SPACING STARTING FROM THE TOE OF SLOPE AND EXTENDING UP SLOPE ALONG THE TOP OF BANK.

N

0 16 32 FT

SCALE: 1" = 16'-0"

BYLA
LANDSCAPE ARCHITECTS
323 Lewis | Ketchum, ID
(208) 726 5967 | (208) 720 0215
www.bylla.us

No.	Description	Signature	Date

RIVER RESTORATION
SWAN RESIDENCE
ADDRESS

SITE OVERVIEW

1 09.16.2019

Date: 06.07.2024
Drawn By: TB, KR
Checked By: CG
File: FILE

Sheet No.
L1.0
#

City of Ketchum

ATTACHMENT C:

Army Corps of Engineers Joint Application

16. DETAILED DESCRIPTION OF EACH ACTIVITY WITHIN OVERALL PROJECT. Specifically indicate portions that take place within waters of the United States, including wetlands: Include dimensions; equipment, construction, methods; erosion, sediment and turbidity controls; hydrological changes: general stream/surface water flows, estimated winter/summer flows; borrow sources, disposal locations etc.:

Please see attached narrative.

17. DESCRIBE ALTERNATIVES CONSIDERED to AVOID or MEASURES TAKEN to MINIMIZE and/ or COMPENSATE for IMPACTS to WATERS of the UNITED STATES, INCLUDING WETLANDS: See Instruction Guide for specific details.

No reasonable alternative exists to restore land to pre-flood condition and provide long-term bank stability and proper flow distribution.

18. PROPOSED MITIGATION STATEMENT or PLAN: If you believe a mitigation plan is not needed, provide a statement and your reasoning why a mitigation plan is NOT required. Or, attach a copy of your proposed mitigation plan.

A mitigation plan is not required because no wetlands will be impacted and the conveyance capacity of the channel will be greater than under existing conditions.

19. TYPE and QUANTITY of MATERIAL(S) to be discharged below the ordinary high water mark and/or wetlands:

Dirt or Topsoil:		cubic yards
Dredged Material:		cubic yards
Clean Sand:		cubic yards
Clay:		cubic yards
Gravel, Rock, or Stone:		cubic yards
Concrete:		cubic yards
Other (describe): Gravel, rock, and wood	: 252	cubic yards
Other (describe: Temporary coffer	: 16	cubic yards

TOTAL: 268 cubic yards

20. TYPE and QUANTITY of impacts to waters of the United States, including wetlands:

Filling:	0.0838 acres	3,650 sq ft.	407 cubic yards
Backfill & Bedding:	acres	sq ft.	cubic yards
Land Clearing:	acres	sq ft.	cubic yards
Dredging:	acres	sq ft.	cubic yards
Flooding:	acres	sq ft.	cubic yards
Excavation:	0.145 acres	6,316 sq ft.	240 cubic yards
Draining:	acres	sq ft.	cubic yards
Other: Temporary coffer :	0.0048 acres	209 sq ft.	16 cubic yards

TOTALS: 0.2288 acres 9,966 sq ft. 647 cubic yards

21. HAVE ANY WORK ACTIVITIES STARTED ON THIS PROJECT? ☒ NO ☐ YES If yes, describe ALL work that has occurred including dates.

22. LIST ALL PREVIOUSLY ISSUED PERMIT AUTHORIZATIONS:

USACE Permit NWW-2017-639-I02
Not implemented due to inability to obtain City of Ketchum permit

23. ☐ YES, Alteration(s) are located on Public Trust Lands, Administered by Idaho Department of Lands

24. SIZE AND FLOW CAPACITY OF BRIDGE/CULVERT and DRAINAGE AREA SERVED: n/a Square Miles

25. IS PROJECT LOCATED IN A MAPPED FLOODWAY? ☐ NO ☒ YES If yes, contact the floodplain administrator in the local government jsrisdiction in which the project is located. A Floodplain Development permit and a No-rise Certification may be required.

26a WATER QUALITY CERTIFICATION: Pursuant to the Clean Water Act, anyone who wishes to discharge dredge or fill material into the waters of the United States, either on private or public property, must obtain a Section 401 Water Quality Certification (WQC) from the appropriate water quality certifying government entity.
See Instruction Guide for further clarification and all contact information.

The following information is requested by IDEQ and/or EPA concerning the proposed impacts to water quality and anti-degradation:

☐ NO ☐ YES Is applicant willing to assume that the affected waterbody is high quality?
☐ NO ☐ YES Does applicant have water quality data relevant to determining whether the affected waterbody is high quality or not?
☐ NO ☐ YES Is the applicant willing to collect the data needed to determine whether the affected waterbody is high quality or not?

26b. BEST MANAGEMENT PRACTICTES (BMP's): List the Best Management Practices and describe these practices that you will use to minimize impacts on water quality and anti-degradation of water quality. All feasible alternatives should be considered - treatment or otherwise. Select an alternative which will minimize degrading water quality

Construct during low-flow period.
Temporary coffer dam will dewater the large majority of the area.
Care will be taken to minimize turbidity in Big Wood River during debris removal.

Through the 401 Certification process, water quality certification will stipulate minimum management practices needed to prevent degradation.

27. LIST EACH IMPACT to stream, river, lake, reservoir, including shoreline: Attach site map with each impact location.

Activity	Name of Water Body	Intermittent Perennial	Description of Impact and Dimensions	Impact Length Linear Feet
Excavation	Big Wood River	Perennial	Removal of debris and gravel in channels #1 and #2	180
Bank stabilization	Big Wood River	Perennial	Bank re-grade, gravel, toe rock, log barbs, and woody material	180
			TOTAL STREAM IMPACTS (Linear Feet):	180

28. LIST EACH WETLAND IMPACT include mechanized clearing, filL excavation, flood, drainage, etc. Attach site map with each impact location.

Activity	Wetland Type: Emergent, Forested, Scrub/Shrub	Distance to Water Body (linear ft)	Description of Impact Purpose: road crossing, compound, culvert, etc.	Impact Length (acres, square ft linear ft
Restoration	Emergent	25 to 125	Regrade and restore	4,356
			TOTAL WETLAND IMPACTS (Square Feet):	4,356

29. ADJACENT PROPERTY OWNERS NOTIFICATION REQUIREM: Provide contact information of ALL adjacent property owners below.

Name:
MARSUPIAL PROPERTIES LLC C/O ALISON & GEOFFREY RUSACK

Mailing Address:
1825 BALLARD CANYON RD

City: SOLVANG | State: CA | Zip Code: 93463

Phone Number *(include area code)*: | E-mail:

Name:
EDWARD AND BARBARA PATTON

Mailing Address:
P.O. BOX 6284

City: KETCHUM | State: ID | Zip Code: 83340

Phone Number *(include area code)*: | E-mail:

Name:
PATTON, EDWARD SCOTT TRUSTEE

Mailing Address:
P.O. BOX 6284

City: KETCHUM | State: ID | Zip Code: 83340

Phone Number *(include area code)*: | E-mail:

Name:
CITY OF KETCHUM

Mailing Address:
P.O. BOX 2315

City: KETCHUM | State: ID | Zip Code: 83340

Phone Number *(include area code)*: | E-mail:

Name:
HOWARD, WILLIAM E TRUSTEE

Mailing Address:
56 LAUREL POINT LANE

City: FRIDAY HARBOR | State: WA | Zip Code: 98250

Phone Number *(include area code)*: | E-mail:

Name:
CAMPBELL, DOROTHY BEAUCHAMP

Mailing Address:
C/O KIMIYA LEUTERITZ MGR, 2454 ALTON PKWY

City: IRVINE | State: CA | Zip Code: 92606

Phone Number *(include area code)*: | E-mail:

Name:
COMMUNITY LIBRARY ASSOC INC

Mailing Address:
JENNY EMERY DAVIDSON, P.O. BOX 2168

City: KETCHUM, ID | State: ID | Zip Code: 83340

Phone Number *(include area code)*: | E-mail:

Name:
CHATEAUX OF NORTHWOOD OWNERS

Mailing Address:
C/O JOHN PHILLIPS, P.O. BOX 605

City: KETCHUM | State: ID | Zip Code: 83340

Phone Number *(include area code)*: | E-mail:

30. SIGNATURES: STATEMENT OF AUTHORIAZATION / CERTIFICATION OF AGENT / ACCESS

Application is hereby made for permit, or permits, to authorize the work described in this application and all supporting documentation. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein; or am acting as the duly authorized agent of the applicant (Block 2). I hereby grant the agencies to which this application is made, the right to access/come upon the above-described location(s) to inspect the proposed and completed work/activities.

Signature of Applicant: _____ *Date:* _____

Signature of Agent: _____ *Date:* _____

This application must be signed by the person who desires to undertake the proposed activity AND signed by a duly authorized agent (see Block 1, 2, 30). Further, 18 USC Section 1001 provides that: "*Whoever, in any manner within the jurisdiction of any department of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious, or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both*".

29 ADJACENT PROPERTY OWNER NOTIFICATION FORM Provide mailing information of ALL adjacent property owners below

Name NEARSIGHT PROPERTIES LLC C/O ALISON & GEOFFREY BUSACK Mailing Address 1825 BALLARD CANYON RD City / State / Zip Code SOLVANG / CA / 93463 Phone Number / E-mail	Name EDWARD AND BARBARA PATTON Mailing Address PO BOX 6284 City / State / Zip Code KETCHUM / ID / 83340 Phone Number / E-mail
Name PATTON EDWARD SCOTT TRUSTEE Mailing Address PO BOX 6284 City / State / Zip Code KETCHUM / ID / 83340 Phone Number / E-mail	Name CITY OF KETCHUM Mailing Address PO BOX 2315 City / State / Zip Code KETCHUM / ID / 83340 Phone Number / E-mail
Name HOWARD, WILLIAM F TRUSTEE Mailing Address 56 LAUREL POINT LANE City / State / Zip Code FRIDAY HARBOR / WA / 98250 Phone Number / E-mail	Name CAMPBELL, DOROTHY BEAUCHAMP Mailing Address C/O KIMIYA LUTTRELL/ MGR, 2454 ALTON PKWY City / State / Zip Code IRVINE / CA / 92606 Phone Number / E-mail
Name COMMUNITY LIBRARY ASSOC INC Mailing Address JENNY EMERY DAVIDSON, PO BOX 2168 City / State / Zip Code KETCHUM, ID / ID / 83340 Phone Number / E-mail	Name CHATEAUX OF NORTHWOOD OWNERS Mailing Address C/O JOHN PHILLIPS, PO BOX 605 City / State / Zip Code KETCHUM / ID / 83340 Phone Number / E-mail

30 SIGNATURES STATEMENT OF AUTHORIAZATION / CERTIFICATION OF AGENT / ACCESS

Application is hereby made for permit, or permits, to authorize the work described in this application and all supporting documentation. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein, or am acting as the duly authorized agent of the applicant (Block 2). I hereby grant the agencies to which this application is made, the right to access/come upon the above described location(s) to inspect the proposed and completed work/activities.

Signature of Applicant: _____ *Date:* Aug 26, 2025

Signature of Agent _____ *Date* 8/26/2025

This application must be signed by the person who desires to undertake the proposed activity AND signed by a duly authorized agent (see Block 1, 2, 30). Further, 18 USC Section 1001 provides that: "*Whoever, in any manner within the jurisdiction of any department of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious, or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both*".

City of Ketchum

ATTACHMENT D:

Army Corps of Engineers Approval Letter

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
IDAHO FALLS REGULATORY OFFICE
900 NORTH SKYLINE DRIVE, SUITE A
IDAHO FALLS, IDAHO 83402-1700

September 4, 2025

WALLA WALLA DISTRICT
REGULATORY DIVISION

SUBJECT: NWW-2024-00130, Swan Property-Big Wood Stabilization

Sandra Swan
2395 Acorn Palm Rd
Boca Raton, FL 33432
emtiswan@comcast.net

Dear Ms. Swan:

We have determined that your proposed project, Swan Property-Big Wood River Stabilization is authorized in accordance with Department of the Army (DA) **Nationwide Permit (NWP) No. 13: Bank Stabilization** and **Nationwide Permit (NWP) No. 18: Minor Discharges**. This project is located at 401 Northwood Way, within Section 12 of Township 4 North, Range 17 East, near coordinates 43.691540º N latitude and 114.373247º W longitude, in Ketchum, Blaine County, Idaho. Please refer to File Number NWW-2024-00130 in all future correspondence with our office regarding this project.

Project activities include the discharge of approximately 155 cubic yards of rock, earth, and geotextile material to regrade 0.10 acres of wetlands as well as adjacent uplands on the property. Project activities also include the discharge of 183 cubic yards of fill along 252 linear feet of the East bank of the main channel and 57 cubic yards along 123 feet of the North Bank of the East side channel for bank stabilization, fill material associated with bank stabilization includes toe rock, toe logs, log barbs, root wads, etc. The east side channel work will include the construction of an entrance sill comprised of 12 cubic yards of rock material along 15 linear feet of channel to prevent further downcutting and erosion. Work may also include temporary dewatering and bypass with coffer dams. Additional work will include the removal of accumulated gravels, large wood, and other debris that will be included into the bank stabilization activity to the maximum degree practicable. All work will be conducted in accordance with the plans enclosed including the joint application, project drawings, application narrative, and restoration plan.

DA permit authorization is necessary because your project may involve the discharge of fill material into waters of the U.S. This authorization is outlined in Section 404 of the Clean Water Act (33 U.S.C. 1344).

You must comply with all general, regional, and special conditions, for this verification letter to remain valid and to avoid possible enforcement actions. The general and regional permit conditions for *NWP No. 13: Bank Stabilization and NWP No. 18: Minor Discharges* are attached and also available online[1]. In addition, you must also comply with the special conditions listed below.

The following Special Conditions include:

Special Condition 1: Your permit has been issued while Monarch Butterfly is proposed as "threatened" under the Endangered Species Act (ESA). Should the Monarch Butterfly be listed under the ESA prior to the completion of the project, please contact the United States Army Corps of Engineers for an evaluation of effect determination.

Special Condition 2: Your permit has been issued while Suckley's Cuckoo Bumble Bee is proposed as "endangered" under the Endangered Species Act (ESA). Should the Suckley's Cuckoo Bumble Bee be listed under the ESA prior to the completion of the project, please contact the United States Army Corps of Engineers for an evaluation of effect determination.

You must also comply with the conditions detailed in the attached Section 401 Water Quality Certification (WQC) issued by the Idaho Department of Environmental Quality (IDEQ) on December 4, 2020. If you have any questions regarding the conditions set forth in the WQC, please contact IDEQ directly at 208-736-2190, Twin Falls Regional Office.

Nationwide Permit General Condition 30 (Compliance Certification) requires that every permittee who has received NWP verification must submit a signed certification regarding the completed work and any required mitigation. This Compliance Certification form is enclosed for your convenience and must be completed and returned to us within 30 days of your project's completion.

This letter of authorization does not convey any property rights, or any exclusive privileges and does not authorize any injury to property or excuse you from compliance with other Federal, State, or local statutes, ordinances, regulations, or requirements which may affect this work.

This verification is valid until **March 14, 2026**, unless the NWP is modified, suspended or revoked. If your project, as permitted under this NWP verification, is modified in any way you must contact our office prior to commencing any work

[1] http://www.nww.usace.army.mil/Business-With-Us/Regulatory-Division/Nationwide-Permits/

activities. In the event that you have not completed construction of your project by March 14, 2026, please contact us at least 60-days prior to this date. A new application and verification may be required.

We actively use feedback to improve our delivery and provide you with the best possible service. If you would like to provide feedback, please take our online survey[2]. If you have questions or if you would like a paper copy of the survey, please contact the Walla Walla District Regulatory. For more information about the Walla Walla District Regulatory program, you can visit us online[3].

If you have any questions or need additional information about this permit authorization, you can contact me by phone at 208-522-1645, by mail at the address in the letterhead, or email at Caleb.J.Williams@usace.army.mil. For informational purposes, a copy of this letter has been sent to: Aaron Golart (IDWR), Sean Woodhead (IDEQ), and Adam Crutcher (City of Ketchum).

Sincerely,

Caleb Williams
Project Manager, Regulatory Division

Encls
Joint Application for Permits amended 08.25.2025
Swan, Sandra River Restoration 2024 Designs
Application Narrative amended 08.25.2025
Wetland Delineation Report, Swan-401 Northwood Way
Stream Alteration and Floodplain Development, Floodplain Riparian Restoration Plan, Swan-401 Northwood Way
NWP 13 General Conditions
NWP 18 General Conditions
IDEQ General Water Quality Certification
Compliance Certification

[2] https://regulatory.ops.usace.army.mil/customer-service-survey/
[3] http://www.nww.usace.army.mil/Business-With-Us/Regulatory-Division/

TRANSFER OF NATIONWIDE PERMIT

When the structures or work authorized by this Nationwide Permit, **NWW-2024-00130** are still in existence at the time the property is transferred. The terms and conditions of this Nationwide Permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this Nationwide Permit, the associated liabilities and compliance with the terms and conditions the transferee must sign and date below.

Name of New Owner:

Street Address:

Mailing Address:

City, State, Zip:

Phone Number:

_____ _____

Signature of TRANSFEREE *DATE*

City of Ketchum

ATTACHMENT E:

Blaine County Wetland and Riparian Plant List

Blaine County Riparian and Wetland Plant List

** Highlighted species below can be very invasive.*

**This list is not intended to be inclusive of all riparian and wetland species. Blaine County will consider additional species provided that documentation is supplied which supports its native origin in the area.*

AQUATIC, EMERGENT MARSH, AND SEASONAL PONDS

Updated Common Name:	Alternative Common Name:	Updated Scientific Name:
American sloughgrass		Beckmannia syzigachne
blister sedge		Carex vesicaria
broadleaf arrowhead, arumleaf arrowhead	Arrowhead, Wapato	Sagittaria latifolia, S. cuneata
chairmaker's bulrush		Schoenoplectus americanus
common cattail	Cattail	Typha latifolia
common spikerush		Eleocharis palustris
hardstem bulrush	Bulrush, Tule	Schoenoplectus acutus
narrowleaf bur-reed	Burreed	Sparganium angustifolium
Northwest Territory sedge		Carex utriculata

BEST BANK STABILIZERS AND FLOODPLAIN SPECIES – with rapidly growing, often rhizomatous roots that resist erosion.

Updated Common Name:	Alternative Common Name:	Updated Scientific Name:
alderleaf buckthorn	Alder-Leafed Buckthorn	Rhamnus alnifolia
Baltic rush	Rushes	Juncus balticus
Bebb willow		Salix bebbiana
black cottonwood	Black Cottonwood	Populus balsamifera ssp. trichocarpa
blue wildrye		Elymus glaucus
Booth's willow	Booth Willow	Salix boothii
chokecherry	Chokecherry	Prunus virginiana var. melanocarpa
common snowberry	Snowberry	Symphoricarpos albus
common spikerush		Eleocharis palustris
fowl mannagrass		Glyceria striata
fringed brome		Bromus ciliatus
Geyer's willow	Geyers Willow	Salix geyeriana
giant mountain aster		Canadanthus modestus
gray alder	Alnus incana	Alnus incana
longstyle rush		Juncus longistylis

narrowleaf cottonwood	Narrowleaf Cottonwood	Populus angustifolia
narrowleaf willow	Coyote Willow	Salix exigua
Nebraska sedge		Carex nebrascensis
northern black currant		Ribes hudsonianum
Northwest Territory sedge		Carex utriculata
panicled bulrush		Scirpus microcarpus
redosier dogwood	Redtwig Dogwood	Cornus stolonifera
rose spirea	Douglas Spiraea	Spiraea douglasii
spike bentgrass		Agrostis exarata
streambank wheatgrass	Streambank Wheatgrass	Elymus lanceolatus ssp. lanceolatus
water birch	River Birch	Betula occidentalis
Whiplash Willow	Pacific Willow	Salix Lucida var
Woods' rose	Woods Rose	Rosa woodsii
yarrow	Yarrow	Achillea millifolium

OTHER RIPARIAN TREES AND SHRUBS FOR THE ZONE BEHIND IMMEDIATE STREAMBANK

Updated Common Name:	Alternative Common Name:	Updated Scientific Name:
basin big sagebrush		Artemisia tridentata ssp. tridentata
Bebb willow		Salix bebbiana
black hawthorn	Douglas, River Hawthorn	Crataegus douglasii
blue elderberry	Elderberry	Sambucus nigra ssp. cerulea
chokecherry	Chokecherry	Prunus virginiana var. melanocarpa
common snowberry	Snowberry	Symphoricarpos albus
creeping barberry		Mahonia repens
Engelmann spruce	Picea engelmannii	Picea engelmannii
fourwing saltbrush	Atriplex sp.	Atriplex canescens
golden currant	Gooseberries, Currants	Ribes aureum
Greene's mountain ash	Rocky Mountain Ash	Sorbus scopulina
kinnikinnick		Arctostaphylos uva-ursi
Lewis' mock orange	Lewis’ Mockorange, Syringa	Philadelphus lewisii
lodgepole pine	Pinus contorta	Pinus contorta
narrowleaf willow	Coyote Willow	Salix exigua
quaking aspen	Aspen	Populus tremuloides
rock spiraea	Rock Spiraea, Creambush	Holodiscus dumosus

Rocky Mountain maple		Acer glabrum
rose spirea	Douglas Spiraea	Spiraea douglasii
rubber rabbitbrush	Common Rabbitbrush	Ericameria nauseosa
Saskatoon serviceberry	Serviceberry	Amelanchier alnifolia
Scouler's willow		Salix scouleriana
silver sagebrush		Artemisia cana ssp. viscidula
silverberry	Elaeangus commutata	Elaeangus commutata
skunkbrush sumac	Three- Leaf Sumac	Rhus trilobata var. trilobata
snowbrush ceanothus	Snowbrush	Ceanothus velutinus
Thimbleberry	Thimbleberry	Rubus parviflorus
twinberry honeysuckle		Lonicera involucrata
Wild Raspberry	Wild Raspberry	Rubus ideaus
Woods' rose	Woods Rose	Rosa woodsii
yellow rabbitbrush	Green Rabbitbrush	Chrysothamnus viscidiflorus

RIPARIAN TREE AND SHRUB UNDERGROWTH GRASSES AND FORBS

Updated Common Name:	Alternative Common Name:	Updated Scientific Name:
American vetch		Vicia americana
blue wildrye		Elymus glaucus
chamisso sedge		Carex pachystachya
common cowparsnip	Cow Parsnip	Heracleum maximum
feathery false lily of the valley	Solomon’s Seal	Maianthemum racemosum
fringed brome		Bromus ciliatus
hairy clematis	Leather Flower	Clematis hirsutissima
hairy hedgenettle		Stachys pilosa
nettleleaf giant hyssop		Agastache urticifolia
Richardson's geranium		Geranium richardsonii
slender cinquefoil	Graceful Potentilla	Potentilla gracilis
sticky purple geranium	Sticky Geranium	Geranium viscosissimum
tall fringed bluebells	Bluebells	Mertensia ciliata
tobacco root	Edible Valerian	Valeriana edulis
Virginia strawberry		Fragaria virginiana
western columbine	Columbine	Aquilegia formosa
western meadow-rue		Thalictrum occidentale
Western Valerian	Western Valerian	Valeriana occidentalis
white sagebrush	Louisiana Sagewort	Artemisia ludoviciana
woodland strawberry	Wild Strawberry	Frageria vesca

WET MEADOW, FEN, AND SPRINGS seasonally flooded or saturated for long duration

Updated Common Name:	Alternative Common Name:	Updated Scientific Name:
American sloughgrass		Beckmannia syzigachne
analogue sedge		Carex simulata
Baltic rush	Rushes	Juncus balticus
beaked spikerush		Eleocharis rostellata
blister sedge		Carex vesicaria
chairmaker's bulrush		Schoenoplectus americanus
Nebraska sedge		Carex nebrascensis
Northwest Territory sedge		Carex utriculata
Nuttall's sunflower		Helianthus nuttallii
primrose monkeyflower		Mimulus primuloides
Rocky Mountain iris	Rocky Mountain Iris	Iris missouriensis
seep monkeyflower	Yellow Monkey Flower	Mimulus guttatus
small camas	Camas Lily	Camassia quamash
smallwing sedge		Carex microptera
tall fringed bluebells	Bluebells	Mertensia ciliata
tufted hairgrass	Hairgrass	Deschampsia caespitosa
western columbine	Columbine	Aquilegia formosa
western mountain aster		Symphyotrichum spathulatum var. spathulatum
western polemonium	Jacob's Ladder	Polemonium occidentale

DRY RIPARIAN-MESIC MEADOW temporarily flooded or saturated for short duration

Updated Common Name:	Alternative Common Name:	Updated Scientific Name:
antelope bitterbrush	Bitterbrush	Purshia tridentata
Baltic rush	Rushes	Juncus balticus
basin big sagebrush		Artemisia tridentata ssp. tridentata
basin wildrye	Great Basin Wildrye	Leymus cinereus
bluebunch wheatgrass	Bluebunch Wheatgrass	Pseudoroegneria spicata
California brome		Bromus carinatus
chamisso arnica		Arnica chamissonis
clustered field sedge		Carex praegracilis
Columbia needlegrass		Achnatherum nelsonii
Cusick's bluegrass		Poa cusickii
Douglas' sedge		Carex douglasii

duncecap larkspur		Delphinium occidentale
fourwing saltbrush	Atriplex sp.	Atriplex canescens
Idaho blue-eyed grass		Sisyrinchium idahoense
Idaho fescue	Idaho Fescue	Festuca idahoensis
Lewis' flax	Lewis Flax	Linum lewisii
little sagebrush		Artemisia arbuscula ssp. longiloba
mountain big sagebrush		Artemisia tridentata ssp. vaseyana
mule-ears	Yellow Mule's Ears	Wyethia amplexicaulis
Munro's globemallow	Globemallow, Orange	Sphaeralcea munroana
needle-and-thread		Hesperostipa comata
nettleleaf giant hyssop		Agastache urticifolia
nodding onion	Nodding Onion	Allium cernuum
old man's whiskers	Avens, Old Man's Whiskers	Geum triflorum
poverty rush		Juncus tenuis
rubber rabbitbrush	Common Rabbitbrush	Ericameria nauseosa
Sandberg bluegrass	Canadian Bluegrass	Poa secunda
scarlet gilia		Ipomopsis aggregata
silver sagebrush		Artemisia cana ssp. viscidula
slender cinquefoil	Graceful Potentilla	Potentilla gracilis
slender wheatgrass		Elymus trachycaulus ssp. trachycaulus
small camas	Camas Lily	Camassia quamash
squirreltail		Elymus elymoides
sticky purple geranium	Sticky Geranium	Geranium viscosissimum
streambank wheatgrass	Streambank Wheatgrass	Elymus lanceolatus ssp. lanceolatus
sulphur-flower buckwheat		Eriogonum umbellatum
sunflower mule-ears	White Mule's Ears	Wyethia helianthoides
tufted hairgrass	Hairgrass	Deschampsia caespitosa
western mountain aster		Symphyotrichum spathulatum var. spathulatum
western wheatgrass		Pascopyrum smithii
white sagebrush	Louisiana Sagewort	Artemisia ludoviciana
yarrow	Yarrow	Achillea millifolium
yellow rabbitbrush	Green Rabbitbrush	Chrysothamnus viscidiflorus

City of Ketchum

ATTACHMENT F:

Draft Findings of Fact Conclusions of Law and Decision

City of Ketchum
Planning & Building

IN RE:	)
	)
Swan Stream Alteration	) KETCHUM PLANNING AND ZONING COMMISSION
Floodplain Development Permit	) FINDINGS OF FACT, CONCLUSIONS OF LAW, AND
File Number: P24-057	) DECISION
	)
Date: October 14, 2025	)
	)

PROJECT:	Swan Stream Alteration Permit
APPLICATION TYPE:	Floodplain Development Permit
FILE NUMBER:	P24-057
PROPERTY OWNER:	Robert H and Sandra Swan (Trustees)
REPRESENTATIVE:	Chuck Brockway, Brockway Engineering (consultant)
LOCATION:	401 Northwood Way (Chateaux of Northwood, Lot 12)
ZONING:	General Residential Low Density (GR-L) & Floodplain Management Overlay District (FMOD)

RECORD OF PROCEEDINGS

A floodplain development permit application was received on June 20, 2024, and routed to all staff departments and Harmony Engineering and Design for review. Two rounds of review and revisions were conducted. Following the first round of review, the applicant received notification from the Army Corps of Engineers that a new joint application was required due to the extent of the changes proposed. This caused a delay in the application. The revised application was submitted to the city in July 2025. Following one round of review, the application was scheduled for public hearing with the Planning and Zoning Commission. A public meeting notice for the project was mailed to all owners of property within 300 feet of the project site and all political subdivisions on September 19, 2025. The notice was published in the Idaho Mountain Express on September 19, 2025. A notice was posted on the project site and the City's public notice webpage on September 29, 2025. The application materials were posted on the Planning and Building Active Applications webpage on September 30, 2025. The application was heard at a public hearing of the Planning and Zoning Commission on October 14, 2025.

BACKGROUND

The property is located at 401 Northwood Way, at the corner of Northwood Way and Saddle Rd (the "subject property"). The property is zoned General Residential Low Density (GR-L) and includes area within the Floodplain Management Overlay District. The subject property is accessed from Northwood Way, through 391 Northwood Way, also owned by the Swans. The subject property contains one single family residence built in 1991 according to the Blaine County Clerk and Recorder. The property borders the Big Wood River, with a side channel from the Big Wood River to the east along the Chateaux of Northwood Townhomes.

The subject property has a history of challenges resulting from significant flooding that occurred in 2017. The current condition of the property is significantly degraded, and large sandbags have been in place since 2020. Impacting the functionality and aesthetics of the riparian and floodplain areas. Below is a general timeline of what has occurred over the past decade in relation to the subject property.

2015 – Administrative Floodplain Development Permit issued for landscape improvements outside the floodplain and riparian boundaries
2017 – Flooding occurred resulting in the destabilization of the east bank of the Big Wood, gravel deposits, and increased flood elevations
2018 – Stream Alteration Permit approved (P18-131) – proposed improvements on subject property and property to the north.
2019 – Emergency Stream Alteration Permit approved (P19-044) – installation of sandbags that exist today
2019/2020 – Amended Stream Alteration Permit withdrawn (P19-138) – amended to remove improvements to the property north of the subject property.
2020 – Discussions began with Wood River Land Trust and Trout Unlimited to conduct a comprehensive river reach study
2023 – Discussions of stream alteration resumed between the city and property owner.
2024 – Stream Alteration Permit (P24-057) submitted June 20, 2024 – current application

KMC 17.88.200 requires that "If an emergency stream bank stabilization permit is granted, the applicant shall apply for a waterways design review/stream alteration permit under article I of this chapter within six months from the date of the issuance of the emergency stream bank stabilization permit." As shown above, a stream alteration permit was approved in 2018 but never constructed due to a dispute between the two property owners. Following the 2019 emergency permit, the applicant submitted an amendment to the 2018 permit to remove improvements on the adjacent property. Upon review of the permit, staff made a recommendation of denial. The application was withdrawn prior to hearing with the Planning and Zoning Commission. In lieu of a new permit application, the city attempted to engage the neighbors through a collaborative effort with the Wood River Land Trust and Trout Unlimited. The goal being a larger reach study and alterative design approaches to address many persistent challenges in the area along the Bigwood such as degraded habitat, unstable banks, and diminished flow capacity similar to the efforts being taken at the Warm Springs Preserve currently. That effort was not successful and concluded around 2021/2022.

The KMC states that "If a waterways design review/stream alteration permit under article I of this chapter and all other applicable state and federal agency permits are granted, the applicant shall then complete restoration of the affected property to City and state standards by either March 31 of the year following

the issuance of the emergency stream bank stabilization permit or by another date specified by the administrator or other governmental agency". However, the code does not specify what to do in the event a permit is not granted. The city, exercising its enforcement discretion, elected to not initiate a formal enforcement process against the property owner as the city believed the property owner to be cooperating in good faith. In 2023 the property owner contacted city staff to gain resolution to a long-standing issue garnering attention and igniting frustration among community members in the vicinity. A detailed survey was conducted of the project area in 2018 and again in 2023 to ensure that any changes in existing conditions were adequately accounted for.

Following collaborative discussions between staff and the applicant, the city received a new stream alteration permit on June 20, 2024. Upon deeming the application complete, staff conducted two rounds of review of the application. As the Big Wood River is considered a "water of the United States", the Army Corps of Engineers was conducting a concurrent review of the application. Following the second round of review, changes to the design prompted a re-review by the Army Corps of Engineers (ACE). At that time, the applicant was notified that the area contained within Area 4 was considered a jurisdictional wetland and that impacts to that area were to be minimized below a certain threshold to be permitted. This caused a delay of the review while the applicant revised the proposed project to address the requirements by ACE. The applicant resubmitted the application in July 2025, which has been reviewed a third time by staff prior to scheduling the application with the Planning and Zoning Commission.

A public meeting notice for the project was mailed to all owners of property within 300 feet of the project site and all political subdivisions on September 19, 2025. The notice was published in the Idaho Mountain Express on September 19, 2025. A notice was posted on the project site and the City's public notice webpage on September 29, 2025. The application materials were posted on the Planning and Building Active Applications webpage on September 30, 2025.

FINDINGS OF FACT

The Planning and Zoning Commission having reviewed the project record, provided notice, and conducted the required public hearing does hereby find that the project does conform to applicable standards and criteria as set forth in Ketchum Municipal Code Chapter 17.88 – Floodplain Management Overlay Zoning District (FP). After deliberation, the Commission found the project to be in conformance with the floodplain development criteria. Therefore, the Commission does hereby make and set forth these Findings of Fact, Conclusions of Law, and Decision as follows:

Floodplain Development Permit Requirements				
1. Evaluation Standards: 17.88.050€				
Compliant			Standards and Staff Comments	
Yes	No	N/A	Guideline	City Standards and *Staff Comments*
☒	☐	☐	17.88.050(E)1	The proposal preserves or restores the inherent natural characteristics of the river, floodplain, and riparian zone, including riparian vegetation and wildlife habitat. Development does not alter river channel unless all stream alteration criteria for evaluation are also met.

Floodplain Development Permit Requirements				
1. Evaluation Standards: 17.88.050€				
Compliant			Standards and Staff Comments	
Yes	No	N/A	Guideline	City Standards and *Staff Comments*
			Staff Comments	*Due to high levels of snowpack, coupled by warm temperatures, and a significant rain event, the 2017 flooding was the largest flooding event in the City of Ketchum in many years. During this event, Warm Springs Creek, Trail Creek, and the Bigwood River experienced water levels that overtopped banks, created debris jams, and in some instances re-routed portions of the river. The Bigwood River was specifically compromised in the area of the subject property. In this location, the Bigwood River is less constrained by development until further south down the river. During large flood events, water will overtop river banks and sheet flood across large portions of open land owned by private entities, the City of Ketchum, and the Community Library.* *Prior to the 2017 flood event the area east of the eastern bank of the main channel of the Big Wood River now proposed for bank stabilization and land reclamation/restoration was largely in a manicured, non-native state. Groundcover was largely turfgrass with minimal shrubs and trees. Turfgrass extended to the bank of the river on the bank that abuts the main channel of the Big Wood River.* *As described in the narrative and plans submitted by Brockway Engineering, the 2017 flood event resulted in deposition of significant quantities of gravel within the main channel of the Big Wood River in the vicinity of the subject property and erosion/land loss due to bank erosion. Subsequent runoff occurred in the spring of 2018 and 2019 with overland flooding both years. The scope of work proposed by this permit involves excavation from the river channel, bank stabilization along the main channel and eastern side channel, land reclamation, and restoration.* *The east bank of the Bigwood property, adjacent to the subject property and the north bank of the side channel will be stabilized with bank hardening techniques (toe rock and geogrid material) and bioengineering techniques (installation of logs with root wads to function as bank barbs, installation of willows within the interspatial voids of the toe rock). The toe rock and geogrid will be placed at the toe of the slope, below the ordinary high water mark, and covered with top soil and landscaping to establish a natural condition of the river and riparian area.*

Floodplain Development Permit Requirements				
1. Evaluation Standards: 17.88.050€				
Compliant			Standards and Staff Comments	
Yes	No	N/A	Guideline	City Standards and *Staff Comments*
				Post-2017 flooding and 2018 and 2019 runoff, land areas on the subject property affected by sheet flow are being reclaimed, filled and revegetated with native, riparian and wetland vegetation. In addition to the reclamation work, the scope of the stream alteration includes the burying of a rock wall and installation of geogrid fabric. All existing vegetation will be removed, the land regraded to spot elevations shown in the plan set, and new grasses and shrubs will be installed. As such, the 25' riparian zone on the subject property will be restored to a state that is more characteristic of a native riparian zone than what existed prior to the 2017 flood.
☒	☐	☐	17.88.050(E)2	No temporary construction activities, encroachment or other disturbance into the 25-foot riparian zone, including encroachment of below grade structures, shall be permitted, with the exception of approved stream stabilization work and restoration work associated with a riparian zone that is degraded.
			Staff Comments	*Temporary construction activities and encroachments are proposed by the project but are solely and directly related to stream stabilization and riparian restoration work. Such encroachments include the toe rock and geogrid fabrics proposed along the east bank of the main channel. Groundwater discharge piping currently exists within the riparian area on the north end of the property along the Bigwood River. These discharge pipes are to be rerouted to discharge near the east channel instead.*
☒	☐	☐	17.88.050(E)3	No permanent development shall occur within the 25-foot riparian zone, with the exception of approved stream stabilization work and restoration work associated with permit issued under this title, or exceptions as described below: a. Access to a property where no other primary access is available; b. Emergency access required by the fire department; c. A single defined pathways or staircases for the purpose of providing access to the river channel and in order to mitigate multiple undefined social paths; d. Development by the City of Ketchum.
			Staff Comments	*As noted above, no permanent development is proposed within the riparian zone with the exception of the groundwater discharge pipes on the east channel. Prior to the 2017 flood, small sump pumps in the crawl space were used occasionally. Following the 2017 flood,*

Floodplain Development Permit Requirements				
1. Evaluation Standards: 17.88.050€				
Compliant			Standards and Staff Comments	
Yes	No	N/A	Guideline	City Standards and *Staff Comments*
				groundwater seepage into the crawlspace increased to a level where the small sump pumps were no longer adequate. In fall 2020, a groundwater dewatering system was installed by the property owner. This system includes two large sump pumps with discharge pipes that divert groundwater and create a depression in the water table sufficient to keep groundwater from seeping into the crawl space. One sump pump is located at the north end of the structure and discharges water into the Big Wood River at the north end of the property. The second sump pump is located on the south end of the structure and discharges water into the east channel. *The Clean Water Act prohibits persons from discharging pollutants (oil, dirt, human waste, or chemicals) through a point source (pipe, ditch, channel, etc.) into a "water of the United Sates" without a permit. However, the dewatering system is not subject to a permit requirement by the Idaho Department of Water Resources (IDWR) or the Idaho Department of Environmental Quality (DEQ) because the sumps draw clean water directly from the water table, rather than pumping dirty water from a crawlspace without manufactured or natural filtering systems in place.* *However, per Section 17.88.050.E.3 of the city's floodplain regulations, "No permanent development shall occur within the 25-foot riparian zone, with the exception of approved stream stabilization work and restoration work associated with permit issued under this title, or exceptions as described below: a. Access to a property where no other primary access is available; b. Emergency access required by the fire department; c. A single defined pathways or staircases for the purpose of providing access to the river channel and in order to mitigate multiple undefined social paths; and d. Development by the City of Ketchum." The KMC defines development broadly, including permanent infrastructure related to the discharge of water.* *During review of the application, staff raised the issue of the discharge pipes with the applicant. The applicant represents that removal of the sump pumps and discharge pipes entirely would jeopardize the foundation of the structure as it would leave the foundation unprotected during flooding events. In other parts of the city, homeowners often utilize temporary sump pumps in crawl spaces*

Floodplain Development Permit Requirements				
1. Evaluation Standards: 17.88.050€				
Compliant			Standards and Staff Comments	
Yes	No	N/A	Guideline	City Standards and *Staff Comments*
				and discharge dirty water into the city's right-of-way. The applicant evaluated an option to reroute the north discharge pipes to consolidate the discharge locations into the east channel. This proposal requires a significant amount of piping and land disturbance. Staff appreciate the effort to minimize impacts to riparian areas, however, staff believe that removal and proper reinstallation of the northern discharge pipes in their current location is the best course of action. The existing pipes sit at the surface and visually impact the aesthetic of the bank and riparian areas, improperly discharging water and creating additional erosion. Replacement and proper installation of the pipes a minimum of 18 inches below surface would remove the visual impact, further minimize erosion, and not impact the ability of the riparian area to establish properly.
☐	☐	☒	17.88.050(E)4	New or replacement planting and vegetation in the riparian zone shall include plantings that are low growing and have dense root systems for the purpose of stabilizing stream banks and repairing damage previously done to riparian vegetation. Examples of such plantings most commonly include: red osier dogwood, common chokecherry, serviceberry, elderberry, river birch, skunk bush sumac, Beb's willow, Drummond's willow, little wild rose, gooseberry, and honeysuckle. However, in rare instances the distance from the top-of-bank to the mean high water mark is significant and the native vegetation appropriate for the riparian zone are low growing, drought resistant grasses and shrubs. Replacement planting and vegetation shall be appropriate for the specific site conditions. Proposal does not include vegetation within the 25-foot riparian zone that is degraded, not natural, or which does not promote bank stability.
			Staff Comments	*The KMC states "The Waterways Review District includes all parcels containing lands that are within 25 feet of the mean high-water mark as measured horizontally from the mean high-water mark of any waterway. Waterways include the Big Wood River, Trail Creek, and Warm Springs Creek, and any and all channels having year-round or intermittent flow. These lands within 25 feet of the mean high-water mark area also known as the riparian zone that is regulated by the City of Ketchum". This language requires that areas along the Bigwood River and the east channel be restored to establish appropriate riparian areas along both. However, in previous*

Floodplain Development Permit Requirements				
1. Evaluation Standards: 17.88.050€				
Compliant			Standards and Staff Comments	
Yes	No	N/A	Guideline	City Standards and *Staff Comments*
				determinations by former city staff and the Commission, through permit reviews and approvals, riparian restoration of the east channel has not been required. *The applicant proposes significant riparian restoration along the Bigwood River, including the western most portion of the east channel where it connects to the Bigwood, but proposes a less intense treatment of toe rock and root barbs along the east channel. As noted above, the majority of the area along the east channel is now considered a jurisdictional wetland, much of which is to remain undisturbed. There is a small stretch toward the eastern most property line that is proposed to be filled as discussed above.* *Based on the KMC, staff believes the east channel does contain a 25-foot riparian zone as the channel will have intermittent flow and the area is. Staff believes that the current proposal by the applicant is sufficient. Following completion, the east channel will flow during medium to high water periods, however, will likely not flow during low water times. As seen over the past seven years, the area along the east channel has re-established itself naturally and will likely continue to do so in the areas left undisturbed. The conditions of approval recommended above related to planting within the wetland fill areas encourage selection of plant species suitable for dry riparian areas, which the east channel will be during many months.* *In general, staff is supportive of the stream alteration and bank stabilization proposed for the project, however, staff believe that additional consideration of the planting plan within the riparian area is warranted. The application narrative provides an overview of the planting plan, planting methods, and coverage targets for the various zones, including two zone specific to the riparian area. Zone 2 is the area within the 25 foot riparian area between the ordinary mean high water mark and the 25-foot boundary. Zone 3 is the area from the ordinary mean high water mark down to the toe of the channel.* *Healthy riparian areas are characterized by a hierarchy of plants (grasses, shrubs, and trees) of varying species creating a dynamic biodiverse environment that enhances habitat areas for aquatic and avian species, stabilizes riverbanks, and promotes improved water*

Floodplain Development Permit Requirements				
1. Evaluation Standards: 17.88.050€				
Compliant			Standards and Staff Comments	
Yes	No	N/A	Guideline	City Standards and *Staff Comments*
				quality. This stretch of the Big Wood River is a specific microclimate with significant shade and habitat refuge. Trees are a critically important and prevalent species on this stretch of the Big Wood as they provide shade and habitat refuge. The proposed planting plan for zones 2 and 3 are limited to riparian grasses and shrubs with no proposed trees and low planting densities. Additionally, the planting method proposes to install grasses through a hydroseed method that is not always successful in riparian or floodplain applications. Finally, the proposed seed mixes for the riparian area are drought tolerant and hearty, but not specific to riparian areas. *To ensure the best degree of success in this critical area, the following conditions of approval shall apply:* • *The landscape plan shall be revised as follows and submitted to the Planning and Building Department for review, comment, and final approval prior to installation of any landscaping:* o *Include a minimum of five trees within Zone 2 of a species identified in the Blaine County Wetland and Riparian Plant List appropriate for the zone immediately behind the streambank. The landscape plan shall also be revised to increase the planting density of shrubs within the Zone 2 area from 6 per 1,000 SF to 10 per 1,000 SF.* o *Include a minimum of five trees within Zone 3 of a species identified as bank stabilizers in the Blaine County Wetland and Riparian Plant List. Cottonwood trees located at the top of the slope are preferred, however, other species may be considered. Grouping of trees may be appropriate provided the locations of trees are strategically placed to maximize bank stabilization at key pressure point locations (south end of bank stabilization)* o *Require a minimum of two staggered rows of willows at a spacing no greater than 5 feet. Coyote Willows are preferred at the toe of the slope, however, a similar species may be considered.* o *Propose a new grass mix for the riparian area with species identified in the Blaine County Wetland and*

Floodplain Development Permit Requirements				
1. Evaluation Standards: 17.88.050€				
Compliant			Standards and Staff Comments	
Yes	No	N/A	Guideline	City Standards and *Staff Comments*
				Riparian Plant List for undergrowth grasses and forbs in riparian areas. The landscape plan shall also be revised to propose an alternate planting method for grasses such as hydro mulch, intermittent plug planting, or other methods with greater success rates in riparian areas. ○ *Identify temporary fencing requirements for trees and shrubs for a minimum of 3 growing seasons to ensure adequate success rates of plantings.*
☒	☐	☐	17.88.050(E)5	Landscaping and driveway plans to accommodate the function of the floodplain allow for sheet flooding. Surface drainage is controlled and shall not adversely impact adjacent properties including driveways drained away from paved roadways. Culvert(s) under driveways may be required. Landscaping berms shall be designed to not dam or otherwise obstruct floodwaters or divert same onto roads or other public pathways.
			Staff Comments	*The proposal does not include the construction of a new building, nor does it include any changes to the existing structure or driveway. The existing residence is outside of the floodplain boundary completely. The proposed project does include fill of wetlands and land restoration of fill areas with landscaping that will not obstruct sheet flooding of water during flood events as demonstrated by the model conducted by the applicant and reviewed by the City's Floodplain Administrator. Landscaping proposed in reclaimed areas are mainly low-lying grasses with sporadic planting of shrubs. As these areas are considered "Dry Riparian/Mesic Meadow" areas in the Blaine County Wetland and Riparian Plant List and shall be restored per the following conditions:* • *The applicant shall revise the landscape plan dated June 7, 2024 to reflect the Commission approved extents of wetland fill and revise the planting plan to reflect a mix of appropriate shrubs and grasses outlined in the 2021 Blaine County Wetland and Riparian Plant List for "Dry Riparian" areas. The revised plan shall be provided to the Planning and Building Department for final review and approval prior to any installation.* • *The landscape plan shall be revised to include information regarding the protection and irrigation of the disturbed and revegetated areas to ensure success rates are achieved.*

Floodplain Development Permit Requirements				
1. Evaluation Standards: 17.88.050€				
Compliant			Standards and Staff Comments	
Yes	No	N/A	Guideline	City Standards and *Staff Comments*
				Irrigation shall be provided, either permanently or temporarily, for a minimum of 2 growing seasons. Permanent irrigation is not permitted within the 25-foot riparian zone.
☒	☐	☐	17.88.050(E)6	Flood water carrying capacity is not diminished by the proposal.
			Staff Comments	*The project includes laying back the banks of the Big Wood River adjacent to the property and installing bank stabilization. The proposed grading at the bank will increase the flood carrying capacity by increasing the conveyance area of the channel in these locations. As shown in Table 1 of the applicant's narrative, the total excavation in the Big Wood (items 1-3) is 228 CY along the channel banks and the total fill is 155 CY within the eroded floodplain, resulting in a net increase in conveyance area.* *Other factors that affect the flood carrying capacity include channel roughness, slope, and alignment, which are not being modified with this project. The effective flow rates from FEMA, which are lower than the preliminary flow rates, were used since small channel modifications will have a greater impact under lower flows and this allowed for better evaluation of the no-rise requirement.*
☒	☐	☐	17.88.050(E)7	Impacts of the development on aquatic life, recreation, or water quality upstream, downstream or across the stream are not adverse.
			Staff Comments	*Healthy riparian areas are characterized by a hierarchy of plants (grasses, shrubs, and trees) of varying species creating a dynamic biodiverse environment that enhances habitat areas for aquatic and avian species, stabilizes riverbanks, and promotes improved water quality. This stretch of the Big Wood River is a specific microclimate with significant shade and habitat refuge. Trees are a critically important and prevalent species on this stretch of the Big Wood as they provide shade and habitat refuge. The proposed planting plan for zones 2 and 3 are limited to riparian grasses and shrubs with no proposed trees and low planting densities. Additionally, the planting method proposes to install grasses through a hydroseed method that is not always successful in riparian or floodplain applications. Finally, the proposed seed mixes for the riparian area are drought tolerant and hearty, but not specific to riparian areas.* *To ensure the best degree of success in this critical area, and to enhance and protect acquatic and avian species, the following conditions must be met:*

Floodplain Development Permit Requirements				
1. Evaluation Standards: 17.88.050€				
Compliant			Standards and Staff Comments	
Yes	No	N/A	Guideline	City Standards and *Staff Comments*
				• *The landscape plan shall be revised as follows and submitted to the Planning and Building Department for review, comment, and final approval prior to installation of any landscaping:* o *Include a minimum of five trees within Zone 2 of a species identified in the Blaine County Wetland and Riparian Plant List appropriate for the zone immediately behind the streambank. The landscape plan shall also be revised to increase the planting density of shrubs within the Zone 2 area from 6 per 1,000 SF to 10 per 1,000 SF.* o *Include a minimum of five trees within Zone 3 of a species identified as bank stabilizers in the Blaine County Wetland and Riparian Plant List. Cottonwood trees located at the top of the slope are preferred, however, other species may be considered. Grouping of trees may be appropriate provided the locations of trees are strategically placed to maximize bank stabilization at key pressure point locations (south end of bank stabilization)* o *Require a minimum of two staggered rows of willows at a spacing no greater than 5 feet. Coyote Willows are preferred at the toe of the slope, however, a similar species may be considered.* o *Propose a new grass mix for the riparian area with species identified in the Blaine County Wetland and Riparian Plant List for undergrowth grasses and forbs in riparian areas. The landscape plan shall also be revised to propose an alternate planting method for grasses such as hydro mulch, intermittent plug planting, or other methods with greater success rates in riparian areas.* o *Identify temporary fencing requirements for trees and shrubs for a minimum of 3 growing seasons to ensure adequate success rates of plantings.*
☐	☐	☒	17.88.050(E)8	Building setback in excess of the minimum required along waterways is encouraged. An additional ten-foot building setback beyond the

Floodplain Development Permit Requirements				
1. Evaluation Standards: 17.88.050€				
Compliant			Standards and Staff Comments	
Yes	No	N/A	Guideline	City Standards and *Staff Comments*
				required 25-foot riparian zone is encouraged to provide for yards, decks and patios outside the 25-foot riparian zone.
			Staff Comments	*n/a - There is no construction of buildings part of this application.*
☐	☐	☒	17.88.050(E)9	The top of the lowest floor of a building located in, or partially within, the SFHA shall be at or above the flood protection elevation (FPE). A building is considered to be partially within the SFHA if any portion of the building or appendage of the building, such as footings, attached decks, posts for upper story decks, are located within the SFHA. See section 17.88.060, figures 1 and 2 of this chapter to reference construction details. See chapter 17.08 of this title for definition of "lowest floor." a. In the SFHA where base flood elevations (BFEs) have been determined, the FPE shall be 24 inches above the BFE for the subject property; 24 inches or two feet is the required freeboard in Ketchum City Limits. b. In the SFHA where no BFE has been established, the FPE shall be at least two feet above the highest adjacent grade.
			Staff Comments	*n/a - There are no buildings proposed with this application.*
☐	☐	☒	17.88.050(E)10	The backfill used around the foundation in the SFHA floodplain shall provide a reasonable transition to existing grade but shall not be used to fill the parcel to any greater extent. a. Compensatory storage shall be required for any fill placed within the floodplain. b. A CLOMR-F shall be obtained prior to placement of any additional fill in the floodplain.
			Staff Comments	*n/a - There are no buildings proposed and therefore no foundations.*
☐	☐	☒	17.88.050(E)11	All new buildings located partially or wholly within the SFHA shall be constructed on foundations that are designed by a licensed professional engineer.
			Staff Comments	*n/a - There are no buildings proposed and therefore no foundations.*
☐	☐	☒	17.88.050(E)12	Driveways shall comply with City of Ketchum street standards; access for emergency vehicles has been adequately provided for by limiting flood depths in all roadways to one foot or less during the one percent annual chance event.

Floodplain Development Permit Requirements				
1. Evaluation Standards: 17.88.050€				
Compliant			Standards and Staff Comments	
Yes	No	N/A	Guideline	City Standards and *Staff Comments*
			Staff Comments	*n/a - As noted above, there are no changes to the existing residence or driveway proposed in the application. The existing driveway and residence is outside the floodplain boundary.*
☒	☐	☐	17.88.050(E)13	Landscaping or revegetation shall conceal cuts and fills required for driveways and other elements of the development.
			Staff Comments	*Toe rock and geogrid are all proposed to be below grade and not visible. As noted above, the riparian planting plan shall be revised to create a more robust and comprehensive riparian system that can establish quickly and withstand damage from future flooding events. To ensure that no below grade improvements become visible over time, the following condition must be met:* • *The applicant shall install the geogrid material at a depth that provides a minimum of eight inches of topsoil in all locations. 12 inches of topsoil is preferred to better support the revegetation of the disturbed areas. The applicant shall conduct an additional analysis and provide such to the Planning and Building Department for review, to determine if 12 inches of topsoil can be placed without jeopardizing the no-rise and no adverse impact certifications currently achieved by the project. Based on the results of the analysis, city staff may require additional topsoil be placed in key areas to increase success rates for revegetation and bank stability.*
☒	☐	☐	17.88.050(E)14	(Stream Alteration) The proposal is shown to be a permanent solution and creates a stable situation.
			Staff Comments	*The proposed project includes bank stabilization including log barbs that provide habitat and direct flow to the center of the channel and a rock toe to provide stability and protection during large flood events. The channel velocity is expected to range from 3.6 to 4.7 ft/s through the project reach during the 1% annual chance event and the stone toe protection proposed is estimated to withstand average channel velocities up to 8.8 ft/s.* *This type of bank stabilization treatment that includes a rock toe with willow plantings above the OHW has been used successfully on the Big Wood River for many projects. The log barbs help reduce near bank velocities to reduce erosion and stabilize the bank. The willow plantings stabilize the soils on the upper portion of the bank while providing stream shading to enhance habitat.*

Floodplain Development Permit Requirements				
1. Evaluation Standards: 17.88.050€				
Compliant			Standards and Staff Comments	
Yes	No	N/A	Guideline	City Standards and *Staff Comments*
☒	☐	☐	17.88.050(E)15	(Stream Alteration) No increase to the one percent annual chance flood elevation at any location in the community, based on hydrologic and hydraulic analysis performed in accordance with standard engineering practice and has been certified and submitted with supporting calculations and a No Rise Certificate, by a registered Idaho engineer.
			Staff Comments	*A hydraulic analysis using standard engineer practices was completed that showed no increase in the 1% annual chance flood elevations between existing and proposed conditions measured to the nearest 0.00-ft. A No Rise Certificate was submitted and stamped by an Idaho PE.*
☒	☐	☐	17.88.050(E)16	(Stream Alteration) The project has demonstrated no adverse impact or has demonstrated all impacts will be mitigated.
			Staff Comments	*A no adverse impact statement based on the hydraulic modeling and sealed by an Idaho PE has been provided. Adverse impacts could be caused by changes in flood heights, velocity, flood carry capacity, inundation extent, or sedimentation or erosion potential. In comparing the existing and proposed condition hydraulic models, the flood heights will be reduced as discussed in criterion 15 and flood carry capacity is unchanged as discussed in criterion 6. Velocity changes ranges from a reduction of 0.06 ft/s to an increase of 0.09 ft/s within the project reach. There is a small increase of 0.01 ft/s at cross section 106, just upstream of the project site, but the velocity remains below the acceptable range for the bank protection that consists of 12-24" diameter rock that was placed along this bank in 2023.* *The proposed project decreases potential impacts to downstream properties that may be realized if no action is taken. The east channel off the Bigwood River runs from the mid-point of the subject property southeast along the Chateaux at Northwood Condos. Historically, the channel would see moderate flows during spring runoff, through mid-summer, but was not a primary conveyor of water year-round. Following 2017, flows into the east channel have increased, which creates potential risk for downstream property owners. Most of the residences immediately downstream of the subject property have structures located within the 25-foot riparian area. Allowing a substantial river channel in this area would create risk of further degradation of the stream and cause continued erosion of the channel*

Floodplain Development Permit Requirements				
1. Evaluation Standards: 17.88.050€				
Compliant			Standards and Staff Comments	
Yes	No	N/A	Guideline	City Standards and *Staff Comments*
				toward the residences, jeopardizing structures in the future. The project proposes to restore and stabilize the east channel in a way that returns the channel to pre-2017 conditions, maintaining intermittent flows, but not encourage further development of a year-round channel of the river in that location.
☒	☐	☐	17.88.050(E)17	(Stream Alteration) The recreational use of the stream including access along any and all public pedestrian/fisher's easements and the aesthetic beauty shall not be obstructed or interfered with by the proposed work.
			Staff Comments	*As noted above, all toe rock and geogrid materials will be below the ordinary high water mark and not visible from the public. In addition, the property contains a fisherman's easement along the bank of the Bigwood and a public access easement along the northern property line of the subject property. Neither the fisherman's easement nor the public access easement will be permanently negatively impacted by the proposed project. However, both easements will have temporary closures during construction that will be signed and adequately monitored for public safety. Removal of the sandbags will result in a dramatic improvement in the aesthetic beauty of the river and assist in the river returning to its pre-2017 condition.*
☒	☐	☐	17.88.050(E)18	(Stream Alteration) Fish habitat is maintained or improved as a result of the work proposed.
			Staff Comments	*The proposed project will improve aquatic and avian habitat areas with improved riparian areas that include log barbs, deep rooted plant species, and trees with shade. Robust riparian areas result in reduced flood water velocities, thereby reducing changes of erosion and channeling of the river that diminish refuge areas for fish and other wildlife. The project proposes the removal of some woody debris at key obstruction points in the river channels, that is often supportive of fish habitat. However, some of that woody debris is located in areas of significant gravel deposits and does not support fish habitat. Woody debris harvested from obstruction points will be used in the restoration of the riparian area for the creation of better fish habitat in better established areas.*
☒	☐	☐	17.88.050(E)19	(Stream Alteration) The proposed work shall not be in conflict with the local public interest, including, but not limited to, property values, fish and wildlife habitat, aquatic life, recreation and access to

Floodplain Development Permit Requirements				
1. Evaluation Standards: 17.88.050€				
Compliant			Standards and Staff Comments	
Yes	No	N/A	Guideline	City Standards and *Staff Comments*
				public lands and waters, aesthetic beauty of the stream and water quality.
			Staff Comments	*As outlined above, the proposed project will improve aquatic and avian habitat areas with improved riparian areas that include log barbs, deep rooted plant species, and trees with shade. Robust riparian areas result in reduced flood water velocities, thereby reducing changes of erosion and channeling of the river that diminish refuge areas for fish and other wildlife.*
☒	☐	☐	17.88.050(E)20	(Stream Alteration) The work proposed is for the protection of the public health, safety and/or welfare such as public schools, sewage treatment plant, water and sewer distribution lines and bridges providing particularly limited or sole access to areas of habitation.
			Staff Comments	*The proposed work increases the flood carrying capacity of the area, with some proposed work occurring on the City of Ketchum property. Directly downstream of the subject property is a municipal bridge for Warm Springs Rd that crosses the Bigwood River. Removal of debris jams, increased flood carrying capacity, and reduction of river velocity from improved riparian and floodplain vegetation will reduce the risk of compromise to the bridge during peak flooding events.*
☒	☐	☐	17.88.050(E)21	(Wetlands) Where development is proposed that impacts any wetland the first priority shall be to move development from the wetland area. Mitigation strategies shall be proposed at time of application that replace the impacted wetland area with an equal amount and quality of new wetland area or riparian habitat improvement.
			Staff Comments	*Prior to the 2017 flood event the area east of the eastern bank of the main channel of the Big Wood River (Area #4) was largely in a manicured, non-native state. Groundcover was largely turfgrass with minimal shrubs and trees. Turfgrass extended across the property to the bank of the river on the bank that abuts the main channel of the Big Wood River. Following the 2017 flood, the stream alteration permit that was approved had no delineated wetlands identified by the ACE and no wetland impacts or proposed mitigation. The land reclamation request, similar to what is proposed today, was considered a "repair of uplands" in the 2018 permit approval.* *The repair provision that the previous approval was under is only valid for a short duration following a flood event. Due to the time that has lapsed since the 2018 approval, the repair provision is no longer*

Floodplain Development Permit Requirements				
1. Evaluation Standards: 17.88.050€				
Compliant			Standards and Staff Comments	
Yes	No	N/A	Guideline	City Standards and *Staff Comments*
				available as a permitting approach. Additionally, the soils, hydrology, and plant species have begun to reclaim the area into a more natural riparian and wetland condition. As such, the ACE considers a large portion of Area #4 to now be a jurisdictional wetland. The ACE allows for limited disturbance of jurisdictional wetlands provided the area disturbed is less than 0.10 acre, or 4,356 acres of total disturbance. However, the KMC states that, "Where development is proposed that impacts any wetland the first priority shall be to move development from the wetland area. Mitigation strategies shall be proposed at time of application that replace the impacted wetland area with an equal amount and quality of new wetland area or riparian habitat improvement". *As shown on the Area #4 site plan, the proposed project includes three areas pertinent to reviewing compliance with this standard:* • *Riparian Restoration Area – approximately 3,160 SF (includes areas between the 25 ft riparian boundary to the toe of the slope)* • *Undisturbed Wetlands – 4,008 SF* • *Wetland Fill Area – 3,330 SF (includes all fill areas outside the 25 ft riparian boundary)* *The applicant is requesting latitude from the Commission to allow for the reclamation of property lost during the 2017 flood. As noted above, prior to 2017, there were no wetlands contained on the property and the majority of the vegetation was turf grass with little to no riparian area. The applicant has proposed a middle ground approach to the current condition with the preservation of 4,008 SF of newly designated wetlands that will remain untouched and restoration of approximately 3,160 SF of riparian area that did not previously exist. The only work that will be conducted within the preserved wetland area is the removal of the existing gravel bags and revegetation of the areas under the gravel bag locations.* *The landscape plan provided in the application materials was submitted with the initial application and has not been updated to reflect the proposal outlined above. The planting proposed within the wetland fill area includes some shrubs but consists primarily of Scottish Links fescue, which is a turf grass commonly used in golf*

Floodplain Development Permit Requirements				
1. Evaluation Standards: 17.88.050€				
Compliant			Standards and Staff Comments	
Yes	No	N/A	Guideline	City Standards and *Staff Comments*
				course applications. Although drought tolerant and known to be very hardy, staff does not believe the proposal to be an appropriate planting choice. Blaine County has an approved Riparian and Wetland Planting List (Attachment E) that recommends plant species based on location and inundation conditions present. The City of Ketchum does not have a separately adopted plant list, and relies on the Blaine County list for guidance on how to achieve high quality riparian and wetland restoration. *If the proposed wetland and riparian restoration areas are deemed adequate by the Commission, the wetland fill areas would be considered "Dry Riparian/Mesic Meadow" which means that the area would be temporarily flooded or saturated for short durations. Staff recommends that the area be revegetated using a blend of grasses identified in the Blaine County plant list for those specific applications. Staff recommends the following conditions of approval:* • *The applicant shall revise the landscape plan dated June 7,2024 to reflect the Commission approved extents of wetland fill and revise the planting plan to reflect a mix of appropriate shrubs and grasses outlined in the 2021 Blaine County Wetland and Riparian Plant List for "Dry Riparian" areas. The revised plan shall be provided to the Planning and Building Department for final review and approval prior to any installation.* • *The landscape plan shall be revised to include information regarding the protection and irrigation of the disturbed and revegetated areas to ensure success rates are achieved. Irrigation shall be provided, either permanently or temporarily, for a minimum of two growing seasons. Permanent irrigation is not permitted within the 25-foot riparian zone.*

CONCLUSIONS OF LAW

1. The City of Ketchum is a municipal corporation established in accordance with Article XII of the Constitution of the State of Idaho and Title 50 Idaho Code and is required and has exercised its authority pursuant to the Local Land Use Planning Act codified at Chapter 65

of Title 67 Idaho Code and pursuant to Chapters 3, 9 and 13 of Title 50 Idaho Code to enact the ordinances and regulations, which ordinances are codified in the Ketchum Municipal Code ("KMC") and are identified in the Findings of Fact and which are herein restated as Conclusions of Law by this reference and which City Ordinances govern the applicant's Floodplain Development Permit application for the development and use of the project site.

2. The Commission has authority to hear the applicant's Floodplain Development Permit Application pursuant to Chapter 17.88 of Ketchum Municipal Code Title 17.

3. The City of Ketchum Planning Department provided notice for the review of this application in accordance with Ketchum Municipal Code §17.88.050.D.2.b.

4. The Floodplain Development Permit application is governed under Ketchum Municipal Code Chapters 17.88.

5. The Floodplain Development Permit Application File No. P24-057, as conditioned, meets all applicable standards specified in Title 17 of Ketchum Municipal Code, as more fully described in the Findings of Fact above.

DECISION

THEREFORE, the Ketchum Planning and Zoning Commission approves this Floodplain Development Permit Application File No. P24-057 this Tuesday, October 14, 2025, subject to the following conditions of approval.

CONDITIONS OF APPROVAL

1. The terms of this approval shall be per the provisions of KMC 17.88.050.D.3.G – Terms of Approval.
2. This approval is only for the scope of work outlined in the application narrative and project plans dated September 25, 2025 and October 9, 2025 respectively and as conditioned hereon.
3. Any modification to approved plans as referenced in this approval shall be considered an amendment to this permit, and may require a public hearing, considered for review under the requirements of KMC 17.88.050.D.
4. The applicant shall install the geogrid material at a depth that provides a minimum of eight inches of topsoil in all locations. Twelve inches of topsoil is preferred to better support the revegetation of the disturbed areas. The applicant shall conduct an additional analysis and provide such to the Planning and Building Department for review, to determine if 12 inches of topsoil can be placed without jeopardizing the No Rise and No Adverse Impact certifications currently achieved by the project. Based on the results of the analysis, city staff may require additional topsoil be placed in key areas to increase success rates for revegetation and bank stability.
5. Prior to removal of debris in Areas #1 and #2, the applicant shall obtain written approval of the scope of work and written authorization for access and construction on property not owned by

the applicant. If no such approval can be obtained, the scope of work identified for Areas #1 and #2 shall not be completed. Approval for work conducted on City of Ketchum property requires approval of an encroachment permit by the Ketchum City Council.

6. As part of debris removal activities, any rotted or unsuitable wood removed from debris jams shall be placed within the vicinity of the project area to decompose naturally rather than being hauled off and disposed.
7. The landscape plan shall be revised as follows and submitted to the Planning and Building Department for review, comment, and final approval prior to installation of any landscaping:
    a. The applicant shall revise the landscape plan to reflect the Commission approved extents of wetland fill and revise the planting plan to reflect a mix of appropriate shrubs and grasses outlined in the 2021 Blaine County Wetland and Riparian Plant List for "Dry Riparian" areas.
    b. The landscape plan shall be revised to include information regarding the protection and irrigation of the disturbed and revegetated areas to ensure success rates are achieved. Irrigation shall be provided, either permanently or temporarily, for a minimum of two growing seasons. Permanent irrigation is not permitted within the 25-foot riparian zone.
    c. Include a minimum of five trees within Zone 2 of a species identified in the Blaine County Wetland and Riparian Plant List appropriate for the zone immediately behind the streambank. The landscape plan shall also be revised to increase the planting density of shrubs within the Zone #2 area from six per 1,000 SF to 10 per 1,000 SF.
    d. Include a minimum of five trees within Zone #3 of a species identified as bank stabilizers in the Blaine County Wetland and Riparian Plant List. Cottonwood trees located at the top of the slope are preferred, however, other species may be considered. Grouping of trees may be appropriate provided the locations of trees are strategically placed to maximize bank stabilization at key pressure point locations (south end of bank stabilization).
    e. Require a minimum of two staggered rows of willows at a spacing no greater than five feet. Coyote Willows are preferred at the toe of the slope, however, a similar species may be considered.
    f. Propose a new grass mix for the riparian area with species identified in the Blaine County Wetland and Riparian Plant List for undergrowth grasses and forbs in riparian areas. The landscape plan shall also be revised to propose an alternate planting method for grasses such as hydro mulch, intermittent plug planting, or other methods with greater success rates in riparian areas.
    g. Identify temporary fencing requirements for trees and shrubs for a minimum of three growing seasons to ensure adequate success rates of plantings.
8. The applicant shall make every reasonable effort to complete the project in 2025. In the event the project cannot be completed in 2025, the large gravel bags running the length of the Big Wood shall be removed and the disturbed area stabilized no later than November 15, 2025. The applicant shall provide a temporary stabilization plan for review and approval by the city's Floodplain Administrator prior to removal. Upon completion of gravel bag removal, the applicant shall notify city staff that work has been completed and schedule an on-site visit with staff to confirm compliance with the approved stabilization plan.
9. Work that is not completed in 2025 shall be completed in 2026 no earlier than peak spring runoff periods and no later than October 15, 2026.

10. Prior to start of construction in 2025 or 2026, the applicant shall submit a comprehensive construction management plan for review and approval by the City Engineer and City Floodplain Administrator. The construction management plan must address all applicable requirements of KMC Chapter 15.06 – Construction Activity Standards.
11. The Administrator shall conduct site inspections of work in progress. The Administrator shall make as many inspections of the work as may be necessary to ensure that the work is being done according to the terms of this permit, approved plans, and KMC 17.88. In exercising this power, the Administrator has a right, upon presentation of proper credentials, to enter the property at any reasonable hour for the purposes of inspection or other enforcement action.
12. If construction or improvements differ from the approved plans, such work may be subject to removal or require an amendment to the permit at the applicant's expense.
13. Following project completion, upon an annual inspection, if 80% or fewer of the plants indicated on the Landscape Plan have not survived, the property owner shall re-install new plantings. This includes ground cover and grasses, shrubs, and trees.
14. No use of restricted use chemicals or soil sterilants are permitted within one hundred feet (100') of the mean high-water mark on the subject property at any time (KMC 17.88.040.C.3).
15. All applications of herbicides and/or pesticides within one hundred feet (100') of the mean high-water mark, but not within twenty-five feet (25') of the mean high-water mark, must be done by a licensed applicator and applied at the minimum application rates (KMC 17.88.040.C.4).
16. Application times for herbicides and/or pesticides shall be limited to two (2) times a year; once in the spring and once in the fall unless otherwise approved by the City Arborist (KMC 17.88.040.C.5).
17. It shall be unlawful to dump, deposit, or otherwise cause any trash, landscape debris ,or other material to be placed in any stream, channel, ditch, pond, or basin that regularly or periodically carries or stores water.

Administrative Appeal Notice: Applicant has the opportunity, pursuant to Ketchum City Code 17.20.030(F) and 17.144, to administratively appeal this Decision to the City Council.

Regulatory Taking Analysis Notice: Applicant has the opportunity, pursuant to Idaho Code 67-8003, to submit a written request for a regulatory taking analysis of this Decision.

Findings of Fact adopted this 14th day of October 2025.

Neil Morrow, Chair
City of Ketchum
Planning and Zoning Commission