



City of Ketchum
Planning & Building

PROJECT: Swan Stream Alteration/Bank Stabilization

PERMIT #: P18-131

OWNER: Robert and Sandra Swan (401 Northwood Way)
City of Ketchum (Ketchum FR NWSE TL 7801 SEC 12 4N 17E River Bed)

APPLICANT: Robert and Sandra Swan

REPRESENTATIVE: Chuck Brockway, Brockway Engineering PLLC and Evan Robertson, Robertson & Slette PLLC for Robert and Sandra Swan

LOCATION: 401 Northwood Way (Lot 12, Chateaux of Northwood)
Adjacent riverbed (Ketchum FR NWSE TL 7801 SEC 12 4N 17E River Bed)

ZONING: General Residential – Low Density (GR-L) and Floodplain Management Overlay (FP), Waterways and Floodway subdistricts

REQUEST: Amendment to permit P18-131 issued October 19, 2019. Construction has not commenced. Permit remains valid under an administrative extension. Scope of work includes stream alteration, bank stabilization, land reclamation and restoration.

PRIOR/ASSOCIATED: 15-144, P17-055, P17-134, P19-044

BACKGROUND

At the March 9, 2021 Planning and Zoning Commission meeting, the Commission continued the request to amend Permit P18-131 to March 23, 2021. On March 23, 2021, the hearing was continued to March 30, 2021. Attached are all the comments that were submitted between publication of March 23, 2021 staff report and the March 23, 2021 meeting date. No new staff analysis is provided.

Attachments:

Public Comments submitted between March 18, 2021 and March 23, 2021.

March 23, 2021 Staff report and attachments

GEOFFREY CLAFLIN RUSACK

411 Northwood Way
Ketchum, Idaho

Planning & Zoning Commission
City of Ketchum
c/o Suzanne Frick
P.O. Box 2315
Ketchum, Idaho 83340
sfrick@ketchumidaho.org

March 23, 2021

Via Email Only

Re: Revised Swan River Restoration Project
Stream Alteration Permit (P17-134)

Dear Commissioners:

I am in receipt of and have had a chance to review the Swans' letter to you of March 21, 2021. Unfortunately, once again, the Swans are trying to portray me in as dark a light as possible. At absolutely no time have I been trying to take advantage of their misfortune. Rather, Alison and I are simply asking for a fair exchange. It is mind boggling to me that, after years of discussing this work and their agreeing 100% to granting a view corridor covenant, they, in these last few months, are saying that it is unfair, and they never agreed to it.

Again, and again, both orally and in writing, the Swans not only agreed to providing a view corridor, but they wanted to do so because it was best for all parties. It was they and their counsel that prepared a formal agreement with the view corridor in it – including that it would run with the land. On November 10, 2019, in an email Sandra wrote to her engineers and attorney, she stated in pertinent part, the following:

"Hello All,

Geoff and I just had a very productive conversation regarding the terms of an ongoing agreement to complete the work as permitted. I am hoping that we can provide Geoff with everything he needs by end of day Wednesday for review. I am including all parties on this email, to ensure we are all on the same page. Geoff - If I have misrepresented our conversation in anyway, please reply to all of us so we can correct the wrong. We want to do what is best for all parties, and I think we all share the same intent.

I believe we need all the following to happen to reach an agreement, nothing else:

View Corridor - We have agreed to maintain our vegetation in a manner consistent with not impeding Rusack's view corridor. We will agree to trim the riparian vegetation to a specific height regularly, and if we fail to do so, we will give Rusack permission to enter our property and trim the vegetation accordingly. Maybe someone can simply draw lines on a plan in overview that outlines what constitutes the "view corridor".

Later, on November 26, 2019, she sent me the agreement that her attorney had drawn up and wrote the following (and despite her now claiming that I am at fault for things taking so long, in this email below she thanks me for my patience!):

"Hi Geoff,

I can't believe it took this long, but here it is. LMK your thoughts - if all looks good I will have my attorney forward it to yours. Thanks for your patience! - Sandra"

This agreement was clearly written by Sandra and her counsel (not my attorneys) and contained the following language with regard to the view corridor:

"Swan agrees, for itself and all succeeding owners of the Swan Parcel, not to allow any vegetation located upon or within the east bank of the River or the adjacent twenty-five foot wide Riparian Zone on the Swan Parcel to exceed five feet in height, and further agrees that in the event Swan fails or refuses to maintain such vegetation height restriction, Marsupial, and any succeeding owner of the Marsupial Parcel, shall be entitled to enter upon the Swan Parcel to trim any such vegetation accordingly, or to seek a court order of specific performance compelling the owner of the Swan Parcel to adhere to this requirement."

All of this was done as bargained-for consideration, and the agreement they prepared was sent to me well over a year and a half ago. In point of fact, the Swans were accepting of the terms of that agreement when I wrote Sandra on September 4, 2018 about the view corridor.

On a separate note, very oddly, even though the Swans work will immediately start eroding my river floor and my application plans include addressing that issue, they are now opposed to doing both projects simultaneously. Previously, however, the Swans were once concerned that my application might get approved before their project could start, and they asked that I wait until both projects could be completed at the same time. On July 19, 2020, Sandra wrote my engineer requesting the following:

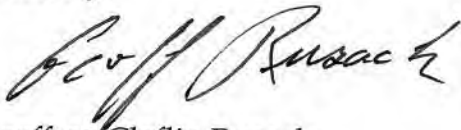
"Thanks for the summary Nick. We appreciate the concession to add the riffle, but would ask that one additional item be added to the permit. We can only support this permit if there is a clause that ties our two permits together in terms of the water diversion. We would like there to be a condition that clearly states if the Swan's remediation has not yet taken place at the time Rusack diverts the river, the two projects need to be completed simultaneously. It is inconceivable to ask us to take the risk of Rusack obtaining approval and completing his work prior to us obtaining permission from Rusack. I suspect the regulatory agencies will require this anyway, but we need to see it in the submittal."

Please note that, once again, the Swans had refused to amend their application to include the riffle, even though it was needed due to the immediate damage their work would cause. Despite that, thinking that we had an agreement with the Swans over all of these issues, we put the riffle into our application, as well as readily agreeing to do both projects at the same time.

In our remediation work, we ultimately will put a barb into our property. However, that work is taking place on our land, not theirs, and is being done to protect our property. In contrast, the Swans want to do work on our land for the purpose of protecting their property.

The Swans have said that they will be amenable to negotiating a resolution. We, of course, will as well. We will not, however, go in with terms changed. Everything needs to be on the table, and it needs to be done in a structured fashion, possibly using a mediator of both of our counsels' choosing. If not, I would hope you will follow the law and deny the application.

Sincerely,

A handwritten signature in black ink, appearing to read "Geoff Rusack", with a stylized flourish at the end.

Geoffrey Claflin Rusack

cc: Alison Wrigley Rusack
Ed Lawson
Katie Franklin
Nick Kraus

Robertson & Slette, p.l.l.c.

ATTORNEYS AT LAW



J. Evan Robertson
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MEMORANDUM

TO: Ketchum Planning and Zoning Commissioners

VIA EMAIL: Suzanne Frick: sfrick@ketchumidaho.org

FROM: EVAN ROBERTSON

DATE: March 22, 2021

RE: Swan Stream Alteration/Bank Stabilization

Commissioners,

As you know, I represent Bob and Sandra Swan in their effort to obtain an amendment to their current Stream Alteration Permit No. P18-131 which was approved by Ketchum on October 19, 2019. The proposed amendment was discussed in depth at your meeting of March 9th, and the matter was continued to your meeting of March 23rd for final action.

The purpose of this memo is not to belabor the history of the Swan Permit No. P18-131 nor the merits of the pending amendment to it, but simply to provide comments on the staff report provided to you for the meeting on March 23rd, by, I assume, Suzanne Frick and/or Brittany Skelton. My comments are also intended only to augment the written response to the staff report submitted separately by my clients, a copy of which is also being included with this submittal to make sure it reaches you.

My comments include the following:

1. Assuming, for the sake of argument only, that the staff report is correct in suggesting that the actions you can take on the Swans pending application for an amendment to Permit No. P18-131 are limited to the three options listed on page 6 of the staff report, I concur with my clients in urging you select Option No. 2, requiring one last round of negotiations between the Swans and Marsupial Properties LLC in an effort to reach a mutually acceptable agreement that would eliminate the need for the pending amendment and allow immediate completion of all bank stabilization work already approved, including stabilization of approximately seventy (70) feet of the riverbank abutting the Marsupial Property. I recognize this is your option, not ours, but we support it and would appreciate your continuation of these amendment proceedings to allow a reasonable amount of time to facilitate such negotiations.

2. My clients and I do not approve of Option No. 3 in the staff report, which would result in the immediate denial of our pending application for an amendment to Permit No. P18-131, coupled with a request that my clients join with an amorphous group of participants in search of an undefined “holistic comprehensive solution” to a Big Wood River problem that is not defined or described in the staff report. This option would likely take years to explore, during which time the Swan property would continue its current vulnerability to additional damage from subsequent flood events. We do not believe this option has been properly investigated or defined, and asking the Swans to incur further delays in repairing and protecting their property is unacceptable.

3. Option No. 1 of the staff report is also unacceptable, and like Option No. 3 likely result in an appeal to the City Council and, if necessary, then an appeal and lengthy proceedings in the judicial system particularly if the denial is based upon the unacceptably vague standard of evaluation in Section 17.88.050(e) 14 of the Ketchum City Code, as was suggested in the earlier staff report for your meeting of March 9, authored, I believe, by Brittany Skelton.

My clients are extremely anxious to complete their proposed stream alteration project, which was professionally designed by Charles G. Brockway of Brockway Engineering, PLLC, to repair and reclaim areas of their property destroyed or damaged in the 2017 flood, but even more importantly to protect their property and home from future flood events. Despite all of their efforts, and the approval by the U.S. Army Corps of Engineer, IDWR, and Ketchum of their original Stream Alteration Permit No. P18-131, my client’s property remains seriously damaged, and vulnerable to future flooding after almost

Monday, March 22, 2021

Page | 3

four years. This is a travesty, and they need your help. Please continue proceeds on our amendment application to allow the Swans to attempt further negotiations with Marsupial Properties, LLC and the Rusacks, and if negotiation prove unsuccessful, please allow us an opportunity to then present additional information and arguments before taking final action on our amendment application.

Thank you,

A handwritten signature in blue ink, appearing to read "J. Evan Robertson", with a stylized, flowing script.

J. Evan Robertson

Planning & Zoning Commission
City of Ketchum
% Suzanne Frick
sfrick@ketchumidaho.org

March 21st, 2021

Via Email Only

Re: Swan Response to Rusack's Letter

Dear Commissioners,

From the very start of this process we have strived to work with ALL parties to mitigate risks, alleviate concerns and comply with all written laws and ordinances. Despite our best efforts, our neighbors are clearly trying to take advantage of our misfortune to garner benefits unrelated to our permitted work. We consider this to be wholly unacceptable, not to mention it has placed us all in this very uncomfortable position of having to work around the Rusack's demands, rather than the law and common sense.

To put it very simply, our original offer still stands - we will pay to mitigate all known risks and will agree that unless otherwise required in our permit, no vegetation associated with our permitted work will impede the Rusack's view for as long as we own the property. We will not grant them view corridor rights across our property for eternity, nor will we tie our two permits together. We have amended our permits in an attempt to detach ourselves from the constraints the Rusack's are imposing, not increase them. Furthermore, the suggestion that the version of the legal agreement they presented was both written and agreed to by us is utterly false. The document was coauthored by both our attorneys and was never agreed to by either party. It was simply yet another attempt to get the Rusack's constantly changing demands down in writing.

We find it very disconcerting that the Rusack's feel they deserve something in return for allowing us to reclaim some of their most valuable land and reinforce their unstable and unprotected bank, while trying to protect our property. Both of his hired engineers recommended he protect his entire bank, and both Mr. Rusack and his current engineer admitted these actions would make the Rusack's far better off than they are today. Furthermore, we are asking nothing more of the Rusack's than they are asking of their upstreams neighbors or are seeking permission to do to their own property. Our permit does not require staging ANY heavy equipment on his land yet his permitted work would. He is

requesting a temporary diversion dam be placed in front of his neighbors, and his permit includes log barbs, vegetation and bank reinforcement on both his and his neighbors property. Why are these things acceptable to him on his own permit but not ours, especially when we have made it clear our permitted work will NOT impede his view? Similarly, if the Rusack's are so concerned with erosion why won't they agree to our work or amend their own permit?

In summary, we have always been, and remain more than willing to mitigate all risks, but we are not willing to endure more delays or decrease our property value for the sole benefit of increasing the value of the Rusack's, by granting them something no homeowner in Ketchum is entitled to by law. Despite more than 3 years of trying to reach an agreement with the Rusack's, we are willing to make one more attempt to reach a mutually acceptable agreement prior to the next meeting, if they are willing to drop their request for view corridor rights.

Sincerely,

Handwritten signatures of Bob and Sandra Swan, separated by a plus sign.

Bob & Sandra Swan

Hemingway Chapter
Trout Unlimited

121 Audubon Place
Hailey, ID 83333
208 720 9218
Richardsonah1@gmail.com
www.hemingwaytu.org



MARCH 19, 2021

Planning and Zoning Commission
City of Ketchum
City Hall
Ketchum, ID 83340

Comment regarding Swan Modified Stream Alteration Permit

Dear Commission and Staff:

These comments are filed on behalf of the Hemingway Chapter of Trout Unlimited.

The Planning & Zoning Commission is facing a difficult decision with precedent implications for the Big Wood River. In these comments, we explain why the decision is important and must be made within the context of the accumulated knowledge of the River and the most recent Big Wood River Atlas recently completed by Blaine County.

The Big Wood River (BWR) is a wonderful asset for our valley, but its health has been severely impacted over the years by development and poor planning. The local jurisdictions, adjoining property owners, and river users need to fix it.

Development along the River has dramatically reduced the river's normal hydrologic function and damaged its habitat for trout and other wildlife. Cottonwoods, willows and other native vegetation and the woody debris that gave the river its name have been removed from the river, jeopardizing bank stability and eliminating shade. Over 40% of the river's banks have been armored to protect properties. This has had the effect of increasing the velocity of the river, altering the natural sinuosity of a free-flowing river, preventing the river from accessing its normal floodplain, and increasing flood damage potential.

The expected outcomes of any major restoration effort must be tempered by recognition of the existing human constraints -- residences, roads, bridges, irrigation diversions and other infrastructure -- imposed on the River. While we can never restore the River to its former wild state, many studies indicate there is a lot we can do to remediate the harm we have caused and to stop further deterioration of its natural hydrology and habitat for trout and other wildlife.

Studies Overview

Below are some notable studies, including two very expensive \$100,000 -150,000 studies of the River, with their major conclusions and recommendations to restore a healthy stream supporting abundant fish and other wildlife that will mitigate flood damage:

* *Effects of Stream Alterations on Rainbow Trout in the Big Wood River, Idaho*, Russell F. Thurow, Fisheries Research Biologist, Id. Dept. of Fish and Game, 1988.

The study found that, while the BWR “may be a shadow of its former fishery”, it still had a respectable wild rainbow population with growth rates comparable to the Henry’s Fork and Silver Creek. A significant finding was that **unaltered reaches contained 8 to 10 times the fish densities of stretches where rock revetments (riprap) had been installed and/or cover and woody debris had been removed.**

**Big Wood Fishery Assessment*, Wood River Land Trust, May 23, 2005

This assessment by a staff member of the Wood River Land Trust (WRLT) used existing studies and research to identify the factors that limited the health and productivity of the BWR. Noting the “vital role” the river has “in our vibrant local economy”. The report describes the importance of local jurisdictions and the **“adoption of local ordinances and state laws to regulate development of the floodplain, specifically with regard to buffer zones, steps to maintain “natural sheet flooding across the floodplain”, alternatives to riprap, requiring river and bank restoration as part of the subdivision approval process and limiting water withdrawals. “**

**Geomorphic Assessment of the Big Wood River*, Cygnia Rapp, Consulting Geomorphologist, December 2006

The study advises that bank hardening activities (e.g., riprap) “do not provide a long-term solution posed by flood and erosion hazards”, but actually contribute to the problem. It does suggest that preserving and restoring sinuous reaches that are not entrenched, have intact riparian cover, and connect other braided or meandering sections may provide “the greatest biological benefit for the lowest cost”.

**Final Geomorphic Assessment Report, Big Wood River, Blaine County, Idaho*, Biota Research and Consulting, Inc. (Biota), 2016

A major study commissioned by Trout Unlimited (TU), the Wood River Land Trust, the Bureau of Land Management (BLM) and others describes the functioning and impaired channel conditions from the SNRA to Magic Reservoir. **It specifies various approaches that can be utilized throughout the river to**

improve “flood attenuation” and thereby reduce flood hazard, improve the continuity of sediment movement, increase channel stability and reduce bank erosion, including improving functional channel geometry, utilizing wood revetment bank stabilization techniques instead of rip-rap rock, installing rock stabilization with willow bundles where suitable, floodplain improvements”.

**Preliminary Estimates of the Economic Effects of Stream Restoration on the Big Wood Valley, Idaho, Philip S. Cook and Dennis R. Becker of the University of Idaho College of Natural Resources, August 2016*

This report estimates that improved fishing alone would increase non-resident angler spending by \$69,000 in year 1 to almost \$1.3 million in years 15-20. The benefits from reduced flood risk, improved water quality and increased aesthetic appeal were not considered, nor was the benefit to resident anglers.

Finally the last study, completed in 2020, by the County is a **game changer** for the information, river recommendations and GIS overlays that it provides as a resource for government and private decisionmakers. This \$150,000 three-year study should be the new “North Star” for identifying and judging ALL future projects affecting the River.

**Big Wood River Atlas, Cardno and Ecosystem Sciences (Cardno). 2020*
<https://www.co.blaine.id.us/509/Big-Wood-River-Atlas-2020>

This major study, which was commissioned by Blaine County and covers the 42 miles from the SNRA to Stanton Crossing, was designed to accomplish five objectives:

1. Build community trust and collaboration over river management issues.
2. Understand historic and current processes.
3. Develop a flood risk management framework that supports the connectivity of floodplains.
4. Develop a decision-making framework to identify and evaluate projects that work to restore natural river processes and encourage aquatic habitat formation.
5. **Assist river managers with identifying best management practices for development within the river.**

The study points out that, as a trout fishery, the Big Wood River is “a significant contributor to the economic health of the valley”. The most critical factor limiting the trout population is the amount and quality of fish habitat, with trout densities in unaltered reaches 8 to 10 times greater than altered reaches (cover impaired or having rock revetments). The study emphasizes the importance of large woody debris in providing good habitat for trout and improving the river’s hydrology. Large stable log jams played a major role in the development and maintenance of the pre-development “anastomosing” channel system described in the Rapp study. This type of channel system is more resilient to disturbances such as flood, fire and large sediment events and creates a more complex mosaic of habitat types that support fish. The study recommends reintroducing large wood to the river but only after proper geomorphic and engineering analysis (see Appendix A). Other factors noted in the study as influencing channel form behavior and habitat are (a) sedimentation, (b) riparian vegetation (which reduces the risk of flood, erosion and bank

failure and improves aquatic habitat and water quality), and (3) rock revetments or “riprap” (which adversely affects stream morphology, degrades fish populations, and exacerbates flooding and erosion). The study recommends removal of riprap deemed not critical, modification of existing riprap to achieve greater hydraulic complexity and limiting construction of new riprap, warning that riprap “does not eliminate the potential of an area to be re-captured by the river or be subject to future bank loss.” In terms of steps to be taken to maintain and restore the river, the **study recommends projects in the following priority:**

1. Protect remaining intact functional floodplain through acquisition, easements, and legislation.
2. Reconnect channels where evidence shows that removing confinements such as riprap and levees would open “prior channel occupation”.
3. Reconnect floodplain processes in areas where development has encroached into the floodplain and embankments have been constructed restricting access to the floodplain.
4. Restore riparian vegetation where it has been removed or modified to the point of compromised river function.
5. Use flood fence and engineered LWD [large woody debris] jams to stabilize “dynamic channel planform” (control sediment in a way that reduces flooding and channel erosion while improving habitat).

The study identifies 22 river sections with opportunities and challenges in each of the sections. Pages 26-28 of the study (see attachment labeled Flood Hazard Overlay Sequence) show how overlays denoting FEMA boundaries, historic flooding, specific flood years, aerial photography and more are illustrated graphically in each section. The Swan’s amended SAP falls into Section 5 (see attachment) and can be found on page 46 of the BWR Atlas:

Adams Gulch to Warm Springs Creek. The 1.8 mile section in north Ketchum has largely maintained uniform channel position except in the Hemingway/Northwood Natural Area above Warm Springs Bridge. This natural undeveloped area has a high value in floodplain function since it is upstream of a highly developed zone. Side channels in this area offer excellent opportunities for reconnection. The section has significant bank armoring, especially along the east bank above Warm Springs Bridge.

Applying these principles and information accumulated from the various studies, the Hemingway Trout Unlimited chapter recommends that the Ketchum Planning and Zoning Commission deny the Swan’s modified SAP application. We come to this conclusion for the following reasons:

1. This reach of the River is an area with high value for floodplain function and therefore affects all of the properties downstream.

2. The current application will not be a long-term solution, even to the Swans' own bank erosion.
3. The Commission should recommend that the property owners in this reach, including the City of Ketchum, the Community Library, the Swans, the Rusacks, and the Northwood Town Homes develop a reach-wide solution that will reduce bank erosion, open the east and west channels to the River, remove bank hardening where possible, and restore the riparian zone.

For our part, the Chapter commits to cooperate in this effort, including seeking funding for an initial concept study that applies the standards in the Big Wood River Atlas. And we hope the City will commit to expedite the necessary permitting to allow work in the river to be completed before the high-water season in 2022.

The River deserves the opportunity to reconnect channels and reconnect floodplain processes in this area where development has encroached into the floodplain, and to restore riparian vegetation where it has been removed or modified to the point of compromised function. The Big Wood River Atlas lays out the standards. The City should use this first, Atlas Study SAP as a model for all future SAPs, reaching a result based on the study's recommendations.

Sincerely,

Alan Richardson
President

Adams Gulch to Warm Springs Crk



River Reach Locator Map

REACH 5

Legend

- 2017 Channel Trace
- Irrigation Diversion
- Bridge
- FEMA 100 Year
- Levee
- Rock Armoring
- Historic Channel Migration Zone

Flood Risk Zone

- Flood Risk Zone I
- Flood Risk Zone II

Zone of Recent Erosion

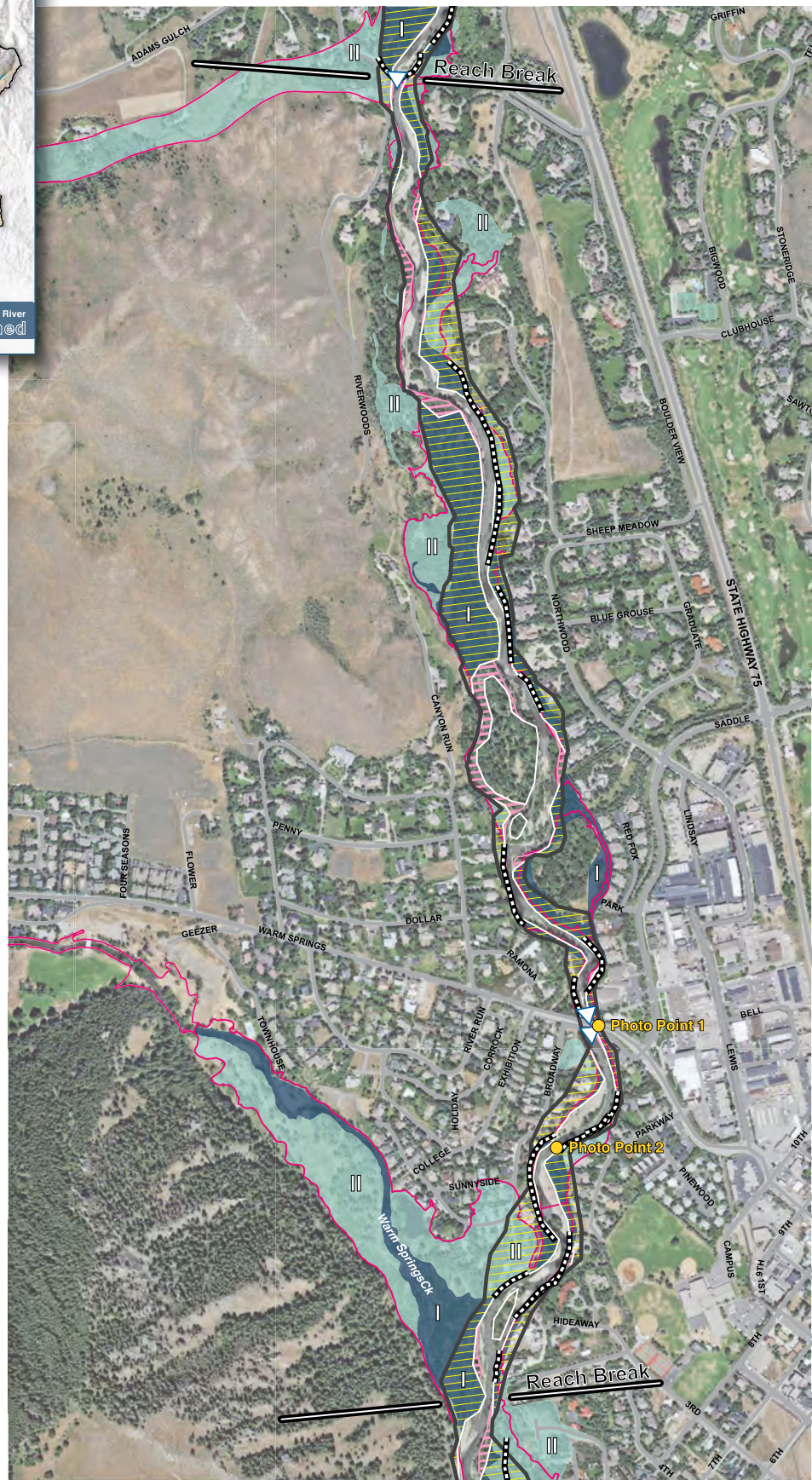
- 2015 to 2017 Erosion

Zone of Potential Erosion

- High Erosion Potential
- Moderate Erosion Potential
- Photo Point

Reach Description

The 1.8-mile reach from Adams Gulch to Warm Springs Creek runs through the heart of the City of Ketchum. The channel has maintained uniform channel position within this reach since photo records are available (1943-present), with the notable exception of the river corridor through the Hemingway/Northwood Natural Area. Significant bank armoring is located along the eastern bank upstream of Warm Springs Bridge and along both banks downstream to protect homes from river erosion.



REACH MAP -AERIAL

2015 Aerial Photo and Flood Risk

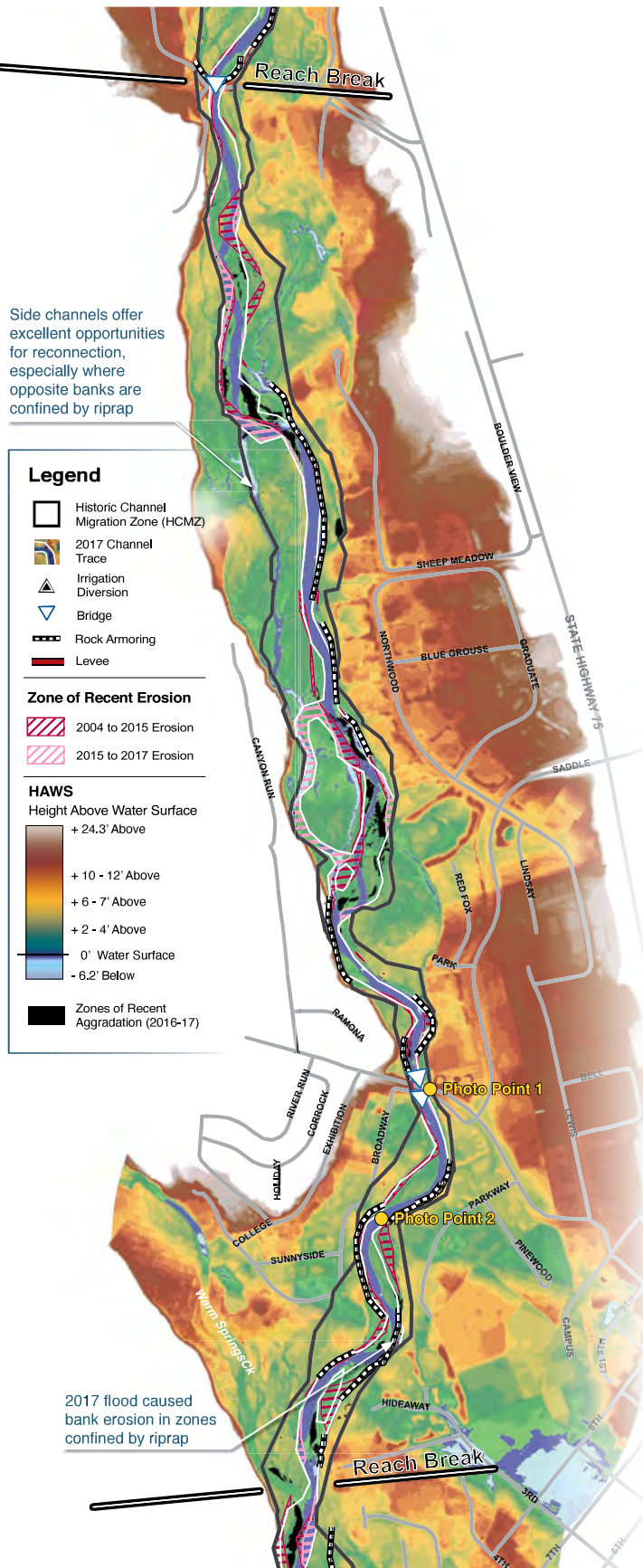


0 1,000 2,000
Feet

Average FEMA Floodplain Width: 444 feet
2017 Average Bankfull Channel Width: 118 feet

REACH 5

Reach Characteristics



REACH MAP - HAWS

Height Above Water Surface (HAWS), Erosion Hazards, HCMZ

Height Above Water Surface mapping of the Big Wood River uses a technique to show elevation difference of the floodplain topography relative to the river water surface. The map shows relic features in the floodplain created by the river, such as abandoned channels, meander bends, and oxbows. This illustrates how the river has actively meandered across the width of the geomorphic floodplain.



Reach 5 - Photo Point 1

Looking downstream from Warm Springs Rd bridge

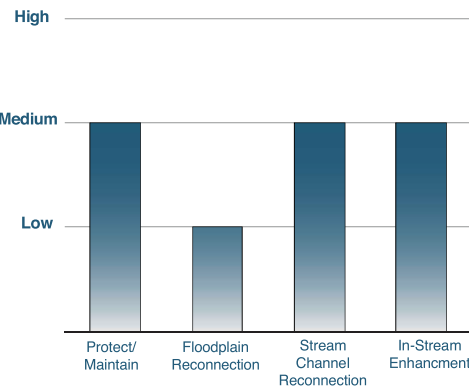


Reach 5 - Photo Point 2

Looking downstream, riprap wall in background

Reach Characteristics	Reach Average	Big Wood River Average
Sinuosity	1.13	1.15
Gradient (ft/ft)	0.0087	0.0064
HCMZ Width (ft)	350	513
Bankloss 2015-2017 (acre/river mile)	2.5	4.9
Bankloss 2004-2015 (acre/river mile)	3.7	6.8
Bank Stabilization (%)	30%	24%

This reach presents a relatively narrow HCMZ and FEMA floodplain potentially caused by its close proximity to Ketchum. The reach also experienced about 2x less bankloss between 2015-2017 than average, has the fourth steepest river gradient, and was the first reach to experience noticeable areas of aggradation between 2016-2017.



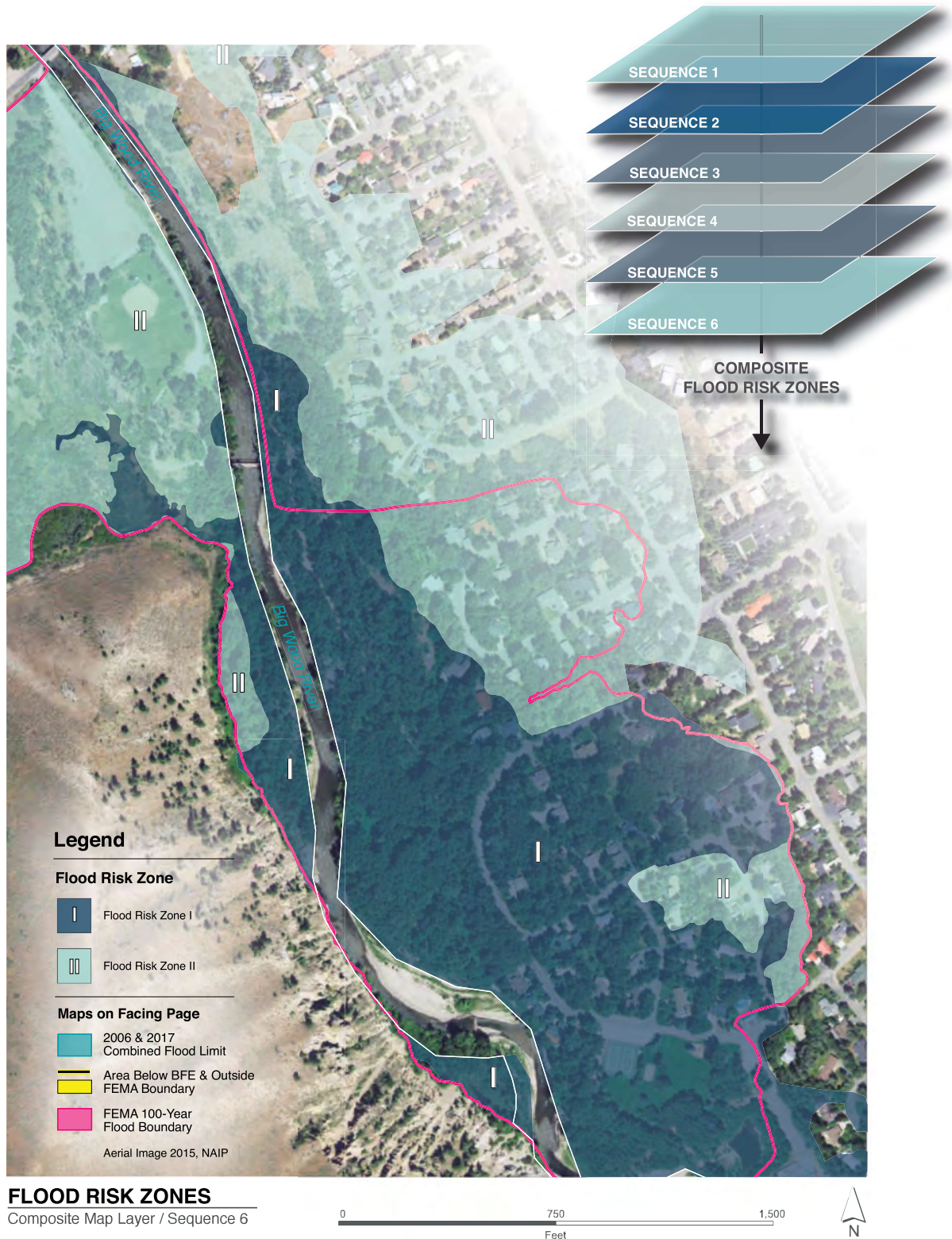
Reach Project Potential

The western floodplain throughout the upper sections of this reach are currently undeveloped and subject to some protection in the Northwood Natural Area. These areas serve a high value in floodplain function upstream of a highly developed zone. Efforts should be made to maintain and expand protected status, as well as restore channel processes in areas of prior channel occupation.

Flood Hazard Sequence

Step 5 - Develop Preliminary Flood Zones. Four initial flood zones were created based on the overlay of the zones developed through steps 1-4. Those 4 zones are: (1) Within the FEMA Zone SFHA and within the known flood limits; (2) Within the FEMA Zone SFHA and beyond the known flood limits; (3) Outside the FEMA Zone SFHA and within the known flood limits; and (4) Outside the FEMA boundary but below the BFE flood surface.

Step 6 - Develop Two Flood Risk Zones. Using the overlay of the various sources of flood analysis, two flood risk zones were developed, shown on the opposite page, and presented in the reach maps. Flood Risk Zone 1 represents areas that have experienced flooding in either 2006 or 2017, and fall within the FEMA Zone SFHA. Flood Risk Zone 2 represents areas that fall within the FEMA Zone SFHA. Flood Risk Zone 2 represents areas that fall within the FEMA Zone SFHA, but may have not flooded during 2006 or 2017, and adjacent areas below the BFE elevation.



Map Sequence 1



Sequence 1: FEMA 100-Year Flood Boundary

Map Sequence 2



Sequence 2: Observed Flood Limits from 2006 & 2017

Map Sequence 3



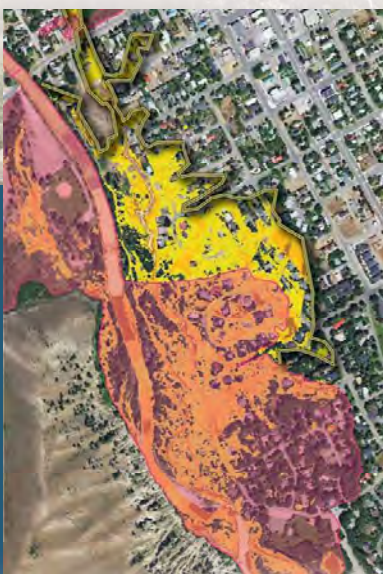
Sequence 3: FEMA 100-Year Flood Boundary and Base Flood Elevation (BFE)

Map Sequence 4a



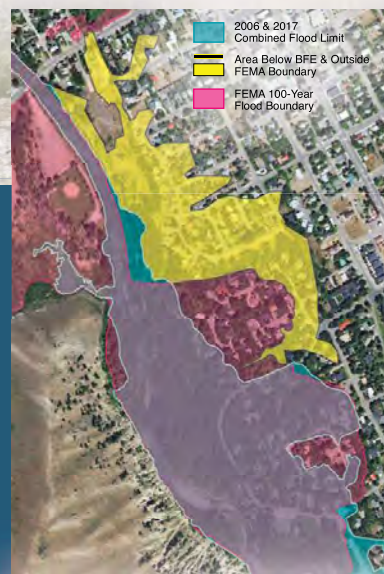
Sequence 4a: Relative Elevation Model (REM) and BFE

Map Sequence 4b



Sequence 4b: BFE / REM comparison with FEMA 100-Year Flood Boundary

Map Sequence 5



Sequence 5: Output of Layered Analyses

Channel Migration/Erosion Hazard Sequence

The purpose of this channel migration study is to inform the community of the dynamic nature of the river, and identify areas susceptible to channel migration and riverbank erosion. Mapping of the Historical Channel Migration Zone (HCMZ) and identification of the Zones of Potential Erosion relied upon a procedure modified from two methodologies outlined in the following documents: (1) A Framework for Delineating Channel Migration Zones (Rapp and Abbe, 2003) and, (2) A Methodology for Delineating Planning-Level Channel Migration Zones (Olson et al, 2014). Historical channel migration rates were not determined in this study, nor projected into the future to estimate future channel positions. The intent of this study was not to develop regulated CMZ boundaries.

The following steps were completed to identify the Historical Channel Migration Zone and to develop the Zones of Potential Erosion, both of which are presented on a reach-by-reach basis in Chapter 4 of this Atlas:

Step 1- Georectification of historical aerial photos.

The Aerial photos of the project area were accessed from multiple sources, including Blaine County and the National Aerial Imagery Program (NAIP). These aerial images were then georectified and projected to the NAD 1983 Central Idaho State Plane coordinate system. Time periods selected for aerial photo analysis are intended to span significant flood events and other meaningful watershed events such as fires and land development. The following years were georectified and used in the analysis- 1943, 1966, 1986, 2004, 2015, and 2017.

Step 2 - Delineation of the active channel margins for each photoperiod.

The margins of the active, or bankfull channel, were delineated for each georectified photoperiod and digitized using Geographic Information System (GIS) ArcMap software. The extents of the active channel were identified using geomorphic and vegetative indicators. To maintain consistency in interpretive bias, a single analyst completed all channel boundary delineations, with review conducted by a senior geomorphologist.

Step 3 - Overlay all historical channel traces and set the landward limits of the combined channel occupation area as the HCMZ.

The total area occupied by the channel within the known historical record delineates the Historical Channel Migration Zone.

Step 4 - Compare HCMZ to modern (2017) channel boundary and delineate Zones of Moderate Erosion Potential.

This step considers the potential of the river to re-occupy areas between the current channel location and areas of prior channel occupation. River channels tend to migrate within their former HCMZ unless cut off or confined from doing so. The area in between the 2017 channel and the edge of the HCMZ is considered to have Moderate Erosion Potential unless a High Potential Area is identified.

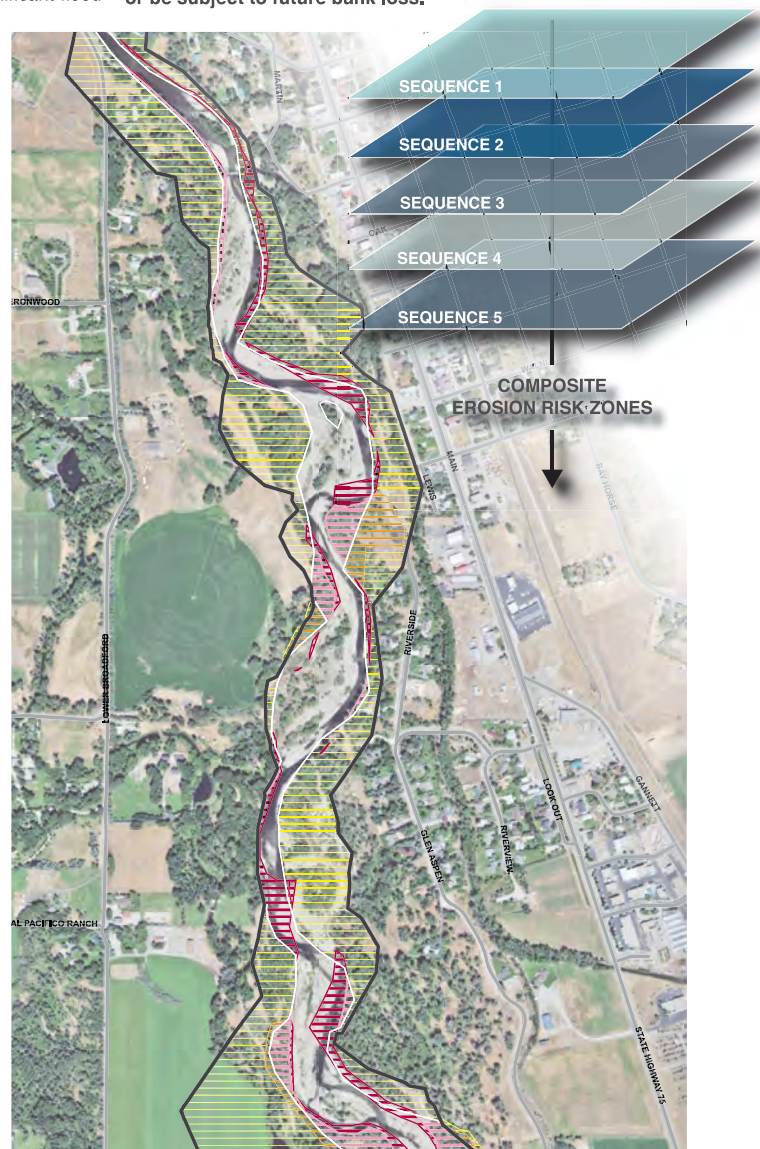
Step 5 - Identify Zones of High Erosion Potential.

Some areas along the channel margins are observed to be eroding at a more rapid pace, putting adjacent riparian and upland zones at a higher risk of erosion. Channel migration during the 2017 floods was delineated by comparing the 2015 channel trace and the 2017 channel trace (in blue on Map Sequence 5). The areas between the traces represent the current directional trends of channel erosion. These zones were compared to underlying topographic information using the HAWS mapping. Where

erosion trends intersected with topographically favorable (i.e. low lying) conditions, areas of high erosion potential were identified and delineated. Where these zones are identified within the HCMZ, the remaining area to the edge of the HCMZ is delineated as moderate; where these zones extend beyond the HCMZ, a narrow buffer of moderate erosion potential is applied beyond the HCMZ.

A Note on Riprap and Channel Migration/Erosion Potential.

In some cases, armored banks, levees, roads, and other infrastructure can act as a barrier to channel migration. Nearly 40% of the entire Big Wood River is lined with some sort of bank armoring, and much of it acts as a temporary barrier to migration, while some may act as a more permanent barrier (levees or roads that are maintained by government of flood control district entities). As part of the assessment, areas identified by others (Rapp 2016, Biota 2016, or Blaine County 2018) as armored by riprap or levees were included in the geospatial analysis and presented in the reach maps (Chapter 4), but a detailed evaluation of the condition of those areas was not conducted. The mapping efforts identified reaches where riprap banks failed or where migration upstream of riprap banks risks flanking and failure from the landward side. Efforts were not made in this assessment to determine which armored banks are more prone to failure than others. Therefore, it is assumed that, without maintenance, all banks are prone to failure over the long term. **The presence of rock-lined banks does not eliminate the potential of an area to be re-captured by the river or be subject to future bank loss.**



EROSION RISK
Composite Map Layer

Zone of Potential Erosion
 [Orange hatched] High Erosion Potential
 [Yellow hatched] Moderate Erosion Potential

Zone of Recent Erosion
 [Pink hatched] 2004 to 2015 Erosion
 [Pink hatched] 2015 to 2017 Erosion



City of Ketchum Planning & Building

PROJECT: Swan Stream Alteration/Bank Stabilization

PERMIT #: P18-131

OWNER: Robert and Sandra Swan (401 Northwood Way)
City of Ketchum (Ketchum FR NWSE TL 7801 SEC 12 4N 17E River Bed)

APPLICANT: Robert and Sandra Swan

REPRESENTATIVE: Chuck Brockway, Brockway Engineering PLLC and Evan Robertson, Robertson & Slette PLLC for Robert and Sandra Swan

LOCATION: 401 Northwood Way (Lot 12, Chateaux of Northwood)
Adjacent riverbed (Ketchum FR NWSE TL 7801 SEC 12 4N 17E River Bed)

ZONING: General Residential – Low Density (GR-L) and Floodplain Management Overlay (FP), Waterways and Floodway subdistricts

REQUEST: Amendment to permit P18-131 issued October 19, 2019. Construction has not commenced. Permit remains valid under an administrative extension. Scope of work includes stream alteration, bank stabilization, land reclamation and restoration.

PRIOR/ASSOCIATED: 15-144, P17-055, P17-134, P19-044

BACKGROUND

At the March 9, 2021 Planning and Zoning Commission meeting, the Commission continued the request to amend Permit P18-131 so staff could reach out to the two property owners, the Rusacks at 411 Northwood Way and the Swans at 401 Northwood Way to determine each Owner's requirements for moving forward with the original plan approved under Permit P18-131.

A response has been received by the Rusacks which is currently under review by the Swans. The Swans were asked to provide a response by end of day Monday March 22nd. Once the response is received, both responses will be forwarded to the Planning and Zoning Commission.

In the event the two property owners cannot come to agreement, staff has provided several options for Commission consideration. Those options are presented at the end of this report.

At the March 9, 2021 meeting there was testimony about the side channel, protection of properties to the south of the site and the condition of the property at 401 Northwood Way. Staff has researched the history of this area which is provided in this report.

Site History

The following provides the Commission with history of development and improvements at 401 Northwood Way and the Chateaux of Northwood Subdivision. The research comes from the Planning and Zoning Commission, City Council and staff approvals of the subdivision plats, stream alteration permits, design review permits and building permits for development in the area.

As identified on the adopted subdivision map for Chateaux of Northwood, which includes 401 Northwood Way, close to half the property at 401 Northwood Way is in the 100-year floodplain and use of the site as a floodplain for river expansion during high water was recognized when the site was originally created in the Northwood PUD (1984) and in 1992-95 when the property was split off from the Northwood PUD and became part of the Chateaux of Northwood Subdivision. The following provides the background.

- 1992-1995: The Chateaux of Northwood Subdivision was established creating Lots 1-10 on Red Fox Lane and Lot 12, the subject property, at 401 Northwood Way. As noted in Attachment A, close to half the property of 401 Northwood Way was in the floodplain. Notes on the plat include:
 - Floodway and floodplain information was established in accordance with the Federal Flood Insurance Map, prepared by the US Department of Housing and Urban Development, 1978. The floodplain area designated on this plat is considered by the City of Ketchum as reasonable for regulatory purposes. Prospective buyers are warned that sheet flooding can and will occur and that flooding may extend beyond the floodway and floodplain boundary lines identified.
 - No building may occur west of the 100-year floodplain line (IRF).
 - A 25-foot scenic easement shall exist along the east bank of the Big Wood River. There shall be no construction of any fence, deck, or other structure within said easement and said easement shall shift to follow any changes in the location of the river bank. Said easement shall be measured from the mean high-water mark. Riparian vegetation shall be maintained in its natural state within said 25-foot easement.
 - Any alterations or improvements to the overflow ditch, such as, but not limited to, introducing water into the overflow ditch shall require prior approval from the Ketchum Water Department.

According to the plat conditions and approvals for the subdivision, sheet flooding and river movement was anticipated to occur on the property at 401 Northwood Way. It was expected that owners of the property were aware of the potential for flooding and the property would serve as the location for sheet flooding and river expansion during high water. The house was permitted to be constructed outside of the 100-year flood area, however, the plat note indicated flooding may occur beyond the 100-year boundary as identified on the plat. When the building permit was issued for the house at 401 Northwood, there was a condition that no landscape work shall take place at or beyond the 100-year floodplain line (Attachment B). It was envisioned the natural riparian vegetation would continue to exist.

Overflow Channel

The ditch along Chateaux of Northwood Subdivision was a dry overflow ditch and was characterized as such during approval of the subdivision application. It was believed to be an abandoned irrigation ditch. If there was water in the ditch at the time of the Chateaux of Northwood Subdivision approvals, the ditch would have been considered a waterway and properties along the ditch would have been subject to the floodplain management regulations in effect at the time, including conditions related to riparian vegetation and setbacks. It was clear during the subdivision approval, no water flowed in the ditch. There were no riparian conditions of approval associated with this area of the subdivision.

City records indicate the previous owner of 401 Northwood Way requested approval to activate the ditch and divert water from the river into the overflow ditch. The request was approved, provided the owner indemnify and cover potential damage that may occur to a downstream property owner. After the work was performed, records indicate water in the ditch was intermittent. Records also show there was a city and state investigation of the previous owner for making modifications to the overflow ditch to deepen the channel and divert more water into the ditch. The improvements proposed as part of Permit P18-131 will enable water to flow in the ditch year-round which enhances the properties adjacent to the ditch. Those properties will be required to comply with the city's floodplain regulations including the riparian setback regulations. If the improvements as part of Permit P18-131 are not installed, there is no evidence the properties along the ditch will be at risk.

River and Riparian Evolution at 401 Northwood Way. City records indicate that modifications have been made within the 100-year floodplain area at 401 Northwood Way that are inconsistent with original permits and approvals and more recent conditions of approval. The following illustrates the history of the site.



1987 Photo before Chateaux Northwood and 401 Northwood are developed. Rusack's property is upstream of the vacant site. The overflow ditch is not activated.



2002 Photo—Riparian vegetation exists up to the home. The overflow ditch is not visible.



2009 Photo—No change in riparian vegetation adjacent to river or house. Change in river braiding.



2013 Photo—Some riparian vegetation at river bank removed, overflow ditch more prominent. Vegetation remains adjacent to the house in the floodplain.



2015 Photo—There appear to be no changes to vegetation. Vegetation remains adjacent to the house within the floodplain.



2016 Photo—As part of a house remodel, riparian landscaping was removed next to river and house to enhance yard space. A requirement of the building permit prohibited work and removal of vegetation in the floodplain. This condition was not followed.



June 2017 after the spring flood.

Note the river path where trees and vegetation were removed in 2016. The 100-year floodplain was activated.

The photos illustrate the value and importance of riparian vegetation and minimizing disruption of the floodplain. Unfortunately, as a result of a remodel that occurred in 2016 that included unauthorized changes to the floodplain and vegetation, the changes may have exacerbated water intrusion during high water. The property owner is requesting installation of intensive measures to not only protect the property but also restore the rear yard within the floodplain to its pre-flood condition.

Based on the original approvals for the lot, the rear yard area within the floodplain that is currently targeted for restoration was never envisioned for use as a rear yard lawn. Instead, this area was to be a natural floodplain with native riparian landscaping.

OPTIONS FOR COMMISSION CONSIDERATION

As explained at the March 9, 2021 hearing, the Planning and Zoning Commission cannot approve a project that is shown to have an adverse impact on another property. The project must be redesigned to eliminate the impact. This impact has been verified by the City's independent engineer. Concern was also expressed that without the proposed improvements, properties downstream within the Chateaux of Northwood Subdivision would be at risk. There is no evidence or analysis to support this claim.

The following options are provided for Commission consideration. Depending on the direction the Commission takes, staff will return with findings reflecting the decision.

- Option 1: Deny the amendment to Permit P18-131 and direct the application to revise their design to eliminate any impact to other properties.
- Option 2: In the event the two property owners appear close to a mutual agreement to implement the original plans for Permit P18-131, continue the hearing to a date certain to allow time for the parties to reach an agreement.
- Option 3: Deny the amendment to Permit P18-131 and request all parties who own property along that stretch of the river that include the City, Community Library, the Swans, the Rusacks, Chateaux Northwood Subdivision, and others, to work together to develop a holistic comprehensive solution.

Attachments

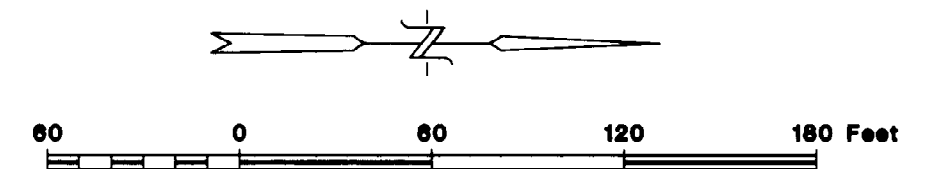
- A: Approved and Recorded Chateaux of Northwood Subdivision
- B: July 1990 City of Ketchum Conditions of Approval for House Building Permit 89-061 for 401 Northwood Way
- C: March 9, 2021 Staff Report and Attachments

CURVE TABLE

No.	Delta	Radius	Arc Length	Tangent	Chord
1	35°20'48"	50.44	17.07	16.07	30.63
2	43°05'14"	229.80	172.81	90.72	168.77
3	71°12'53"	25.00	31.07	17.90	29.11
4	71°12'53"	55.00	68.36	39.38	64.04
5	00°40'06"	450.00	5.25	2.62	5.25
6	35°20'48"	20.44	12.61	6.51	12.41
7	17°13'42"	259.80	78.12	39.36	77.83
8	25°51'32"	259.80	117.25	59.64	116.26
9	44°31'47"	15.00	11.66	6.14	11.37
10	41°30'25"	58.00	42.02	21.98	41.10
11	109°10'48"	58.00	110.52	81.58	94.54
12	109°55'36"	58.00	111.28	82.73	94.98
13	22°35'09"	58.00	22.87	11.58	22.72
14	58°40'11"	15.00	15.36	8.43	14.70
15	21°40'51"	199.80	75.61	38.26	75.15
16	21°24'23"	199.80	74.65	37.76	74.21
17	34°38'44"	80.44	48.64	25.09	47.90
18	16°07'56"	25.00	7.04	3.54	7.02
19	17°54'55"	490.00	153.21	77.24	152.59
20	17°14'06"	490.00	147.39	74.26	146.84
21	2°06'26"	490.00	18.02	9.01	18.02
22	9°49'34"	350.00	60.02	30.09	59.95
23	38°40'24"	350.00	236.29	122.84	231.81
24	37°15'27"	490.00	318.63	165.18	313.05
25	47°38'25"	350.00	291.02	154.52	282.71
26	20°12'32"	450.00	158.72	80.19	157.90
27	67°31'54"	25.00	29.47	16.71	27.79
28	62°10'55"	25.00	27.13	15.08	25.82
29	62°10'56"	50.00	54.26	30.15	51.64

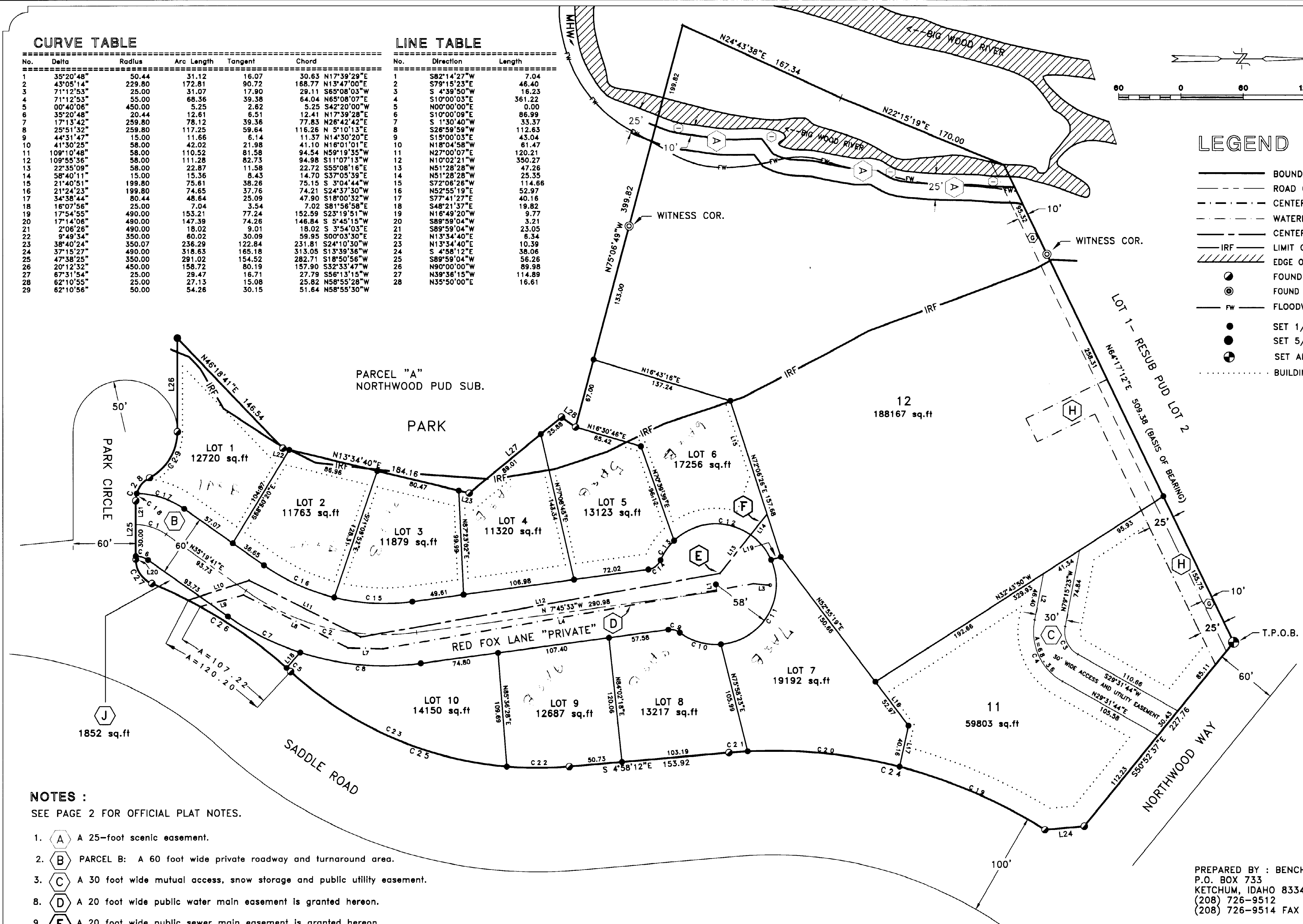
LINE TABLE

No.	Direction	Length
1	S82°14'27"W	7.04
2	S79°15'23"E	46.40
3	S 4°39'50"W	16.23
4	S10°00'03"E	361.22
5	N00°00'00"E	0.00
6	S10°00'09"E	86.99
7	S 1°30'40"W	33.37
8	S28°59'59"W	112.63
9	S19°00'03"E	43.04
10	N18°04'58"W	61.47
11	N27°00'07"E	120.21
12	N10°02'21"W	350.27
13	N51°28'28"W	47.26
14	N51°28'28"W	25.35
15	S72°08'28"W	114.86
16	N52°55'19"E	52.97
17	S77°41'27"E	40.16
18	S48°21'37"E	19.82
19	N16°49'20"W	9.77
20	S89°59'04"W	3.21
21	S89°59'04"W	23.05
22	N13°34'40"E	6.34
23	N13°34'40"E	10.39
24	S 4°58'12"E	36.06
25	S89°59'04"W	56.26
26	N90°00'00"W	89.98
27	N39°36'15"W	114.89
28	N35°50'00"E	16.61



LEGEND

- BOUNDARY LINES
- ROAD CENTERLINE
- - - CENTERLINE WATERLINE ESMNT.
- - - WATERLINE EASEMENT
- - - CENTERLINE SEWER ESMNT.
- IRF — LIMIT OF 100 YEAR FLOOD
- /// EDGE OF WATER — MHW
- FOUND 5/8" RB
- ⊙ FOUND 1/2" RB
- FW — FLOODWAY LIMIT
- SET 1/2" RB
- SET 5/8" RB
- ⊕ SET ALUM. CAP
- BUILDING ENVELOPE



NOTES :

SEE PAGE 2 FOR OFFICIAL PLAT NOTES.

1. (A) A 25-foot scenic easement.
2. (B) PARCEL B: A 60 foot wide private roadway and turnaround area.
3. (C) A 30 foot wide mutual access, snow storage and public utility easement.
8. (D) A 20 foot wide public water main easement is granted hereon.
9. (E) A 20 foot wide public sewer main easement is granted hereon.
10. (F) A 10 foot wide private sewer easement through Lot 6 to benefit Lot 12 is granted hereon.
11. (G) A 10 foot wide Fisherman's Access easement is granted to the public to the East bank of the Big Wood River.
12. (H) A 25 foot wide water main easement is granted hereon.
14. (I) A 10-foot Fisherman's / Pedestrian Access / Nature Study easement is dedicated to the public hereon.
17. (J) Parcel J : A parcel owned and maintained by the Chateaux of Northwood Homeowners Association.

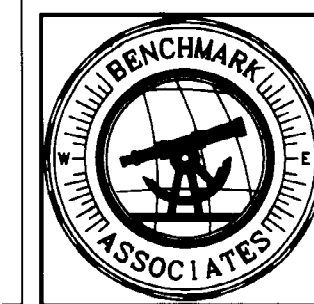
HEALTH CERTIFICATE

Sanitary restrictions as required by Idaho Code Title 50, Chapter 13, have been satisfied. Sanitary restrictions may be reimposed, in accordance with Idaho Code Title 50, Chapter 13, Section 50-1326, by the issuance of a certificate of disapproval.

Date: 7-14-95

Robert L. Enlow
South Central District Health Dept., EHS

PREPARED BY : BENCHMARK ASSOCIATES
P.O. BOX 733
KETCHUM, IDAHO 83340
(208) 726-9512
(208) 726-9514 FAX



CHATEAUX OF NORTHWOOD

A 12 LOT SUBDIVISION

A REPLAT OF LOTS 3A AND 3B,
NORTHWOOD P.U.D. SUBDIVISION.

T4N, R17E, SEC. 12, B.M., KETCHUM, BLAINE CO., ID.

A SUBDIVISION PLAT	PLOT BY : LLJ	PLOT FILE 95078.DWG
PROJECT NO. 95078	DATE : JULY 1995	

NOTES :

1. (A) A 25-foot scenic easement shall exist along the east bank of the Big Wood River. There shall be no construction of any fence, deck or other structure within said easement and said easement shall shift to follow any changes in the location of the river bank. Said easement shall be measured from the mean high water mark. Riparian vegetation shall be maintained in its natural state within said 25-foot scenic easement.
2. (B) PARCEL B: A 60 foot wide roadway and turnaround area is a fee simple parcel owned and maintained by the Chateaux of Northwood Homeowners Association. Parcel B is a private street providing access to Lots 1 through 10, off-street parking, public utilities, drainage and snow storage for the benefit of Lots 1 through 10. The maintenance of Parcel B and removal of snow therefrom shall be the obligation of the Chateaux of Northwood Homeowners Association, and the City of Ketchum shall not maintain or improve this private street for any reason. There shall be no construction of any fence, deck or other structure or placement of landscaping within said Parcel B which would obstruct the mutual access, off-street parking, public utilities, drainage and snow storage.
3. (C) A 30 foot wide mutual access, snow storage and public utility easement shall exist within Lot 11 for the benefit of Lot 12. Access to Lots 11 and 12 shall be within said easement.
4. Ten foot (10') public utility easements are centered on all lot lines.
5. Floodway and floodplain information was established in accordance with the Federal Flood Insurance Map, prepared by the U.S. Department of Housing and Urban Development, 1978. The floodplain area designated on this plat is considered by the City of Ketchum as reasonable for regulatory purposes. Prospective buyers are warned that sheet flooding can and will occur and that flooding may extend beyond the floodway and floodplain boundary lines identified.
6. All new utilities shall be placed underground.
7. There shall be a minimum 10 foot separation between water and sewer lines.
8. (D) A 20 foot wide public water main easement is granted hereon to the City of Ketchum.
9. (E) A 20 foot wide public sewer main easement is granted hereon to the City of Ketchum.
10. (F) A 10 foot wide private sewer easement through Lot 6 to benefit Lot 12 is granted hereon. Lot 12 is responsible for maintenance and repair of said private sewer service.
11. (G) A 10 foot wide Fisherman's Access easement is granted to the public along the north boundary of Lots 11 and 12.
12. (H) A 25 foot wide water main easement is granted hereon to the City of Ketchum to maintain the hydrant on Lot 12.
13. The Chateaux of Northwood Homeowners Association shall be responsible for the removal and replacement of landscape features that hinder the use of all easements described in these notes.
14. (I) A 10-foot Fisherman's / Pedestrian Access / Nature Study easement is dedicated to the public along the east bank of the Big Wood River which shall shift to follow any changes in the location of the river bank. Said easement shall be measured from the mean high water mark.
15. Lot 11 is limited to single family residential use.
16. No building west of the 100-year floodplain line (IRF).
17. (J) Parcel J : A parcel owned and maintained by the Chateaux of Northwood Homeowners Association for landscape and snow storage.
18. Any alterations or improvements to the overflow ditch such as but not limited to introducing water into the overflow ditch shall require prior approval from the Ketchum Water Department.



CHATEAUX OF NORTHWOOD

A 12 LOT SUBDIVISION

**A REPLAT OF LOTS 3A AND 3B,
NORTHWOOD P.U.D. SUBDIVISION.**

T4N, R17E, SEC. 12, B.M., KETCHUM, BLAINE CO., ID.

SUBDIVISION NOTES
PROJECT NO. 95078

PLOT BY : LLJ

PLOT FILE 95078.DWG

DATE : JULY 1995

OWNER'S CERTIFICATE

KNOW ALL MEN BY THESE PRESENTS that JAMES P. BALDWIN and NANCY L. BALDWIN, husband and wife, do hereby certify that they are the owners of certain parcels of land described as follows;

Lots 3A and 3B REPLAT OF : P.U.D. LOT 3 NORTHWOOD P.U.D. SUBDIVISION, located within Section 12, Township 4 North, Range 17 East, Boise Meridian, City of Ketchum, Blaine County, Idaho, according to the official plat thereof, recorded as instrument no. 323620 records of Blaine County, Idaho.

The above described parcels contains 9.87 acres.
It is the intention of the undersigned to and they do hereby include said land in this plat.

IN WITNESS WHEREOF, I have hereunto set my hand.

James P. Baldwin
JAMES P. BALDWIN

Signed this 7 day of July, 1995.

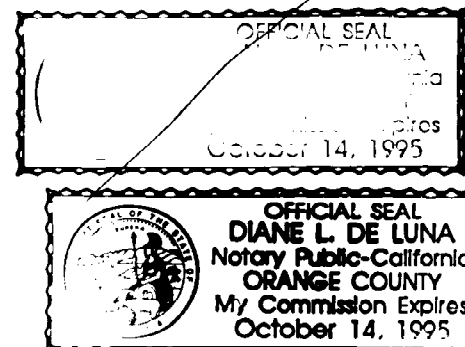
ACKNOWLEDGMENT

STATE OF California
COUNTY OF Orange)ss

On this 7 day of July, 1995, before me, the undersigned, a Notary Public for said State, personally appeared JAMES P. BALDWIN, a married man known to me to be the person whose name is subscribed to the within instrument, and acknowledged to me that he executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal the day and year in this certificate first above written.

My commission expires: October 14, 1995
Diane L. DeLuna
Notary Public



IN WITNESS WHEREOF, I have hereunto set my hand.

Nancy L. Baldwin
NANCY L. BALDWIN

Signed this 7 day of July, 1995.

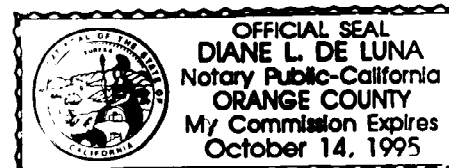
ACKNOWLEDGMENT

STATE OF California
COUNTY OF Orange)ss

On this 7 day of July, 1995, before me, the undersigned, a Notary Public for said State, personally appeared NANCY L. BALDWIN, a married woman known to me to be the person whose name is subscribed to the within instrument, and acknowledged to me that she executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal the day and year in this certificate first above written.

My commission expires: October 14, 1995
Diane L. DeLuna
Notary Public

**SURVEYOR'S CERTIFICATE**

I, GORDON K. WILLIAMS, a duly Registered Land Surveyor in the State of Idaho, do hereby certify that this is a true and accurate map of the land surveyed under my direct supervision, that the location of the lot has definitely been established and perpetuated in strict accordance with the State of Idaho Code relating to plats and surveys and it is, as shown hereon, a portion of Sec. 12, T4N., R17E., Blaine Co., Idaho as shown in the owners certificate.

Gordon K. Williams
GORDON K. WILLIAMS, P.L.S. 6/29/95

**CITY ENGINEER'S APPROVAL**

I, _____, City Engineer for Ketchum, Idaho do hereby approve the foregoing plat.

BY Richard Fossbury 7/10/95

COUNTY SURVEYOR'S APPROVAL

This is to certify that I, Jim W. Koonce, County Surveyor for Blaine County, Idaho, have checked the foregoing plat and computations for making the same and have determined that they comply with the laws of the State of Idaho relating thereto.

Jim W. Koonce

KETCHUM CITY COUNCIL'S APPROVAL

The foregoing plat was approved and accepted this 11th day of July, 1995, by the Ketchum City Council, Ketchum, Idaho.

By: Sandra E. Colby

BLAINE COUNTY TREASURER'S CERTIFICATE

On this 27th day of June, 1996, the foregoing plat was approved and accepted by the Blaine County Treasurer, Blaine County, Idaho.

By: Debbie A. Deek by Neil Peterson

COUNTY RECORDER'S CERTIFICATE

I hereby certify that this instrument was filed at the request of Sawtooth Title at 36 minutes past 1:00 o'clock, P.m., on this 27 day of June, 1996, A.D., in my office and duly recorded in book _____ of plats at page _____.

Instrument No. 391749 Fee: \$ 12.00

By: Mary Green
J.R. Drum

	CHATEAUX OF NORTHWOOD		
	A 12 LOT SUBDIVISION		
	A REPLAT OF LOTS 3A AND 3B,		
	NORTHWOOD P.U.D. SUBDIVISION.		
T4N, R17E, SEC. 12, B.M., KETCHUM, BLAINE CO., ID.			
CERTIFICATE PAGE	PLOT BY : LLJ	PLOT FILE 95078.DWG	
PROJECT NO. 95078	DATE : JULY 1995		



PLANNING AND ZONING DEPARTMENT P.O. BOX 2315 KETCHUM, IDAHO 83340

July 9, 1990

Jim Speck
Attorney-at-Law
P. O. Box 987
Ketchum, Idaho 83340

Re: James Baldwin
Landscape Plan

Dear Jim:

Upon review of the landscape plan submitted for the Baldwin property at 401 Northwood Way, the Building Inspector and I have concluded that it will be considered part of Building Permit Number 89-061, under which the residence is being constructed. No additional excavation permit will be required for the work approved on this landscape plan and described herein. Further, the work necessary to complete the plan may commence subject to compliance with the following conditions:

1. That no work shown on the plan or otherwise shall take place at or beyond the 100-year floodplain line, as defined in the Floodplain Management Overlay Zoning District in Ketchum Zoning Ordinance Number 208. That floodplain line shall be surveyed and field staked at the owners' expense. Any grading, filling or other alteration within the 100-year floodplain boundary will require at a minimum City design review approval and may involve review and approval by other state or federal agencies; and
2. That the five (5) foot wide public pedestrian easement along the north property line shall remain open and unobstructed by berms or trees. Ground cover, such as sod, is acceptable; however, the pedestrian way must remain useable by the general public as access to the Big Wood River, as contemplated when originally platted.

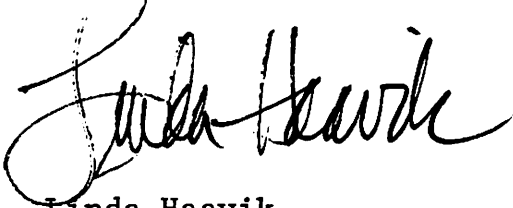
Enclosed please find two (2) copies of the plan submitted, each containing notes reflecting the conditions stated above. One copy has been retained by the City under Building Permit Number 89-061.

Jim Speck
Page 2
July 9, 1990

Should you have any questions or wish to discuss this matter,
please do not hesitate to contact me or Dennis Wheeler, Building
Inspector.

Sincerely,

CITY OF KETCHUM

A handwritten signature in cursive script, appearing to read "Linda Haavik". The signature is written in dark ink and is positioned above the printed name and title.

Linda Haavik
Planning and Zoning Administrator

Enclosure

cc: Building Permit File Number 89-061



City of Ketchum Planning & Building

PROJECT: Swan Stream Alteration/Bank Stabilization

PERMIT #: Amendment to Permit P18-131

OWNER: Robert and Sandra Swan (401 Northwood Way)
City of Ketchum (Ketchum FR NWSE TL 7801 SEC 12 4N 17E River Bed)

APPLICANT: Robert and Sandra Swan

REPRESENTATIVE: Chuck Brockway, Brockway Engineering PLLC and Evan Robertson, Robertson & Slette PLLC for Robert and Sandra Swan

LOCATION: 401 Northwood Way (Lot 12, Chateaux of Northwood)
Adjacent riverbed (Ketchum FR NWSE TL 7801 SEC 12 4N 17E River Bed)

ZONING: General Residential – Low Density (GR-L) and Floodplain Management Overlay (FP), Waterways and Floodway subdistricts

REQUEST: Amendment to permit P18-131 issued October 19, 2019. Construction has not commenced. Permit remains valid under an administrative extension. Scope of work includes stream alteration, bank stabilization, land reclamation and restoration.

PRIOR/ASSOCIATED: 15-144, P17-055, P17-134 original, P17-135 amended, P18-131 (original approval), P19-044

BACKGROUND

The applicants, Bob and Sandra Swan, own 401 Northwood Way. The property is developed with a single-family residence constructed in 1991. 401 Northwood Way is the subject property, with the majority of the scope of work proposed by this application occurring on 401 Northwood Way. The City of Ketchum owns a parcel of land directly adjacent to 401 Northwood Way to the west. The Big Wood River's channel is located on both the city's parcel and the subject property. **See Figure 1.** This proposal includes work on both the subject property and the city's parcel.



In addition to the main channel of the Big Wood River, the subject property also contains a side channel of the Big Wood River (the “eastern side channel”) as well as locally and federally regulated floodway and 1% annual chance floodplain (also known as Special Flood Hazard Area or SFHA). The subject property also contains locally regulated Riparian Zone (the first 25’ of land that is landward of the mean high-water mark) that is governed by the city’s floodplain ordinance. The city’s parcel contains floodway, SFHA, and Riparian Zone.

The 2017 flood affected the subject property. For a prolonged period of time the Big Wood River overtopped the banks and the SFHA was activated. An emergency permit (17-055) was issued to allow the installation of temporary flood control barriers. Subsequent temporary permits were issued via permits 17-134 original, 17-134 amended, and 19-044 for other measures to prevent further flooding on the subject property until a permanent intervention could be permitted and constructed.

In 2018 the property owners submitted an application to make permanent interventions on the subject property, the city’s parcel, and the parcel of land directly upstream and adjacent to the subject property, which is addressed 411 Northwood Way. **See Figure 2.** A permit was issued, via an administrative approval, for these three parcels on October 19, 2019. Ketchum City Council approved an Encroachment Permit approving work on the city-owned parcel on November 4, 2019. The permit remains active via an extension that is valid until May 1, 2019 (see **Attachment G, Letter, City of Ketchum/Brittany Skelton to Charles Brockway and Evan Robertson, dated January 26, 2021**).



The proposed amendment to Permit 18-131 removes all components of the project that were previously designed to occur on 411 Northwood Way. The proposed amendment contains all work on the subject property and the city-owned parcel.

Because work is no longer proposed to occur on 411 Northwood Way, elements of the overall project were redesigned to meet the property owner’s goals while also adhering to local, state and federal regulations. Both the Idaho Department of Water Resources (IDWR) and the U.S. Army Corps of Engineers (USACE) have approved the amended scope of work. However, based on the city’s independent analysis, the proposed amendment creates an impact to the upstream property that must be mitigated prior to city approval.

Table 1. compares the proposed amendments to project components as approved via P18-131.

Table 1.	
Approved vs. Proposed Amendment	
Approved via original P18-131 permit approval	Proposed amendment

Work proposed on city parcel, 401 Northwood Way and 411 Northwood Way	Work proposed on city parcel and 401 Northwood Way. Work stops just south of the property line shared by and 401 Northwood Way and 411 Northwood Way
1,423 cubic yards of gravel extraction	1,243 cubic yards of gravel extraction
Excavation along approximately 405 linear feet of river channel	Excavation along approximately 300 linear feet of river channel
Installation of approximately 183 cubic yards of bank stabilization materials	Installation of approximately 131 cubic yards of bank stabilization materials
Installation of bank stabilization materials along approximately 252 linear feet of streambank	Installation of bank stabilization materials along approximately 180 linear feet of streambank
	<u>New</u> : Buried rock sill traversing the channel of the main channel of the Big Wood River just downstream of the property line shared by 401 Northwood Way and 411 Northwood Way. Buried rock sill

Table 2. contains a description of project components and their purposes. Table 2 describes the purpose of project components that are proposed to be amended, as well as the project components for which there are no changes proposed, and the one new project component (buried rock sill). **See plans included with Attachment A, original permit, and Attachment C, proposed amended plans, for reference.**

Table 2.	
Purpose of project components	
Project component	Purpose
<u>Project components proposed to be amended</u>	
Work proposed on multiple parcels (see Sheets 1 and 2, Brockway Engineering, PLLC, dated September 28, 2020 and included as Attachment C or Sheets 1 and 2, Brockway Engineering, PLLC, dated September 30, 2019 and included with Attachment A)	Facilitates a design that works with the characteristics of the river in this reach, rather than a design that looks at one parcel in isolation.
Gravel extraction from main channel of Big Wood River (see Sheet 1, Brockway Engineering, PLLC, dated September 28, 2020 and included as Attachment C and Sheet 1, Brockway Engineering, PLLC, dated September 30, 2019 and included with Attachment A to compare changes in locations)	Facilitate the ability of the project to cause "No Net Rise" in water surface elevation; also to remove gravel deposited during 2017 floods due to downstream log jam.
Regrading of the slope of the bottom of the main channel of the Big Wood River (see Sheets 1 and 3, Cross Sections 105 and 106, Brockway Engineering, PLLC, dated September 28, 2020 and included as Attachment C and see Sheets 1 and 3, Cross Sections 105 and 106,	To tie in the upstream and downstream limits of the project.

<p>Brockway Engineering, PLLC, dated September 30, 2019 and included with Attachment A to compare changes)</p>	
<p>Recontouring the slopes of the eastern and western banks of the main channel of the Big Wood River (see Sheets 1 and 3, Cross Sections 105 and 106, Brockway Engineering, PLLC, dated September 28, 2020 and included as Attachment C and see Sheets 1 and 3, Cross Sections 105 and 106, Brockway Engineering, PLLC, dated September 30, 2019 and included with Attachment A to compare changes)</p>	<p>To remove gravel deposited during 2017 floods and tie the regraded channel into existing top of banks.</p>
<p>Installation of riprap along the eastern bank of the main channel of Big Wood River (see Sheet 1, Brockway Engineering, PLLC, dated September 28, 2020 and included as Attachment C and Sheet 1, Brockway Engineering, PLLC, dated September 30, 2019 and included with Attachment A to compare changes in locations)</p>	<p>Aids in bank stability/mitigates bank erosion and protects against loss of lands.</p>
<p>Installation of embedded cottonwoods along eastern bank of the main channel of the Big Wood River (see Sheet 1, Brockway Engineering, PLLC, dated September 28, 2020 and included as Attachment C and Sheet 1, Brockway Engineering, PLLC, dated September 30, 2019 and included with Attachment A to compare changes in locations)</p>	<p>Aids in bank stability/mitigates bank erosion. Also provides a “roughing effect” and slows velocity of water, which mitigates downstream erosion.</p>
<p><u>New</u>: Buried rock sill traversing the channel of the main channel of the Big Wood River just downstream of the property line shared by 401 Northwood Way and 411 Northwood Way. (see Site Plan, Brockway Engineering, PLLC, dated September 28, 2020 and included as Attachment C for specific location)</p>	<p>Because project components previously approved for upstream on 411 Northwood Way have been removed, the buried rock sill has been introduced. Previously, gravel extraction continued upstream and created a uniform slope from 411 Northwood to 401 Northwood. Riprap and cottonwoods embedded in the bank were also previously contiguous from 411 Northwood to 401 Northwood.</p> <p>The purposes of the buried rock sill, as designed, are:</p> <ul style="list-style-type: none"> • To increase the stability of the re-graded channel. • Account for the change in grade of the bottom of the river channel’s bed at 411 Northwood and the bottom of the river channel’s bed at 401 Northwood Way. • Prevent bed erosion below the level of the rock sill from migrating upstream of the location where riprap on 401 Northwood now terminates.
<p><u>Project components proposed to remain the same</u></p>	

Installation of underground (buried) gabions parallel to the eastern bank of the main channel of the Big Wood River but offset landward (further east, closer to the residence) of the embedded riprap and cottonwood trees	Serves as a bank up to the riprap and embedded cottonwood trees to prevent the main channel of the Big Wood River from enlarging, braiding, or migrating further east toward the residence during major flood events
Removal of select accumulations of woody debris along main channel of the Big Wood River (see Sheet 1, Brockway Engineering, PLLC, dated September 28, 2020 and included as Attachment C or Sheet 1, Brockway Engineering, PLLC, dated September 30, 2019 and included with Attachment A for specific locations)	Mitigate for potential of excessive woody debris from becoming mobilized during a flood event and causing log jams in problematic areas.
Installation of new topsoil on the 401 Northwood Way parcel, landward of the banks of the main channel and eastern side channel of the Big Wood River (see Sheets 1 and 2, Brockway Engineering, PLLC, dated September 28, 2020 and included as Attachment C or Sheets 1 and 2, Brockway Engineering, PLLC, dated September 30, 2019 and included with Attachment A)	Topsoil was eroded during the 2017 flood event and subsequent flooding in 2018 and 2019. Installation of new topsoil will also reclaim the prior “finished grade” of the property.
Installation of new riparian vegetation in the 25’ Riparian Zone (see Zone 2 on River Restoration, Swan Residence, Ben Young Landscape Architecture, dated September 16, 2019 and included with Attachment A)	Prior to the 2017 flood event 401 Northwood Way’s regulated riparian zone was non-compliant. Turfgrass lawn dominated the riparian zone and the riverbank was largely void of riparian shrubs. Installation of riparian vegetation will aid in bank stability, soil retention during flood events, and will enhance the riparian habitat for animals and aquatic species (riparian plantings provide shading and cooling, which helps regulate the temperature of water in the river).
Installation of new riparian vegetation in the regulated floodplain that does not overlap with the 25’ Riparian Zone (see Zone 1 on River Restoration, Swan Residence, Ben Young Landscape Architecture, dated September 16, 2019 and included with Attachment A)	Intended to provide a “roughing effect” when the floodplain is activated, which can slow down the velocity of floodwaters. Additionally, riparian vegetation can aid in retention of topsoil (i.e. mitigate erosion) during flood events.
Installation of a buried rock sill at the mouth of the eastern side channel of the Big Wood River (see Sheets 1 and 2, Brockway Engineering, PLLC, dated September 28, 2020 and included as Attachment C or Sheets 1 and 2, Brockway Engineering, PLLC, dated September 30, 2019 and included with Attachment A)	The rock sill is designed to prevent enlargement of the eastern side channel. Enlargement of the eastern side channel could result in the eastern channel becoming a primary channel of the Big Wood River, which could threaten the townhomes that are currently adjacent to the side channel.
Sloping the buried rock sill at the mouth of the eastern side channel (see Sheets 1 and 2, Brockway Engineering, PLLC, dated September 28, 2020 and included as Attachment C or Sheets 1 and 2, Brockway Engineering, PLLC, dated September 30, 2019 and included with Attachment A)	The slope and geometry of the rock sill is designed to divert water year-round to the side channel but prevent it from becoming the main channel.
Installation of riprap along the eastern side channel (see Sheets 1 and 2, Brockway Engineering, PLLC, dated	Mitigates bank erosion, promotes bank stability

September 28, 2020 and included as Attachment C or Sheets 1 and 2, Brockway Engineering, PLLC, dated September 30, 2019 and included with Attachment A)	
Installation of riparian plantings in the Riparian Zone adjacent to the eastern side channel (see Zone 2 on River Restoration, Swan Residence, Ben Young Landscape Architecture, dated September 16, 2019 and included with Attachment A)	Improves riparian habitat for animals and fish, restores the natural characteristics of the floodplain, provided roughness to reduce velocity of flow across the floodplain.

The scope of work proposed under the initial permit, and with conditions of approval, mitigated adverse impacts to upstream and downstream properties.

Table 3 identifies components of the project, as proposed to be amended, that have the potential to cause adverse impacts to upstream or downstream properties. As the project is designed currently, these impacts have not been demonstrated to be mitigated.

Table 3. Amended project components with potential to cause adverse impacts	
Project Component	Potential adverse impact
Removal of riprap and embedded cottonwood trees from 411 Northwood Way	<p>These components of the project previously mitigated increases in velocity caused by the project. Without these project features on 411 Northwood Way the project, as currently designed, threatens 411 Northwood Way's bank with under cutting and erosion.</p> <p>See Cross Section 105 at flow of 1,000 cfs in Table 1 of the October 10, 2020 narrative (Attachment #) for demonstration of velocity increase caused by the project. Velocity increases at lower more frequent flows can cause erosion of unstable banks.</p>
Rock sill traversing the main channel of the Big Wood River just downstream (south) of the property line shared by 411 Northwood Way and 401 Northwood Way	Without bank stability components on 411 Northwood Way described above, the elevation of the rock sill has been designed to promote bed erosion and downcutting of the channel upstream of the project onto the 411 Northwood Way property. This will cause the channel to create the hydraulic conditions included in the original design but without the previously proposed bank protection.

Due to the issues detailed in Table 3, staff's recommended is to deny the proposed amendment to P18-131, for the following reasons:

- Ketchum Municipal Code, Title 17, Zoning, Chapter 17.88, Floodplain Management Overlay Zoning District, standard of evaluation 17.88.050(E)14 states: "The proposal is shown to be a permanent solution and creates a stable situation."

- The proposed amendment to the plans originally approved via P18-131 does not create a stable situation or permanent solution. The amendment to the project, as designed, increases velocity at Cross Section 105 at flows of 1,000 cfs. Velocity increase at lower, more frequent flows can cause erosion of unstable banks.
- Without bank stability components on 411 Northwood Way originally included in the project but proposed to be removed with this amendment, the elevation of the rock sill has been designed to promote bed erosion and downcutting of the channel upstream of the project onto the 411 Northwood Way property. This will cause the channel to create the hydraulic conditions included in the original design but without the previously proposed bank protection.

Recommended Motion:

1. "I move to deny the amendment to P18-131, the Swan Stream Alteration/Bank Stabilization project, finding the project as designed does not meet standard of evaluation 17.88.050(E)14 for the following reasons:
 - The proposed amendment to the plans originally approved via P18-131 does not create a stable situation or permanent solution. The amendment to the project, as designed, increases velocity at Cross Section 105 at flows of 1,000 cfs. Velocity increase at lower, more frequent flows can cause erosion of unstable banks.
 - Without bank stability components on 411 Northwood Way originally included in the project but proposed to be removed with this amendment, the elevation of the rock sill has been designed to promote bed erosion and downcutting of the channel upstream of the project onto the 411 Northwood Way property. This will cause the channel to create the hydraulic conditions included in the original design but without the previously proposed bank protection."

And

2. "I move to direct staff to prepare the Findings of Fact, Conclusions of Law, and Decision for review at the March 23, 2021 meeting."

Attachments – Plans and Correspondence:

- A. *Original Permit*: Findings of Fact, Conclusion of Law, and Decision, P18-131, issued October 11, 2019
 - a. Swan Property Restoration Plan: Stream Alteration and Floodplain Development Permit Applications: Final for City Approval, Brockway Engineering, PLLC, dated September 30, 2019
 - b. Swan, Sandra River Restoration Project sheets 0-3, Brockway Engineering, PLLC, dated September 16, 2019
 - c. Draft River Restoration, Swan Residence, BYLA, dated September 16, 2019
- B. *Original Permit*: Encroachment Agreement 20292 – City of Ketchum and Sandra Swan
- C. Plans, "Swan, Sandra River Restoration Project," Three (3) sheets: Site Plan, Sections and Details, and Channel Cross-Sections, dated September 28, 2020
- D. Memo, Charles Brockway, "Information Regarding Channel Sills," dated October 10, 2020
- E. Narrative, Charles Brockway, "Amendment to Swan River Restoration Project," dated September 28, 2020
- F. Engineering No-Rise Certificate, Charles Brockway, dated September 28, 2020
- G. Letter, City of Ketchum/Brittany Skelton to Charles Brockway and Evan Robertson, dated January 26, 2021 (*one (1) attachment to letter: Memo, Harmony Design and Engineering, dated January 22, 2021*)
- H. Letter, City of Ketchum/Brittany Skelton to Charles Brockway, dated January 4, 2021 (*one (1) attachment to letter: Memo, Harmony Design and Engineering, dated December 6, 2020*)
- I. Letter, City of Ketchum/Brittany Skelton to Edward Lawson, dated November 6, 2020
- J. Letter, Evan Robertson to Brittany Skelton, dated October 26, 2020
- K. Letter, Charles Brockway to Brittany Skelton, dated October 22, 2020
- L. E-mail, Charles Brockway, dated January 20, 2021

- M. E-mail, Evan Robertson, dated January 11, 2021
- N. E-mail, Charles Brockway, dated January 11, 2021 *(two (2) attachments to e-mail: HEC-RAS model file included in project record and Engineering No-Rise Certificate, Charles Brockway, dated September 28, 2020 included as Attachment E to staff report)*
- O. E-mail, Charles Brockway, dated October 13, 2020 *(two (2) attachments to e-mail: HEC-RAS model file included in project record and Memo, Charles Brockway, "Information Regarding Channel Sills," dated October 10, 2020, included as Attachment C to staff report)*
- P. E-mail, Brittany Skelton to Charles Brockway, dated September 30, 2020
- Q. E-mail, Charles Brockway to Brittany Skelton, dated September 29, 2020 *(one (1) attachment to e-mail, Plans, three (3) sheets, included as Attachment B.)*

Attachments – Public Comment - Permit Amendment:

- 1. Lawson, March 4, 2021
- 2. Trout Unlimited – Hemingway Chapter, March 3, 2021
- 3. Pioneer West, February 23, 2021
- 4. Pioneer West, November 6, 2021
- 5. Lawson, November 4, 2020
- 6. Quadrant, October 15, 2020

Additional information included in the record, associated with permit amendment:

- HEC-RAS Model "Swan2-forCityAmendmentOct 2020", attached to e-mail dated October 13, 2020 from Charles Brockway to Brittany Skelton

Included in the record, associated with original permit approval:

Public Comment – Original Permit

- 1. Trout Unlimited, March 11, 2019
- 2. Wood River Land Trust, March 11, 2019
- 3. Katie Franklin, November 9, 2018
- 4. Trout Unlimited, October 29, 2018
- 5. Wood River Land Trust, October 29, 2018
- 6. Barbara Patton, October 29, 2018
- 7. John E. Philips, October 24, 2018
- 8. Donald White, October 23, 2018

Documents

- I. Floodplain Management Overlay Application coversheet, signed by Sandra Swan and dated August 23, 2018
- II. Swan Property Restoration Plan: Stream Alteration and Floodplain Development Permit Applications (including project drawings and HEC-RAS model results), Brockway Engineering, dated August 27, 2018
- III. Project drawings and exhibits, Brockway Engineering, dated September 28, 2018
- IV. Jennifer Zung, PE, Harmony Design & Engineering, memo dated October 11, 2018
- V. Response to Review by Harmony Engineering of Swan Phase 2 Stream Alteration Permit Application, C. G. Brockway, PhD, PE, dated October 17, 2018
- VI. Email, Charles G. Brockway to Brittany Skelton, dated October 17, 2018
- VII. Letter, Bob and Sandra Swan, to Mayor Neil Bradshaw, Brittany Skelton and John Gaeddert, received via email from Robert Swan October 28, 2018
- VIII. Email, Sandra Swan, dated November 6, 2018, with photo attachments
- IX. Email, Jennifer Zung, dated November 9, 2018
- X. Email, Charles G. Brockway, dated November 14, 2018, 3:40 p.m. with attachment, memo "Information Requested by Jennifer Zung Regarding Sandra Swan SAP Application", dated November 13, 2018
- XI. Email, Jennifer Zung, dated November 14, 2018, 5:21 p.m.

- XII. Email, Charles G. Brockway, dated November 14, 2018, 6:23 p.m.
- XIII. Emails, Charles G. Brockway, dated November 16, 2018
- XIV. Emails, Jennifer Zung, dated November 16, 2018
- XV. Email, Jennifer Zung, dated November 26, 2018, with attachments
- XVI. Revised stand alone revegetation plan, Brockway Engineering, dated December 7, 2018, including attachment, River Restoration landscape plan, BYLA, dated November 27, 2018
- XVII. Letter, Brittany Skelton to Evan Robertson, dated December 10, 2018
- XXVIII. Swan, Sandra River Restoration Project plan set, Brockway Engineering, dated January 4, 2019
- XIX. "No Rise" Certificate, Charles G. Brockway, PE, dated January 4, 2019
- XX. HEC-RAS model files, Brockway Engineering
- XXI. Response to City of Ketchum Deficiency Letter for the Swan Phase 2 SAP Application, Charles G. Brockway, dated January 4, 2019
- XXII. Letter, Evan Robertson to Brittany Skelton, Aaron Golart (IDWR), John Gaeddert, and Tim Luke (IDWR) dated January 29, 2019
- XXIII. Jennifer Zung, PE, Harmony Design & Engineering, memo dated February 20, 2019
- XXIV. Swan, Sandra River Restoration Project plan set, Brockway Engineering, dated July 19, 2019
- XXV. Swan Property Restoration Plan: Stream Alteration and Floodplain Development Permit Applications: Final for City Approval, Brockway Engineering, dated August 14, 2019
- XXVI. Swan Property Restoration Plan: Stream Alteration and Floodplain Development Permit Applications: Final for City Approval, Brockway Engineering, dated September 16, 2019
- XXVII. Swan, Sandra River Restoration Project plan set, Brockway Engineering, dated September 16, 2019
- XXVIII. IDWR Amended Approval of Joint Application for Permit No. S37-20546, dated July 8, 2019
- XXIX. IDWR Approval, in Part, of Joint Application for Permit No. S37-20546, dated February 28, 2019
- XXX. USACE permit NWW-2017-639-I02 dated September 11, 2018
- XXXI. Email, Frank Edelmann, Idaho Fish and Game, September 19, 2018
- XXXII. Email, Kristine Hilt, Blaine County, September 20, 2018
- XXXIII. Email, Frank Edelmann, Idaho Fish and Game, September 24, 2018
- XXXIV. Public comment
- XXXV. Site photos dated September 27, 2010 (Ketchum Planning and Building Department)
- XXXVI. Site photos dated May 11, 2017 (Ketchum Planning and Building Department)
- XXXVII. Site photos dated May 24, 2017 (Ketchum Planning and Building Department)
- XXXVIII. Site photos dated April 6, 2018 (Ketchum Planning and Building Department)
- XXXIX. Site photos dated May 2, 2018 (Ketchum Planning and Building Department)
- XL. Site photos dated November 1, 2018 (Ketchum Planning and Building)
- XLI. Site photos dated November 2, 2018 (Ketchum Planning and Building)
- XLII. P15-144 Findings of Fact, Conclusions of Law, and Decision – 401 Northwood Way
- XLIII. P17-055 Findings of Fact, Conclusions of Law, and Decision – 401 Northwood Way
- XLIV. P17-134 Findings of Fact, Conclusions of Law, and Decision, original – 401 Northwood Way
- XLV. P17-134 Findings of Fact, Conclusions of Law, and Decision, amended – 401 Northwood Way
- XLVI. P19-044 Findings of Fact, Conclusions of Law, and Decision – 401 Northwood Way
- XLVII. P19-047 Approval – 411 Northwood Way (tree removal)
- XLVIII. Chateaux of Northwood subdivision plat, 1995
- XLIX. City Council meeting minutes, January 13, 1992
 - L. Planning and Zoning Commission meeting minutes, February 10, 1992
 - LI. Planning and Zoning Commission meeting minutes, March 23, 1992
 - LII. Letter, Idaho Conservation League to Ketchum Planning and Zoning Commission, with attachment, dated March 23, 1992

LIII. Planning and Zoning Commission meeting minutes, May 8, 1995

Attachments – Plans and Correspondence

- A. *Original Permit*: Findings of Fact, Conclusion of Law, and Decision, P18-131, issued October 11, 2019
 - a. Swan Property Restoration Plan: Stream Alteration and Floodplain Development Permit Applications: Final for City Approval, Brockway Engineering, PLLC, dated September 30, 2019
 - b. Swan, Sandra River Restoration Project sheets 0-3, Brockway Engineering, PLLC, dated September 16, 2019
 - c. Draft River Restoration, Swan Residence, BYLA, dated September 16, 2019



City of Ketchum
Planning & Building

IN RE:)
)
Swan Stream Alteration/Bank Stabilization) KETCHUM PLANNING AND BUILDING DEPARTMENT
Floodplain Development and Waterways) FINDINGS OF FACT, CONCLUSIONS OF LAW, AND
Design Review Permit) DECISION
Date: October 11, 2019)
)
File Number: P18-131)

PROJECT: Swan Stream Alteration/Bank Stabilization

ADFP#: P18-131

OWNER: Robert and Sandra Swan (401 Northwood Way)
Marsupial Properties LLC, Alison and Geoffrey Rusack (411 Northwood Way)
City of Ketchum (Ketchum FR NWSE TL 7801 SEC 12 4N 17E River Bed)

APPLICANT: Robert and Sandra Swan

REPRESENTATIVE: Chuck Brockway, Brockway Engineering PLLC and Evan Robertson, Robertson & Slette PLLC for Robert and Sandra Swan

LOCATION: 401 Northwood Way (Lot 12, Chateaux of Northwood)
411 Northwood Way (Lot 1, Resub of Northwood PUD Lot 2)
Adjacent riverbed (Ketchum FR NWSE TL 7801 SEC 12 4N 17E River Bed)

ZONING: General Residential – Low Density (GR-L) and Floodplain Management Overlay (FP), Waterways and Floodway subdistricts

REQUEST: Stream alteration, bank stabilization, land reclamation and restoration

PRIOR/ASSOCIATED: 401 Northwood Way

- 15-144
- P17-055
- P17-134
- P19-044

411 Northwood Way

- P19-047

BACKGROUND FACTS

1. The City of Ketchum is a municipal corporation organized under Article XII of the Idaho Constitution and the laws of the State of Idaho, Title 50, Idaho Code. Under Chapter 65, Title 67 of the Idaho Code, the City is required to pass certain ordinances regarding land use, including a zoning ordinance.
2. Pursuant to Zoning Code Title 17, Section 17.88.050(D)1, the administrator shall have the authority to consider and approve, approve with conditions, or deny applications for floodplain development permits and for waterways design review.
3. The subject properties contain floodway, stream channel and bank, and riparian area. The proposed scope of work is to occur on three (3) separate parcels, held by three separate owners, with the bulk of the work occurring on 401 Northwood Way. The proposed scope of work is interrelated, with the overall project design dependent on completion of all components of the project. As such, the proposal is being reviewed and approved as a comprehensive, integrated project with the understanding all project components will be completed.
4. The applicant is put on notice that city review and approval of this application does not guarantee that flooding will not occur as the subject property is located in the Special Flood Hazard Area (1% annual chance floodplain, also known as the 100-year floodplain).
5. The scope of work approved by this permit involves excavation from the river channel, bank stabilization along the main channel and eastern side channel, land reclamation, and restoration.

FINDINGS OF FACT

Floodplain Design Review Requirements				
1. EVALUATION STANDARDS: 17.88.050(E)				
Compliant			Standards and Staff Comments	
Yes	No	N/A	Guideline	City Standards and <i>Staff Comments</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	17.88.050(E)1 FLOODPLAIN DEVELOPMENT/ WATERWAYS DESIGN REVIEW	<p>Preservation or restoration of the inherent natural characteristics of the river and creeks and floodplain areas. Development does not alter river channel.</p>
			<i>Staff Comments</i>	<p><i>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.</i></p> <p><i>The majority of work associated with this permit is proposed to occur on 401 Northwood Way and this parcel contains river channel, floodway (both within and landward to of the channel), and a significant amount of 1% annual chance floodplain. Minor, yet integral to the overall scope of the project, amounts of work are proposed on 411 Northwood Way (riverbed gravel removal, bank stabilization and associated willow plantings) and the parcel owned by the City of Ketchum (riverbed gravel removal, tree and woody debris removal).</i></p>

			<p><i>The project area at 411 Northwood Way contains river channel and a minor amount of floodway (largely aligning with the river channel). The project area on the City of Ketchum parcel contains river channel and is entirely within the floodway.</i></p> <p><i>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 parcels and erosion/land loss due to bank erosion. Subsequent runoff occurred in the spring of 2018 and 2019 with overland flooding both years. Emergency permits were issued for 401 Northwood Way in 2018 and 2019, allowing placement of large grain-feed sacks filled with gravel (“supersack” sandbags), in order to prevent migration of the main channel of the Big Wood River further eastward onto 401 Northwood Way. A tree removal permit was approved for 411 Northwood Way for at-risk trees; the trees have not yet been removed.</i></p> <p><i>The scope of work approved by this permit involves excavation from the river channel, bank stabilization along the main channel and eastern side channel, land reclamation, and restoration.</i></p> <p><i>Alteration of the river channel is a permitted action through an approved streambank stabilization project (KMC 17.88.060(E)3).</i></p> <p><i>Both the 401 Northwood Way and 411 Northwood Way edge-of-banks (east banks of Big Wood River) and the north bank of the side channel on 401 Northwood Way will be stabilized with bank hardening techniques (riprap) and bioengineering techniques (installation of logs with root wads to function as bank barbs, installation of willows within the interspatial voids of the riprap). 401 Northwood Way’s land east of the eastern bank will be further protected with the installation of a buried rock sill and the mouth of the eastern side channel is to be protected from widening by installation of buried angular stones.</i></p> <p><i>In terms of restoration, post-2017 flooding and 2018 and 2019 runoff, land areas on 401 Northwood Way affected by sheet flow are being reclaimed by native, riparian vegetation. If left unaltered by human intervention, a healthy riparian area would likely reestablish naturally.</i></p> <p><i>However, because the scope of this project at 401 Northwood Way includes land reclamation, bank stabilization, as well as the burying of a rock wall, 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 401 Northwood Way will be restored to a state that is more characteristic of a native riparian zone than what existed prior to the 2017 flood; 401 Northwood Way was first developed with a residence after the city’s adoption of riparian standards and riparian zone requirements therefore apply.</i></p>
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				<p>411 Northwood Way will not have its riparian zone restored (although staff recommends restoration due to the bank-stabilizing and ecosystem health functions such vegetation provides) because the property was first developed with a residence prior to the city's adoption of riparian standards.</p> <p>On the city parcel several leaner trees and one discrete area of accumulated woody debris is proposed for removal. As actions on the city's parcel are subject to City Council approval through an Encroachment Agreement, this permit notes approval of trees and accumulated woody debris on the city's parcel is subject to a decision by Ketchum City Council.</p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	17.88.050(E)2	<p>Preservation or enhancement of riparian vegetation and wildlife habitat, if any, along the stream bank and within the required minimum twenty five foot (25') setback or riparian zone. No construction activities, encroachment or other disturbance into the twenty five foot (25') riparian zone, including encroachment of below grade structures, shall be allowed at any time without written City approval per the terms of this chapter.</p>
			Staff Comments	<p>Disturbance to the 25' riparian zone is limited to the plans approved through this permit. Any amendment to the proposed scope of work shall be approved in writing as an amendment to this permit.</p> <p>See 17.88.060(E)1 for discussion of riparian vegetation.</p> <p>Accumulated woody debris and riparian plantings have benefits for aquatic life and the overall riparian ecosystem. Staff does not routinely recommend approval of removal of in-stream wood or woody debris accumulated adjacent to streambanks and in floodplain areas. However, the applicant proposes removal of some, but not all woody debris in order to accomplish the project goals; the applicant also states that much of the woody debris will be reused within the project.</p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	17.88.50(E)3	<p>No development, other than development by the City of Ketchum or development required for emergency access, shall occur within the twenty five foot (25') riparian zone with the exception of approved stream stabilization work. The Administrator may approve access to property where no other primary access is available. Private pathways and staircases shall not lead into or through the riparian zone unless deemed necessary by the Administrator.</p>
			Staff Comments	<p>Currently, no pathways and staircases lead into or through the riparian zone. None are proposed.</p> <p>Development activity approved to occur within the riparian zone is described in the plan set attached hereto, as conditioned.</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	17.88.050(E)4	<p>A landscape plan and time frame shall be provided to restore any vegetation within the twenty five foot (25') riparian zone that is degraded, not natural or which does not promote bank stability.</p>
			Staff Comments	<p>A riparian vegetation restoration plan has been proposed with this project. See Brockway Engineering plan set and BYLA plan.</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	17.88.050(E)5	<p>New or replacement planting and vegetation 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 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.</p>

			<p>Staff Comments</p> <p><i>A riparian planting restoration plan has been proposed (BYLA) and includes golden currants, red-osier dogwoods, river alder and woods rose in the riparian zone.</i></p> <p><i>The proposed grasses are per the seed mix identified in the September 30, 2019 Brockway Engineering plan: Idaho fescue, streambank wheatgrass, creeping red fescue, bluebunch wheatgrass and silky lupine.</i></p>
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Compliant			Standards and Staff Comments	
Yes	No	N/A	Guideline	City Standards and Staff Comments
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	17.88.050(E)6	<p>Landscaping and driveway plans to accommodate the function of the floodplain to allow for sheet flooding. Floodwater carrying capacity is not diminished by the proposal. 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.</p>
			Staff Comments	<p><i>The project has been designed (channel geometry design, stabilized bank elevations, and reclaimed land finished elevations) to allow sheet flooding.</i></p> <p><i>However, staff finds greater densities of plantings than what are proposed, within both the riparian zone and the remainder of the Special Flood Hazard Area at 401 Northwood Way, are recommended and would result in better control of surface drainage (sheet flow would be slowed down due to the roughness provided by dense vegetation) and would have the added benefits of erosion mitigation and habitat benefit.</i></p> <p><i>No culverts or berms are proposed.</i></p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	17.88.050(E)7	<p>Impacts of the development on aquatic life, recreation, or water quality upstream, downstream or across the stream are not adverse.</p>
			Staff Comments	<p><i>The proposal is designed to balance the goals of protecting land area from erosion, preventing migration of the main channel of the Big Wood River to the east (closer to structures), and protecting private property owners' (401 and 411 Northwood Way) views of the river and enjoyment of their outdoor properties with the characteristics of an unaltered floodplain and riparian area.</i></p> <p><i>The proposed riparian zone restoration will be an improvement compared to the riparian zone's state prior to the 2017 flood event, which will aid in water quality, thereby benefiting aquatic life.</i></p> <p><i>The public access easements that are located on 401 Northwood Way will remain in effect.</i></p>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	17.88.050(E)8	<p>Building setback in excess of the minimum required along waterways is encouraged. An additional ten foot (10') building setback is encouraged to provide for yards, decks and patios outside the twenty five foot (25') riparian zone.</p>
			Staff Comments	<p><i>N/A, no new building is proposed.</i></p>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	17.88.050(E)9	<p>The top of the lowest floor of a building located in the one percent (1%) annual chance floodplain shall be a minimum of twenty four inches (24") above the base flood elevation of the subject property. (See section 17.88.060, figures 1 and 2 of this chapter.)</p>

Compliant			Standards and Staff Comments	
Yes	No	N/A	Guideline	City Standards and Staff Comments
			<i>Staff Comments</i>	<i>N/A, no new building is proposed.</i>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	17.88.050(E)10	The backfill used around the foundation in the floodplain shall provide a reasonable transition to existing grade but shall not be used to fill the parcel to any greater extent. Compensatory storage shall be required for any fill placed within the floodplain. An LOMA-F shall be obtained prior to placement of any additional fill in the floodplain.
			<i>Staff Comments</i>	<i>N/A, no new building is proposed.</i>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	17.88.050(E)11	All new buildings shall be constructed on foundations that are approved by a licensed professional engineer.
			<i>Staff Comments</i>	<i>N/A, no new building is proposed.</i>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	17.88.050(E)12	Driveways shall comply with effective street standards; access for emergency vehicles has been adequately provided for.
			<i>Staff Comments</i>	<i>N/A, no alteration of driveway is proposed.</i>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	17.88.050(E)13	Landscaping or revegetation shall conceal cuts and fills required for driveways and other elements of the development.
			<i>Staff Comments</i>	<i>N/A, no alteration of driveway is proposed.</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	17.88.050(E)14	(Stream alteration.) The proposal is shown to be a permanent solution and creates a stable situation.
			<i>Staff Comments</i>	<i>The applicant's engineer has designed the stream channel to be a permanent and stable solution. Bank stabilization, protection of the mouth of the eastern side channel, and the buried rock sill are designed to further ensure stability.</i> <i>Monitoring and maintenance are addressed in Section G of the restoration plan dated September 30, 2019 and are approved as conditioned by this permit.</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	17.88.050(E)15	(Stream alteration.) No increase to the one percent (1%) annual chance floodplain upstream or downstream has been certified, with supporting calculations, by a registered Idaho hydraulic engineer.
			<i>Staff Comments</i>	<i>The applicant's engineer has completed a no-rise analysis and submitted a no-rise certification.</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	17.88.050(E)16	(Stream alteration.) The recreational use of the stream including access along any and all public pedestrian/fisherman's easements and the aesthetic beauty is not obstructed or interfered with by the proposed work.
			<i>Staff Comments</i>	<i>401 Northwood Way contains a 10' wide Fisherman's Access Easement providing public access to the river and a 10' Fisherman's / Pedestrian Access / Nature Study easement, offset 10' landward from the eastern bank of the Big Wood River, that is dedicated to the public.</i> <i>Prior to the 2017 flood, neither access into the river channel via the pedestrian access easement nor access along the easement that parallels the bank were inhibited by physical barriers. The bank stabilization treatment proposed may introduce access challenges for persons with mobility impairments (climbing onto and over riprap). As such, staff includes as a condition of approval that the bank stabilization material placed in the most upland (least prone to bank overtopping during highwater) 5' section of the 10' wide Fisherman's Access Easement be arranged in an intentional, deliberate manner to mimic a 'stairstep' leading into the river channel.</i>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	17.88.050(E)17	(Stream alteration.) Where development is proposed that impacts any wetland, 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

Compliant			Standards and Staff Comments	
Yes	No	N/A	Guideline	City Standards and <i>Staff Comments</i>
				a comparable amount and/or quality of new wetland area or riparian habitat improvement.
			<i>Staff Comments</i>	<i>N/A, the subject property does not contain wetlands.</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	17.88.050(E)18	(Stream alteration.) Fish habitat shall be maintained or improved as a result of the work proposed.
			<i>Staff Comments</i>	<i>Use of woody treatments in the eastern side channel's stabilization will aid in maintaining fish habitat. Juvenile fish have been observed in this side channel. Incorporation of woody treatments into the stabilization of the bank of the main channel of the river will aid in maintaining fish habitat as well.</i>
				<i>Removal of the woody debris that has accumulated post-2017 flood will disrupt fish habitat. However, upon completion of this project, the willows and woody treatment incorporated into the stabilized bank should enhance the fish habitat above and beyond the habitat that existed adjacent to the eastern bank of the main channel prior to the 2017 flood. Prior to the 2017 flood the eastern bank of the river contained little to no riparian vegetation and showed signs of incision.</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	17.88.060(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 public lands and waters, aesthetic beauty of the stream and water quality.
			<i>Staff Comments</i>	<i>The proposed work is designed to strike a balance between private property values and the natural characteristics of the main and eastern side channel of the Big Wood River, the floodplain, and riparian area, as such natural characteristics of an unaltered landscape relate to fish and wildlife habitat, aquatic life, recreation, access to the river, aesthetic beauty of the river, and water quality.</i>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	17.88.060(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.
			<i>Staff Comments</i>	<i>N/A.</i>

CONCLUSIONS OF LAW

1. The City of Ketchum is a municipal corporation organized under Article XII of the Idaho Constitution and the laws of the State of Idaho, Title 50, Idaho Code;
2. Under Chapter 65, Title 67, of the Idaho Code the City has passed a zoning ordinance, Title 17;
3. The City of Ketchum Planning Department provided adequate notice of opportunity to comment on this application pursuant to Chapter 17.88 of the zoning ordinance, Title 17;
4. The Administrator has authority to hear the applicant's Preliminary Plat Application pursuant to Section 17.88.050.D.1 of Ketchum Municipal Code, Title 17;
5. The project **does** meet the standards of approval under Chapter 17.88 of Zoning Code Title 17.

DECISION

THEREFORE, the Administrative Floodplain Development Permit for the proposed project, Swan Stream Alteration/Bank Stabilization, is approved on this date, October 11th, 2019, with the following conditions:

1. This approval is subject to the scope of work described in the following documents:
 - a. Swan Property Restoration Plan: Stream Alteration and Floodplain Development Permit Applications: Final for City Approval, Brockway Engineering, PLLC, dated September 30, 2019
 - b. Swan, Sandra River Restoration Project sheets 0-3, Brockway Engineering, PLLC, dated September 16, 2019
 - c. Draft River Restoration, Swan Residence, BYLA, dated September 16, 2019 with the exception of Zone 2 riparian grasses, which shall be the seed mix specified in the September 30, 2019 Brockway Engineering plan.
2. Commencement of construction of any component of this project is subject to approval by the City Council of an Encroachment Agreement and any conditions of approval for the Encroachment Agreement imposed by Council.
3. Commencement of construction of any component of this project is subject to written approval from the adjacent upstream property owners, Marsupial Properties LLC (Alison and Geoffrey Rusack), and/or their attorneys, to the City of Ketchum, attention: Brittany Skelton, Planning and Building Department, because the scope of work includes alteration of the Rusack's private property 411 Northwood Way (Lot 1, Resub of Northwood PUD).
4. The owner's representative shall notify the City of Ketchum Senior Planner Brittany Skelton via e-mail 48 hours in advance of the day construction of the project is scheduled to begin and notify via e-mail on the day construction begins.
5. The owner's representative shall notify the City of Ketchum Senior Planner Brittany Skelton via e-mail within 48 hours of the next business day after the scope of work is complete.
6. The owner's representative shall facilitate a site visit with city staff to occur within five (5) business days of completion of the project.
7. Within 30 days of completion of the project the owner's representative shall submit a construction completion report certifying the project has been completed as proposed. This report shall at minimum include:
 - a. A letter prepared and stamped by Brockway Engineering confirming the project was completed in accordance with the plans dated September 16 and September 30, 2019.
 - i. Verify elevations of reclaimed areas and top of bank or riprapped portions of streambank do not exceed elevations specified in plans
 - ii. Survey cross sections to show channel graded as proposed
 - iii. Verify mouth to east side channel constructed as proposed
 - b. A letter prepared by Ben Young Landscape Architects confirming landscaping has been installed as indicated in the plan dated September 16, 2019, with the exception of the riparian seed mix, which shall be per the seed mix specified in the September 30, 2019 Brockway plan
8. Follow up reports Monitoring Reports due to the city by December 31, 2020, 2021, and 2022. Monitoring reports to reflect all maintenance performed during the given calendar year.
9. For the purpose of maintaining the public access to the river, bank stabilization material placed in the most upland (least prone to bank overtopping during highwater) 5' section of the 10' wide

Fisherman's Access Easement shall be arranged in an intentional, deliberate manner to mimic a 'stairstep' leading into the river channel.

10. Maintenance of barbs, riprap, and east sill shall be limited to reconfiguration of dislodged material used in original construction.
 - a. Replacement of any material that has been washed downstream may be approved administratively if quantity does not exceed 1 cubic yard per year.
11. Floodplain Development Permit approval shall expire one (1) year from the date of signing of approved Findings of Fact per the terms of KMC, Section 17.88.050.G, Terms of Approval;
12. No use of restricted use chemicals or soil sterilants will be allowed within one hundred feet (100') of the mean high-water mark on any property within the city limits at any time (KMC 17.88.040.C.3);
13. No use of pesticides, herbicides, or fertilizers will be allowed within twenty-five feet (25') of the mean high water mark on any property within the City limits unless approved by the City Arborist (KMC 17.88.040.C.4);
14. 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);
15. Application times for herbicides and/or pesticides will 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);
16. The application of dormant oil sprays and insecticidal soap within the Riparian Zone may be used throughout the growing season as needed (KMC 17.88.040.C.6);
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.

Decision: Approved, subject to conditions above.

DATED this 11th day of October, 2019



Brittany Skelton
Senior Planner, CFM

Attachments:

- A. Swan Property Restoration Plan: Stream Alteration and Floodplain Development Permit Applications: Final for City Approval, Brockway Engineering, PLLC, dated September 30, 2019
- B. Swan, Sandra River Restoration Project sheets 0-3, Brockway Engineering, PLLC, dated September 16, 2019
- C. Draft River Restoration, Swan Residence, BYLA, dated September 16, 2019

Public Comment:

1. Trout Unlimited, March 11, 2019
2. Wood River Land Trust, March 11, 2019
3. Katie Franklin, November 9, 2018
4. Trout Unlimited, October 29, 2018
5. Wood River Land Trust, October 29, 2018

6. Barbara Patton, October 29, 2018
7. John E. Philips, October 24, 2018
8. Donald White, October 23, 2018

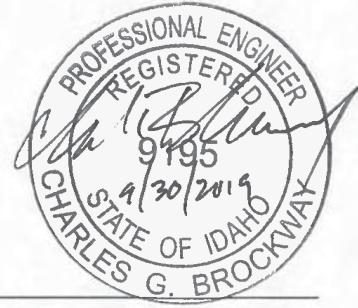
Included in the record:

- I. Floodplain Management Overlay Application coversheet, signed by Sandra Swan and dated August 23, 2018
- II. Swan Property Restoration Plan: Stream Alteration and Floodplain Development Permit Applications (including project drawings and HEC-RAS model results), Brockway Engineering, dated August 27, 2018
- III. Project drawings and exhibits, Brockway Engineering, dated September 28, 2018
- IV. Jennifer Zung, PE, Harmony Design & Engineering, memo dated October 11, 2018
- V. Response to Review by Harmony Engineering of Swan Phase 2 Stream Alteration Permit Application, C. G. Brockway, PhD, PE, dated October 17, 2018
- VI. Email, Charles G. Brockway to Brittany Skelton, dated October 17, 2018
- VII. Letter, Bob and Sandra Swan, to Mayor Neil Bradshaw, Brittany Skelton and John Gaeddert, received via email from Robert Swan October 28, 2018
- VIII. Email, Sandra Swan, dated November 6, 2018, with photo attachments
- IX. Email, Jennifer Zung, dated November 9, 2018
- X. Email, Charles G. Brockway, dated November 14, 2018, 3:40 p.m. with attachment, memo "Information Requested by Jennifer Zung Regarding Sandra Swan SAP Application", dated November 13, 2018
- XI. Email, Jennifer Zung, dated November 14, 2018, 5:21 p.m.
- XII. Email, Charles G. Brockway, dated November 14, 2018, 6:23 p.m.
- XIII. Emails, Charles G. Brockway, dated November 16, 2018
- XIV. Emails, Jennifer Zung, dated November 16, 2018
- XV. Email, Jennifer Zung, dated November 26, 2018, with attachments
- XVI. Revised stand alone revegetation plan, Brockway Engineering, dated December 7, 2018, including attachment, River Restoration landscape plan, BYLA, dated November 27, 2018
- XVII. Letter, Brittany Skelton to Evan Robertson, dated December 10, 2018
- XXVIII. Swan, Sandra River Restoration Project plan set, Brockway Engineering, dated January 4, 2019
- XIX. "No Rise" Certificate, Charles G. Brockway, PE, dated January 4, 2019
- XX. HEC-RAS model files, Brockway Engineering
- XXI. Response to City of Ketchum Deficiency Letter for the Swan Phase 2 SAP Application, Charles G. Brockway, dated January 4, 2019
- XXII. Letter, Evan Robertson to Brittany Skelton, Aaron Golart (IDWR), John Gaeddert, and Tim Luke (IDWR) dated January 29, 2019
- XXIII. Jennifer Zung, PE, Harmony Design & Engineering, memo dated February 20, 2019
- XXIV. Swan, Sandra River Restoration Project plan set, Brockway Engineering, dated July 19, 2019
- XXV. Swan Property Restoration Plan: Stream Alteration and Floodplain Development Permit Applications: Final for City Approval, Brockway Engineering, dated August 14, 2019
- XXVI. Swan Property Restoration Plan: Stream Alteration and Floodplain Development Permit Applications: Final for City Approval, Brockway Engineering, dated September 16, 2019
- XXVII. Swan, Sandra River Restoration Project plan set, Brockway Engineering, dated September 16, 2019
- XXVIII. IDWR Amended Approval of Joint Application for Permit No. S37-20546, dated July 8, 2019
- XXIX. IDWR Approval, in Part, of Joint Application for Permit No. S37-20546, dated February 28, 2019
- XXX. USACE permit NWW-2017-639-I02 dated September 11, 2018

- XXXI. Email, Frank Edelmann, Idaho Fish and Game, September 19, 2018
- XXXII. Email, Kristine Hilt, Blaine County, September 20, 2018
- XXXIII. Email, Frank Edelmann, Idaho Fish and Game, September 24, 2018
- XXXIV. Public comment
- XXXV. Site photos dated September 27, 2010 (Ketchum Planning and Building Department)
- XXXVI. Site photos dated May 11, 2017 (Ketchum Planning and Building Department)
- XXXVII. Site photos dated May 24, 2017 (Ketchum Planning and Building Department)
- XXXVIII. Site photos dated April 6, 2018 (Ketchum Planning and Building Department)
- XXXIX. Site photos dated May 2, 2018 (Ketchum Planning and Building Department)
- XL. Site photos dated November 1, 2018 (Ketchum Planning and Building)
- XLI. Site photos dated November 2, 2018 (Ketchum Planning and Building)
- XLII. P15-144 Findings of Fact, Conclusions of Law, and Decision
- XLIII. P17-055 Findings of Fact, Conclusions of Law, and Decision
- XLIV. P17-134 Findings of Fact, Conclusions of Law, and Decision
- XLV. P19-044 Findings of Fact, Conclusions of Law, and Decision
- XLVI. P19-047 Approval
- XLVII. Chateaux of Northwood subdivision plat, 1995
- XLVIII. City Council meeting minutes, January 13, 1992
- XLIX. Planning and Zoning Commission meeting minutes, February 10, 1992
- L. Planning and Zoning Commission meeting minutes, March 23, 1992
- LI. Letter, Idaho Conservation League to Ketchum Planning and Zoning Commission, with attachment, dated March 23, 1992
- LII. Planning and Zoning Commission meeting minutes, May 8, 1995

**A. Swan Property Restoration Plan: Stream Alteration and Floodplain Development Permit
Applications: Final for City Approval, Brockway Engineering, PLLC, dated September 30, 2019**

Swan Property Restoration Plan: Stream Alteration and Floodplain Development Permit Applications: Final for City Approval



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

September 30, 2019

The project scope and this narrative have been revised multiple times at the request of the City of Ketchum. In the previous version, the erosion protection of the reclaimed land on the floodplain was removed from the project. This change was necessary to obtain an administrative approval of the permit, and is not desired by the applicant nor recommended by the project engineer. Newly-placed soil must be protected from erosion so that it does not wash away during sheet flooding, which may lead to exactly the same situation that exists today; vegetation alone is insufficient. In the present version, the language has been clarified in a few locations as requested by the City. This revised narrative pertains to City of Ketchum permitting only.

A. Background

This project consists of a follow-up to previously-permitted work to address flooding on the applicants' property. Previously-issued permits include the following:

1. Removal of a large debris dam which had formed during the flood of 2017. The dam had raised water levels, caused major gravel deposition in the main river channel, and caused water to leave its banks and cut eastward through the applicant's yard. This dam was the primary source of the flooding problems on the subject property and its removal was the first step toward a long-term solution.
2. Emergency work in May 2018 to place 1-yard gravel bags across the breach area. Even though runoff magnitude in 2018 was moderate (a peak flow of only 836 cfs), water overtopped the bank and cut eastward and the bags were placed to prevent further property damage. At this flow, there would have been zero floodplain inundation but for the gravel deposition in the river channel.

The current proposal is intended to be a long-term solution to the ongoing threat to the applicant's property. Due to gravel deposition in the channel to depths of 2 to 3 feet in 2017, confirmed by topographic surveys, river water levels are now nearly the same as the elevation of the applicant's adjacent property even at base flows. In 2018, water overtopped the bank at very low flows of 150 to 200 cfs. The river continued to cut a channel eastward through the property, exacerbating the erosion that occurred in 2017. This erosion was finally halted by the emergency placement of the gravel bags, but not before major damage to land had occurred. The same effects were observed in 2019,

during which the peak flow was slightly above the median level. The flow in 2019 was not sufficient to mobilize gravel or cause channel changes to any significant degree. The river channels today are essentially in the same configuration as when the permit application was originally submitted in August 2018.

Topographic surveys were performed in November 2017 and July 2018. As noted above, no channel changes have occurred and no new surveying was or will be completed in 2019. Comparing the 2017 and 2018 datasets, it is evident that the runoff in 2018, even though it was very high, failed to mobilize the gravel deposition in any appreciable quantities. The data confirms what is evident by visual inspection –the gravel deposition must be removed in order to restore conveyance to this reach and prevent the river from cutting a new channel eastward through private property.

At the same time, the east floodplain should continue to function as it has historically, but without allowing the major erosion observed in 2017 and 2018. Sheet flow in this area is appropriate and consistent with historical occurrence; however, the river cutting a major new channel through private property is not. This objective will be accomplished by regrading and protecting the floodplain as described below.

The minor channel known as the “East Channel” has important riparian value and should be maintained and protected. This channel has historically flowed year-round and has contributed significantly to flood-carrying capacity of the river system. These values should be preserved, but the channel must be stabilized to prevent it from turning into a major river channel and impacting adjacent properties.

Finally, bank protection measures consisting of both rock and wood-based treatments are warranted along the excavated banks to prevent undercutting and potential bank failure.

The project consists of seven (7) components. The components are described below and are illustrated on the accompanying drawings.

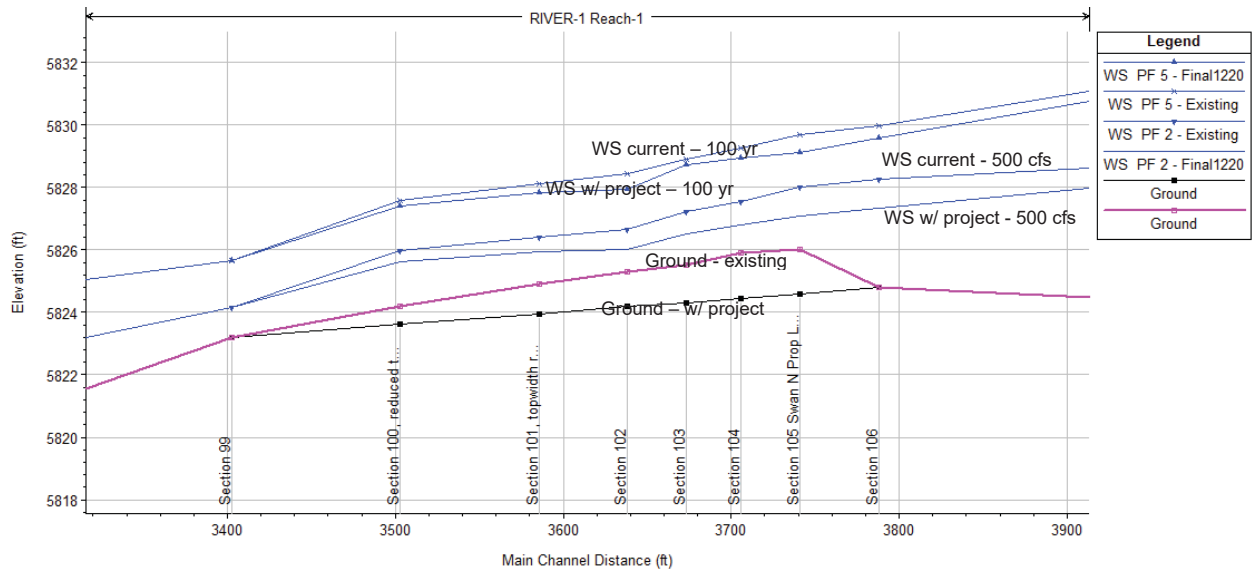
B. Project Components

1. Removal of gravel and sediment deposition

The accretion of gravel in 2017 did not adequately mobilize in 2018 and very little gravel was transported. Gravel must be removed and the channel re-graded to a stable section which can transport flows without overtopping the east bank except in very high flow conditions, as it has historically. The figure below shows the existing channel “hump” of gravel and the proposed grade. Also shown are computed values of the water surface at a flow of 500 cfs and the 100-year flow.

The grade of the channel was set by assuming a constant gradient from the northern to the southern cross-section (see plan drawing). This results in a slope of 1.1%. The excavated channel will be generally trapezoidal, with bottom width varying from 40 to 60

feet and side slope of 4:1. The exception is at section 106 north of the Swan property line, which must have a narrower section to match property with adjacent conditions. The hydraulic modeling performed for the project indicates that this geometry will result in a net decrease in water levels at all river flows (see Section E, below).



Excavated gravel will be utilized for the reclamation component, but most of the gravel will be excess and will be hauled off site.

The logistics of river channel construction dictate that some material stockpiling must occur in the dry channel for a very short time. A typical approach would involve one loader excavating the channel to grade, and a second loader picking up stockpiled material and transporting it out of the channel.

2. Reclamation of eroded land

This component will involve restoring eroded turf and riparian areas to substantially pre-2017 extents and grade, i.e. prior to the discrete flood event of 2017. 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 shots from obvious pre-flood points such as bases of trees, undisturbed turf areas, etc. These data were used to estimate final grade elevations and a contour map for the landscaper to follow. Final grades were set approximately 0.5' higher than estimated pre-flood grades to account for soil settling and the overall higher flood elevations due to gravel deposition (see Section E).

It will be vitally important to ensure that the reclaimed area can withstand shallow sheet flow without succumbing to the erosion seen in 2017 and 2018. The modeling indicates that during the 100-year event as much as 232 cfs (8% of the total streamflow) will flow

in the east floodplain at velocities from 1.4 to 2.0 ft/s. To obtain an administrative approval, the City has prohibited the inclusion of a stabilization product and therefore it is not included in the plan.

The reclaimed area will be revegetated with same or similar vegetation that was in place prior to the 2017 flood, including turfgrass. However, appropriate riparian vegetation will be used in the 25-foot riparian zone, and riparian woody shrubs will be incorporated to increase surface roughness and provide habitat value. See the revegetation plan, Section F, and the attached revegetation map from BYLA.

3. Protection of southern boundary of reclaimed land

This component involves armoring the south boundary of reclaimed land. The reason for this action is twofold: 1) water flowing southeasterly over the reclaimed area during a flood will “fall” into the east channel, which is an erosion risk, and 2) the east channel flow itself could undercut and erode the southern boundary of the reclaimed area. The armoring treatment will include riprap with willow plantings.

4. Stabilization of East Channel entrance

Water should be allowed to flow into East Channel, but the channel is now at risk of down-cutting and allowing excessive flow to occur. The flood risk to owners of property along the channel has been elevated significantly. During the 2018 runoff, very large amounts of water entered the channel – much more than would ordinarily occur during such a modest runoff event. The objective is to reestablish the channel as a functioning minor channel that will both increase flood conveyance and provide water supply for riparian values during low 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 from the river to about 80 feet downstream, and placing erosion protection consisting of 1) a rock sill across the channel to prevent downcutting, and 2) a rip-rap bank upstream and downstream of the sill consisting of buried rock and embedded root wads. These measures are intended to prevent down-cutting and stabilize the flow into the channel.

5. Bank stabilization

This component includes 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. The benefits of this action include erosion protection, encouraging the high velocity flow to remain waterward of the bank, encouraging the river to curve westward, and improving habitat.

6. Buried rock sill

A line of rock will be buried along the top of the bank to provide a final backstop against downcutting or bank migration in the event of a severe, unforeseen occurrence. The top of the rock will be about 8” below finished grade and approximately 10 feet waterward of the ordinary high water mark.

7. Removal of debris and at-risk trees

Woody debris and unstable trees will be removed and the wood utilized in the bank protection measures wherever possible. Tree removal will be minimized to the extent possible, but it is vital that unstable trees which may fall into the river and restart the debris dam accretion process be removed. The removal areas are specifically designated on the plan drawing. Trees on city property as marked in the field will be removed, and deadwood on city property in the area of water bypass will likely need to be removed to accomplish the bypass. It appears likely that all woody material can be utilized in the project.

C. Quantities

Quantities of excavation and fill were calculated for components #1 through #5 and are shown in Table 1. OHW was assumed to be the line existing prior the 2017 discrete event. Component #6 involves work landward of the OHW and therefore no quantities are given. Component #7 involves removal of trees and debris and the volume is difficult to estimate.

As noted in Table 1, the total volume of gravel removal is 1,423 cubic yards. Of this amount, gravel removal proposed on City of Ketchum property, which would occur at Sections 104, 105, and 106 is estimated to be 215 cubic yards. Additional detailed information on the channel grading after gravel removal activity is provided in Table 2, including cross-sectional areas of removal and channel geometry.

D. Water Bypass

The project work area will be dewatered to reduce or eliminate turbidity impacts and to allow proper grade and geometric control on all features of the project. This will be accomplished by placing 1-yard gravel bags north of the work and diverting the flow into the western river channel at a location which is feasible and will provide the necessary flow path. To do this will likely require removal of the debris as shown on the plan drawing and may require creation of a shallow bypass channel across the gravel bar on City property, not on the Community Library’s property. It is possible that the gravel bags alone will be sufficient to bypass the flow, depending on the magnitude of the river flow. Material removed for the bypass channel will be temporarily placed on the gravel bar just adjacent to the channel and the gravel bar restored after the work is complete.

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. Gravel removal	405	0.54	1,423	1,423	0	0
2. Reclamation	n/a	0.27	0	0	447	0
3. Reclaimed land south boundary protection	165	0.03	0	0	77	65
4. East chan entrance stabilization	88	0.03	86	86	54	54
5. Bank stabilization	252	0.06	0	0	183	183
6. Gabions	Landward of OHW					
7. Wood removal	n/a	0.10	150	150	0	0
Temporary bypass and coffer	32	0.03	65	65	18	12
TOTALS		1.05	1,724	1,724	586	314
TOTALS (not including temporary work)		1.02	1,659	1,659	568	302

Notes:
 Gravel removal: Length is total north-south length along Big Wood River from upper to lower limits of removal.
 Reclamation: Fill volume is for reclamation of land within floodplain.
 Reclaimed land south boundary protection: Length is west-east along north bank of East Channel.
 East channel entrance stabilization: Length is the west-east length of the east channel entrance protection and re-grading; total excavation is for channel re-grading from entrance eastward; fill is rock at entrance.
 Bank stabilization: Length is north-south along Big Wood River, fill is riprap and logs.
 * OHW prior to 2017 discrete event.

Table 2. Post-project channel geometry.

Section	River Station (ft)	Bottom width (ft)	Side slope	Cut area (ft2)
106	106085	20	2:1	25
105	106038	30	4:1	98
104	106003	40	4:1	114
103	105970	40	4:1	113
102	105935	50	4:1	154
101	105883	60	4:1	96
100	105800	60	4:1	116
99	105700	30	4:1	21

E. HEC-RAS Modeling

Hydraulic modeling using HEC-RAS 4.1 was performed for the project. The FEMA effective model for the Big Wood River was run, and found to reproduce the base flood elevations at Sections EN and EM. The project is located between these two sections.

Eight new cross-sections were developed using the survey data described above to reflect current conditions through the project reach. The same roughness coefficients used by FEMA were used for the new cross-sections.

A Corrected Effective model was developed by inserting the new cross-sections and adjusting reach lengths accordingly. A Post-Project model was developed which incorporates both the reclamation of land within the floodplain, the proposed gravel removal, and the bank stabilization actions.

The Corrected Effective model indicates that current 100-year flood heights are 1.1 to 1.3 feet greater than the published base flood elevations due to the gravel deposition described herein.

With the proposed project in place the Post-Project model indicates reductions in flood height compared to the Corrected Effective model during the 100-year event and all other flows in the river. The reduction in water level adjacent to the applicant's property will be considerable as shown in Table 3. The model indicates that the project clearly meets the required "no-rise" criteria for work within a regulatory floodway, as it will result in a decrease in 100-year flood height compared to current conditions.

Table 3. Change in computed water level from existing (Corrected Effective) to Post-Project conditions.

Section	Streamflow (cfs)				
	100	500	1000	2000	2880 (100-yr)
106	-0.95	-0.98	-0.88	-0.66	-0.42
105	-1.21	-1.00	-0.84	-0.58	-0.63
104	-1.15	-0.88	-0.72	-0.55	-0.50
103	-1.05	-1.05	-0.78	-0.48	-0.38
102	-0.84	-0.79	-0.71	-0.82	-0.64
101	-0.78	-0.69	-0.54	-0.48	-0.46
100	-0.60	-0.56	-0.44	-0.38	-0.35

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 1,400 cfs or about a 7-year event, which is an appropriate level. The model predicts the overland flow in the east floodplain during the 100-year event ranges from 77 to 232 cfs through the study reach. In short, the floodplain conveyance is being adequately preserved.

F. Revegetation Plan

Revegetation of the all disturbed areas will be a vital component of the restoration plan. The project is divided in two three revegetation zones according to the treatment received: the reclaimed area outside of the riparian zone, the 25-foot riparian zone, and the bank stabilization zone. Each treatment is described below. Consultation was made with the owner's landscape professional, Ben Young Landscape Architects (BYLA), to refine the plan from the original plan submitted with the application. The plan described below and depicted on the attached map from BYLA is consistent with the plan approved by IDWR and will supersede any previously-submitted plans.

Zone 1: Reclaimed land outside of the 25-foot riparian zone:

Grasses

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

Shrubs (3 per 1000 ft²)

Golden currant	<i>Ribes aureum</i>
Red-osier dogwood	<i>Cornus sericea</i>
River alder shrub	<i>Alnus incana</i>
Woods rose	<i>Rosa woodsii</i>

Cottonwood seedlings (5)

Zone 2: Riparian zone within 25 feet of ordinary high water (prior to 2017 discrete event) of the Big Wood River and East Channel

Note: the riparian grass list has been modified slightly to reflect the requirements of the City in order to obtain administrative approval.

Riparian Grasses (approximately equal proportions)

Idaho fescue	<i>Festuca idahoensis</i>
Streambank wheatgrass	<i>Agropyron riparium</i>
Creeping red fescue	<i>Festuca rubra</i>
Bluebunch wheatgrass	<i>Pseudoroegneria spicata</i>
Silky lupine	<i>Lupinus sericeus</i>

Shrubs (12 per 1000 ft²)

Golden currant	<i>Ribes aureum</i>
Red-osier dogwood	<i>Cornus sericea</i>
River alder shrub	<i>Alnus incana</i>
Woods rose	<i>Rosa woodsii</i>

Zone 3: Bank stabilization

Booth willow	<i>Salix boothii</i>
Geyer willow	<i>Salix geyeria</i>
Pacific willow	<i>Salix lasiandra</i>

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 6 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 1-gallon or 5-gallon containerized nursery stock, planted in accordance with accepted practices for containerized plantings. The shrub location and density will be selected to harmonize with existing vegetation, with target coverages described above. An exact number of shrubs cannot be specified.

Willow plantings within the bank stabilization will be made at a target spacing of 6 feet, with the willows placed deep enough to reach permanent water.

G. Monitoring and Maintenance

At the City's request, the performance of the project will be monitored for a period of three (3) years from the date of completion. Monitoring is agreed to by the owner only if the permit from the City also allows maintenance to address damage found during the monitoring period under the existing permit and without a new permit process.

Monitoring will consist of a site inspection and qualitative assessment by a qualified professional incorporating the following items:

1. Riprap integrity
2. Barb integrity
3. East channel sill integrity

4. East channel flow rate magnitudes at different river levels
5. Gravel and debris accumulation
6. Vegetation establishment, target survival 80% after 3 years

It is understood that debris accumulation/felled trees located outside of the bank stabilization area included in the scope of this permit, both waterward of the ordinary high water mark and landward of the ordinary high water mark and within the boundaries of the special flood hazard area, are subject to a separate permit process. A report will be submitted to the City by December 31 of each year during the monitoring period.

H. Construction Drawings


The City has requested final plans for the project. In anticipation of permit approval and project construction, a set of construction drawings have been prepared on 18"x24" sheets. These drawings contain four sheets: a cover page with specifications, plan view, details, and sections. As noted above, these have been modified slightly from the originally-submitted 8-1/2" x 11" drawings in accordance with the above discussions. The cross-sections shown thereon are the basis of the HEC-RAS modeling. The City is being provided with these large-format plans, as they are easier to follow than smaller-scale sheets. These plans are noted as Revision F and reflect the exclusion of the erosion protection product on the reclaimed land for the City only.

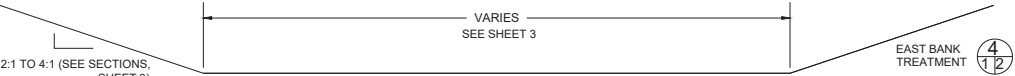
B. Swan, Sandra River Restoration Project sheets 0-3, Brockway Engineering, PLLC, dated September 16, 2019

1. EXCAVATE GRAVEL. ELEVATIONS AND SIDE SLOPES SHOWN.
2. RECLAIM ERODED LAND TO ESTIMATED GRADE EXISTING PRIOR TO 2017 FLOOD AND STABILIZE. PLACE TOPSOIL AND REVEGETATE. FINAL ELEVATIONS AND CONTOURS SHOWN.
3. PROTECT SOUTH EXTENT OF RECLAMATION WITH RIPRAP, 8" TO 24" ANGULAR STONE KEYED INTO TOE OF EAST CHANNEL.
4. PROTECT ENTRANCE TO EAST CHANNEL WITH ROCK SILL AND 8" TO 24" BURIED ANGULAR STONE BLANKET. FLUSH WITH RIVER BED. REMOVE DEBRIS BLOCKING EAST CHANNEL. RE-SHAPE CHANNEL TO LIMIT SHOWN.
5. BANK STABILIZATION: COTTONWOOD LOGS WITH INTACT ROOT BALL PROTECTING 5' FROM TOE, RIPRAP BETWEEN LOGS 8" TO 24" UNIFORM GRADATION KEYED INTO TOE, LONGITUDINAL TOE LOGS, WILLOW CUTTINGS 5' SPACING IN RIPRAP.
6. BURIED SILL, TOP 8" BELOW FINISHED GRADE.
7. REMOVE WOODY DEBRIS INCLUDING UNSTABLE TREES AND UTILIZE IN BANK STABILIZATION. FOR CLARITY, NOT ALL WOODY TREATMENT IN BANK IS SHOWN. SEE DETAILS.

100 — — — — — CROSS-SECTION

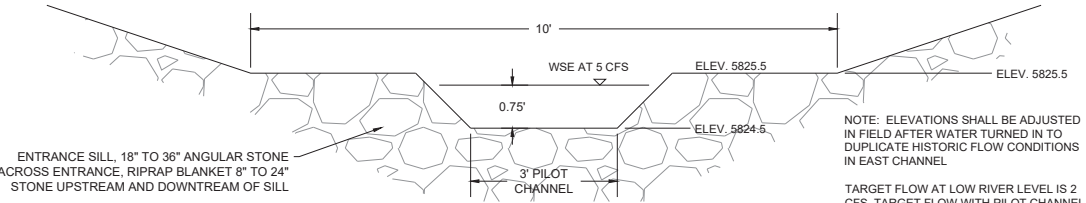
1 SITE PLAN
- 1 SCALE: 1" = 25'

THIS DRAWING HAS BEEN PREPARED BY BROCKWAY ENGINEERING, PLLC FOR A SPECIFIC PROJECT TAKING INTO ACCOUNT THE SPECIFIC AND UNIQUE REQUIREMENTS OF THE PROJECT. REUSE OF THIS DRAWING FOR ANY PURPOSE IS PROHIBITED UNLESS WRITTEN PERMISSION IS OBTAINED FROM BOTH BROCKWAY ENGINEERING & THE CLIENT IS GRANTED.	F	GEOGRID REMOVAL FOR CITY	9/16/19			DESIGNED BY	DRAFTED BY	BROCKWAY ENGINEERING, PLLC HYDRAULICS - HYDROLOGY - WATER RESOURCES 2016 NORTH WASHINGTON, SUITE 4 TWIN FALLS ID, 83301 (208) 736-8543	SWAN, SANDRA RIVER RESTORATION PROJECT SITE PLAN	PROJECT # 1436-02-2018	DWG # 1	REV 
	E	FOR FINAL PERMIT	7/19/19			CSB	KCB					
	D	MODIFICATIONS TO CHANNEL	1/4/19									
	C	ISSUE FOR BIDDING	10/18/18									
	B	ADDED PROPERTY NAMES	9/28/18									
	A	ISSUE FOR PERMITTING	8/27/18									
REV	DESCRIPTION	DATE	APPD.	REFERENCE DRAWINGS	SCALE 1" = 25' (18" X 24" DWG ONLY)							



A
1 2
MAIN RIVER CHANNEL TYP. SECTION
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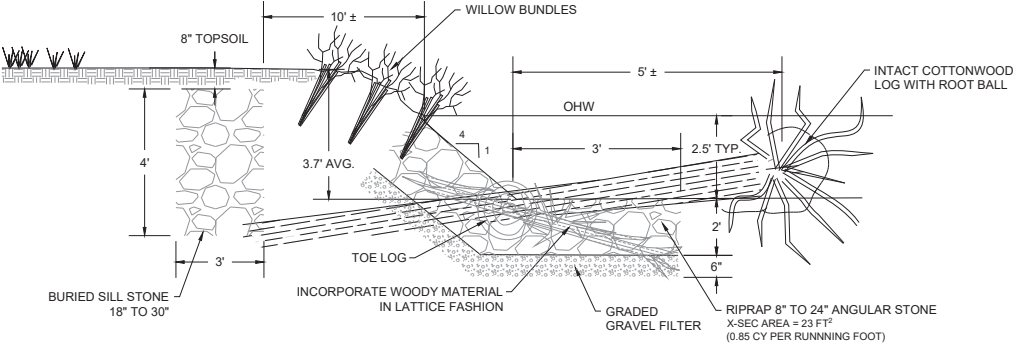
NOT FOR CONSTRUCTION



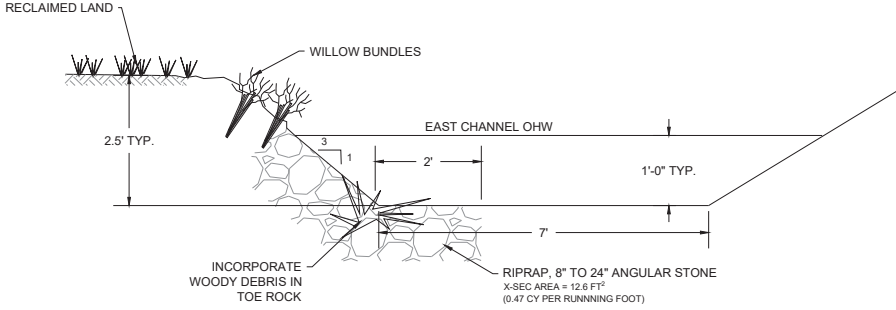
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1 2
EAST CHANNEL ENTRANCE SECTION
SCALE: N.T.S.



3
1 2
LAND RECLAMATION TREATMENT
SCALE: N.T.S.

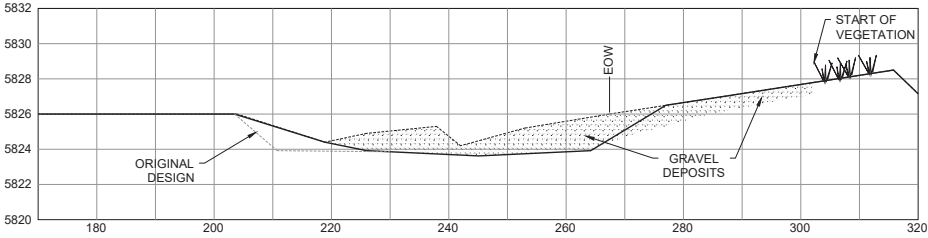


2
1 2
BANK TREATMENT - MAIN RIVER
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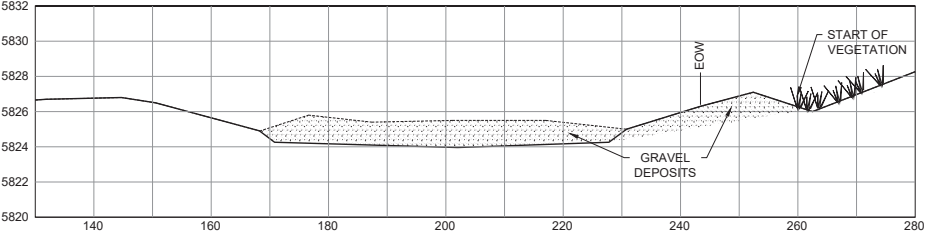


4
1 2
BANK TREATMENT - SOUTH EDGE OF RECLAMATION
SCALE: N.T.S.

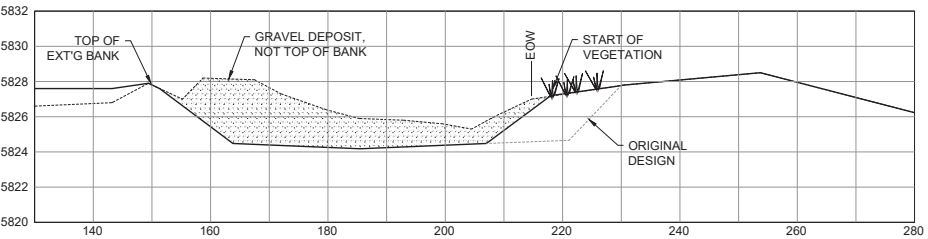
THIS DRAWING HAS BEEN PREPARED BY BROCKWAY ENGINEERING, PLLC, FOR A SPECIFIC PROJECT TAKING INTO ACCOUNT THE SPECIFIC AND UNIQUE REQUIREMENTS OF THE PROJECT. REUSE OF THIS DRAWING FOR ANY PURPOSE IS PROHIBITED UNLESS WRITTEN PERMISSION FROM BOTH BROCKWAY ENGINEERING & THE CLIENT IS GRANTED.	F	GEOGRID REMOVAL FOR CITY	9/16/19				DESIGNED BY	DRAFTED BY	BROCKWAY ENGINEERING, PLLC HYDRAULICS - HYDROLOGY - WATER RESOURCES 2016 NORTH WASHINGTON, SUITE 4 TWIN FALLS ID, 83301 (208) 736-8543	SWAN, SANDRA RIVER RESTORATION PROJECT SECTIONS AND DETAILS	PROJECT # 538-17-2016 DWG # 2 REV A
	E	FOR FINAL PERMIT	7/19/19				CGB	ICB			
	D	MODIFICATIONS TO CHANNEL	1/4/19								
	C	ISSUE FOR BIDDING	10/18/18								
	B	ADDED PROPERTY NAMES	9/28/18								
	A	ISSUE FOR PERMITTING	8/27/18								
	REV	DESCRIPTION	DATE	APPD.	REFERENCE DRAWINGS			(18 X 24) DWG ONLY			



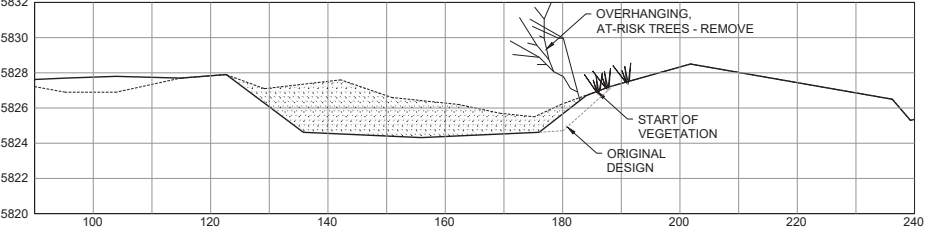
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SECTION 100
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VERTICAL SCALE: 1" = 5'



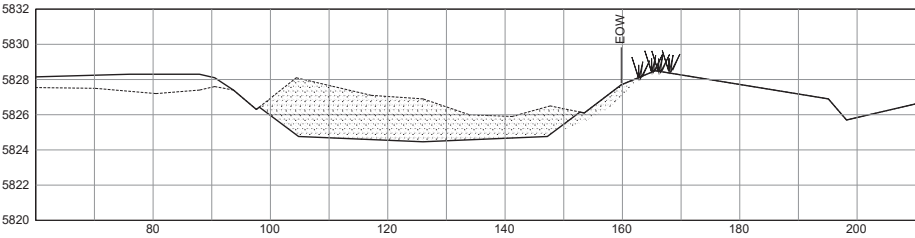
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VERTICAL SCALE: 1" = 5'



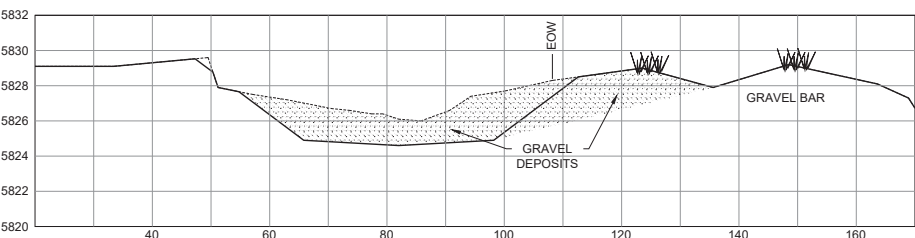
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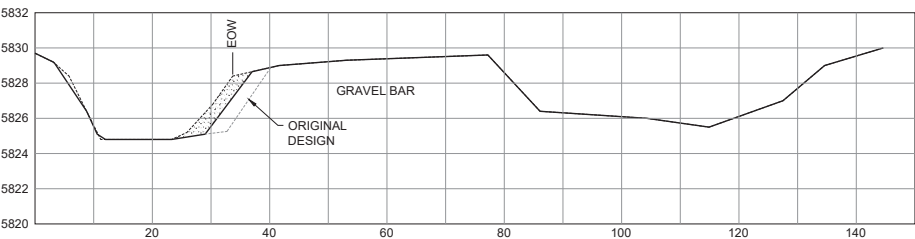
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SECTION 103
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VERTICAL SCALE: 1" = 5'



C.4
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SECTION 104
HORIZONTAL SCALE: 1" = 15'
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'

----- EXISTING CHANNEL - SURVEYED JULY 17, 2018
----- PROPOSED CHANNEL
----- EOW
----- EDGE OF WATER AT TIME OF SURVEY

NOT FOR CONSTRUCTION

C. Draft River Restoration, Swan Residence, BYLA, dated September 16, 2019



Symbol	Description
---	Property Line
(Z1)	ZONE 1 - NON RIPARIAN RECLAIMED LAND & DISTURBED AREAS
(Z2)	ZONE 2 - 25' RIPARIAN ZONE
(Z3)	ZONE 3 - 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.

Botanical Name	Common Name
Ribes aurum	Golden Currant
Cornus sericea	Red-osier dogwood
Alnus incana	River Alder
Rosa woodsii	Woods Rose

TREES: (6) Cottonwood Seedlings

Grasses	Label	Match original Fine Fescue

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

SHRUBS: (12) Placed per every 1,000 Sq. Ft.

Botanical Name	Common Name
Ribes aurum	Golden Currant
Cornus sericea	Red-osier dogwood
Alnus incana	River Alder
Rosa serotina	Woods Rose

Riparian Grasses

Botanical Name	Common Name
Festuca idahoensis	Idaho Fescue
Agropyron riparium	Streambank Bromegrass
Festuca rubra	Crested Red Fescue
Pseudobromus spicata	Bluebunch Wheatgrass
Lupinus serotinus	Silky Lupine

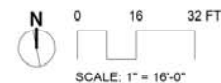
ZONE 3 - Bank Stabilization

SHRUBS: Placed 5' apart maximum

Botanical Name	Common Name
Salix boothii	Booth Willow
Salix geyeri	Geyer Willow
Salix lasiolepis	Pacific Willow

PLAN NOTES:

1. THIS PLAN IS A GRAPHIC REPRESENTATION OF THE PROPOSED RESTORATION PLAN BY BROCKWAY ENGINEERING DATED SEPT. 18, 2019. 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.



Attachments – Plans and Correspondence

- B. *Original Permit:* Encroachment Agreement 20292 – City of Ketchum and Sandra Swan

G

WHEN RECORDED, PLEASE RETURN TO:

OFFICE OF THE CITY ATTORNEY
CITY OF KETCHUM
POST OFFICE BOX 2315
KETCHUM, IDAHO 83340

ENCROACHMENT AGREEMENT NO 20292

THIS AGREEMENT, made and entered into this 4th day of November 2019, by and between the CITY OF KETCHUM, IDAHO, a municipal corporation ("Ketchum"), whose address is Post Office Box 2315, Ketchum, Idaho and SANDRA SWAN, (collectively referred to as "Owner"), whose address is 8 Brittany Meadows, Atherton CA, 94027.

RECITALS

WHEREAS, Owner is the owner of real property described as 401 Northwood Way located within the City of Ketchum, State of Idaho; and

WHEREAS, Owner wishes to: construct stream bank protection measures on City property as described in this agreement and identified in Exhibit A attached hereto and incorporated herein (collectively referred to as the "Improvements"); and

WHEREAS, Ketchum finds that said Improvements subject to the conditions identified in this Agreement will not impede the use of the public property at this time;

NOW, THEREFORE, in contemplation of the above stated facts and objectives, it is hereby agreed as follows:

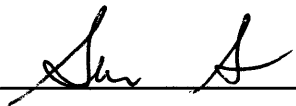
TERMS AND CONDITIONS

1. Ketchum shall permit Owner to construct and maintain the improvements on City property described below until notified by Ketchum to remove all or a portion of the improvements. Permitted improvements consist of:
 - a. Excavate gravel and establish elevations and side slopes in accordance with the plans and specifications in Exhibit A.
 - b. Install a temporary water bypass consisting of gravel bags as identified in Exhibit A during the period of construction.
 - c. If necessary, install a temporary shallow by-pass channel across the gravel bar on city property.
2. If a temporary shallow by-pass channel is determined to be necessary, prior to installation of such channel or removal of debris for the channel, the project contractor shall meet with City representatives to obtain approval of the work to be performed.
3. No logs or woody debris may be removed from City property downstream, upstream or adjacent to 401 Northwood Way.

4. No removal of any trees located on City property may occur unless prior approval has been granted by the City Arborist.
5. Prior to any work commencing, a survey shall be conducted and the boundaries of the City property shall be delineated with survey stakes.
6. Owner shall be responsible for the maintenance of said Improvements. Repairs on City property shall be reviewed and approved by Ketchum prior to work commencing.
7. In consideration of Ketchum allowing Owner to construct and maintain the Improvements on City property, Owner agrees to indemnify and hold harmless Ketchum from and against any and all claims of liability for any injury or damage to any person or property arising from the Improvements constructed, installed and maintained on City property. Owner shall further indemnify and hold Ketchum harmless from and against any and all claims arising from any breach or default in the performance of any obligation on Owner's part to be performed under this Agreement, or arising from any negligence of Owner or Owner's agents, contractors or employees and from and against all costs, attorney's fees, expenses and liabilities incurred in the defense of any such action or proceeding brought thereon. In the event any action or proceeding is brought against Ketchum by reason of such claim, Owner, upon notice from Ketchum, shall defend Ketchum at Owner's expense by counsel satisfactory to Ketchum. Owner, as a material part of the consideration to Ketchum, hereby assumes all risk of damages to property or injury to persons in, upon or about the Improvements constructed, installed and maintained on City property arising from the construction, installation and maintenance of said Improvements and Owner hereby waives all claims in respect thereof against Ketchum.
8. Ketchum shall not be liable for injury to Owner's business or loss of income therefrom or for damage which may be sustained by the person, goods, wares, merchandise or property of Owner, its tenants, employees, invitees, customers, agents or contractors or any other person in or about the Subject Property caused by or resulting from the Improvements constructed, installed, removed or maintained on City property.
9. Owner understands and agrees that by maintaining the Improvements on City property pursuant to this Agreement, Owner obtains no claim or interest in said City property which is adverse to that of Ketchum and that Owner obtains no exclusive right to said City property nor any other right to use the City property not specifically described herein.
10. This Agreement shall be a covenant running with the Subject Property and the terms and provisions hereof shall inure to the benefit of and be binding upon the parties and the respective heirs, personal representatives, successors and assigns of the parties hereof.
11. In the event either party hereto retains an attorney to enforce any of the rights, duties and obligations arising out of this Agreement, the prevailing party shall be entitled to recover from the non-prevailing party reasonable attorney's fees at the trial and appellate levels and, whether or not litigation is actually instituted.

12. This Agreement shall be governed by, construed, and enforced in accordance with the laws and decisions of the State of Idaho. Venue shall be in the District Court of the fifth Judicial District of the State of Idaho.
13. This Agreement sets forth the entire understanding of the parties hereto, and shall not be changed or terminated orally. It is understood and agreed by the parties hereto that there are no verbal promises or implied promises, agreements, stipulations or other representations of any kind or character pertaining to the Improvements maintained in the public right-of-way other than as set forth in this Agreement.
14. No presumption shall exist in favor of or against any party to this Agreement as the result of the drafting and preparation of this document.
15. This Agreement shall be recorded with the Blaine County Recorder by Ketchum.
16. The parties fully understand all of the provisions of this Agreement, and believe them to be fair, just, adequate and reasonable, and accordingly accept the provisions of this Agreement freely and voluntarily.

OWNER:

By: 

Sandra Swan




CITY OF KETCHUM:

By: 

Neil Bradshaw, Mayor

ATTEST:



Robin Crotty
City Clerk

STATE OF California)
) ss.
County of San Mateo)

On this 6th day of Nov, 2019, before me, the undersigned Notary Public in and for said State, personally appeared SANDRA SWAN, known to me to be the person who executed the foregoing instrument and acknowledged to me that ~~he~~ she executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written.



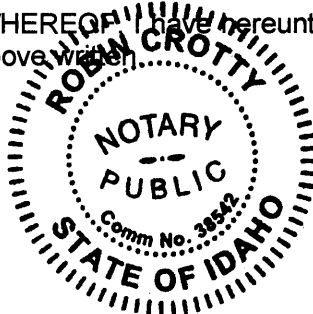
Chetna S. Nayak
Notary Public for California
Residing at Mentor Park
Commission expires 02/25/2021

STATE OF Idaho)
) ss.
County of Blaine)

STATE OF IDAHO)
) ss.
County of Blaine)

On this 19th day of November, 2019, before me, the undersigned Notary Public in and for said State, personally appeared NEIL BRADSHAW, known or identified to me to be the Mayor of the CITY OF KETCHUM, IDAHO, and the person who executed the foregoing instrument on behalf of said municipal corporation and acknowledged to me that said municipal corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and seal the day and year in this certificate first above written.

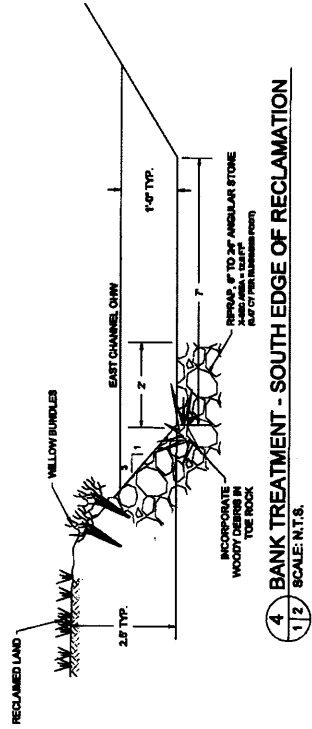
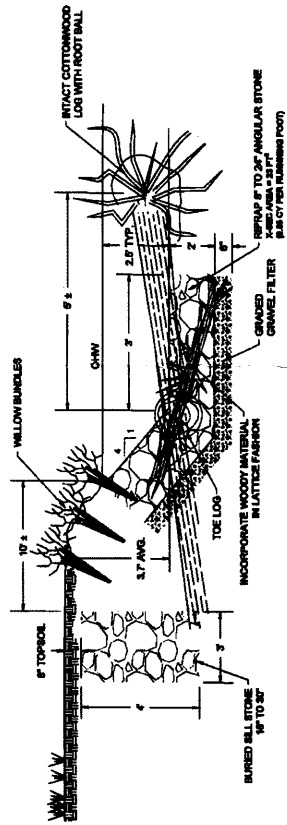
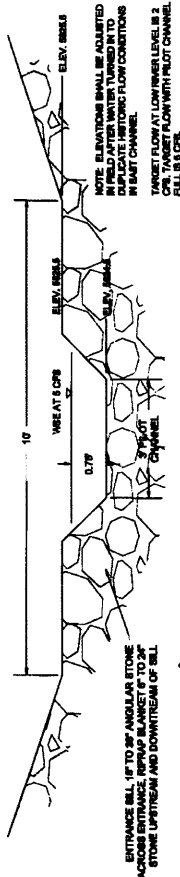


Robyn Crotty
Notary Public for State of Idaho
Residing at Ketchum
Commission expires 12/25/2020

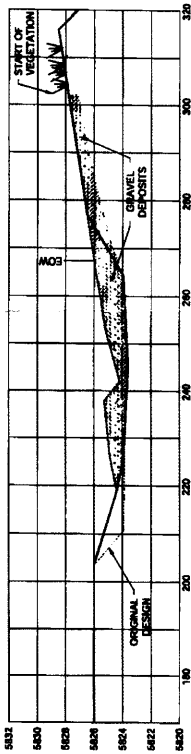
EXHIBIT "A"



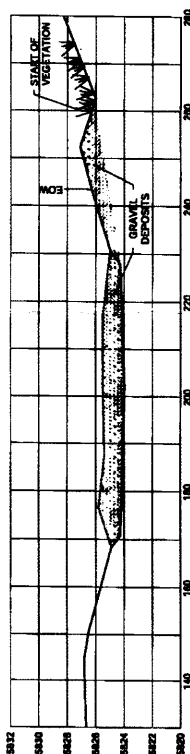
NOT FOR CONSTRUCTION



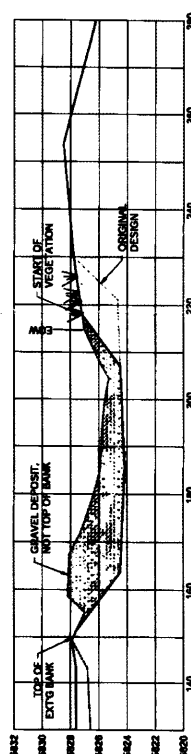
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DWG # 2		SECTIONS AND DETAILS		DWG # 2
BROCKWAY ENGINEERING, PLLC 2018 NORTH WASHINGTON, SUITE 4 TAMPA, FL 33601 (813) 738-6545		SWAN, SANDRA RIVER RESTORATION PROJECT		PROJECT # 088-17-2016
SHEET # 1		SHEET # 1		PROJECT # 088-17-2016
DATE 11/11/2016		DATE 11/11/2016		PROJECT # 088-17-2016
DESCRIPTION RIVER RESTORATION		DESCRIPTION RIVER RESTORATION		PROJECT # 088-17-2016
REV 1		REV 1		PROJECT # 088-17-2016
DATE 11/11/2016		DATE 11/11/2016		PROJECT # 088-17-2016
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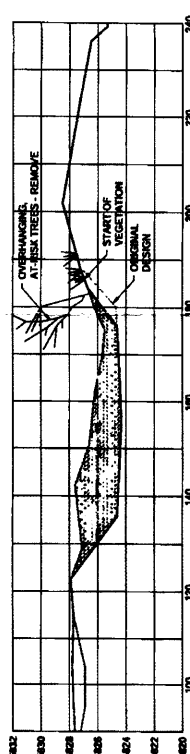
SECTION 100
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VERTICAL SCALE: 1" = 5'



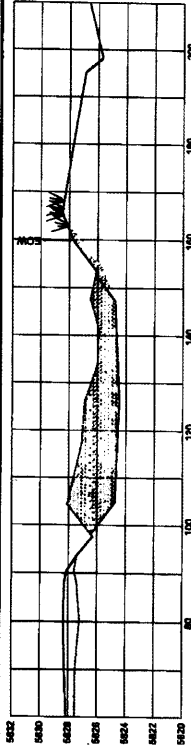
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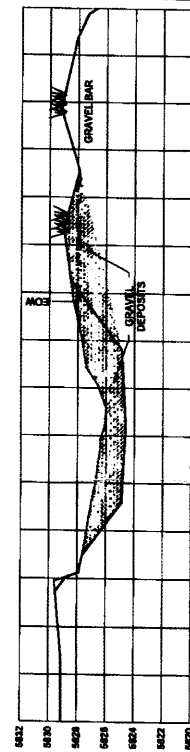
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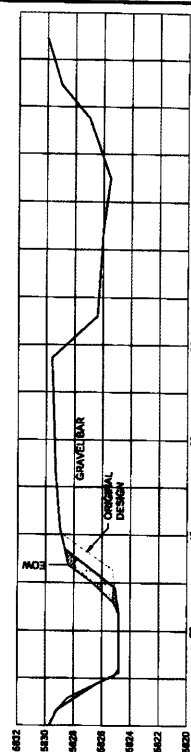
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SECTION 104
HORIZONTAL SCALE: 1" = 15'
VERTICAL SCALE: 1" = 5'



SECTION 105
HORIZONTAL SCALE: 1" = 15'
VERTICAL SCALE: 1" = 5'



SECTION 106
HORIZONTAL SCALE: 1" = 15'
VERTICAL SCALE: 1" = 5'

EXISTING CHANNEL - SURVEYED JULY 17, 2018
PROPOSED CHANNEL - SURVEYED JULY 17, 2018
EDGE OF WATER AT TIME OF SURVEY

NOT FOR CONSTRUCTION

BROCKWAY ENGINEERING, PLLC 2016 NORTH WASHINGTON, SUITE 4 TWIN FALLS ID 83301 (208) 738-8643		SWAN, SANDRA RIVER RESTORATION PROJECT CHANNEL CROSS-SECTIONS		PROJECT # 588-17-2018
DESIGNED BY CHECKED BY DATE		REV 3		DWG # 3
REFERENCE DRAWINGS DATE APPR. DATE		REFERENCE DRAWINGS DATE APPR. DATE		PROJECT # 588-17-2018

[illegible]

	<p>DEPARTMENT OF HEALTH AND HUMAN SERVICES</p> <p>OFFICE OF THE SECRETARY</p> <p>OFFICE OF PUBLIC AFFAIRS</p> <p>1000 PENNSYLVANIA AVENUE, N.W.</p> <p>WASHINGTON, D.C. 20492</p> <p>202-201-6000</p> <p>www.hhs.gov</p>
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06/16/2018
Date: 11/27/2018
Drawn By: TB, KJR
Checked By: CG
Per: FILE
Sheet No: L1.0

SITE OVERVIEW

RIVER RESTORATION
SWAN RESIDENCE
ADDRESS


No.	Description	Signature	Date
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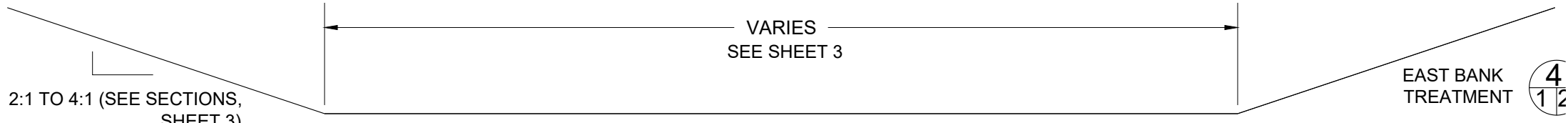
BYLA
LANDSCAPE ARCHITECTS

323 Lewis J. | Kelowna, BC
(250) 738 8867 • (250) 738 0219
www.byla.ca

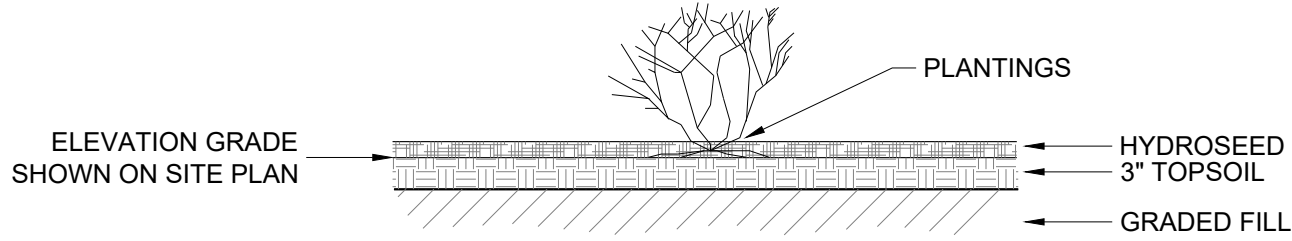
Attachments – Plans and Correspondence

- C. Plans, “Swan, Sandra River Restoration Project,” Three (3) sheets: Site Plan, Sections and Details, and Channel Cross-Sections, dated September 28, 2020

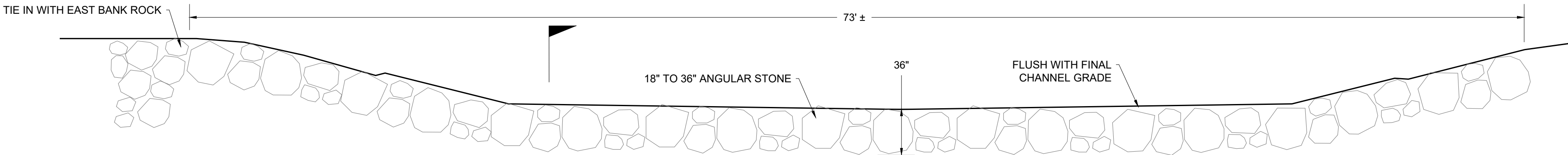
THIS DRAWING HAS BEEN PREPARED BY BROCKWAY ENGINEERING, PLLC. FOR A SPECIFIC PROJECT TAKING INTO ACCOUNT THE SPECIFIC AND UNIQUE REQUIREMENTS OF THE PROJECT. REUSE OF THIS DRAWING FOR ANY PURPOSE IS PROHIBITED UNLESS WRITTEN PERMISSION FROM BOTH BROCKWAY ENGINEERING & THE CLIENT IS GRANTED.	G	AMENDMENT - REMOVE LOT 1 WORK	9/28/20							DESIGNED BY CGB	DRAFTED BY ICB	BROCKWAY ENGINEERING, PLLC HYDRAULICS - HYDROLOGY - WATER RESOURCES 2016 NORTH WASHINGTON, SUITE 4 TWIN FALLS ID, 83301 (208) 736-8543	SWAN, SANDRA RIVER RESTORATION PROJECT		PROJECT # 1436-02-2018	
	F	GEOGRID REMOVAL FOR CITY	9/16/19													
	E	FOR FINAL PERMIT	7/19/19													
	D	MODIFICATIONS TO CHANNEL	1/4/19													
	C	ISSUE FOR BIDDING	10/18/18													
	B	ADDED PROPERTY NAMES	9/28/18													
	REV	DESCRIPTION	DATE	APPD.	REFERENCE DRAWINGS				SCALE 1" = 25' (18 X 24) DWG ONLY							
												SITE PLAN		DWG # 1	REV 	



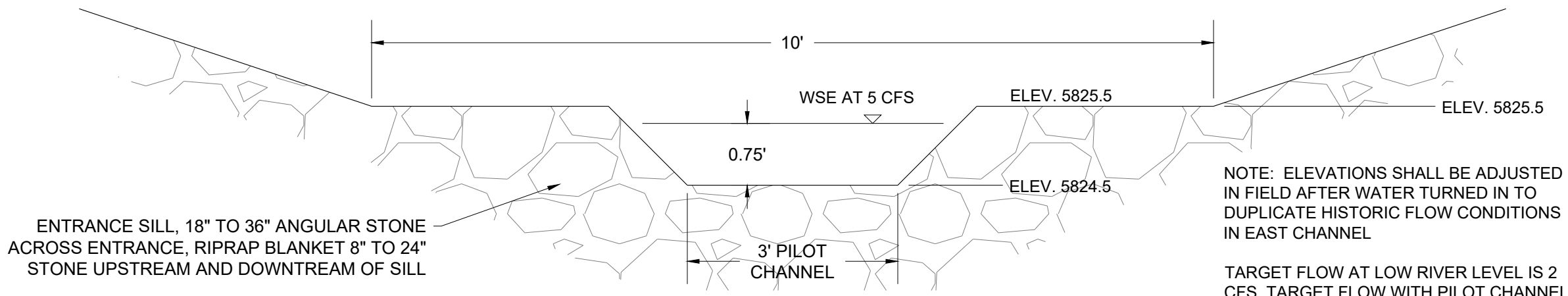
A MAIN RIVER CHANNEL TYP. SECTION
1 2 SCALE: N.T.S.



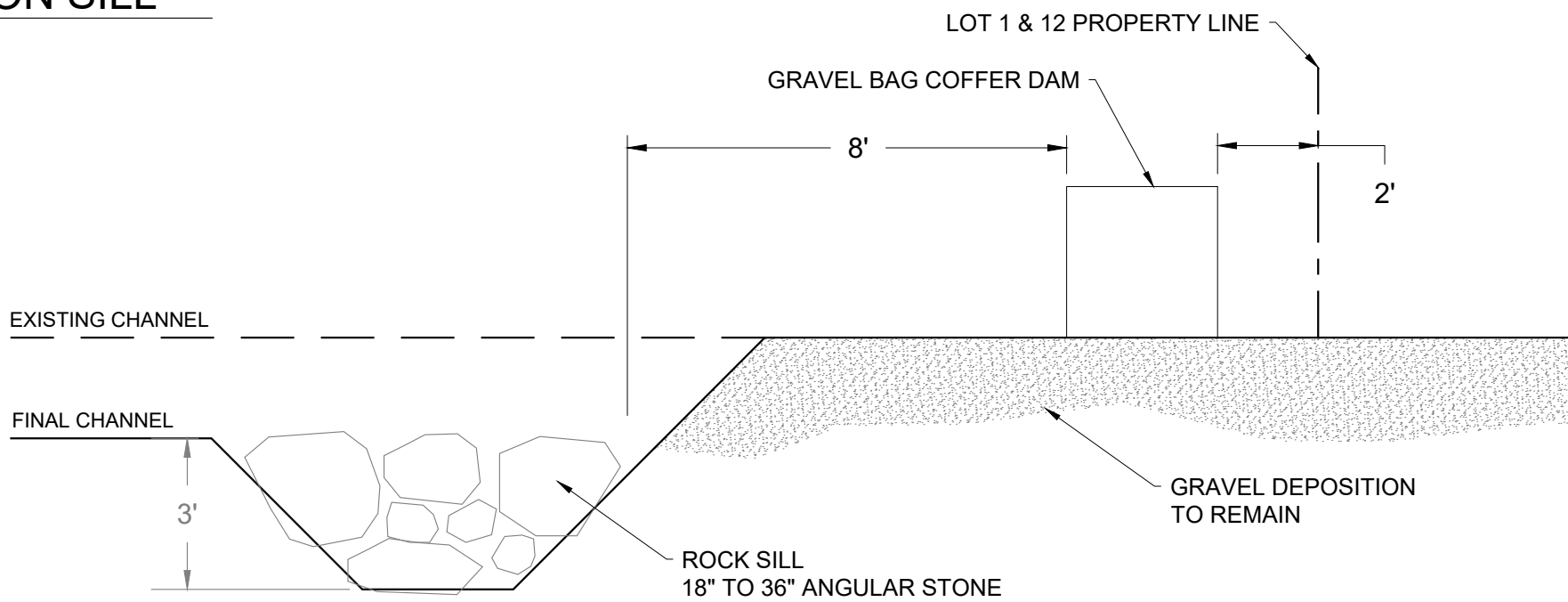
3 LAND RECLAMATION TREATMENT
1 2 SCALE: N.T.S.



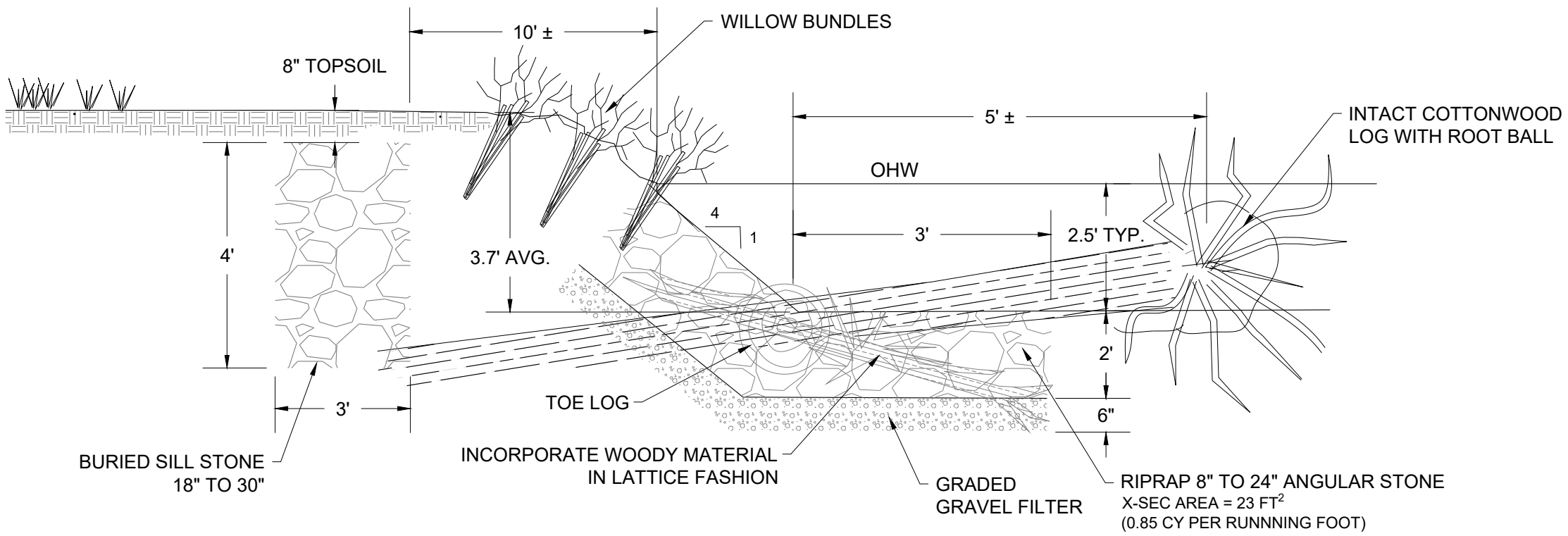
5 CHANNEL STABILIZATION SILL
1 2 SCALE: N.T.S.



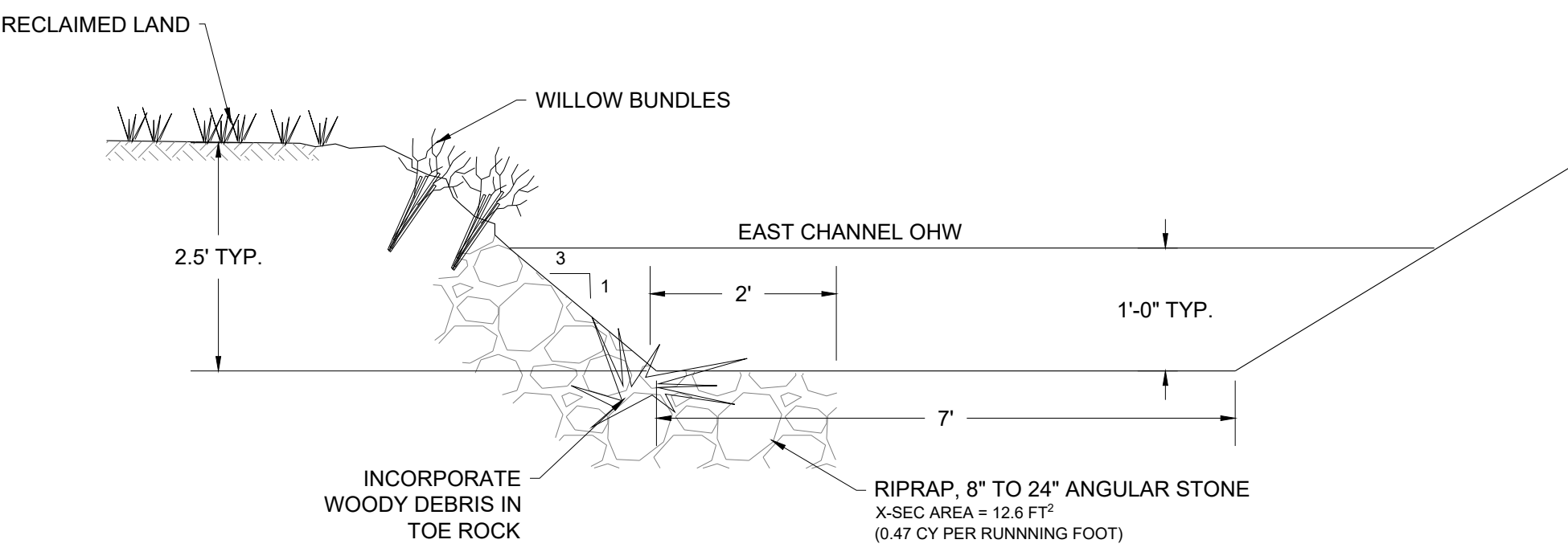
B EAST CHANNEL ENTRANCE SECTION
1 2 SCALE: N.T.S.



C CHANNEL STABILIZATION SILL SECTION
2 2 SCALE: N.T.S.



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



4 BANK TREATMENT - SOUTH EDGE OF RECLAMATION
1 2 SCALE: N.T.S.

NOT FOR CONSTRUCTION

AMENDMENT 9/28/2020

THIS DRAWING HAS BEEN PREPARED BY BROCKWAY ENGINEERING, PLLC. FOR A SPECIFIC PROJECT TAKING INTO ACCOUNT THE SPECIFIC AND UNIQUE REQUIREMENTS OF THE PROJECT. REUSE OF THIS DRAWING FOR ANY PURPOSE IS PROHIBITED UNLESS WRITTEN PERMISSION FROM BOTH BROCKWAY ENGINEERING & THE CLIENT IS GRANTED.

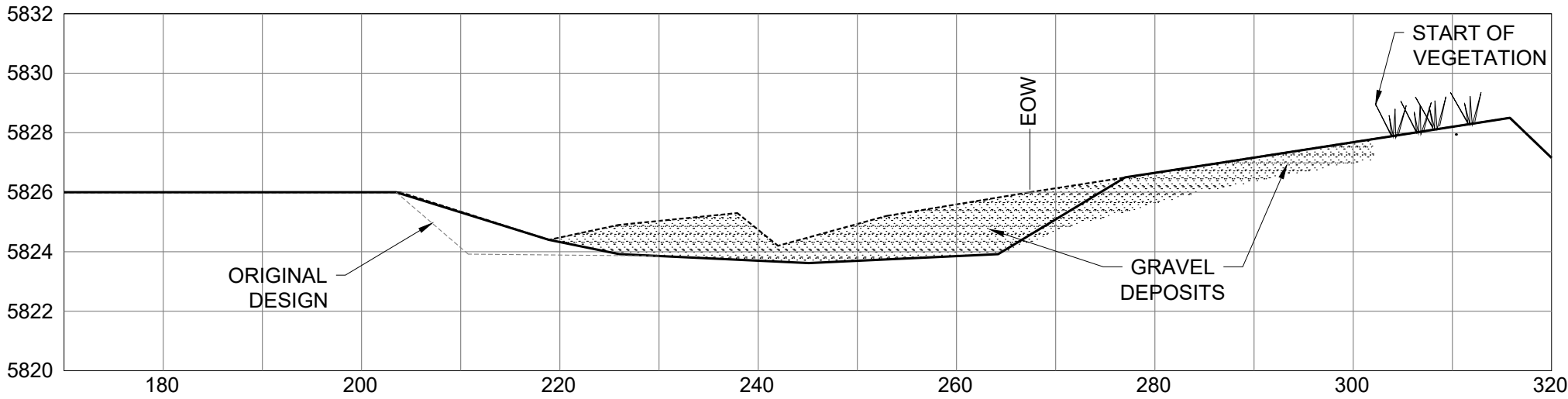
G	AMENDMENT - REMOVE LOT 1 WORK	9/28/20			
F	GEOGRID REMOVAL FOR CITY	9/16/19			
E	FOR FINAL PERMIT	7/19/19			
D	MODIFICATIONS TO CHANNEL	1/4/19			
C	ISSUE FOR BIDDING	10/18/18			
B	ADDED PROPERTY NAMES	9/28/18			
REV	DESCRIPTION	DATE	APPD.	REFERENCE DRAWINGS	

DESIGNED BY	DRAFTED BY
CGB	ICB
(18 X 24) DWG ONLY	

BROCKWAY ENGINEERING, PLLC
HYDRAULICS - HYDROLOGY - WATER RESOURCES
2016 NORTH WASHINGTON, SUITE 4
TWIN FALLS ID, 83301
(208) 736-8543

SWAN, SANDRA
RIVER RESTORATION PROJECT
SECTIONS AND DETAILS

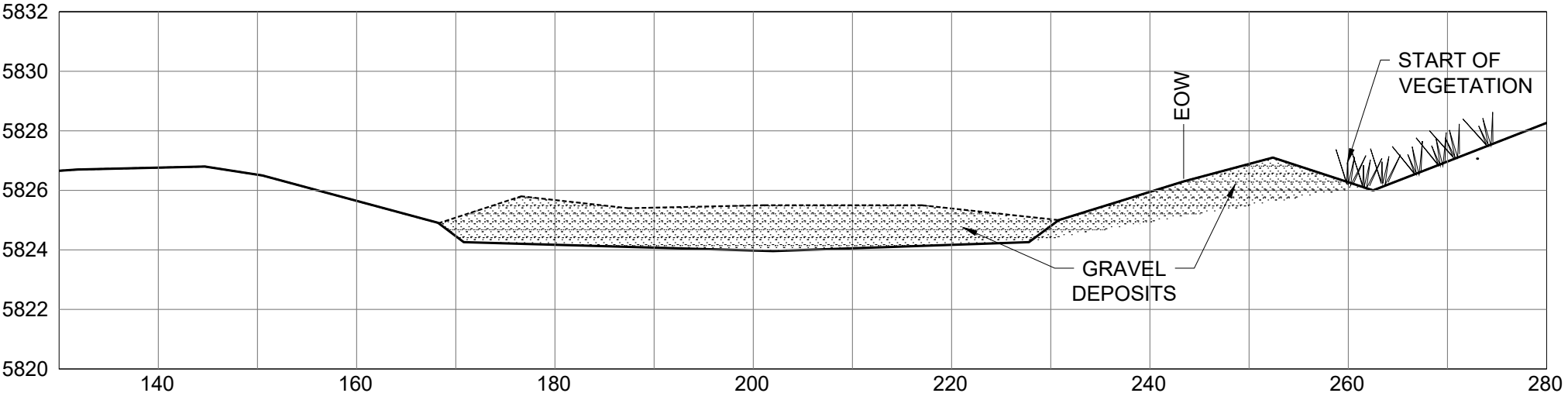
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DWG #	2
REV	G



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SECTION 100

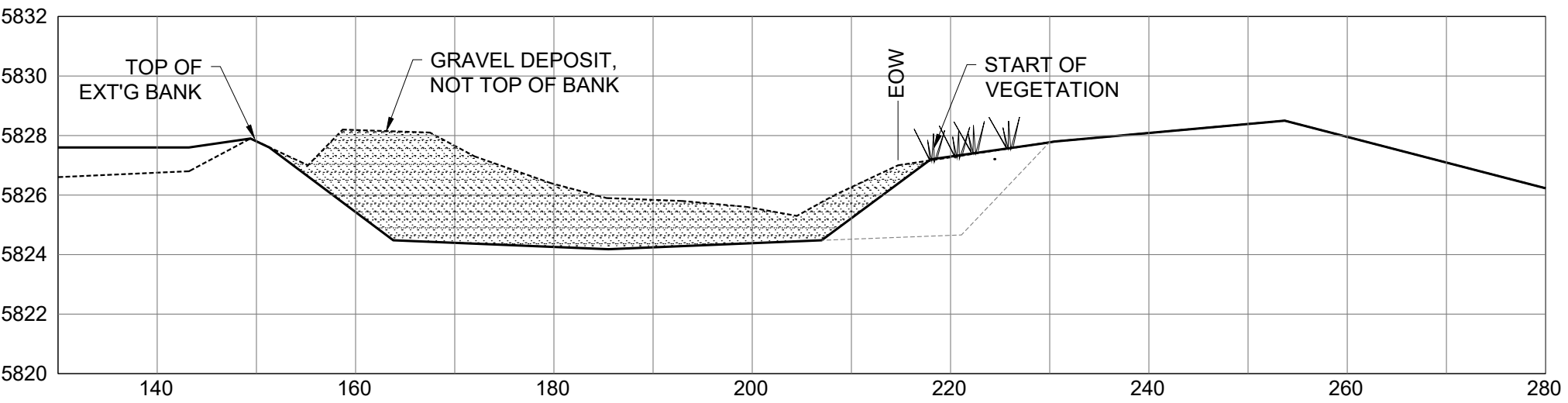
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VERTICAL SCALE: 1" = 5'



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SECTION 101

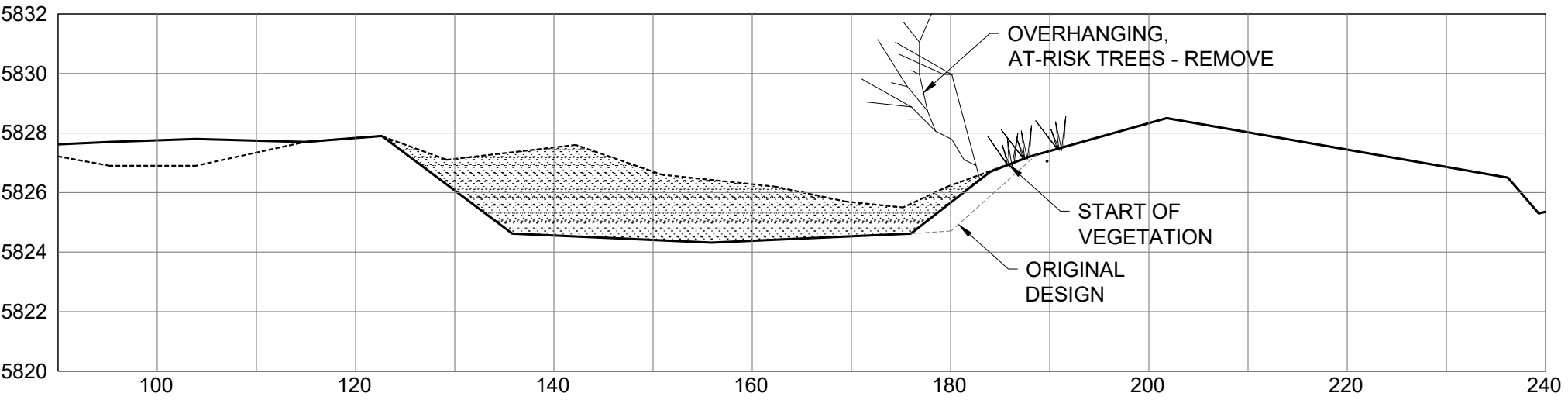
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SECTION 102

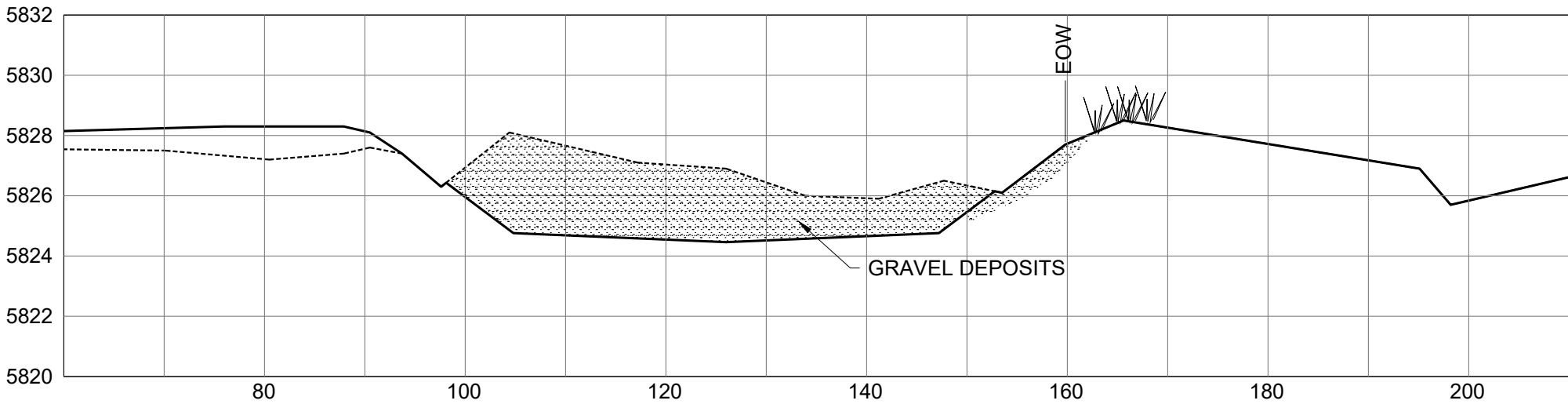
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C.3
1 | 3

SECTION 103

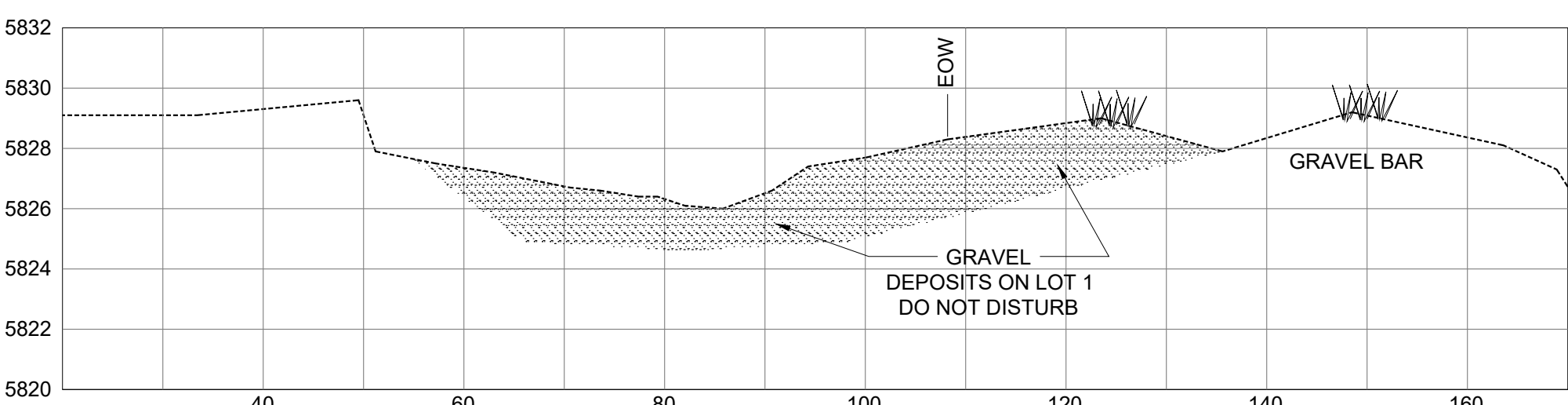
HORIZONTAL SCALE: 1" = 15'
VERTICAL SCALE: 1" = 5'



C.4
1 | 3

SECTION 104

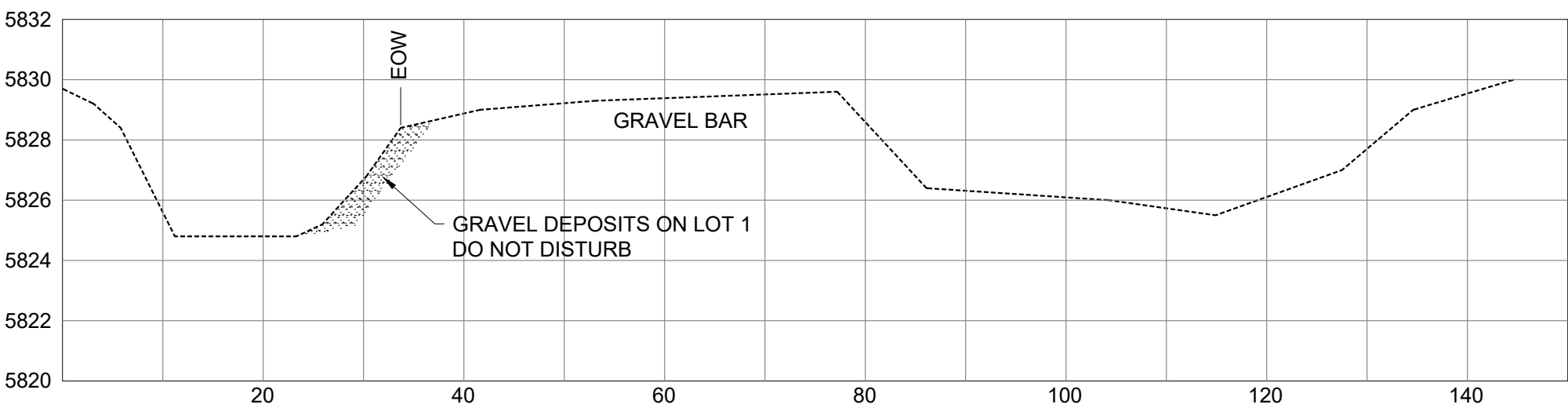
HORIZONTAL SCALE: 1" = 15'
VERTICAL SCALE: 1" = 5'



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'

LEGEND

- EXISTING CHANNEL - SURVEYED JULY 17, 2018
- PROPOSED CHANNEL
- EOW EDGE OF WATER AT TIME OF SURVEY

NOT FOR CONSTRUCTION

AMENDMENT 9/28/2020

THIS DRAWING HAS BEEN PREPARED BY BROCKWAY ENGINEERING, PLLC. FOR A SPECIFIC PROJECT TAKING INTO ACCOUNT THE SPECIFIC AND UNIQUE REQUIREMENTS OF THE PROJECT. REUSE OF THIS DRAWING FOR ANY PURPOSE IS PROHIBITED UNLESS WRITTEN PERMISSION FROM BOTH BROCKWAY ENGINEERING & THE CLIENT IS GRANTED.

G	AMENDMENT - REMOVE LOT 1 WORK	9/28/20			
F	GEOGRID REMOVAL FOR CITY	9/16/19			
E	FOR FINAL PERMIT	7/19/19			
D	MODIFICATIONS TO CHANNEL	1/4/19			
C	ISSUE FOR BIDDING	10/18/18			
B	ADDED PROPERTY NAMES	9/28/18			
REV	DESCRIPTION	DATE	APPD.	REFERENCE DRAWINGS	

DESIGNED BY

CGB

DRAFTED BY

ICB

BROCKWAY ENGINEERING, PLLC

HYDRAULICS - HYDROLOGY - WATER RESOURCES

2016 NORTH WASHINGTON, SUITE 4

TWIN FALLS ID, 83301

(208) 736-8543

SWAN, SANDRA
RIVER RESTORATION PROJECT

CHANNEL CROSS-SECTIONS

PROJECT #
538-17-2016

DWG #
3

REV
G

(18 X 24) DWG ONLY

Attachments – Plans and Correspondence

- D. Memo, Charles Brockway, “Information Regarding Channel Sills,” dated October 10, 2020

Information Regarding Channel Sills

Prepared at the request of the City of Ketchum for the Swan project amendment

Brockway Engineering, PLLC

October 10, 2020



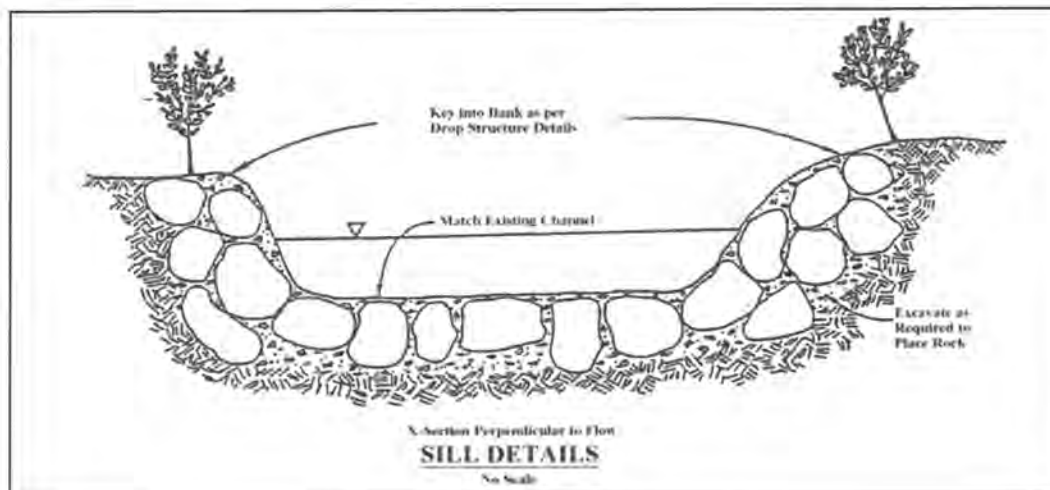
The Swan project amendment proposes a sill across the channel at the owner's north property line. The City of Ketchum has requested additional information about the nature and functionality of a sill and the justification for it.

A. What is a sill?

A sill is a line of large rock, buried in the channel bed, typically aligned perpendicularly to the channel. The sill is fully-buried with no part of the rock exposed above the bed of the channel. A sill is a grade control device; it inhibits an erodible channel from cutting downward, which can lead to a progressive head-cut in which the erosion proceeds upstream in an unwanted fashion. A sill is essentially a variation of a drop structure, sometimes called a "rock weir" or "boulder weir," that does not protrude above the bed. A drop structure could not be approved for this application due to the "no-rise" restriction imposed by FEMA.

B. Is a sill a standard channel control feature?

Yes. A sill is recognized as a standard method by the Idaho Department of Water Resources Stream Channel Protection Program as outlined in IDAPA 37.03.07.058.02. That paragraph states "The top of the sill may not exceed the elevation of the bottom of the channel. The purpose of a sill is to halt the upstream movement of a headcut, thus precluding the widening or deepening of the existing channel." Appendix G of the above-referenced rules contains a figure depicting a sill, as shown below:



Federal agencies such as the Natural Resources Conservation Service (NRCS), the U.S. Bureau of Reclamation, and the U. S. Forest Service also recognize rock sills in their design guidelines. For example, the NRCS describe them in its Technical Supplement 14G, “Grade Stabilization Techniques” and 14H, “Flow Changing Techniques”

C. Have sills and/or boulder weirs been used on the Big Wood River system?

Yes. Five examples are:

1. At the North Gimlet diversion headgate, a sill was used to inhibit further down-cutting of the channel that had impaired the ability to divert the full water right. In the photo below, there is a sill across the river just downstream of the headgate within the yellow rectangle, but it is not visible.



2. The Heart Rock Ranch project involved a major stream restoration effort and included a number of boulder weirs on Willow Creek and Crystal Creek.

3. A variation of a boulder weir known as a V-weir was installed on Silver Creek for one of the diversions as the Susie Q Ranch.

4. The project at the Cooper property near the hospital, designed by Biota Research and Consulting, includes a grade control sill / riffle across the entrance to a flood channel to be excavated and restored to reduce the risk of the flood channel capturing too much of the river flow (project not yet constructed).

5. A variation of a buried rock sill was used by the City of Ketchum to halt down-cutting of the Warm Springs Creek channel that had threatened a sewer line, shown below:



D. Is a sill “unnatural”?

They are placed by machine, but that would be a very narrow view of “unnatural.” Sills simply comprise a change in channel erodibility. This type of feature exists within every river in the world. Whenever there is a difference in erodibility, softer material downstream will tend to erode and the harder material will not, resulting in riffles, pools, or waterfalls. Differences in erodibility are one reason why rivers do not look like canals. They result in a diversity of flow patterns.

E. Why is grade control needed in this case?

With the removal of all work on the Rusack property, the channel regrading will not daylight on the Rusack property. Instead, there will be a discontinuity or vertical jump in the channel bed

height at the property line. The rock sill will help stabilize the channel at this point and mitigate the erosive instability of the channel bed.

It is understood that Rusack will be amending his permit application to extend the bank stabilization and proposed rock riffle downstream to the property line. In that case, this work will meet up with the Swan work and the sill on the Swan property could be seen as the downstream end of the rock riffle. If the Rusack project does not get built, the sill will continue to function. Ms. Swan cannot speculate on whether the Rusack project will get approved as proposed, or approved with changes, or get built even if it is approved. The intent is to develop a standalone project.

It should also be noted that the top of the sill will be at an elevation that has already been approved by all agencies. The Rusack work, if approved, will tie into that elevation. The amendment request does not involve any difference in channel grade on the Swan property.

F. What will be the effect on channel velocity of the channel sill and stopping the Swan work at the property line?

Concerns have been raised as to whether the Swan project as a standalone effort will result in undue velocity increases on the Rusack property. The HEC-RAS model representing the approved permits was modified to include the gravel discontinuity and remove all work on the Rusack property. The computed channel velocities during flood conditions (100-year event, 2880 cfs) and during lower flows of 1000 cfs and 500 cfs are shown in Table 1.

During the 100-year event, all models indicate essentially the same velocities. This is because during the flood, the entire floodplain is inundated and differences on Swan and Rusack are marginal and make little difference.

During lower flows (1000 cfs and 500 cfs), the velocity is greater at Section 105 with the Amended model compared to the Original Permit model. This is because the hump of gravel deposition at Section 105 is not excavated and water therefore falls over it into the lower, excavated Swan reach (this is the same effect as happens at Section 106 in the Original Permit model). The velocities at Section 106 decrease with the Amended model compared to the Original Permit model.

It must be noted that each model assumes a fixed, immovable bed. In reality, with the Amended model the hump of gravel at Section 105 will be transported downstream and the velocities will tend to converge to those for the Original Permit model. The bank stabilization to be included on Rusack's forthcoming amended permit will need to account for these velocities in the same way that the original Swan design did.

Other models developed by other people will no doubt differ to some degree. This is the nature of models. The owner does not intend to get drawn into a "battle of the models."

Table 1. Computed channel velocities (ft/s) during the 100-year flood (2880 cfs), and lower flows of 1000 cfs and 500 cfs.

Model	HEC-RAS Model Plan	Flow (cfs)	Location / River Station		
			Section 104 (downstream of property line)	Section 105 (just upstream of property line)	Section 106 (approx. 65' upstream of property line)
			106003	106038	106085
Existing conditions model (Nov. 2017 and Aug. 2018 surveys)	Plan01	2880	8.6	10.3	15.0
		1000	5.8	5.9	6.7
		500	4.4	6.2	4.9
Original Swan Approved Permits (including work on Rusack)	Plan08	2880	8.8	10.3	14.5
		1000	5.7	5.9	8.9
		500	4.4	4.2	7.4
Amended Swan Project (work on Rusack removed)	Plan10	2880	8.9	10.3	15.0
		1000	5.7	8.0	6.8
		500	4.4	6.2	4.9

Attachments – Plans and Correspondence

- E. Narrative, Charles Brockway, “Amendment to Swan River Restoration Project,” dated September 28, 2020

Amendment to Swan River Restoration Project

September 28, 2020

A. Elements of Amendment

The Amendment pertains to the river restoration project approved by the Corps of Engineers (NWW-2017-639-I02), the Idaho Department of Water Resources (S37-20546 as Amended July 8, 2019) to the project includes the following elements, all of which are depicted on Revision G of the project drawings, dated September 28, 2020. The specific elements of the Amendment are as follows:

- a. Remove all work of any kind on Lot 1 (Marsupial Investments)
- b. For water bypass, place temporary gravel bags across the channel just south of the Lot 1 / Lot 12 line. The line of bags will extend westward onto City of Ketchum property just as in the approved permit (the temporary gravel bags on City property were previously approved in the encroachment permit). As before, it is likely that water can be bypassed without removal of debris or gravel on City property; however, if this becomes necessary the same provision as previously approved would apply.
- c. Stop the channel excavation and re-grading just downstream of the temporary gravel bags (stopping short of the bags to avoid undermining them).
- d. To increase the stability of the re-graded channel and prevent down-cutting and a potential head cut moving upstream onto Lot 1, a below-grade rock sill will be placed across the channel. Such sills are included in the IDWR minimum standards and are commonly used. The top of the sill will be flush with the finished of the channel, i.e. all of the rock will be below the channel bed and thus there will be no hydraulic impact from the sill.

Material quantities for the reduced-scope amended project are shown in Tables 1 and 2. These are the same tables found in the September 30, 2019 narrative for the approved project, with Items #1 and #2 revised and an Item #8 added to reflect the sill across the channel. All other elements of the project are unchanged.

Table 1. Material quantities, Items #1 and #2 revised per amendment.

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. Gravel removal	300	0.50	1,243	1,243	0	0
2. Reclamation	n/a	0.27	0	0	447	0
3. Reclaimed land south boundary protection	165	0.03	0	0	77	65
4. East chan entrance stabilization	88	0.03	86	86	54	54
5. Bank stabilization	180	0.05	0	0	131	131
6. Bank sill	Landward of OHW					
7. Wood removal	n/a	0.10	150	150	0	0
8. Sill across channel to stabilize gravel cut	12	0.02	49	49	49	49
Temporary bypass and coffer	32	0.03	65	65	18	12
TOTALS		1.03	1,593	1,593	776	311
TOTALS (not including temporary work)		1.00	1,528	1,528	758	299
Notes: Gravel removal: Length is total north-south length along Big Wood River from upper to lower limits of removal. Reclamation: Fill volume is for reclamation of land within floodplain. Reclaimed land south boundary protection: Length is west-east along north bank of East Channel. East channel entrance stabilization: Length is the west-east length of the east channel entrance protection and re-grading; total excavation is for channel re-grading from entrance eastward; fill is rock at entrance. Bank stabilization: Length is north-south along Big Wood River, fill is riprap and logs. * OHW prior to 2017 discrete event.						

Table 2. Post-project channel geometry, revised per Amendment.

Section	River Station (ft)	Bottom width (ft)	Side slope	Cut area (ft2)
106	106085	No disturbance		
105	106038	No disturbance		
104	106003	40	4:1	114
103	105970	40	4:1	113
102	105935	50	4:1	154
101	105883	60	4:1	96
100	105800	60	4:1	116
99	105700	30	4:1	21

B. Revised No-Rise Analysis

The HEC-RAS model for the proposed conditions that was approved by the City of Ketchum was modified by removing the gravel excavation and bank protection obstruction from Sections 105 and 106 (the sections on Lot 1) and creating an interpolated section 10' downstream of the property line to reflect the stoppage of gravel excavation at that point. This model when compared to the existing conditions model shows no rise in 100-year flood elevation in accordance with FEMA criteria.

Attachments – Plans and Correspondence

- F. Engineering No-Rise Certificate, Charles Brockway, dated September 28, 2020

Engineering "No-Rise" Certification

(for projects located in a mapped floodway)

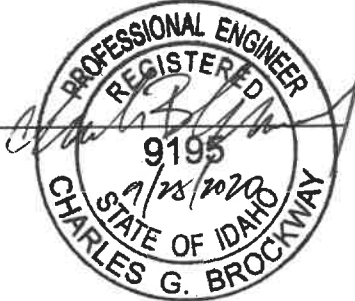
44 CFR 60.3(d)(3) requires that local communities participating in the National Flood Insurance Program "Prohibit encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic 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;"

City of Ketchum ordinance 17.88.060.C requires the City to "Prohibit encroachments, including fill, new construction, substantial improvements, and other development unless certification, with supporting calculations, by a registered professional hydraulic engineer is provided demonstrating that encroachments shall not result in any increase in flood levels 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 statute and ordinance, this further certifies that the attached data support the fact that the proposed Swan Phase 2 Project as Amended September 28, 2020, will not increase the base flood (100-year flood) elevation on Warm Springs Creek at published sections in the Flood Insurance Study for Ketchum, Idaho dated November 26, 2010 and will not increase the 100-year flood elevations at unpublished cross-sections in the effective HEC-RAS model.

9/28/2020
Date

Signature



A circular professional engineer seal for the State of Idaho. The outer ring contains the text "PROFESSIONAL ENGINEER" at the top and "CHARLES G. BROCKWAY" at the bottom. The inner ring contains "REGISTERED" at the top and "STATE OF IDAHO" at the bottom. In the center, the license number "9195" is printed, with the date "9/28/2020" handwritten below it. A handwritten signature is written across the seal.

Attachments – Plans and Correspondence

- G. Letter, City of Ketchum/Brittany Skelton to Charles Brockway and Evan Robertson, dated January 26, 2021 (*one (1) attachment to letter: Memo, Harmony Design and Engineering, dated January 22, 2021*)



**City of Ketchum
Planning & Building**

January 26th, 2021

Via e-mail only

Charles G. Brockway, Ph.D., P.E.
Brockway Engineering, PLLC
2016 Washington St. North, Suite 4
Twin Falls, ID 83301
charles.g.brockway@brockwayeng.com

Evan Robertson
Robertson & Slette, PLLC
134 3rd Ave E
Twin Falls, ID 83301
erobertson@rsidaholaw.com

Re: Proposed amendments to P18-131

Mr. Brockway and Mr. Robertson:

Thank you for the following items:

- January 11, 2021 e-mail, Charles Brockway to Brittany Skelton, and three attachments
 - Engineering "No-Rise" Certification dated September 28, 2020, 1 page
 - Swan2-forCityAmendmentOct 2020.zip
 - HEC-RAS Model Output: Swan Amended Project October 2020, Swan2.p01, and HEC-RAS Model Output: Swan Existing Conditions, Swan2.p10, 2 pages total
- January 11, 2021 email, Evan Robertson to Brittany Skelton, requesting an administrative extension of existing permit P18-131 to October 11, 2021.
- January 20, 2021 e-mail, Charles Brockway to Brittany Skelton, further addressing the design of the proposed amendment to the project

The materials have been reviewed by the city and our consulting engineer, Jennifer Zung, P.E., Harmony Design & Engineering.

The attached review memo from the city's consulting engineer, Harmony Design & Engineering, details the outstanding concerns regarding the proposed project amendment as designed.

However, understanding that your clients, Bob and Sandra Swan, desire for the city to reach a decision on this matter, we can proceed to schedule the proposed amendment to application P18-131 for consideration by the Planning and Zoning Commission during a public hearing. The next available meeting date is Tuesday, March 9th, 2021 with a start time of 4:30 p.m. MDT.

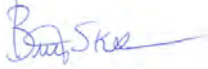
Please let us know by this Friday, January 29th, 2021 if you would like to proceed with a public hearing with the Planning and Zoning Commission on March 9th, 2021.

Regarding the request to extend the existing entitlement for P18-131 to October 11th, 2021:

This letter serves as an extension of the existing entitlement to May 1, 2021. The extension to this date will allow evaluation of the snowpack through February and March of 2021 and the potential for runoff to alter the

conditions the approval of the permit was based on. The extension to May 1, 2021 does not preclude further extension of the permit to October 11, 2021 and neither does the snowpack. Rather, this extension provides time to consider whether additional information may be necessary to evaluate an extension of the permit to October 11, 2021 based on the snowpack and the magnitude of the spring 2021 snowmelt/runoff season. Whether this additional extension can be approved will be subject to the regulations contained in Ketchum Municipal Code section §17.88.050.G.

Regards,



Brittany Skelton, CFM
Senior Planner, Ketchum Planning and Building Department

Attachments:

Memo, Re: Revised Swan River Restoration Project Stream Alteration Permit Review (P17-134), Harmony Design & Engineering, dated January 22, 2020

CC:

Suzanne Frick, Director of Planning and Building, via email sfrick@ketchumidaho.org

Matthew Johnson, City Attorney, via mjohnson@whitepeterson.com

Jennifer Zung via email jen.zung@harmonydesigninc.com

Sandra Swan via email emtiswan@comcast.net



Memo

To: Brittany Skelton, City of Ketchum

From: Jennifer Zung, PE, CFM

CC:

Date: 1/22/2021

Re: Revised Swan River Restoration Project Stream Alteration Permit Review (P17-134)



In response to our comments dated 12/6/2020, Brockway Engineering provided the following items in an email dated 1/11/2021.

1. No-Rise Certification
2. Zip file containing HEC-RAS model files and an explanation why they believe the updated model for the Big Wood River is not appropriate.
3. Comparison tables showing existing and proposed elevations and velocities for the 100-year flood event.

The submitted information addresses comments 1, 2, and 3 under “No Rise Certification and Hydraulic Model” in the Harmony memo dated 12/6/2020. However, the comments regarding long term stability have not been addressed and are copied here:

1. In the Brockway Engineering letter dated October 22, 2020, it is stated that downward erosion of the channel bed gravel upstream of the project is planned and expected. It should be demonstrated that this degradation will not cause adverse impacts such as erosion downstream or upstream.
2. The October 22 letter also states that “modest” increases in velocity upstream of cross section 104 will occur. The letter from Brockway Engineering regarding channel sills dated October 10, 2020, further states that bank stabilization on the Rusack property will need to be installed to account for these increased velocities. Each project must stand alone and show no adverse impacts to other properties or that impacts are being mitigated. Please either add mitigation for the velocity increases to this project or modify the design so that there are no adverse impacts with respect to water surface elevations, velocities, or increased potential for erosion on other properties.

Since the revised design as currently proposed will cause downward erosion of the channel bed and increased velocities at low flows upstream of the project site, the project does not provide a permanent solution or create a stable situation as required in Ketchum Code 17.88.050(E)14.

END OF DOCUMENT

Attachments – Plans and Correspondence

- H. Letter, City of Ketchum/Brittany Skelton to Charles Brockway, dated January 4, 2021 (one (1) attachment to letter: Memo, Harmony Design and Engineering, dated December 6, 2020)*



**City of Ketchum
Planning & Building**

January 4th, 2021

Via e-mail only

**Charles G. Brockway, Ph.D., P.E.
Brockway Engineering, PLLC
2016 Washington St. North, Suite 4
Twin Falls, ID 83301
charles.g.brockway@brockwayeng.com**

Re: Proposed amendments to P18-131

Mr. Brockway:

I apologize for the delay in responding to your revised application. We have reviewed your application and accompanying supporting documentation to amend permit P18-131 regarding the Swan Stream Alteration/Bank Stabilization Floodplain Development and Waterways Design Review permit issued on October 11th, 2019.

The materials have been reviewed by the city and our consulting engineer, Jennifer Zung, P.E., Harmony Design & Engineering. Reviewed materials include:

- Amended plan set, 3 sheets, dated September 28, 2020, Brockway Engineering
- Narrative "Amendment to Swan River Restoration Project", dated September 28, 2020
- Extension request e-mail, dated September 29, 2020, Charles Brockway
- Letter "Information Regarding Channel Sills", Brockway Engineering, dated October 10, 2020
- HEC-RAS model files Swan2.p10, Swan2.g11, Swan2.f01, Swan2.O10 attached to email dated October 13, 2020, Charles Brockway
- Letter "Re: Proposed Amendments to Swan River Restoration Project", Nicholas Kraus, Quadrant Consulting, dated October 15th, 2020
- Letter "RE: Pending Swan SAP Application", Evan Robertson, dated October 26, 2020
- Letter "Re: Pending Swan SAP Application", via email, Ed Lawson, dated November 4, 2020
- Letter, Diane Renfro, PioneerWest Property Management on behalf of Chaeau Northwood HOA, dated November 6, 2020
- Email dated November 8, 2020, Sandra Swan, with attachments A and B


The proposed amendments are complex and represent a significant change to the project plans as approved in permit P18-131 approved on October 11th, 2019. The proposed amendments do not constitute a minor modification. Further, it appears that the amended project as proposed will negatively impact the upstream, adjacent property located at 411 Northwood Way due to the removal of project components previously designed, and approved by the city, to mitigate impact on this parcel.

The attached review memo from the city's consulting engineer, Harmony Design & Engineering, details the additional information needed to evaluate the project.

Further, in accordance with Ketchum Municipal Code section §17.88.050.D.2, the Administrator has determined that this revised project cannot be approved administratively. A review of this permit will require a public hearing with the Planning and Zoning Commission. This decision was reached due to the complexity of the proposed amendment. In order to schedule a hearing with the Commission the issues raised in the attached memo must be resolved.

Lastly, in accordance with Ketchum Municipal Code section §17.88.050.G.4, an administrative extension for the original project permitted by permit P18-131 is in place until March 15th, 2021. March 15th is the start date of the prohibition of in-stream work in the Big Wood River. The extension was limited to March 15th, 2021 to ensure that the work as approved would occur prior to the 2021 spring snowmelt/runoff season; it is unknown whether winter 2020-2021 snowpack will result in a flood event that could alter the site conditions in such a way that that would void or modify the analyses that led to the initial permit approval. The Administrator reserves the right to issue an amendment to the extension for the period of time covering July 15th, 2021 through October 11th, 2021. July 15th is the annual date that in-stream work can commence in the Big Wood River. Whether this additional extension can be approved will be subject to the regulations contained in Ketchum Municipal Code section §17.88.050.G.

Regards,



Brittany Skelton, CFM
Senior Planner, Ketchum Planning and Building Department

Attachments:

Memo, Re: Revised Swan River Restoration Project Stream Alteration Permit Review (P17-134), Harmony Design & Engineering, dated December 6, 2020

CC:

Suzanne Frick, Director of Planning and Building, via email sfrick@ketchumidaho.org

Matthew Johnson, City Attorney, via mjohnson@whitepeterson.com

Jennifer Zung via email jen.zung@harmonydesigninc.com

Sandra Swan via email emtiswan@comcast.net

Evan Robertson via email erobertson@rsidaholaw.com



Memo

To: Brittany Skelton, City of Ketchum

From: Jennifer Zung, PE, CFM

CC:

Date: 12/06/2020

Re: Revised Swan River Restoration Project Stream Alteration Permit Review (P17-134)



Per your request, I have reviewed the revised Stream Alteration Permit for the Swan River Restoration Project (permit No. P17-134) dated September 28, 2020 with respect to City of Ketchum municipal code Chapter 17.88, Article 1. Flood Damage Prevention.

Long Term Stability

Ketchum Code 17.88.050(E)14 states that the proposal should be a permanent solution and create a stable situation. Additionally, criteria 1 states that the development should not alter the river channel, and the inherent natural characteristics of the river and floodplain areas should be preserved or restored.

1. In the Brockway Engineering letter dated October 22, 2020, it is stated that downward erosion of the channel bed gravel upstream of the project is planned and expected. It should be demonstrated that this degradation will not cause adverse impacts such as erosion downstream or upstream.
2. The October 22 letter also states that “modest” increases in velocity upstream of cross section 104 will occur. The letter from Brockway Engineering regarding channel sills dated October 10, 2020, further states that bank stabilization on the Rusack property will need to be installed to account for these increased velocities. Each project must stand alone and show no adverse impacts to other properties or that impacts are being mitigated. Please either add mitigation for the velocity increases to this project or modify the design so that there are no adverse impacts with respect to water surface elevations, velocities, or increased potential for erosion on other properties.

No Rise Certification and Hydraulic Model

Ketchum Code 17.88.050(E)15 states that the proposed project shall result in no increase to the one percent (1%) annual chance floodplain upstream or downstream. The enclosed 2013 FEMA Region X publication, *Procedures for "No-Rise" Certification of Proposed Developments in the Regulatory Floodway*, was used to evaluate the submitted no-rise.

1. Please provide a new No-Rise Certification for the revised project.
2. The geometry and project files for the HEC-RAS model provided were missing so the model could not be reviewed. As you know, FEMA is currently in the process of a county-wide DFIRM update for Blaine County and the City of Ketchum. Thus, a draft 1D hydraulic model for the Big Wood River based on 2017 LiDAR and channel surveys is available and can be used as the best available data for the analysis.
3. Please add a comparison table that shows the existing and proposed base flood elevations to 0.00-ft.

END OF DOCUMENT

Attachments – Plans and Correspondence

- I. Letter, City of Ketchum to Edward Lawson, dated November 6, 2020



**City of Ketchum
Planning & Building**

November 6th, 2020

Via e-mail only

**Lawson Laski Clark, PLLC
c/o Edward A. Lawson
675 Sun Valley Road, Suite A
P.O. Box 3310
Ketchum, ID 83340
eal@lawsonlaski.com**

Re: Letter dated November 4, 2020, Pending Swan SAP Application

Mr. Lawson:

We have received your letter dated November 4, 2020 regarding the pending Swan Stream Alteration Project (SAP) Application for the project proposed at 401 Northwood Way ("Swan Property"). The letter has been included in the project file.

On page two (2), in paragraph three (3), you write that it is your understanding that prior to an administrative approval the City will notify all neighboring property owners within 300 feet of the Swan Property and will set the matter for hearing before the City Council for an amended encroachment permit. You ask that the city advise as soon as possible if this understanding is not accurate.

To clarify: Prior to an administrative decision on a stream alteration application the city will notify all property owners within 300 feet of the subject property via postal mail. Mailed notifications will be sent to the mailing addresses on file with the Blaine County Assessor for each property. Notices will be mailed at minimum ten (10) days prior to an administrative action being taken. This procedure will be followed for the pending Swan application.

In addition to the issuance of a Floodplain Development Permit allowing for stream alteration, when projects include work on city-owned land an Encroachment Permit from City Council authorizing work on city-owned land is required. This was the case for the original scope of work for the Swan project and City Council approved an Encroachment Permit in 2019. Because the scope of work approved is proposed to be amended you are correct that an amendment to the Encroachment Permit is required from City Council. The matter will be set for consideration before City Council during a public meeting.

Regards,

**Brittany Skelton, CFM
Senior Planner, Ketchum Planning and Building Department**

CC:

Katie Franklin, Lawson Laski Clark via email krf@lawsonlaski.com

Geoff Rusack via email geoff@rusack.com

Nicholas Kraus via email nick@quadrant.cc

Suzanne Frick via email sfrick@ketchumidaho.org

Jennifer Zung via email jen.zung@harmonydesigninc.com

Attachments – Plans and Correspondence

- J. Letter, Evan Robertson to Brittany Skelton, dated October 26, 2020

Robertson & Slette, p.l.l.c.

J. EVAN ROBERTSON
GARY D. SLETTE

Legal Assistant - Cassie Chapman
cchapman@rsidaholaw.com

ATTORNEYS AT LAW

134 Third Avenue East
P.O. BOX 1906
TWIN FALLS, IDAHO 83303-1906
TELEPHONE (208) 933-0700
FAX (208) 933-0701



J. EVAN ROBERTSON
erobertson@rsidaholaw.com

October 26, 2020

VIA E-MAIL: bskelton@ketchumidaho.org

Brittany Skelton
City of Ketchum
P.O. Box 2315
Ketchum, ID 83340

RE: Pending Swan SAP Application

Dear Brittany,

I have been asked by Bob and Sandra Swan to respond to your October 19, 2020 email chain to them related to their revised SAP application now pending before the City, and to Mr. Rusack's objection to approval of that application, including the report he filed from his consultants, Quadrant Consulting. As you know, my client's residential property at 411 Northwood Way was extensively damaged by the Big Wood River 2017 spring flood event which obliterated the riverbank, riparian zone, and floodplain along the front of their property and stopped flows into the east channel of the river near the south end of the Swan property. As you also know, the Swan property has remained vulnerable since 2017 to additional damage from similar flood events since they have not been allowed to complete stream channel improvements to strengthen the bank of the river on their property through no fault of their own. Promptly after the 2017 flood subsided, the Swans, at their cost, retained the services of Charles G. Brockway, P.E. to design a stream alteration project to repair and reclaim property eroded by the flood, and to reinforce the river bank to prevent future flood damages all along their property and extending upstream along a portion of the neighboring property belonging to Marsupial, LLC/Rusacks. Those plans were completed with Mr. Rusack's knowledge and tacit, if not formal, approval and participation. This "Original Swan Application" received approvals from the Army Corps of Engineers, and IDWR, and also from the City, whose approval conditioned construction of the project upon receipt of formal consent of the Rusacks but it still appeared at that time that the entire project could be constructed in 2019. What went wrong? To put it simply, all efforts to work with the Rusacks were unsuccessful, and their consent to construct the portion of project planned for the riverbank abutting the Marsupial property proved elusive, and could not be obtained under terms acceptable to my clients. Negotiations nevertheless continued throughout 2019 and into 2020, until several months ago when the Swans, desperate to begin river bank improvements to prevent future flood damage to their property and frustrated with the futile negotiations with Mr. Rusak, requested Mr. Brockway revise the approved permit by reducing its scope to exclude any improvements on the Marsupial property. That revised application, after all the wasted time and money expended on

the Original Swan Application, has now received approval from the Army Corps and IDWR, and awaits approval from Ketchum, which we believe strongly should be administratively approved without delay, and without any condition requiring consent from, or coordination with, Rusacks or Marsupial, LLC. With that brief history of events, now let me respond specifically to the objections to the revised Swan application raised by Rusacks and their consultant, Quadrant Consulting, and set forth what we believe are compelling reasons why the City should immediately approve the pending application:

1. The suggestion in the Quadrant Report that Swans should delay construction of their revised project, and negotiate further with Rusacks in an effort to coordinate construction of their project with a similar project being proposed for the Marsupial property is unacceptable, since the entire purpose of revising the Original Swan Application, as detailed above, was to avoid any further involvement with the Rusacks, and my clients are unwilling to revisit that decision.

2. Speculation in the Quadrant Report that the revised Swan project poses "a high probability of creating an imminent adverse impact to the Marsupial Property" is just that, speculation, and is professionally countered by the attached opinion letter to you from Mr. Charles Brockway, P.E. Further, no such hazard was noted in the approvals the revised Swan project has received from the Army Corps and IDWR, both of which agencies have professionally trained staff involved reviewing all SAP applications.

3. The Swans have an urgent need and desire to protect their property, and believe strongly that the City should appreciate and support their efforts to do so, particularly since this year's exceptionally low flows in the Big Wood River provide excellent conditions for completing the Swan project yet this year, but that window is tight and no further delays can be tolerated.

4. Completion of the revised Swan project is designed to promote immediate restoration of the perennial flows that were in the east channel of the river prior to 2017, which will not only benefit fish and wildlife resources in the area, as touched on in the attached letter from Mr. Brockway, but will also be greatly appreciated by all of the residential property owners along that channel.

5. We are not aware of any provisions in the Ketchum SAP Ordinances or regulations which would permit the City to place a condition on its approval of the Swans' application which would require them to coordinate the construction of their project with the SAP project being proposed by Rusacks for the Marsupial property.

Based on all of the foregoing facts and circumstances I am requesting on behalf of my clients that you complete immediate administrative processing and approval of the pending application ASAP! Thank you.

Sincerely,



J. EVAN ROBERTSON

Attachments – Plans and Correspondence

- K. Letter, Charles Brockway to Brittany Skelton, dated October 22, 2020



BROCKWAY
ENGINEERING
P.L.L.C.

Hydraulics

Hydrology

Water Resources

October 22, 2020

Brittany Skelton
City of Ketchum
P.O. Box 2315
Ketchum, ID 83340

VIA E-MAIL

Re: Swan Project Amendment

Dear Brittany:

I have reviewed the letter dated October 15, 2020 from Quadrant Consulting regarding the proposed amendment to the Swan River Restoration Project. Our comments are as follows:

The discontinuity in the channel bed gravel will indeed erode downward as described in Quadrant's analysis. This is a planned and expected feature of the amended plan. However, the grade control sill will halt the erosion when the channel elevation at Section 104 reaches the design elevation in the original plan. The associated head cutting will also then stop, because head cutting cannot continue without downstream erosion as its instigator. As noted in our supplemental analysis submitted on October 10, 2020, the most likely result will be a channel grade on the Marsupial property very similar to the original design.

Modest increases in velocity upstream of Section 104 are predicted to occur at low to moderate river flows, but not during flood events when bank erosion is of concern. The undercutting of the bank at Sections 105 and 106 on the Marsupial property has been an acute and obvious problem since the 2017 flood, with no steps taken since then to protect the bank or the cottonwood trees which are at risk of falling into the river. This situation presents an imminent risk to the Swan property for two reasons: 1) the bank erosion may continue downstream and further exacerbate the erosion problem on the property, and 2) it is a near certainty that the undercut cottonwood trees will fall into the channel at some point, potentially shunting water onto the Swan property.

Dewatering of the project reach can be accomplished with ordinary effort, especially if the work is done this fall when the river flow is near record lows.

CHARLES E.
BROCKWAY,
PH.D., P.E.

CHARLES G.
BROCKWAY,
PH.D., P.E.

2016 NORTH
WASHINGTON
STREET • SUITE 4

TWIN FALLS,
IDAHO 83301

208•736•8543

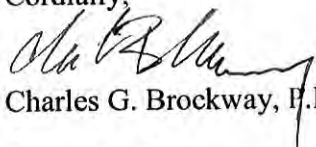
FAX: 736•8506

Flow across the island will not occur in an uncontrolled fashion but will be monitored and regulated as required. Water backed up in the river will not cause an adverse impact to any property owner. The dewatering operation will be temporary, lasting approximately two weeks. This level of dewatering is no more than Marsupial will be asking of its upstream neighbors.

The two parties have been trying to coordinate projects for more than a year and it has proven impossible. The Swan project was thus amended in a reasonable fashion to act as a standalone project which accomplishes the same goals.

Understandably, the Quadrant analysis pertains only to the Marsupial property and does not address the benefits to other property owners and to the natural habitat. Approximately ten property owners adjacent to and downstream of the Swan property (including the City of Ketchum) will benefit from stabilization of the east channel with the consequent reduction of flood risk and maintenance of the historic perennial flow in this reach. The fishery will also greatly benefit: just in the past year, significant fish kills have occurred in the east channel due to stranding of juveniles. Maintenance of flow in the east channel is imperative to avoid this injury to the resource. Health of the riparian along both the Swan and Marsupial parcels has suffered – no vegetation is taking root and the land still consists of sand and small gravel deposition which is more susceptible to erosion.

Cordially,



Charles G. Brockway, P.E.

Cc: Sandra Swan
Evan Robertson

Attachments – Plans and Correspondence

- L. E-mail, Charles Brockway, dated January 20, 2021

Brittany Skelton

From: Charles Brockway <charles.g.brockway@brockwayeng.com>
Sent: Wednesday, January 20, 2021 8:43 AM
To: Brittany Skelton
Cc: 'Jen Zung'; 'Sandra Swan'; 'Zach Latham'
Subject: Swan amendment

Follow Up Flag: Follow up
Flag Status: Flagged

Brittany,

I understand from speaking with Sandra that you are meeting today with Jen regarding the amendment proposal, and I wanted to address the statements in your letter of January 4, 2021 that the design of the project should be modified. An immense amount of engineering and design effort has been put into this project. There have been, and continue to be, three primary objectives or constraints: 1) the Swans backyard must be brought back to original grade; 2) the river bank must be stabilized, which involves placing material within the floodway; and 3) the “no-rise” criteria must be met. Since FEMA requires the baseline for the “no rise” to be the existing conditions, which includes the substantial gravel deposition in the channel, and since objectives 1) and 2) both necessarily cause a rise in flood height, the mitigation by excavating the channel enables the no-rise to be met (and has the additional benefit of reducing water elevation during all high water conditions).

We are not able to contemplate another way to meet all project objectives including the no-rise, without either compromising the objectives or proposing some very undesirable way of mitigating the rise such as cutting a “relief channel” across the island on City property. When you meet with Jen, if you come up with any creative ideas for a different design that could meet all objectives, both Sandra and I would be very willing to hear them. Barring another solution, given Marsupial’s decision to decline the offer to provide additional stabilization on his bank without conceding valuable “view corridor rights”, we believe we are proposing the best engineered design possible, which is in the best interests of the Swans, their ten downstream neighbors, as well as the fishery and riparian function along the riverbank.

Thank you,
Chuck

Charles G. Brockway, Ph.D., P.E.
Brockway Engineering, PLLC
2016 Washington St. North, Suite 4
Twin Falls, ID 83301
(208) 736-8543
charles.g.brockway@brockwayeng.com

All information, calculations, maps, drawings, or other documents transmitted via e-mail are preliminary unless explicitly stated in the e-mail text or in the documents themselves.

Attachments – Plans and Correspondence

M. E-mail, Evan Robertson, dated January 11, 2021

Brittany Skelton

From: Evan Robertson <erobertson@rsidaholaw.com>
Sent: Monday, January 11, 2021 2:37 PM
To: Brittany Skelton
Subject: RE: Proposed amendment to Swan permit P18-131

Follow Up Flag: Follow up
Flag Status: Flagged

Brittany: Obviously we are not in a position to complete the Swan revised project prior to March 15th and would request an administrative extension to Oct. 11th, to give us time to respond to Ms. Zung's assessment that our amended application project will adversely impact upstream properties. That response will be coming from Brockway. Also, what is the status of Rusack's application(s) and any extensions which have been granted for them? Thanks for considering this request and we shall look forward to your response. Evan

From: Brittany Skelton <BSkelton@ketchumidaho.org>
Sent: Monday, January 4, 2021 11:19 AM
To: charles.g.brockway@brockwayeng.com
Cc: Suzanne Frick <sfrick@ketchumidaho.org>; Jen Zung <jen.zung@harmonydesigninc.com>; Sandra Swan (emtiswan@comcast.net) <emtiswan@comcast.net>; Evan Robertson <erobertson@rsidaholaw.com>; Matthew A. Johnson (mjohnson@WHITEPETERSON.com) <mjohnson@WHITEPETERSON.com>
Subject: Proposed amendment to Swan permit P18-131

Chuck,

Please find the attached review/comment letter regarding the proposed amendments to permit P18-131, the Swan Stream Alteration/Bank Stabilization Floodplain Development and Waterways Design Review permit.

Please let me know if you have any questions.

Thanks,
Brittany

BRITTANY SKELTON | CITY OF KETCHUM

SENIOR PLANNER

P.O. Box 2315 | 480 East Ave. N. | Ketchum, ID 83340

office: 208-726-7801 | direct: 208-727-5085

bskelton@ketchumidaho.org | www.ketchumidaho.org

Attachments – Plans and Correspondence

- N. E-mail, Charles Brockway, dated January 11, 2021 *(two (2) attachments to e-mail: HEC-RAS model file included in project record and Engineering No-Rise Certificate, Charles Brockway, dated September 28, 2020 included as Attachment E to staff report)*

Brittany Skelton

From: Charles Brockway <charles.g.brockway@brockwayeng.com>
Sent: Monday, January 11, 2021 4:22 PM
To: Brittany Skelton
Cc: 'Sandra Swan'; 'Evan Robertson'
Subject: Swan amendment response
Attachments: No-rise Swan amended.pdf; Swan2-forCityAmendmentOct 2020.zip; Swan amended plan model comparison tables.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Brittany,

This e-mail concerns the additional information request in the Harmony memo dated 12/6/2020, as transmitted via your letter dated January 4, 2021.

Item 1. No-rise certification is attached.

Item 2. The zip file sent to you by e-mail on 10/13/2020 contained the following HEC-RAS model files for the amended plan. That zip is attached again to this e-mail. If there is some problem opening the files, let me know, but they are all there.

Swan2.prj – project file
Swan2.g11 – geometry file
Swan2.f01 – flow file
Swan2.p10 – plan file

The draft model mentioned in the Harmony memo is in the process of being revisited by FEMA. In addition, section spacing in that model is much wider than what is needed to characterize the very localized effects on the Swan property.

Item 3. The attached PDF file contains the requested comparison tables, confirming no change to flood elevation anywhere, and no change to velocity on the upstream property during the 100-year event (the velocity changes occur during lower flows when the system is more channelized, as outlined in my submittal on 10/13/2020).

I believe Evan will be sending you a letter addressing other items.

Cordially,
Chuck

Charles G. Brockway, Ph.D., P.E.
Brockway Engineering, PLLC
2016 Washington St. North, Suite 4
Twin Falls, ID 83301
(208) 736-8543
charles.g.brockway@brockwayeng.com

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Attachments – Plans and Correspondence

- O. E-mail, Charles Brockway, dated October 13, 2020 (*two (2) attachments to e-mail: HEC-RAS model file included in project record and Memo, Charles Brockway, “Information Regarding Channel Sills,” dated October 10, 2020, included as Attachment C to staff report*)

Brittany Skelton

From: Charles Brockway <charles.g.brockway@brockwayeng.com>
Sent: Tuesday, October 13, 2020 11:48 AM
To: Brittany Skelton
Cc: 'Sandra Swan'; Suzanne Frick; zach.latham@brockwayeng.com
Subject: Swan amendment
Attachments: Information Regarding Channel Sills.pdf; Swan2-forCityAmendmentOct 2020.zip

Brittany,

You requested information regarding channel sill functionality and usage and the HEC-RAS files for the amendment model. Please see attached.

For the HEC-RAS model, the following files apply to the amendment model:

Plan: Swan2.p10

Geometry: Swan2.g11

Flow: Swan2.f01

Output: Swan2.O10

The existing conditions and original approved permit model file have already been submitted.

Thank you,
Chuck

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

Brockway Engineering, PLLC
2016 Washington St. North, Suite 4
Twin Falls, ID 83301
(208) 736-8543
charles.g.brockway@brockwayeng.com

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Attachments – Plans and Correspondence

- P. E-mail, Brittany Skelton to Charles Brockway, dated September 30, 2020

Brittany Skelton

From: Brittany Skelton
Sent: Wednesday, September 30, 2020 10:47 AM
To: 'Charles Brockway'; Suzanne Frick
Cc: 'Sandra Swan'; 'Zach Latham'
Subject: RE: Amendment to Swan project - reduction in scope

Chuck,

Suzanne and I have discussed the proposed amendment at a high level and have the following direction/information.

- 1) This is an amendment to the existing permit, the city's fee to review is \$500 + applicable consultant review fees (per Resolution 20-023, Fee Resolution). Formal review of the application can begin upon receipt of the base application fee (\$500) and acknowledgement via e-mail that you agree to pay associated engineering consultant review fees.
- 2) After analyzing the amendment and understanding the project in its entirety, and in context with what is proposed upstream (we have a pending application from the Rusacks for their own project), we will determine the process (i.e. administrative approval vs. consideration before the Planning and Zoning Commission during a public hearing).
- 3) As with all floodplain development applications that involve in-stream work, our ordinance requires that we have a copy of the IDWR and USACOE approvals prior to the city issuing it's approval. We will need a copy of the IDWR and Army Corps permits reflecting approval of the amendment.
- 4) The scope of work proposed to occur on the city-owned parcel has changed. As such, the existing Encroachment Agreement with City Council (Agreement 20292) will need to be amended. This can't occur administratively and has to occur with Council.

Please let me know if you have any questions.

Thanks,
Brittany

From: Charles Brockway <charles.g.brockway@brockwayeng.com>
Sent: Tuesday, September 29, 2020 11:34 AM
To: Brittany Skelton <BSkelton@ketchumidaho.org>; Suzanne Frick <sfrick@ketchumidaho.org>
Cc: 'Sandra Swan' <emtiswan@comcast.net>; 'Zach Latham' <zach.latham@brockwayeng.com>
Subject: Amendment to Swan project - reduction in scope

Brittany and Suzanne,

The Swan restoration project in Ketchum is being reduced in scope by removing all work on Lot 1 (the Swan's neighbor to the north). In order to stabilize the resulting gravel excavation discontinuity, a rock sill across the channel is being added at the north end. All other aspects of the project will remain the same. I am attaching a short narrative and revised quantity tables describing the smaller project.

This amendment was made necessary by the inability to reach a suitable agreement between the landowners that would allow construction this fall. I'd be grateful if you could take a look at this as soon as possible as this project does need to be completed this fall to avoid yet another year of delay. Because this is a reduction in scope with no hydraulic or other change in impacts, I am requesting that it be approved administratively. If there is anything I can do to help clarify this amendment, please contact me any time.

On a related issue, the existing permit expires on October 11, 2020. By this e-mail I am requesting an extension of time on that deadline by one year.

Thank you,
Chuck

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

Brockway Engineering, PLLC
2016 Washington St. North, Suite 4
Twin Falls, ID 83301
(208) 736-8543

charles.g.brockway@brockwayeng.com

All information, calculations, maps, drawings, or other documents transmitted via e-mail are preliminary unless explicitly stated in the e-mail text or in the documents themselves.

Attachments – Plans and Correspondence

- Q. E-mail, Charles Brockway to Brittany Skelton, dated September 29, 2020 (*one (1) attachment to e-mail, Plans, three (3) sheets, included as Attachment B.*)

Brittany Skelton

From: Charles Brockway <charles.g.brockway@brockwayeng.com>
Sent: Tuesday, September 29, 2020 11:34 AM
To: Brittany Skelton; Suzanne Frick
Cc: 'Sandra Swan'; 'Zach Latham'
Subject: Amendment to Swan project - reduction in scope
Attachments: 1436-02-2018-G-AllSheets.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Brittany and Suzanne,

The Swan restoration project in Ketchum is being reduced in scope by removing all work on Lot 1 (the Swan's neighbor to the north). In order to stabilize the resulting gravel excavation discontinuity, a rock sill across the channel is being added at the north end. All other aspects of the project will remain the same. I am attaching a short narrative and revised quantity tables describing the smaller project.

This amendment was made necessary by the inability to reach a suitable agreement between the landowners that would allow construction this fall. I'd be grateful if you could take a look at this as soon as possible as this project does need to be completed this fall to avoid yet another year of delay. Because this is a reduction in scope with no hydraulic or other change in impacts, I am requesting that it be approved administratively. If there is anything I can do to help clarify this amendment, please contact me any time.

On a related issue, the existing permit expires on October 11, 2020. By this e-mail I am requesting an extension of time on that deadline by one year.

Thank you,
Chuck

Charles G. Brockway, Ph.D., P.E.
Brockway Engineering, PLLC
2016 Washington St. North, Suite 4
Twin Falls, ID 83301
(208) 736-8543
charles.g.brockway@brockwayeng.com

All information, calculations, maps, drawings, or other documents transmitted via e-mail are preliminary unless explicitly stated in the e-mail text or in the documents themselves.

Attachments – Public Comment - Permit Amendment

1. Lawson, March 4, 2021

March 4, 2021

Via Email Only

Planning & Zoning Commission
City of Ketchum
P.O. Box 2315
Ketchum, ID 83340
participate@ketchumidaho.org

Re: Revised Swan River Restoration Project Stream Alteration Permit (P17-134)
Our File No. 12135-001

Dear Commissioners:

We represent Geoff and Alison Rusack (the "Rusacks") who, through their LLC, own the real property located at 411 Northwood Way, Ketchum, Idaho 83340 ("Rusack Property"). The Rusack Property is located upstream of the real property located at 401 Northwood Way ("Swan Property") owned by Robert and Sandra Swan's Trust (the "Swans"). Both the Rusacks and the Swans currently have pending stream alteration permits before the City.

The Swans initially received a conditional permit on October 11, 2019 to complete certain river work and bank stabilization work ("Original Permit") on both the Swan Property and the Rusack Property ultimately to repair damage that had occurred on the Swan Property after the 2017 Big Wood River spring flood event and to protect it from further damage. The Original Permit was contingent upon the Swans receiving the Rusacks' written approval to complete the proposed work on the Rusack Property.

After the Swans received their Original Permit, the Rusacks began evaluating what work should be done on their property in conjunction with the work permitted by the Swans' Original Permit. To that end, the Rusacks submitted a Floodplain Management Overlay Application ("Rusack Application") and related construction plans, narrative, and design report in the fall of 2020 (see project file P20-073). The Rusack Application is largely contingent upon and related to the work the Swans were permitted to do in the Original Permit.

Both before and after the Swans received their Original Permit, the Swans and the Rusacks have been engaged in continuous negotiations in an attempt to come to agreeable terms for the Rusacks to consent to the work on their property. The Rusacks have been consistent with their conditions during the entirety of the negotiation process with the Swans – in fact, the Rusacks clearly expressed their conditions years prior to

the Swans receipt of the Original Permit. The Rusacks have always made it clear that they wanted to ensure their property and their view of Baldy was protected and, only until recently, the Swans were amenable to the Rusacks' wishes.

Indeed, as the upstream neighbors to the Swans, any downstream river work in either of the Swans proposed plans puts the Rusack Property at increased risk of erosion and degradation in property value. Moreover, uncared for/untrimmed vegetation implemented on a relatively small part of the Swan Property is likely to interrupt the Rusacks' view corridor of Baldy – a view which is of paramount importance to the Rusacks and their property's aesthetic. Once these concerns are appropriately mitigated, the Rusacks are more than willing to consent to the Swans beginning their work consistent with the Original Permit.

After extensive discussions between the Swans and the Rusacks about these issues, the Swans submitted an initial draft of a Flood Protection Agreement to the Rusacks which contained these terms. The Rusacks then reviewed the draft and made some suggested changes in pursuit of further negotiation. After a review of the suggested changes, the Swans unilaterally chose to end negotiations and pursue their amended application ("Amended Swan Application").

The Amended Swan Application removes all work proposed on the Rusack Property in an effort to avoid needing the Rusacks' written consent to begin the work. To approve and permit the Amended Swan Application and allow the proposed work to be completed, however, would undeniably create an adverse impact on the Rusack Property. The technical details of this adverse impact are explained in the letter from Nicholas Kraus of Quadrant Consulting to the City of Ketchum dated October 15, 2020.

This adverse impact has been recognized by the City and the City's Engineer in two Memos from Jennifer Zung ("Zung") dated December 6, 2020 and January 22, 2021 and two letters from Brittany Skelton ("Skelton") dated January 4, 2021 and January 26, 2021. Even the Swans' engineer, Chuck Brockway ("Brockway") recognizes that the Amended Swan Application will cause an adverse impact on the Rusack Property in his letters dated October 10, 2020 and October 22, 2020 letter.

Indeed, Brockway's October 22, 2020 letter states that downward erosion of the channel bed gravel upstream of the project is planned and expected and that "modest" increases in velocity upstream of cross section 104 will occur. Further, Brockway's October 10, 2020 letter states that bank stabilization on the Rusack Property will need to be installed to account for these increased velocities.

Zung's December 6, 2020 letter recognizes these issues and states that the Swan Amended Application must demonstrate that it will not cause any adverse impacts either upstream or downstream and that the projects must stand alone. Skelton's January 4, 2021 letter also explicitly states that the Swans' Amended Application "as proposed will negatively impact the upstream, adjacent property located at 411 Northwood Way due to the removal of project components previously designed, and approved by the city, to mitigate impact on this parcel."

After receipt of these comments, Brockway provided some additional information, but still did not address the foregoing comments regarding long term stability of the project and the same issues were then reiterated by Zung and Skelton in their respective January 22, 2021 Memo and January 26, 2021 letter. Despite not addressing these concerns and the clear determination that the Amended Application would have an adverse impact on the Rusack Property in violation of Ketchum Code 17.88.050(E), the Swans opted to proceed with having their Amended Application be heard by the Planning and Zoning Commission.

These issues cannot be addressed properly, however, without the originally contemplated bank stabilization work and the recently discovered need for river bed work being done on the Rusack Property. The Rusacks have been amenable to this work being done on their property so long as their property and their view of Baldy are properly protected. However, just as the parties were near reaching a favorable agreement for both the Rusacks and the Swans, the Swans unilaterally opted to end negotiations. The Rusacks remain ready and willing to continue negotiations in pursuit of an agreement that addresses both parties concerns satisfactorily.

Notwithstanding the foregoing, the Amended Application simply cannot exist as a standalone project as required by the City. Importantly, the Brockway letter dated October 10, 2020, includes, on the second to last paragraph of page 4, the following statement: "The bank stabilization to be included on Rusack's forthcoming amended permit will need to account for these velocities in the same way that the original Swan design did." This statement clearly shows that the Swans' engineer understands that the Amended Swan Application will require the Rusacks to do work on their property to mitigate the increased velocity that will be caused by the Amended Swan Permit. It also assumes that the Rusacks' pending application (permit application P20-73) will be approved and constructed. Notably, the Rusacks' pending application does not address the river bank work because the Swan's Original Permit did and because the river bank work was necessitated by the increased erosion which would result from the work proposed on the Swan Property.

Despite Brockway's assurances contained in the same document that the Amended Swan Application is meant to be a standalone project, this unequivocal statement clearly shows that the Amended Swan Application is predicated on the Rusacks having to amend their application to include the bank stabilization work proposed on the Rusack Property in the Original Swan Application or suffer the material adverse consequences.¹ This, of course, would require the Rusacks to expend significant time and resources to undertake this work that was originally proposed and permitted in the Original Swan Application. Should the Rusacks not do this work, Brockway essentially acknowledges that the Rusack property will be damaged by the Swans' proposed work.

¹ It should again be noted that the omission of such work from the project is not a result of changes from an engineering standpoint, but rather, the Swans resistance to come to a formal agreement with the Rusacks.

City of Ketchum
Planning and Zoning Commission
March 4, 2021
Page 4

Moreover, the Rusacks' pending application includes a riffle in its application to protect the river bottom on the Rusack Property from erosion that would be caused by the increased velocity resulting from the Original Swan Application. Although this riffle should be the responsibility of the Swans and the Swans' contractors should do the work, the Rusacks elected to include it in their application both because the Swans refused to amend their own plans (even though Brockway agreed that the river floor work was prudent to help protect the Rusack Property from increased velocity caused by the Original Swan Application) and because they thought they had an informal agreement with the Swans that they expected to be memorialized in the written Agreement.

The fact of the matter is that the work that needs to be done to restore the river bank and to protect the Swans' property necessarily includes bank stabilization work on the Rusacks' property. The proposed work which completely eliminates the previously permitted work on the Rusacks' property will undoubtedly adversely impact the Rusacks' which conflicts with the City's code and could expose the City to potential liability. Such a result cannot be allowed.

In light of the foregoing, we are urging you to deny the Amended Swan Application and to encourage the Swans to continue to work with the Rusacks regarding a formal agreement and a joint comprehensive project to remediate the concerns of both the Swans and the Rusacks.

Sincerely,

LAWSON LASKI CLARK, PLLC



Edward A. Lawson

cc: Client
Nick Kraus [nick@quadrant.cc]

Attachments – Public Comment - Permit Amendment

2. Trout Unlimited – Hemingway Chapter, March 3, 2021

Planning and Zoning Commission Members
City of Ketchum
480 East Ave. N.
Ketchum, ID 83340



Attn: Brittany Skelton

March 3, 2021

Dear Commission Members,

Thank you for accepting Trout Unlimited's comment letter on the revised, pending Stream Alteration Permit (SAP) for the Swan property at 401 Northwood Way, described as "Amendment - Swan Stream Alteration/Bank Stabilization Floodplain Development and Waterways Design Review Permit (P18-131).

Trout Unlimited is concerned about all potential Big Wood River SAP applications because of possible impacts to the long-term health of the Big Wood River. The River is essential to the resilience and vitality of our natural and human communities.

In 2019, when the earlier version of the Swan SAP was before the Commission and City Council, we recommended and still suggest:

1. Removal of leaner trees and large woody debris should only take place if necessary. The continual removal of vegetation and large wood within the Big Wood River has degraded natural conditions over time. To restore natural ecosystem processes, large wood and vegetation should be left within riverine and riparian areas wherever possible. In particular, the large cotton woods should be left in place if possible, or the wood should be reused to armor the banks in place of rock riprap. No wood should be removed from the site. It should be put in the river as habitat and fish cover.
2. Gravel extraction should occur only in accordance with a stream channel design that represents natural geomorphic conditions and stream channel configuration, as indicated by Jennifer Zung, PE, Harmony Design & Engineering in Public Record IV, memo dated October 11, 2018. According to the 2016 Biota Research and Consulting Big Wood Geomorphic Assessment, the recovery of natural sediment transport regimes is essential to restoring the health of the Big Wood River. Gravel deposition is a natural occurrence throughout freestone river systems, such as the Big Wood. Extraction should occur only to restore geomorphic conditions that promote sediment transport regimes to help alleviate the need for future gravel extraction and channel manipulations.

Consistent with the above, we now suggest:

1. The entire project should make much more extensive use of wood and woody debris, in preference to rock riprap where possible.

2. The City should retain Jennifer Zung, PE, Harmony Design & Engineering to comment on the consequence of the proposed main channel drop sill and whether it will protect the Rushack property from head-cutting.
3. The City's consultant should comment on whether the planned gravel removal is still appropriate to restore geomorphic conditions that promote sediment transport regimes.
4. The City needs to decide whether it is possible to coordinate the proposed Rushack project with the Swan project—and avoid the installation of the drop sill entirely.

Trout Unlimited appreciates the City staff's solicitation of our review and comments. Thank you for your consideration of these comments and interest in protecting the health of the Big Wood River watershed. Trout Unlimited representatives are readily available to meet with City staff to further discuss this matter and respond to questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Alan Richardson". The signature is fluid and cursive, with a long horizontal stroke at the end.

Alan Richardson

Hemingway Chapter Board President

Attachments – Public Comment - Permit Amendment

3. Pioneer West, February 23, 2021



February 23, 2021

Ketchum Planning and Zoning Commission

RE: Swan Permit Amendment (P18-131)

We are writing on behalf of Chateaux Northwood Homeowner Association ("Association"). The Association strongly supports issuance of the Amended permit for the Swan's to do their work on the Big Wood River, and especially on the side stream abutting the Association owners' properties, immediately south of the Swan's property. The Association has 14 homes that abut the very critical side stream which will be improved by this permit's project.

The side stream is a very important part of the owners' property for the continued protection of small fish, their habitat and other wildlife, as well as the amenity provided for the Ketchum homeowners.

The Association supported the previous approval and now supports the Amendment to the permit.

Thank you.

Best Regards,

A handwritten signature in black ink, appearing to read "Diane Renfro", with a long, sweeping horizontal line extending to the right.

Diane Renfro
President
PioneerWest Property Management
diane@pioneerwestsunvalley.com

cc: Mayor Neil Bradshaw nbradshaw@ketchumidaho.org
Sandra Swan emtiswan@comcast.net

100 E. Fifth Street Ketchum, Idaho 83340
Office (208) 726-9897 Fax (208) 726-1602
pioneerwestsunvalley.com

Attachments – Public Comment - Permit Amendment

4. Pioneer West, November 6, 2021



Experts in Managing Homeowner Associations

November 6, 2020

Dear Suzanne and Brittany,

I am writing on behalf of Chateau Northwood Homeowner Association ("Association"). The Association strongly supports immediate issuance of the permit for the Swan's to do their work on the Big Wood River, especially on the side stream abutting the Association owners' properties.

The side stream is a very important part of the owners' property for the continued protection of small fish and other wildlife, as well as the amenity provided for the homeowners, Ketchum residents.

The Swans and additional owners have gone without this work for over 3 years. Now is the time to do the work before another year is lost.

Thank you for your immediate attention to this matter.

Best Regards,

A handwritten signature in blue ink, appearing to read 'D. Renfro', with a long, sweeping horizontal line extending to the right.

Diane Renfro
President
PioneerWest Property Management
diane@pioneerwestsunvalley.com

cc: Mayor Neil Bradshaw nbradshaw@ketchumidaho.org
Sandra Swan emtiswan@comcast.net

100 E. Fifth Street Ketchum, Idaho 83340
Office (208) 726-9897 Fax (208) 726-1602
pioneerwestsunvalley.com

Attachments – Public Comment - Permit Amendment

5. Lawson, November 4, 2020

EDWARD A. LAWSON
EAL@LAWSONLASKI.COM



November 4, 2020

Via Email Only

City of Ketchum
c/o Brittany Skelton
P.O. Box 2315
Ketchum, ID 83340
bskelton@ketchumidaho.org

Re: Pending Swan SAP Application
Our File No. 12135-001

Dear Ms. Skelton:

As you know, we represent Geoff and Alison Rusack (the "Rusacks") who, through their LLC, own the real property located at 411 Northwood Way, Ketchum, Idaho 83340 ("Rusack Property"). The Rusack Property is located upstream of the real property located at 401 Northwood Way ("Swan Property") owned by Robert and Sandra Swan's Trust (the "Swans"). Both the Rusacks and the Swans currently have pending stream alteration permits before the City.

We are in receipt of: (1) Information Regarding Channel Sills dated October 10, 2020; (2) Chuck Brockway's ("Brockway") letter dated October 22, 2020; and (3) Evan Robertson's ("Robertson") letter dated October 26, 2020. Thank you for providing this information to us.

To start, Robertson's letter mischaracterizes the circumstances which lead to the current situation. He alleges that the Swans' original stream alteration application ("Original Swan Application") was "completed with Mr. Rusack's knowledge and tacit, if not formal, approval and participation." He also alleges that "all efforts to work with the Rusacks were unsuccessful, and their consent to construct the portion of the project planned for the riverbank abutting the Marsupial property proved elusive." This is simply not true.

The Rusacks have been consistent with their conditions during the entirety of the negotiation process with the Swans. They have always made it clear that they wanted to ensure their property and their view of Baldy was protected. Indeed, the Swans submitted an initial draft to the Rusacks containing these terms. The Rusacks then reviewed the draft and made some suggested changes in pursuit of further negotiation. After a review of the suggested changes, the Swans unilaterally chose to end negotiations and pursue their amended application ("Amended Swan Application").

While we understand that the City likely will opt to not comment on the negotiations between the Rusacks and the Swans, the Swans should understand and appreciate that if they were to continue to negotiate the latest draft of the Flood Protection Agreement ("Agreement"), which they were provided in September 2020, the Rusacks were and are open and willing to discuss any issues the Swans may have with the current draft and to come to a reasonable resolution of the same. This willingness to negotiate was clearly expressed by Geoff Rusack to Sandra Swan on multiple occasions and by myself to Evan Robertson on at least one occasion. Once we can finalize and agree upon the terms contained in the Agreement, the Swans will be able to move forward with the work as originally proposed in the Original Swan Application. It should again be emphasized that the material terms of the Agreement are consistent with the terms the Rusacks made known when the Swans began their work on the Original Swan Application years ago.

Robertson states that the Swans have "an urgent need and desire to protect their property" and that the City should support those efforts, especially since the low flows in the Big Wood River this year "provide excellent conditions" to complete the Amended Swan Application. Robertson also states that the Swan Amended Application "will be greatly appreciated by all of the residential property owners along that channel." Again, this position is simply not true and, importantly, does not recognize that the Amended Swan Application will cause damage to the Rusack Property as outlined in Nick Kraus's ("Kraus") letter dated October 15, 2020 (which, as further explained below, is a fact that is at the very least acknowledged by the Swan's engineer, Brockway). The City cannot, and certainly should not, approve of an application knowing that it will cause damage to a neighboring property. As we have previously discussed, the City should view the projects holistically and should refuse to allow any work to be done that will cause harm to any other property.

Multiple times throughout his letter, Robertson urges the City to quickly grant an administrative approval of the Amended Swan Application citing unnecessary delay and favorable river conditions. It is, however, our understanding that prior to an administrative approval, the City will have to notify all neighboring property owners within 300 feet of the Swan Property and will have to set the matter for hearing before the City Council for an amended encroachment permit. Please advise as soon as possible if this understanding is not accurate.

Robertson also claims that he is "not aware of any provisions in the Ketchum SAP Ordinances or regulations which would permit the City to place a condition on its approval of the Swans' application which would require them to coordinate the construction of their project with the SAP project being proposed by Rusacks for the Marsupial Property." However, Section 17.88.050(D) of the Ketchum City Ordinances grants the City Administrator the authority to "approve with conditions" any stream alteration permit. The same section even provides a non-exclusive list of certain conditions that may be placed on approval of a stream alteration permit, but states the conditions of approval is "not limited" to the list identified. Section 17.88.050(F). Clearly, the City has the authority to place such a condition on the Amended Swan Application.

Importantly, the Brockway (Swan) document you recently forwarded us, titled Information Regarding Channel Sills, dated October 10, 2020, includes, on the second to last paragraph of page 4, the following statement: "The bank stabilization to be included on Rusack's forthcoming amended permit will need to account for these velocities in the same way that the original Swan design did." This statement clearly shows that the Swans' engineer understands that the Amended Swan Application will require the Rusacks to do work on their property to mitigate the increased velocity that will be caused by the Amended Swan Permit. It also assumes that the Rusacks' pending application (permit application P20-73) will be approved and constructed.

Despite Brockway's assurances contained in the same document that the Amended Swan Application is meant to be a standalone project, this unequivocal statement clearly shows that the Amended Swan Application is predicated on the Rusacks having to amend their application to include the bank stabilization work proposed on the Rusack Property in the Original Swan Application.¹ This, of course, would require the Rusacks to expend significant time and resources to undertake this work that was originally proposed and permitted in the Original Swan Application. Should the Rusacks not do this work, Brockway essentially acknowledges that the Rusack property will be damaged by the Swans' proposed work.

Moreover, the Rusacks' pending application includes a riffle in its application to protect the river bottom on the Rusack Property from erosion that would be caused by the increased velocity resulting from the Original Swan Application. Although this riffle should be the responsibility of the Swans and the Swans' contractors should do the work, the Rusacks elected to include it in their application both because the Swans refused to amend their own plans (even though Brockway agreed that the river floor work was prudent to help protect the Rusack Property from increased velocity caused by the Original Swan Application) and because they thought they had an informal agreement with the Swans that they expected to be memorialized in the written Agreement.

Based on the foregoing, we are urging the City to deny the Amended Swan Application and to encourage the Swans to continue to work with the Rusacks regarding the Agreement and a joint comprehensive project to remediate the concerns of both the Swans and the Rusacks.

¹ It should be noted that the Original Swan Application included bank stabilization work on the Rusack Property because all involved in the development of the project clearly understand that such work would be the best course of action. To now omit such work from the project is not a result of changes from an engineering standpoint, but rather, the Swans resistance to come to a formal agreement with the Rusacks.

City of Ketchum
November 4, 2020
Page 4

Sincerely,

LAWSON LASKI CLARK, PLLC



Edward A. Lawson

cc: Client
Nick Kraus [nick@quadrant.cc]
Evan Robertson [erobertson@rsidaholaw.com]
Chuck Brockway [Charles.g.brockway@brockwayeng.com]
Jennifer Zung [jen.zung@harmonydesigninc.com]

Attachments – Public Comment - Permit Amendment

6. Quadrant, October 15, 2020

October 15, 2020

City of Ketchum
c/o Brittany Skelton
P.O. Box 2315
Ketchum, ID 83340

via email attachment

Re: Proposed Amendment to Swan River Restoration Project

At the request of Mr. Geoff Rusack of Marsupial Properties LLC (“Marsupial”), the owner of the residence at 411 Northwood Way in Ketchum, we have reviewed the amended Swan River Restoration Project Drawings (the “Amended Drawings”) and Amendment to Swan River Restoration Project Narrative (the “Amended Narrative”) (collectively, “Amended Swan Project”), both dated September 28, 2020, attached.

As described in Paragraph A of the Amended Narrative, the Amended Drawings remove all work of any kind on Lot 1, referring to 411 Northwood Way, which is owned by Marsupial. Prior to the proposed amendment, the Swan River Restoration Project (the “Swan Project”) proposed to complete both river channel grading and bank stabilization work extending upstream approximately 60 feet onto the Marsupial property. As one component of the Swan Project is to lower the river channel elevation adjacent to the Swan property as shown in Sections 100 through 104 on Sheet 3 of the Amended Drawings, the work previously proposed as taking place on the Marsupial property was reasonable and necessary to provide a transition section between the Swan Project and existing upstream channel elevations. Also, as lowering the river channel elevation adjacent to the Swan property led to a predicted increase in river flow velocity, the Swan Project included a provision to stabilize the river bank adjacent to the Marsupial property through the aforementioned transition section.

As depicted on the amended Drawings, the river channel excavation and grading work is now proposed to terminate just downstream of the shared Swan/Marsupial property line. This abrupt project transition will effectively create a vertical discontinuity in the river channel bottom between 18 and 30 inches in height over a horizontal length of approximately 15 to 25 feet as demonstrated by Sections 104 and 105 on Sheet 3 of the Amended Drawings. This resultant over-steepened section of river channel will be highly unstable and is expected to rapidly headcut upstream onto the Marsupial property. As the Amended Swan Project is no longer proposing to stabilize the approximately 60 feet of river bank through the transition section along the Marsupial property, the anticipated effect will be to further exacerbate the bank erosion issue already being experienced by Marsupial in this area as shown in Figure 1. The Amended Drawings do include a rock sill (Note 8, Sheet 3) that will serve to limit the height of the headcut to the previously mentioned 18 to 30 inches, but will not limit upstream headcut migration.



Figure 1: Eroding channel bank in project transition area.

The abrupt vertical project transition proposed by the Amended Swan Project has a high probability of creating an imminent adverse impact to the Marsupial property. To mitigate for this adverse impact, Marsupial would either be required to expend significant time and expense to amend its own permit application (P20-73) to account for the proposed elevation transition between the Swan and Marsupial Projects and to provide for stabilization of the 60 feet of bank previously included in the original Swan Project, or accept the increased erosion risk. Should Marsupial apply for and be granted a permit amendment to accommodate the proposed revisions to the Swan Project, we recommend that either the two projects be constructed concurrently or the Marsupial Project be constructed prior to the Swan Project to avoid impacts due to upstream headcut migration.

Combining the two projects will greatly simplify overall project dewatering as the combined Swan/Marsupial Project reach can readily be isolated from active flowing water at the upstream end of the Marsupial Project. Dewatering will be accomplished by directing all flow in a controlled manner down the adjacent main river channel without the need for a temporary bypass channel.

A standalone Swan Project requires a dewatering plan that backs water up onto the Marsupial property and will result in a more uncontrolled water diversion across an alluvial island into the adjacent main river channel, and may require temporary excavation as referenced in the Amended Narrative.

Based on our review, we request a denial of the Amended Swan Project until the concerns presented above have been addressed to the satisfaction of Marsupial, or both the Swan and Marsupial Projects have been coordinated to function as a single cohesive project that provides for long term channel stability and appropriate protections to the affected landowners.

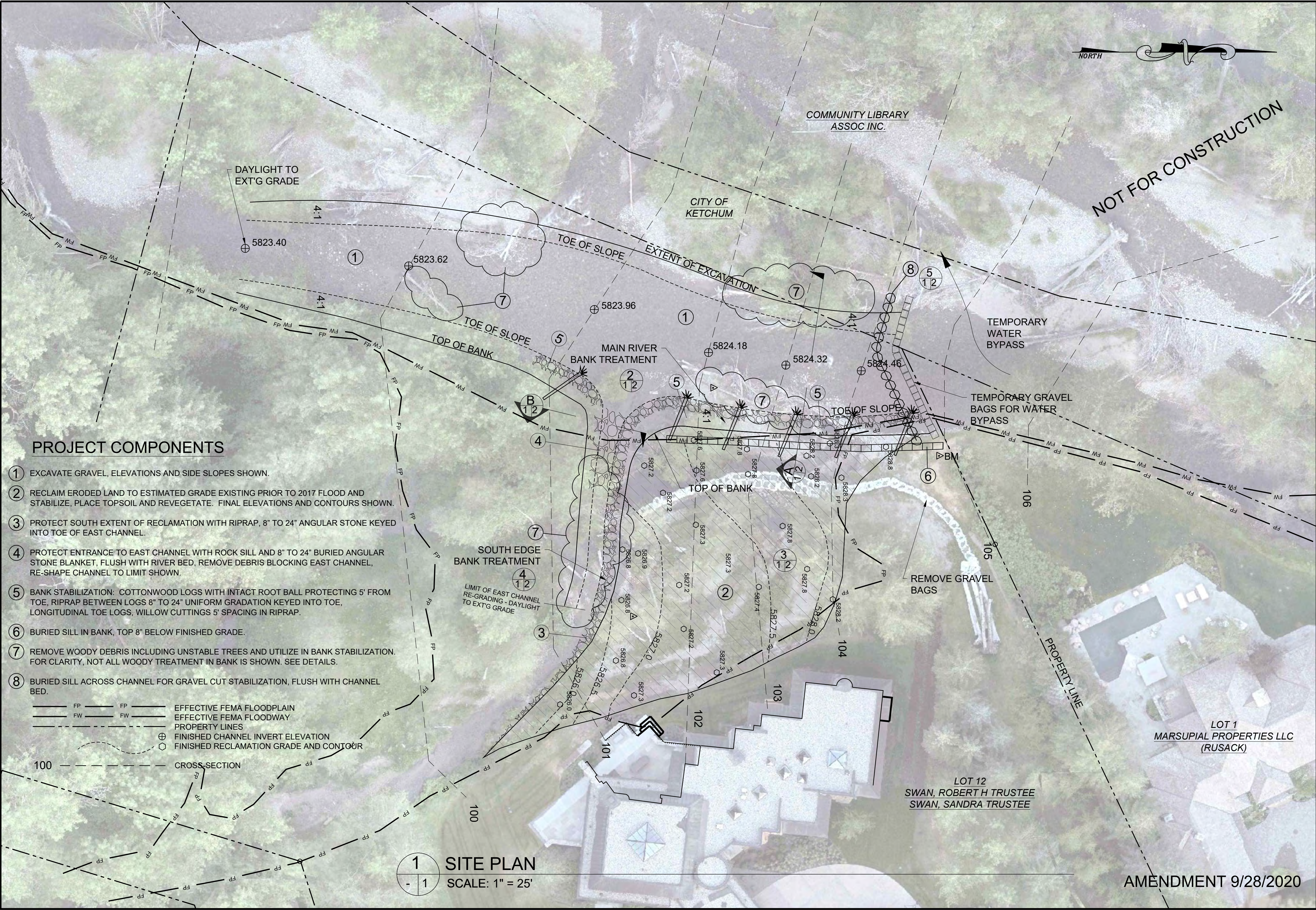
Sincerely,
QUADRANT CONSULTING, INC.



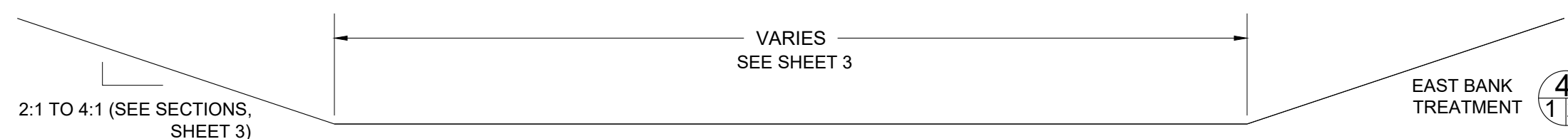
Nicholas A. Kraus, PE

cc: Geoff Rusack, Marsupial Properties, LLC
Katie Franklin, Lawson Laski Clark, PLLC
Ed Lawson, Lawson Laski Clark, PLLC
Jennifer Zung, PE, Harmony Design & Engineering

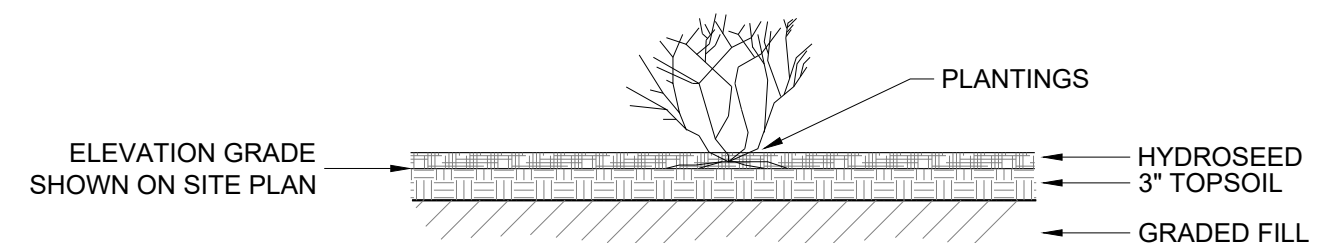
Attachments: Amended Swan River Restoration Project Drawings
Amendment to Swan River Restoration Project Narrative



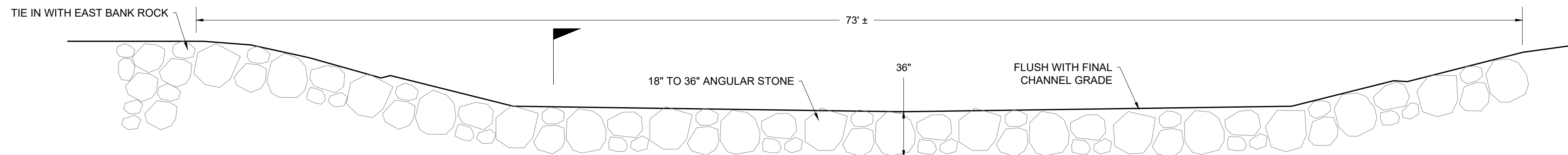
THIS DRAWING HAS BEEN PREPARED BY BROCKWAY ENGINEERING, PLLC. FOR A SPECIFIC PROJECT TAKING INTO ACCOUNT THE SPECIFIC AND UNIQUE REQUIREMENTS OF THE PROJECT. REUSE OF THIS DRAWING FOR ANY PURPOSE IS PROHIBITED UNLESS WRITTEN PERMISSION FROM BOTH BROCKWAY ENGINEERING & THE CLIENT IS GRANTED.	G	AMENDMENT - REMOVE LOT 1 WORK	9/28/20				DESIGNED BY CGB	DRAFTED BY ICB	BROCKWAY ENGINEERING, PLLC HYDRAULICS - HYDROLOGY - WATER RESOURCES 2016 NORTH WASHINGTON, SUITE 4 TWIN FALLS ID, 83301 (208) 736-8543	SWAN, SANDRA RIVER RESTORATION PROJECT		PROJECT # 1436-02-2018	
	F	GEOGRID REMOVAL FOR CITY	9/16/19										
	E	FOR FINAL PERMIT	7/19/19										
	D	MODIFICATIONS TO CHANNEL	1/4/19										
	C	ISSUE FOR BIDDING	10/18/18				SCALE 1" = 25' (18 X 24) DWG ONLY			DWG # 1	REV G		
	B	ADDED PROPERTY NAMES	9/28/18										
	REV	DESCRIPTION	DATE	APPD.	REFERENCE DRAWINGS								



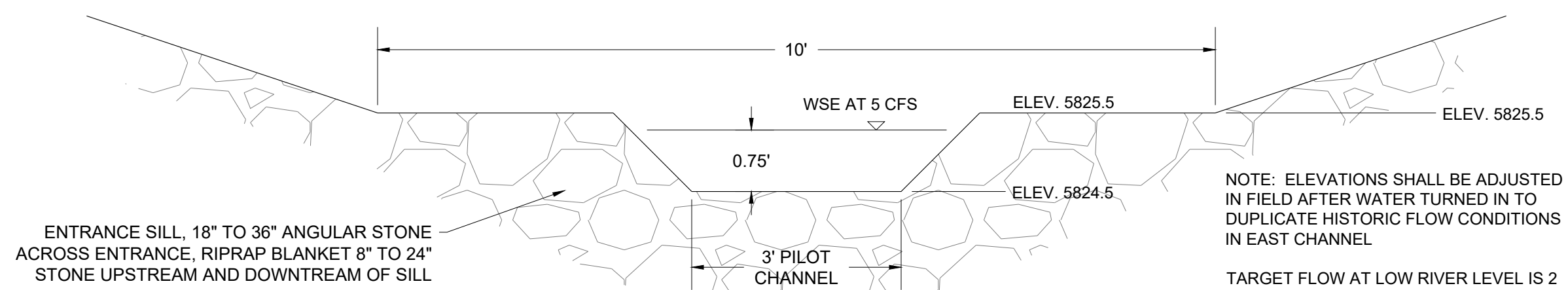
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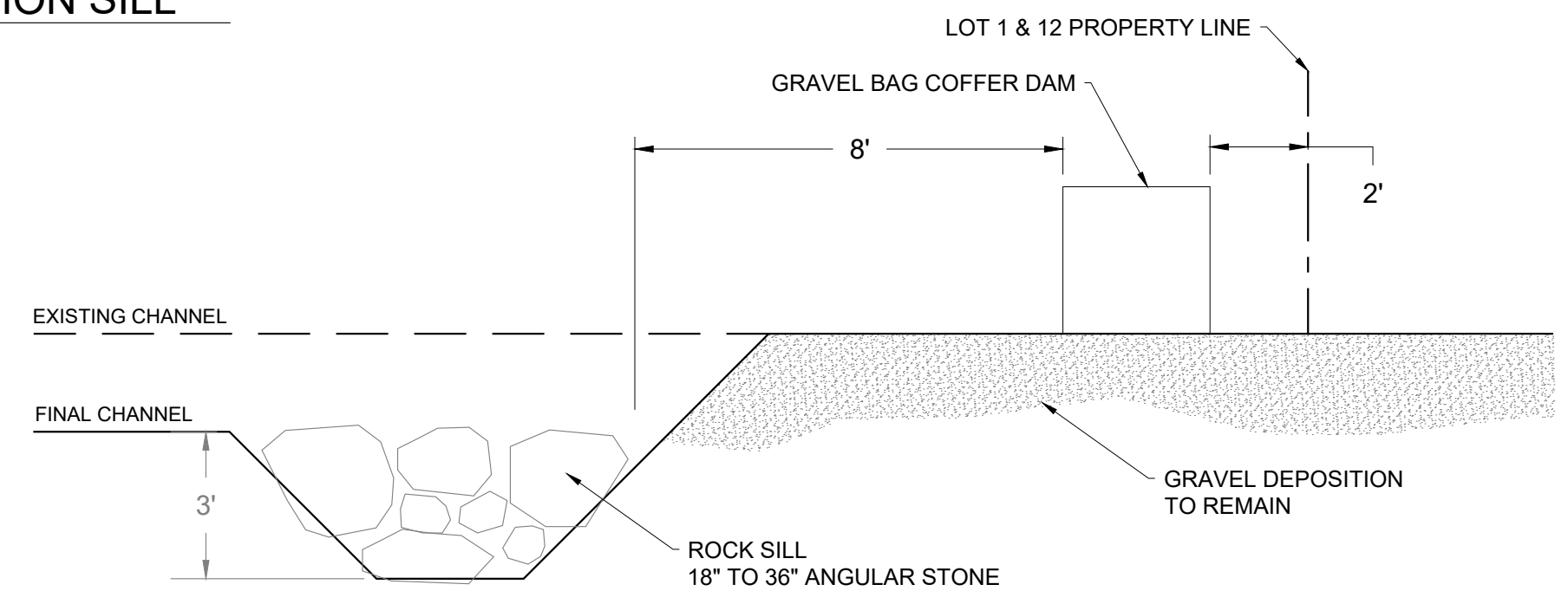
3 LAND RECLAMATION TREATMENT



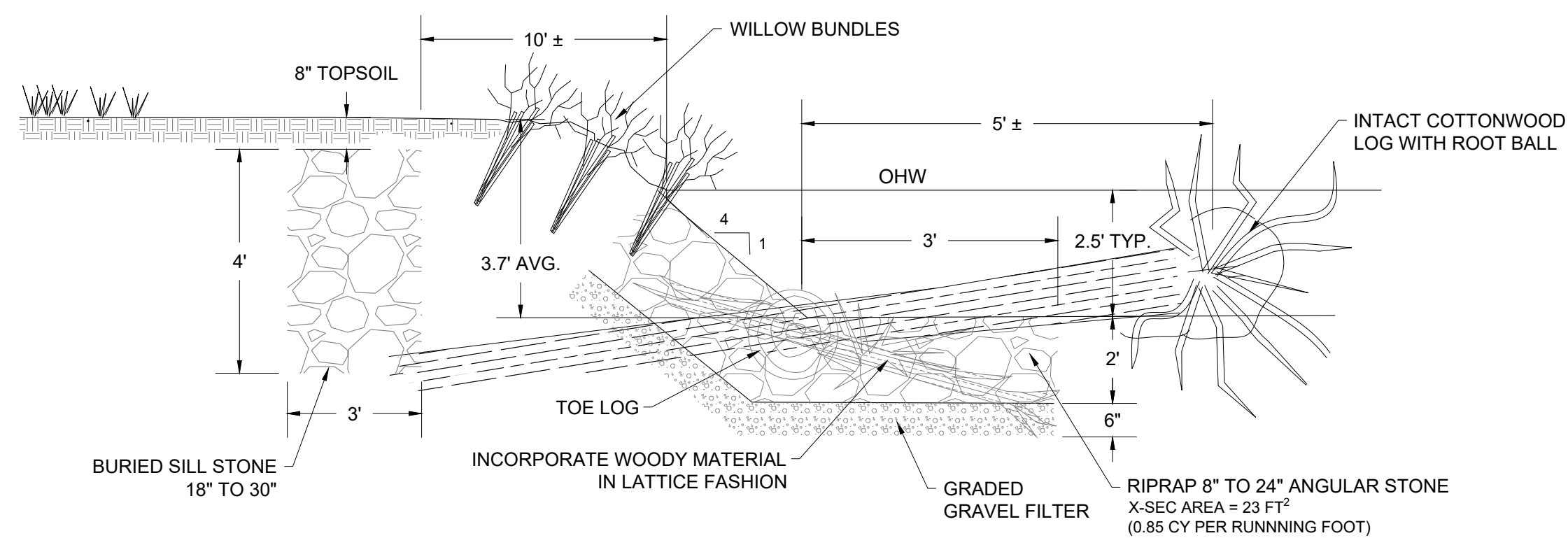
5 CHANNEL STABILIZATION SILL



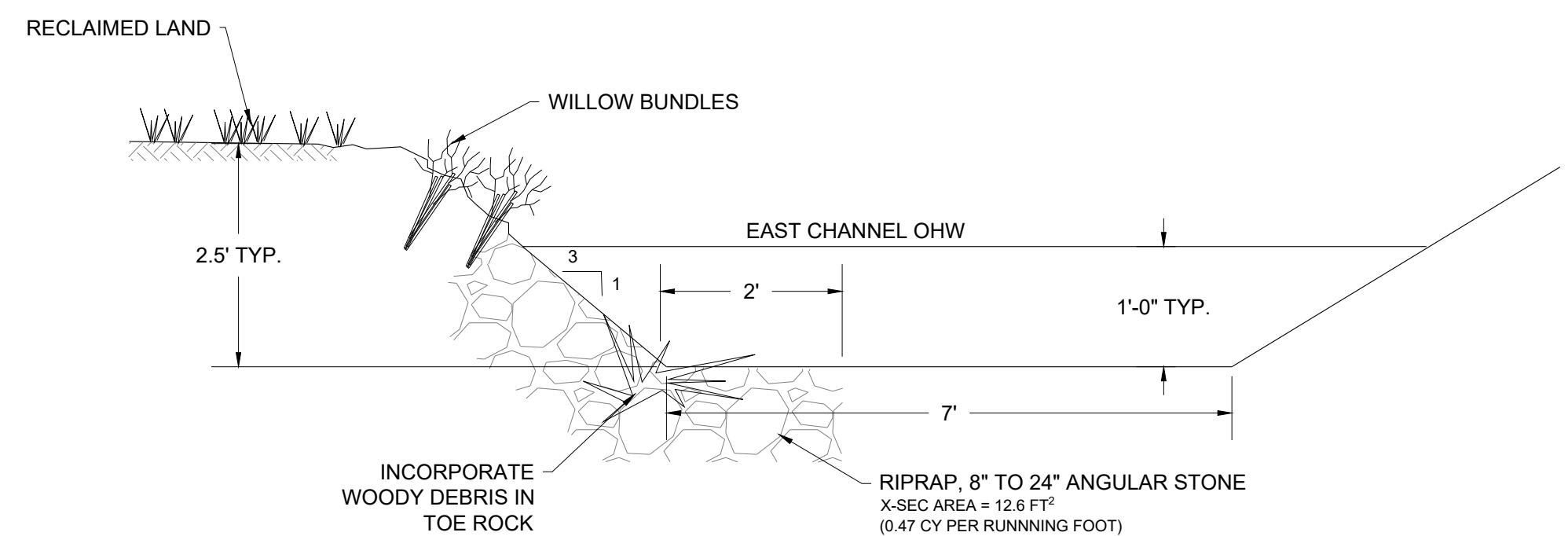
B EAST CHANNEL ENTRANCE SECTION
SCALE: N.T.S.



 CHANNEL STABILIZATION SILL SECTION
SCALE: N.T.S.



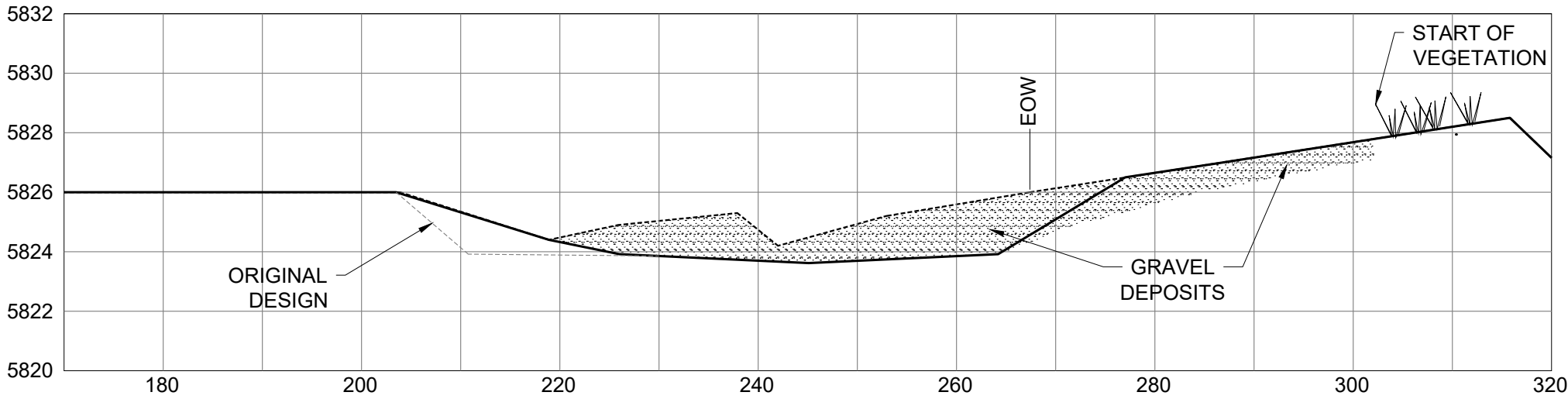
2 BANK TREATMENT - MAIN RIVER
1 | 2 SCALE: N.T.S.



4 BANK TREATMENT - SOUTH EDGE OF RECLAMATION

AMENDMENT 9/28/2020

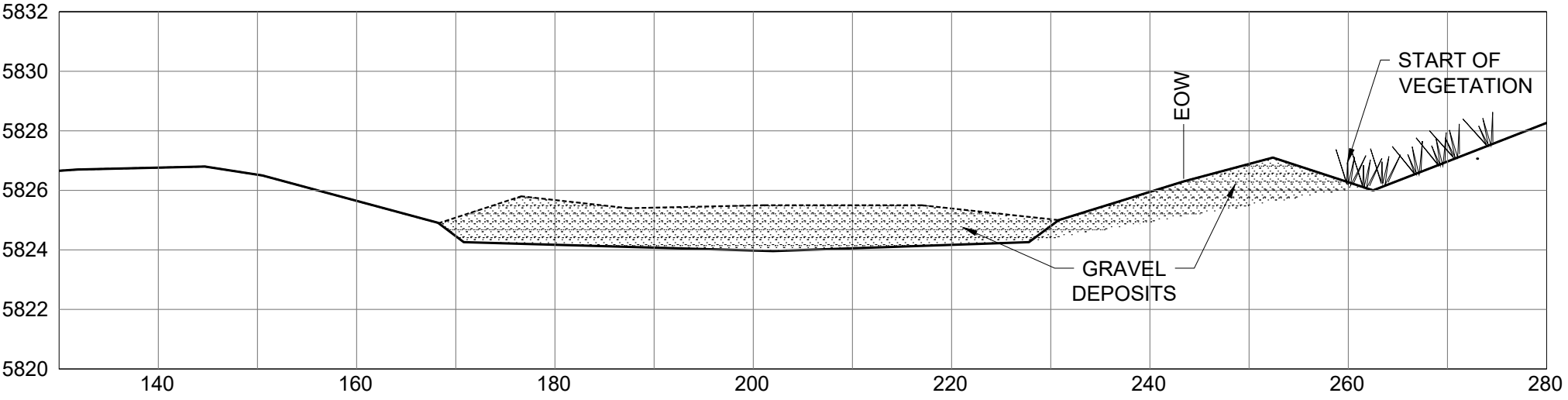
THIS DRAWING HAS BEEN PREPARED BY BROCKWAY ENGINEERING, PLLC. FOR A SPECIFIC PROJECT TAKING INTO ACCOUNT THE SPECIFIC AND UNIQUE REQUIREMENTS OF THE PROJECT. REUSE OF THIS DRAWING FOR ANY PURPOSE IS PROHIBITED UNLESS WRITTEN PERMISSION FROM BOTH BROCKWAY ENGINEERING & THE CLIENT IS GRANTED.	G	AMENDMENT - REMOVE LOT 1 WORK	9/28/20			DESIGNED BY CGB	DRAFTED BY ICB	BROCKWAY ENGINEERING, PLLC HYDRAULICS - HYDROLOGY - WATER RESOURCES 2016 NORTH WASHINGTON, SUITE 4 TWIN FALLS ID, 83301 (208) 736-8543	SWAN, SANDRA RIVER RESTORATION PROJECT SECTIONS AND DETAILS	PROJECT #	
	F	GEOGRID REMOVAL FOR CITY	9/16/19							538-17-2016	
	E	FOR FINAL PERMIT	7/19/19								
	D	MODIFICATIONS TO CHANNEL	1/4/19								
	C	ISSUE FOR BIDDING	10/18/18								
	B	ADDED PROPERTY NAMES	9/28/18								
	REV	DESCRIPTION	DATE	APPD.	REFERENCE DRAWINGS						
(18 X 24) DWG ONLY										DWG #	REV
										2	A



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SECTION 100

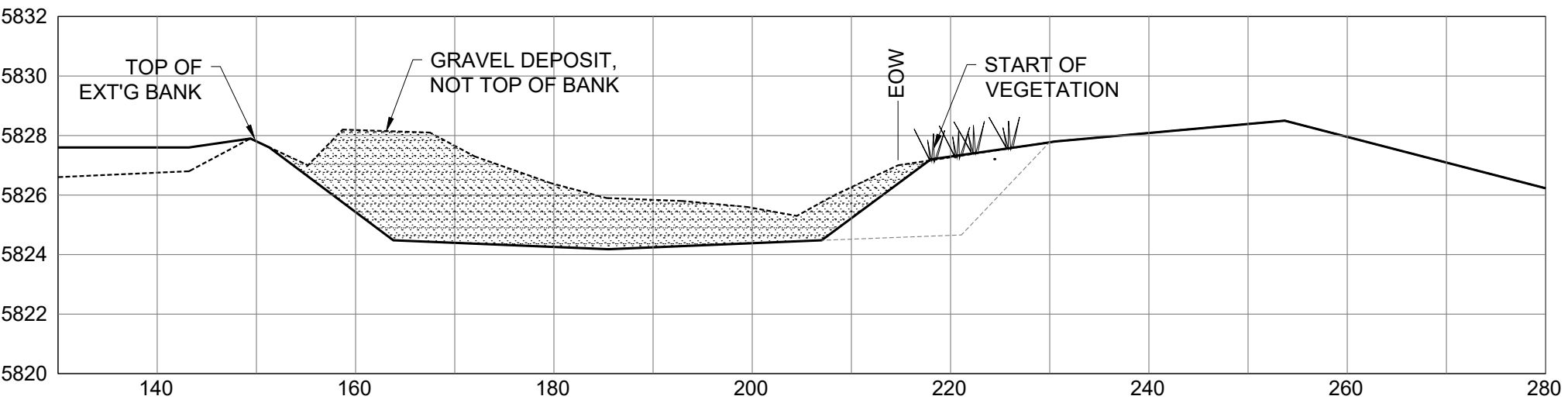
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VERTICAL SCALE: 1" = 5'



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SECTION 101

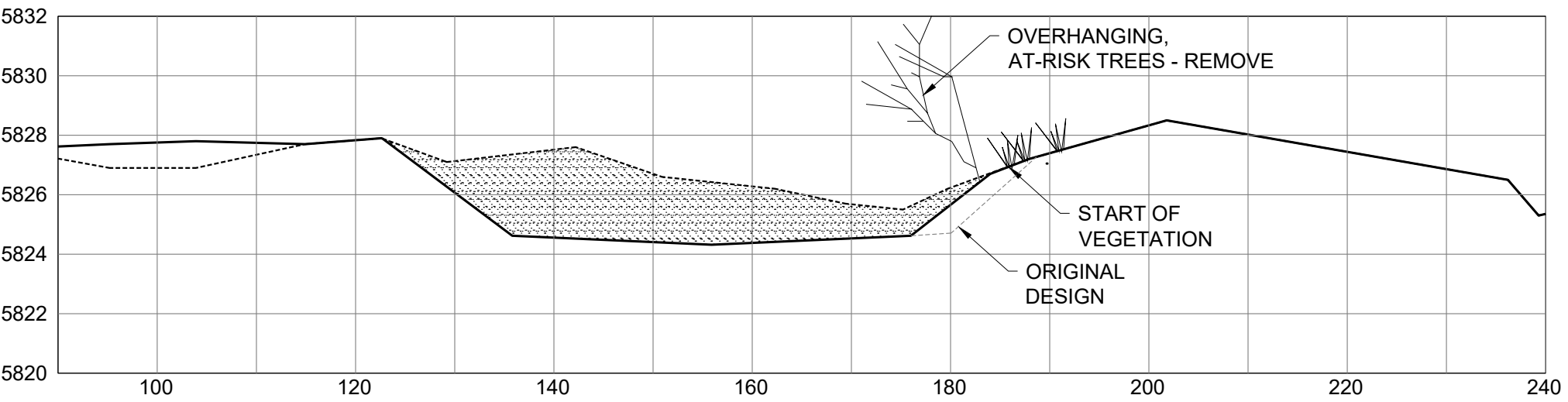
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SECTION 102

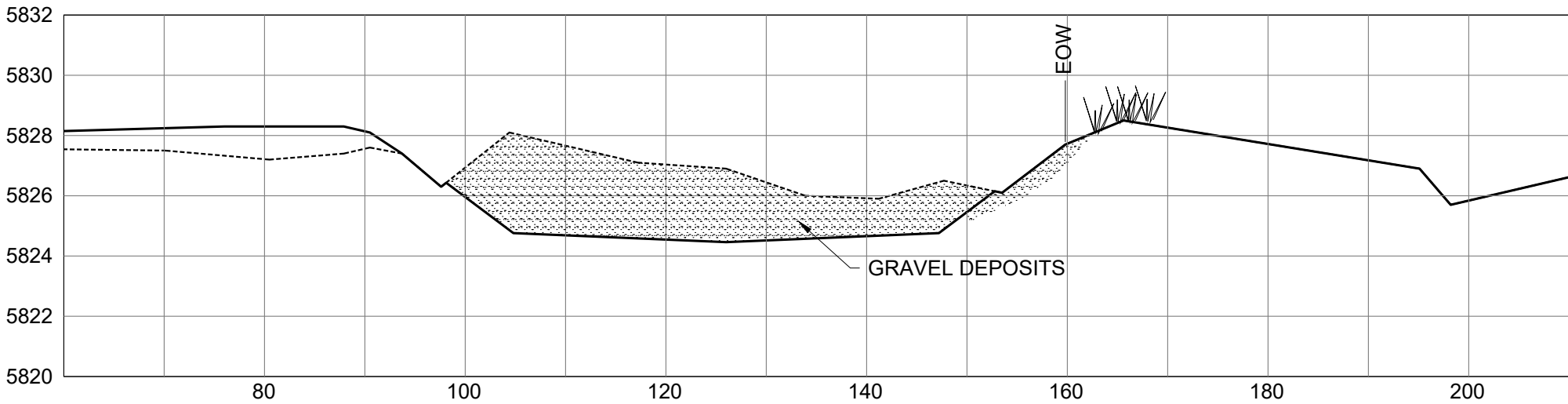
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SECTION 103

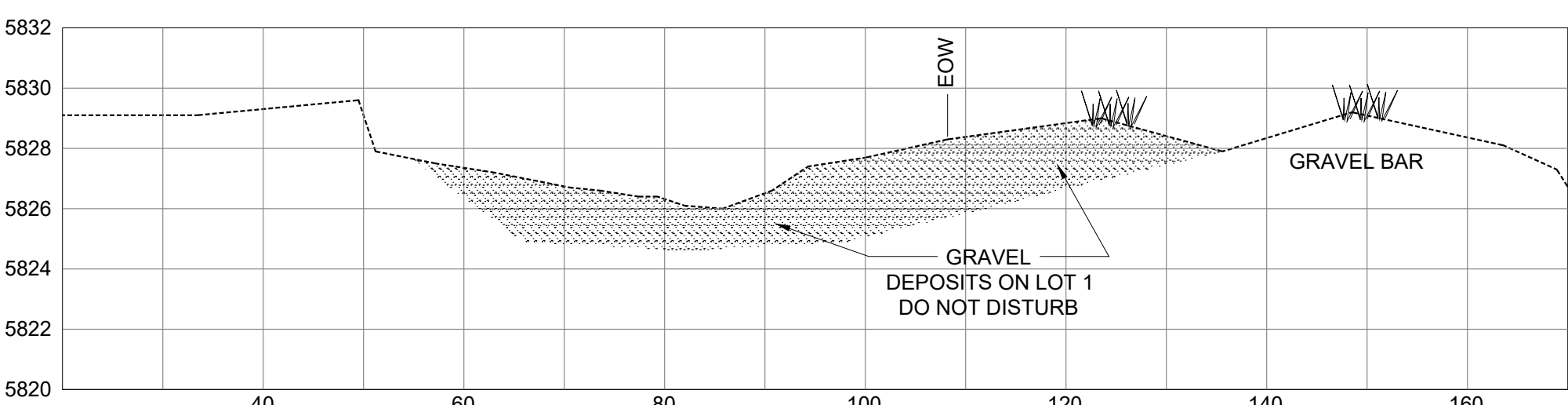
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SECTION 104

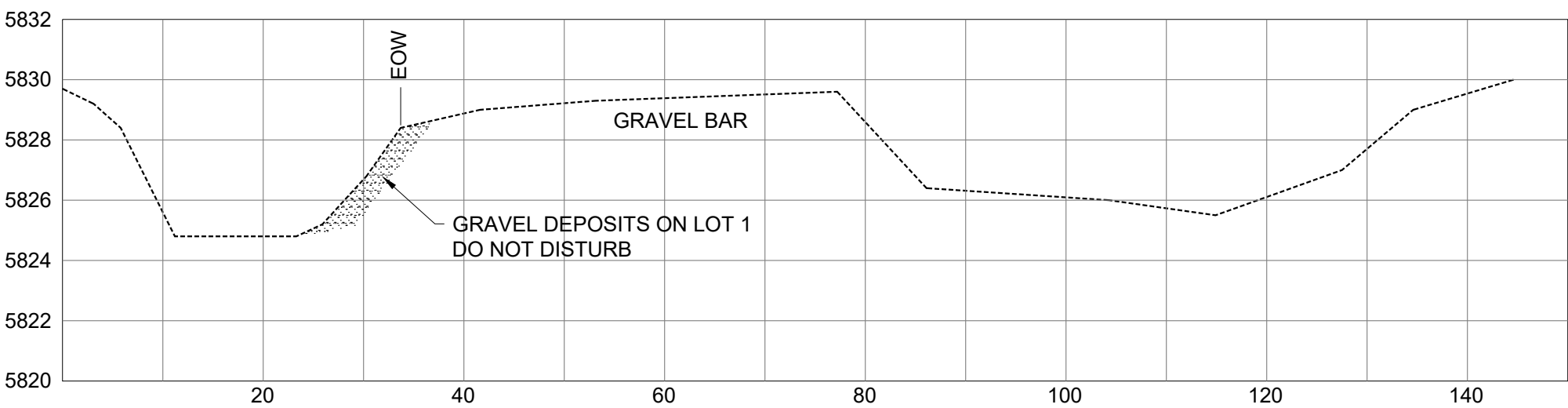
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C.5
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SECTION 105

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



C.6
1 | 3

SECTION 106

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

LEGEND

- EXISTING CHANNEL - SURVEYED JULY 17, 2018
- PROPOSED CHANNEL
- EOW EDGE OF WATER AT TIME OF SURVEY

NOT FOR CONSTRUCTION

AMENDMENT 9/28/2020

THIS DRAWING HAS BEEN PREPARED BY BROCKWAY ENGINEERING, PLLC. FOR A SPECIFIC PROJECT TAKING INTO ACCOUNT THE SPECIFIC AND UNIQUE REQUIREMENTS OF THE PROJECT. REUSE OF THIS DRAWING FOR ANY PURPOSE IS PROHIBITED UNLESS WRITTEN PERMISSION FROM BOTH BROCKWAY ENGINEERING & THE CLIENT IS GRANTED.

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REV	DESCRIPTION	DATE	APPD.	REFERENCE DRAWINGS	

DESIGNED BY

CGB

DRAFTED BY

ICB

BROCKWAY ENGINEERING, PLLC

HYDRAULICS - HYDROLOGY - WATER RESOURCES

2016 NORTH WASHINGTON, SUITE 4

TWIN FALLS ID, 83301

(208) 736-8543

SWAN, SANDRA
RIVER RESTORATION PROJECT

CHANNEL CROSS-SECTIONS

PROJECT #
538-17-2016

DWG #
3

REV
G

(18 X 24) DWG ONLY

Amendment to Swan River Restoration Project

September 28, 2020

A. Elements of Amendment

The Amendment pertains to the river restoration project approved by the Corps of Engineers (NWW-2017-639-I02), the Idaho Department of Water Resources (S37-20546 as Amended July 8, 2019) to the project includes the following elements, all of which are depicted on Revision G of the project drawings, dated September 28, 2020. The specific elements of the Amendment are as follows:

- a. Remove all work of any kind on Lot 1 (Marsupial Investments)
- b. For water bypass, place temporary gravel bags across the channel just south of the Lot 1 / Lot 12 line. The line of bags will extend westward onto City of Ketchum property just as in the approved permit (the temporary gravel bags on City property were previously approved in the encroachment permit). As before, it is likely that water can be bypassed without removal of debris or gravel on City property; however, if this becomes necessary the same provision as previously approved would apply.
- c. Stop the channel excavation and re-grading just downstream of the temporary gravel bags (stopping short of the bags to avoid undermining them).
- d. To increase the stability of the re-graded channel and prevent down-cutting and a potential head cut moving upstream onto Lot 1, a below-grade rock sill will be placed across the channel. Such sills are included in the IDWR minimum standards and are commonly used. The top of the sill will be flush with the finished of the channel, i.e. all of the rock will be below the channel bed and thus there will be no hydraulic impact from the sill.

Material quantities for the reduced-scope amended project are shown in Tables 1 and 2. These are the same tables found in the September 30, 2019 narrative for the approved project, with Items #1 and #2 revised and an Item #8 added to reflect the sill across the channel. All other elements of the project are unchanged.

Table 1. Material quantities, Items #1 and #2 revised per amendment.

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. Gravel removal	300	0.50	1,243	1,243	0	0
2. Reclamation	n/a	0.27	0	0	447	0
3. Reclaimed land south boundary protection	165	0.03	0	0	77	65
4. East chan entrance stabilization	88	0.03	86	86	54	54
5. Bank stabilization	180	0.05	0	0	131	131
6. Bank sill	Landward of OHW					
7. Wood removal	n/a	0.10	150	150	0	0
8. Sill across channel to stabilize gravel cut	12	0.02	49	49	49	49
Temporary bypass and coffer	32	0.03	65	65	18	12
TOTALS		1.03	1,593	1,593	776	311
TOTALS (not including temporary work)		1.00	1,528	1,528	758	299
Notes: Gravel removal: Length is total north-south length along Big Wood River from upper to lower limits of removal. Reclamation: Fill volume is for reclamation of land within floodplain. Reclaimed land south boundary protection: Length is west-east along north bank of East Channel. East channel entrance stabilization: Length is the west-east length of the east channel entrance protection and re-grading; total excavation is for channel re-grading from entrance eastward; fill is rock at entrance. Bank stabilization: Length is north-south along Big Wood River, fill is riprap and logs. * OHW prior to 2017 discrete event.						

Table 2. Post-project channel geometry, revised per Amendment.

Section	River Station (ft)	Bottom width (ft)	Side slope	Cut area (ft2)
106	106085	No disturbance		
105	106038	No disturbance		
104	106003	40	4:1	114
103	105970	40	4:1	113
102	105935	50	4:1	154
101	105883	60	4:1	96
100	105800	60	4:1	116
99	105700	30	4:1	21

B. Revised No-Rise Analysis

The HEC-RAS model for the proposed conditions that was approved by the City of Ketchum was modified by removing the gravel excavation and bank protection obstruction from Sections 105 and 106 (the sections on Lot 1) and creating an interpolated section 10' downstream of the property line to reflect the stoppage of gravel excavation at that point. This model when compared to the existing conditions model shows no rise in 100-year flood elevation in accordance with FEMA criteria.