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Attorneys for Defendant

IN THE DISTRICT COURT OF THE FOURTH JUDICIAL DISTRICT OF THE STATE OF IDAHO, IN AND FOR THE COUNTY OF ADA

JOHN HASTINGS, Jr., Plaintiff, vs. THE STATE OF IDAHO DEPARTMENT OF WATER RESOURCES, a Political Subdivision of the STATE OF IDAHO, Defendant.	Case No. CV01-21-17825 **DEFENDANT'S STATEMENT OF FACTS IN SUPPORT OF CROSS-MOTION FOR SUMMARY JUDGMENT AND IN OPPOSITION TO PLAINTIFF'S MOTION FOR SUMMARY JUDGMENT**

Defendant, the STATE OF IDAHO DEPARTMENT OF WATER RESOURCES, ("Department"), through its counsel of record, and pursuant to the *Scheduling Order* filed in this matter on February 9, 2022, I.R.C.P. 56, Local Rule 8.4, and § C(1)–(2) of the *Order for Scheduling Conference and Order Re: Motion Practice* filed in this matter on

December 15, 2021, submits the following *Defendant's Statement of Facts in Support of Cross-Motion for Summary Judgment and in Opposition to Plaintiff's Motion for Summary Judgment* ("*Statement of Facts*"). Filed concurrently are *Defendant's Cross-Motion for Summary Judgment* and *Defendant's Memorandum in Support of Cross-Motion for Summary Judgment and in Opposition to Plaintiff's Motion for Summary Judgment*.

STATEMENT OF FACTS AND PROCEDURAL HISTORY

The Department and Plaintiff John Hastings Jr.'s ("Mr. Hastings") filed a stipulated statement of facts in this case on February 8, 2022. Stip. Facts for Mot. Prac. Re: Statute Limits. at 1 [hereinafter Facts]. In addition, pursuant to Idaho Code § 9-101(3), I.R.C.P. 44, and I.R.E. 201, the Department requests the Court take judicial notice of Stream Channel Alteration Permit (S37-20565) ("Permit") referenced in ¶¶ 18 and 19 of the Facts.[1] A certified copy of the Permit is attached to this *Statement of Facts*. The following paragraphs summarize the relevant facts and procedural history.

On September 11, 2017, the Department issued a Notice of Violation and Order to Cease and Desist the Unauthorized Alteration of the Big Wood River ("NOV") to Mr. Hastings. *Facts* ¶ 2; Def.'s Answer to First Am. Action for Decl'ry J. & Countercl. Ex. 2 at 1. To resolve the NOV, the Department and Mr. Hastings entered the Consent Order on

[1] Idaho Code § 9-101(3) specifies that courts take judicial notice of public official acts of the executive departments of Idaho. I.R.E. 201(b)(2) states the court may judicially notice a fact that "can be accurately and readily determined from sources whose accuracy cannot reasonably be questioned." The Permit is an official document of the Department, issued pursuant to the Department's authorities in Chapter 38, Title 42, of Idaho Code. *See Probart v. Idaho Power Co.*, 74 Idaho 119, 125, 258 P.2d 361, 364 (1953) ("It is the duty of and the supreme court will take judicial notice of an order of the Public Utilities Commission adopted in accordance with and pursuant to statutory authority."); *Alberthesen v. State*, 60 Idaho 715, 96 P.2d 437 (1939) (The Court took judicial notice of the Idaho Motorist's Guide as an official pronouncement of an executive department of Idaho.); *State, Dep't of L. Enf't v. Engberg*, 109 Idaho 530, 708 P.2d 935 (Ct. App. Idaho 1985) (Judicial notice of liquor license was appropriate.).

January 26, 2018. *Facts* ¶ 4; First Am. Action for Decl'ry J. Ex. A at 3.

> The relevant terms of the Consent Order are:
>
> 1) By February 15, 2018, Respondent shall pay a civil penalty in the amount of $10,000 and submit a Joint Application for Permit ("application") to the Department that proposes a plan to restore the stream bank at the subject lands. . . .
>
> 2) Respondent shall comply with the terms and conditions of any permit the Department issues subsequent to the submittal of an acceptable application and restoration plan pursuant to Order paragraph no. 1.
>
> 3) Respondent shall contact the Department immediately after completing the restoration plan at the subject lands. The Department shall inspect the completed work within 14 days after notification of completion to determine if the work meets the criteria and conditions of the restoration plan.
>
> 4) The Department agrees to refund Respondent $7,500 of the civil penalty if the Respondent successfully completes the restoration plan by December 31, 2018, and meets the requirements of Order paragraphs 1-3. If there are circumstances beyond the control of Respondent, he will contact the Department by November 30, 2018, to request an extension of the deadline stated above.

Consent Order at 2.

In response to the Consent Order, Mr. Hastings submitted a proposed restoration plan on February 14, 2018. *Facts* ¶ 7. Over the next ten months the restoration plan was revised three times before being approved by the Department. *Facts* ¶¶ 7–12, 16. Based on the third revised restoration plan, Mr. Hastings filed a Joint Application for Permits to complete the restoration work. *Facts* ¶ 17. The Department issued its Conditional Approval of Joint Application for Permits ("Permit") on May 17, 2019. *Facts* ¶ 18; *Permit* at 1. Mr. Hastings submitted a *Petition for Hearing* on the Permit on May 21, 2019. *Facts* ¶ 19; First Am. Action for Decl'ry J. Ex. B. Mr. Hastings requested informal discussions regarding the Permit. Pet. for Hr'g at 2. The parties were engaged in informal discussions

until November 19, 2021, when the Idaho Water Resource Board appointed a hearing officer for Mr. Hastings' requested hearing. Def.'s Answer to First Am. Action for Decl'ry J. & Countercl. Ex. 1. Mr. Hastings has not completed the stream bank restoration required by the approved restoration plan and permit. *Facts* ¶ 20.

On November 15, 2021, Mr. Hastings initiated this case with his *Action for Declaratory Judgment* and subsequent *First Amended Action for Declaratory Judgment* ("*Action for Declaratory Judgment*"). Mr. Hastings seeks a declaratory judgment that the statute of limitations in Idaho Code § 42-3809 applies to the Consent Order and the time for the Department to enforce the Consent Order has expired. The Department filed a mandatory counterclaim seeking an order of specific performance requiring Mr. Hastings to comply with the terms of the Consent Order. Def.'s Answer to First Am. Action for Decl'ry J. & Countercl. at 15. The Parties agreed to bifurcate the proceedings and resolve the statute of limitations issue first in their *Stipulation and Joint Motion to Bifurcate Issues and Request for a Briefing Schedule and Oral Argument*.

On March 8, 2022, Mr. Hastings filed his *Motion for Summary Judgment* asking the court to grant his *Action for Declaratory Judgment* and to dismiss the Department's Counterclaim.[2]

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[2] Mr. Hastings' *Memorandum in Support of Motion for Summary Judgment* states he filed a motion for summary judgment on the Department's Counterclaim but his *Motion for Summary Judgment* asks for summary judgment based on the *Action for Declaratory Judgment*.

DATED this 5th day of April 2022.

MEGHAN M. CARTER
Deputy Attorney General
Idaho Department of Water Resources

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on this 5th day of April 2022, I caused to be served a true and correct copy of the foregoing *Defendant's Statement of Facts in Support of Cross-Motion for Summary Judgment and in Opposition to Plaintiff's Motion for Summary Judgment* via iCourt E-File and Serve, upon the following:

J. KAHLE BECKER **Attorney at Law** 223 N. 6th St., Suite 325 Boise, Idaho 83702 kahle@kahlebeckerlaw.com *Attorney for Plaintiff John Hastings*	☐ U.S. Mail, postage prepaid ☐ Hand Delivery ☐ Overnight Mail ☐ Facsimile ☒ iCourt E-File and Serve

MEGHAN M. CARTER
Deputy Attorney General
Idaho Department of Water Resources

State of Idaho
DEPARTMENT OF WATER RESOURCES
322 E Front Street, Suite 648 • PO Box 83720 • Boise ID 83720-0098
Phone: (208) 287-4800 • Fax: (208) 287-6700
Website: idwr.idaho.gov • Email: idwrinfo@idwr.idaho.gov

BRAD LITTLE
Governor

GARY SPACKMAN
Director

May 17, 2019

The foregoing is a true and certified copy of the document on file at the Department of Water Resources.
Signed this 4th day of April, 2022.
33 pages
AARON GOCURT

John Hastings, Jr.
P.O. Box 583
Ketchum, ID 83340

Embassy Auditoriums, Inc.
527 S. Burlingame Ave
Los Angeles, CA 90049-4825

RE: Conditional Approval of Joint Application for Permits (S37-20565) in the matter of Consent Order and Agreement and of Notice of Violation No. E2017-1236
Big Wood River – 1200 Warm Springs Road Restoration

Dear Mr. Hastings:

The Idaho Department of Water Resources (IDWR) has reviewed your above referenced Joint Application for Permit (Application) to alter the Big Wood River and has prepared this conditional approval, pursuant to Section 42-3805, Idaho Code. The conditions set forth below are intended to prevent degradation of water quality, minimize impacts to fish and wildlife habitat, and protect the long-term stability of the stream channel. You may consider this conditional approval letter a permit to construct your project as described below.

Project Background
On August 30, 2017, IDWR received from you an Emergency Permit Application to Alter a Stream Channel (Emergency Application) to construct one bank barb and riprap downstream of the barb approximately 75-feet to the Warm Springs Road bridge abutment. The Emergency Application stated that a follow-up Application would be submitted to formalize the emergency work that was completed in late July without IDWR approval. IDWR conducted a site inspection on September 7, 2017, and confirmed that the channel had been altered along the western streambank without a permit from IDWR.

IDWR issued a Notice of Violation and Order to Cease and Desist the Unauthorized Alteration of the Big Wood River (NOV) on September 11, 2017. On October 3, 2017, IDWR held a compliance conference regarding the NOV. On January 26, 2018, a Consent Order and Agreement was signed by you and IDWR outlining the terms of the agreement and order. A term of the COA required a streambank stabilization and restoration plan to be submitted.

IDWR received the Application (S37-20565) dated and received on March 15, 2019 and the final Restoration Plan and Bank Stabilization Project for 1200 Warm Springs Rd., Ketchum, Idaho (Final Plan) dated December 26, 2018. The Application and Final Plan resulting from the

NOV and subsequent COA required a restoration plan to be submitted. The Application and Final Plan fulfills this portion of the COA.

Proposed Project Components

The six (6) proposed project components include the following:

1. *Retention and completion of existing riprap.*

   Emergency riprap was placed along approximately 193 feet of streambank during 2017 runoff. The riprap in place appears to be smaller than 18-inch stone and should be further stabilized with vegetative plantings and buried toe protection that will include both riprap and longitudinal cottonwood toe logs.

2. *Continuation of riprap upstream and downstream.*

   It is proposed to extend the riprap 35 feet downstream to protect a large cottonwood tree and 84 feet upstream to the end of the eroded reach. These areas will also be protected using vegetative plantings and buried toe protection that will include both riprap and longitudinal cottonwood toe logs.

3. *Bank barbs*

   Four (4) barbs are proposed that are spaced approximately 50-feet apart, angled approximately 30 degrees upstream, and end 12-feet perpendicularly into flow from the OHWM. The barbs will each include an intact cottonwood log as a core, with a rootball protruding into the flow to provide additional roughness and habitat value. The barbs will be low-height features with the elevation at the bank equal to the OHWM. The barbs will be submerged during ordinary high water and mostly submerged during low flow.

4. *Cottonwood toe logs*

   The bioengineering treatment being proposed to provide streambank stability is to place longitudinal toe logs at the toe of the streambank and should increase the stability of the slope. The cottonwood logs will have an intact root ball to provide additional roughness.

5. *Removal of gravel within the channel*

   The removal of gravel is proposed to aid in shifting the thalweg to the center of the channel to help protect the west streambank. This is needed to meet the legal requirement imposed by FEMA and administered by the City of Ketchum. The depth of removal will range from zero to 1.5 feet and the total estimated volume is 197 cubic yards and 0.18 acres.

6. *Vegetation*

   All disturbed areas will be re-graded to remove equipment tracks and to restore the original grade. Vegetation of the streambank will include native riparian grasses, shrubs, and cottonwood seedlings. Native riparian grasses and wild flowers will be planted within an area approximately 15-feet wide measured landward of the OHWM. The estimated area of seeding is approximately 3,100 square feet. Topsoil will also be spread

within the riprap to allow the seeding to extend down the streambank close to the OHWM. Cottonwood seedlings will be planted along the top of the streambank at an irregular spacing of 20 to 40 feet. Woody riparian shrubs will be planted within the zone approximately 15-feet wide measured landward of the OHWM with a target coverage within this area of approximately 6 shrubs per 1000 square feet. Additional woody shrub plantings will be made at the toe of the protected bank between the cottonwood toe log and the riprap. These planting will be spaced approximately 5 feet apart. Keyways of the barbs will be planted with deep rooting native vegetation with the roots within permanent moisture.

Conditional Approval of Proposed Project Components

Consistent with the Stream Channel Alteration Rules, IDAPA 37.03.07 (Rules), approval of the proposed project components is provided as follows, subject to the below Minimum Standards, Special Conditions, and General Conditions:

1. Retention and completion of existing riprap (approved).
2. Continuation of riprap upstream and downstream (approved).
3. Bank barbs (approved).
4. Cottonwood toe logs (approved).
5. Removal of gravel within the channel (approved).
6. Vegetation (approved).

The project location is within Section 12, Township 04 North, Range 17 East, Boise Meridian, Blaine County, Idaho.

Failure to adhere to the conditions as set forth herein may result in an enforcement action pursuant to Section 42-3809, Idaho Code. This project is permitted subject to the following Minimum Standards, Special Conditions, and General Conditions.

Minimum Standards

These standards are established in the Administrative Rules of the Idaho Water Resources Board; Stream Channel Alteration Rules, IDAPA 37.03.07 and are enclosed with this permit: Rule 59 – Drop Structures, Sills and Barbs

Special Conditions

1. **All construction shall be completed in accordance with the descriptions and methods on the attached Application, Final Plan, and permit special conditions. This office must approve, in writing, any changes prior to construction.**

2. **All construction activities shall be conducted in such a manner as to minimize turbidity and comply with Idaho water quality standards. Construction shall take place during low flow to minimize turbidity and protect water quality.**

3. **Prior to any construction authorized by this permit, written approval to work on property belonging to others shall be obtained in writing and a copy of the approval provided to IDWR.**

4. **No in-water construction shall occur between March 15 and July 15.**

5. **Excavated material from the channel (Project Component 5) shall be hauled to an upland location and disposed of properly outside of the floodplain.**

6. **The removal of gravel from within the channel (Project Component 5) shall occur using an excavator or similar equipment and work from a dry location. Heavy equipment shall not enter the active channel or live water.**

7. **Construction of streambank stabilization, including toe logs and bank barbs, shall be conducted from the top of the streambank. Heavy equipment shall not enter the channel below the OHWM to construct streambank stabilization treatment (Project Components 1, 2, 3, 4, and 6).**

8. **Silt fencing or other erosion and sediment control measures shall be installed between any area of earth disturbance and the water. Erosion and sediment control measures shall be installed according to the manufacturer's specifications, during construction, and must be maintained until construction is completed and the disturbed ground is revegetated and stable.**

9. **All fuel, oil, and other hazardous materials shall be stored and equipment refueled away from the stream channel to ensure that a spill will not enter the waterway. Equipment must be free of fuel and lubricant leaks. The operator shall have spill control materials available at all times during this project. These spill control materials shall include, but not be limited to, fuel and/or oil absorbent booms and absorbent pads. In the event of a release greater than 25 gallons of fuel or oil to the ground or to surface waters, the Idaho State EMS Communications Center, or StateComm, shall be contacted at 1-877-554-3367 or 208-846-7610.**

10. **Dormant native woody vegetation shall be planted within the streambank stabilization treatment (Project Components 1, 2, 4, 6) at intervals no greater than 5 feet spacing starting from the toe of slope and extending up slope along the top of bank.**

11. **Permittee shall segregate grasses, forbs, shrubs, and tree plantings to limit competition for nutrients and/or soil moisture, allowing each type of planting optimal success.**

12. **Permittee shall submit an annual report to Aaron Golart, IDWR State Coordinator Stream Protection Program, by December 31 of each year for a minimum of 3 years following initial construction. The report shall describe completed measures, including vegetation planted, and shall address each of the Project Components. By the third report, permittee is required to document that at least 80% survival of each vegetation type is achieved in Project Component 6. If unable to do so, then permittee must submit an additional revegetation plan within three (3) months of the third report that will ensure at least 80% success. Additional annual reports are required until at least 80% survival is achieved. IDWR may seek an enforcement action if such survival rate is not achieved five (5) years from the expiration date of this permit.**

13. **Permittee is responsible for all work done by any contractor or sub-contractor. Permittee shall ensure any contractor or sub-contractor who performs the work follows all the terms and conditions of this authorization.**

14. **This permit shall expire March 15, 2020.**

General Conditions

1. This permit does not constitute any of the following:
   a) An easement or right-of-way to trespass or work upon property belonging to others;
   b) Other approval that may be required by local, state, or Federal governments, unless specifically stated in the special conditions above;
   c) Responsibility of IDWR for damage to any properties due to work done;
   d) Compliance with the Federal Flood Insurance Program, FEMA regulations, or approval of the local Planning and Zoning authority.

2. In accordance with Sections 55-2201 - 55-2212, Idaho Code, the permittee and/or contractors must contact Digline statewide phone number 1-800-342-1585 (Boise area 208-342-1585) not less than three working days prior to the start of any excavation for this project.

3. The permittee or operator must have a copy of this permit at the alteration site, available for inspection at all times.

4. IDWR may cancel or amend this permit at any time that it determines such action is necessary to minimize adverse impact on the stream channel.

IDWR is permitting the proposal subject to the above conditions in this permit, and not the entire proposal as submitted. Failure to adhere to conditions as set forth herein can result in an enforcement action pursuant to Section 42-3809, Idaho Code.

If you object to the decision issuing this permit with the above conditions, you have 15 days in which to notify this office in writing that you request a formal hearing on the matter. If an objection has not been received within 15 days, the decision will be final under the provisions of IDAPA 37.03.07.70 (Rule 70).

Please contact Aaron Golart 208-287-4941 or aaron.golart@idwr.idaho.gov if you have any questions regarding this matter.

Sincerely,

Aaron Golart
State Coordinator
Stream Protection Program

cc: Charles G. Brockway, Brockway Engineering, Twin Falls
Chris Bromley, McHugh Bromley, Boise
Keri York, Trout Unlimited, Hailey
Balthasar Buhidar, Idaho Department of Environmental Quality, Twin Falls
Brittaney Skelton, City of Ketchum
Meribeth Lomkin, Idaho Department of Lands, Jerome
Frank Edelmann, Idaho Department of Fish and Game, Jerome
Robert Brochu, US Army Corps of Engineers, Idaho Falls (NWW-2017-614-I01)

059. DROP STRUCTURES, SILLS AND BARBS (RULE 59).

01. Drop Structures. A drop structure shall be constructed of rocks, boulders and/or logs placed within a stream channel to act as a low level dam. Placement of a drop structure perpendicular to stream flow will decrease the stream gradient, dissipate stream energy and decrease stream velocity through an increase in water surface elevation immediately above the structure. Drop structures shall comply with the following criteria: (7-1-93)

a. Maximum water surface differential across (upstream water surface elevation minus downstream water surface elevation) a drop structure shall not exceed two (2) feet. The department shall approve the final elevation of any structure. (7-1-93)

b. Rock drop structures shall be constructed of clean, sound, dense, durable, angular rock fragments, and/or boulders of size and gradation, such that the stream is incapable of moving the material during peak flows. Rocks shall be keyed into the stream banks to minimize the likelihood of bank erosion, (See Figure 8 in APPENDIX H located at the end of this chapter). (7-1-93)

c. Log drop structures are acceptable in four (4) designs including the single log dam, the stacked log dam, the three (3) log dam, and the pyramid log dam. Log ends shall be keyed into both banks at least one-third (1/3) of the channel width or a distance sufficient to prevent end erosion. To prevent undercutting, the bottom log shall be imbedded in the stream bed or hardware cloth, cobbles or boulders shall be placed along the upper edge. Minimum log size for a single log structure shall be determined by on-site conditions and shall be placed to maintain flow over the entire log to prevent decay. Each log drop structure must be accompanied by downstream scour protection, such as a rock apron (See Figure 9 in APPENDIX I located at the end of this chapter. (7-1-93)

d. All drop structures shall be constructed to facilitate fish passage and centralized scour pool development. (7-1-93)

02. Sills. A sill shall be constructed of the same material and in the same manner as a drop structure. 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. (See Figure 10 in APPENDIX J located at the end of this chapter). (7-1-93)

03. Barb or Partial Drop Structure. A barb or partial drop structure shall be constructed in the same manner and of the same material as a drop structure and placed into the stream channel to act as a low level dam and grade control structure. The barb will decrease stream gradient, dissipate stream energy and redirect stream flow. (7-1-93)

a. Barbs shall be constructed of clean, sound, dense, angular rock fragments, of size and gradation such that the stream is incapable of moving the material during peak flows. (7-1-93)

b. Barbs shall be constructed with a downstream angle of no less than one hundred (100) degrees and no greater than one hundred thirty-five (135) degrees unless otherwise specified. (7-1-93)

c. Barbs shall "extend" into the channel a distance of not more than twenty percent (20%) of the width of the channel unless otherwise specified by the Director. (7-1-93)

d. Barbs shall be keyed into the bank a distance equal to or greater than the width of the structure and down to bed level. Whenever moisture is encountered in the construction of the keyways, willow cuttings or clumps shall be placed before and during rock placement in such a manner that the base of the cutting is in permanent moisture and the top extends a minimum of six (6) inches above grade (see Figure 11 in APPENDIX K located at the end of this chapter). (7-1-93)

JOINT APPLICATION FOR PERMITS

U.S. ARMY CORPS OF ENGINEERS - IDAHO DEPARTMENT OF WATER RESOURCES - IDAHO DEPARTMENT OF LANDS

Authorities: The Department of Army Corps of Engineers (Corps), Idaho Department of Water Resources (IDWR), and Idaho Department of Lands (IDL) established a joint process for activities impacting jurisdictional waterways that require review and/or approval of both the Corps and State of Idaho. Department of Army permits are required by Section 10 of the Rivers & Harbors Act of 1899 for any structure(s) or work in or affecting navigable waters of the United States and by Section 404 of the Clean Water Act for the discharge of dredged or fill materials into waters of the United States, including adjacent wetlands. State permits are required under the State of Idaho, Stream Protection Act (Title 42, Chapter 38, Idaho Code and Lake Protection Act (Section 58, Chapter 13 et seq., Idaho Code). In addition the information will be used to determine compliance with Section 401 of the Clean Water Act by the appropriate State, Tribal or Federal entity.

Joint Application: Information provided on this application will be used in evaluating the proposed activities. Disclosure of requested information is voluntary. Failure to supply the requested information may delay processing and issuance of the appropriate permit or authorization. **Applicant will need to send a completed application, along with one (1) set of legible, black and white (8½"x11"), reproducible drawings that illustrate the location and character of the proposed project / activities to both the Corps and the State of Idaho.**

See Instruction Guide for assistance with Application. Accurate submission of requested information can prevent delays in reviewing and permitting your application. Drawings including vicinity maps, plan-view and section-view drawings must be submitted on 8-1/2 x 11 papers.

Do not start work until you have received all required permits from both the Corps and the State of Idaho

FOR AGENCY USE ONLY			
USACE NWW-	Date Received:	☐ Incomplete Application Returned	Date Returned:
Idaho Department of Water Resources No. S37-20565	Date Received: 3/15/2019	☐ Fee Received DATE:	Receipt No.:
Idaho Department of Lands No.	Date Received:	☐ Fee Received DATE:	Receipt No.:

INCOMPLETE APPLICANTS MAY NOT BE PROCESSED

1. CONTACT INFORMATION - APPLICANT Required:			2. CONTACT INFORMATION - AGENT:		
Name: John Hastings, Jr. and Embassy Auditoriums, Inc.			Name: Charles G. Brockway, P.E.		
Company: P.O. Box 583, Ketchum ID 83340 (Hastings)			Company: Brockway Engineering, PLLC		
Mailing Address: 527 S. Burlingame Ave, Los Angeles CA 90049-4825 (Embassy)			Mailing Address: 2016 North Washington St, Ste 4		
City:	State:	Zip Code:	City: Twin Falls	State: ID	Zip Code: 83301
Phone Number *(include area code)*:	E-mail:		Phone Number *(include area code)*: 208-736-8543	E-mail: charles.g.brockway@brockwayeng	

3. PROJECT NAME or TITLE: 1200 Warm Springs Restoration		4. PROJECT STREET ADDRESS:			
5. PROJECT COUNTY: Blaine	6. PROJECT CITY: Ketchum	7. PROJECT ZIP CODE: 83340			8. NEAREST WATERWAY/WATERBODY: Big Wood River
9. TAX PARCEL ID#: Tax Lot #8137 and Tax Lot #8138	10. LATITUDE: 43.68813 LONGITUDE: -114.37358	11a. 1/4: SW	11b. 1/4: SE	11c. SECTION: 12	11d. TOWNSHIP: 4N / 11e. RANGE: 17E
12a. ESTIMATED START DATE: Sep 1, 2019	12b. ESTIMATED END DATE: Dec 31, 2019	13a. IS PROJECT LOCATED WITHIN ESTABLISHED TRIBAL RESERVATION BOUNDARIES? ☒ NO ☐ YES Tribe:			
13b. IS PROJECT LOCATED IN LISTED ESA AREA? ☒ NO ☐ YES		13c. IS PROJECT LOCATED ON/NEAR HISTORICAL SITE? ☒ NO ☐ YES			

14. DIRECTIONS TO PROJECT SITE: Include vicinity map with legible crossroads, street numbers, names, landmarks.

Highway 75 to Ketchum, west on Warm Springs Road, then cross bridge and go north on driveway.

15. PURPOSE and NEED: ☐ Commercial ☐ Industrial ☐ Public ☒ Private ☐ Other

Describe the reason or purpose of your project; include a brief description of the overall project. Continue to Block 16 to detail each work activity and overall project.

This project is a bank stabilization plan to address chronic instability of the west river bank which has caused substantial loss of property during the 2017 flood and in prior high water events.

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

The project consists of two main parts: bank protection and gravel removal. Work will be performed in accordance with a plan approved by the Idaho Department of Water Resources entitled "Restoration Plan and Bank Stabilization Project for 1200 Warm Springs, Ketchum, Idaho" dated December 26, 2018 and attached hereto.

Emergency riprap was placed by a contractor during the 2017 event. This riprap will remain in place with additional riprap extending downstream approximately 35' to protect the cottonwood tree and upstream approximately 84' around the historic bridge abutment. The riprap will extend down the bank and be buried to provide toe protection. Longitudinal cottonwood toe logs will also be included with the toe protection.

Bank barbs will also be included for bank protection and to assist with moving the channel thalweg away from the bank. Four barbs spaced at 50 feet are proposed. The barbs will be angled approximately 30 degrees upstream and extend approximately 12 feet perpendicular from the bank.

See Attachment A for information on fill volumes above and below the ordinary high water for each of the above activities.

Vegetation will be included in the bank restoration. Bank areas will be restored with native riparian grasses and shrubs as well as cottonwood seedlings. Woody shrubs will also be planted at the toe of the bank and barb keyways.

Gravel removal will aid in shifting the thalweg towards the center of the channel and is also needed to meet the no rise requirement for the floodway. Approximately 197 CY of gravel removal is planned.

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

This alternative is considered to cause the least impact while adequately protecting the property.

Construction will take place during low flows and a turbidity meter will be utilized during construction activities.

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

No mitigation plan is needed since the project will cause minimum impacts.

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

Dirt or Topsoil:	_____	cubic yards
Dredged Material:	_____	cubic yards
Clean Sand:	_____	cubic yards
Clay:	_____	cubic yards
Gravel, Rock, or Stone:	_____	cubic yards
Concrete:	_____	cubic yards
Other (describe): _____	_____	cubic yards
Other (describe: _____	_____	cubic yards
TOTAL: _____		cubic yards

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

Filling:	0.09	acres	3,808	sq ft.	_____ cubic yards
Backfill & Bedding:	_____	acres	_____	sq ft.	_____ cubic yards
Land Clearing:	_____	acres	_____	sq ft.	_____ cubic yards
Dredging:	_____	acres	_____	sq ft.	_____ cubic yards
Flooding:	_____	acres	_____	sq ft.	_____ cubic yards
Excavation:	0.18	acres	7,638	sq ft.	197 cubic yards
Draining:	_____	acres	_____	sq ft.	_____ cubic yards
Other: _____	_____	acres	_____	sq ft.	_____ cubic yards
TOTALS:	0.27	acres	11,446	sq ft.	197 cubic yards

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

Some riprap was placed as emergency bank protection during the 2017 flood event. This riprap will be retained and additional riprap will be placed during construction.

22. LIST ALL PREVIOUSLY ISSUED PERMIT AUTHORIZATIONS:

An emergency permit was issued by the City of Ketchum for riprap placement during the 2017 event.

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

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

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

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

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

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

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

Construction will take place during low water. Silt fence or straw wattles will be placed along disturbed banks as necessary.

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

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

Activity	Name of Water Body	Intermittent Perennial	Description of Impact and Dimensions	Impact Length Linear Feet
Riprap	Big Wood River	Perennial		260
Bank Barbs	Big Wood River	Perennial		40
Gravel Removal	Big Wood River	Perennial		250
			TOTAL STREAM IMPACTS (Linear Feet):	550

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

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

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

Name: Mailing Address: City: State Zip Code: Phone Number (include area code): E-mail:	Name: Mailing Address: City: State Zip Code: Phone Number (include area code): E-mail:
Name: Mailing Address: City: State: Zip Code: Phone Number (include area code): E-mail:	Name: Mailing Address: City: State: Zip Code: Phone Number (include area code): E mail
Name: Mailing Address: City: State: Zip Code: Phone Number (include area code): E-mail:	Name: Mailing Address: City: State: Zip Code: Phone Number (include area code): E-mail:
Name: Mailing Address City: State: Zip Code: Phone Number (include area code): E mail:	Name: Mailing Address: City: State: Zip Code: Phone Number (include area code): E mail:

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

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

Signature of Applicant: _____ *Date:* _____

Signature of Applicant: _____ *Date:* _____

Signature of Agent: _____ *Date:* 3/15/2019

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

Attachment A
Fill Volume Tabulation

Gross fill is total volume of fill below OHW and includes volume placed in excavation of existing bed and banks. Net fill is volume above existing contour.

Activity	Gross fill below OHW (yd^3)	Net fill below OHW (yd^3)	Total fill material above and below OHW (yd^3)
Riprap	295	148*	424
Bank barbs	152	72	172
TOTAL	447	220	596

*Riprap will be placed as nearly as possible to original bank contour; however, to be very conservative the net fill was assumed to be 50% of the gross.

Attachment B
Adjacent Ownership Listing (corresponds to red outlined parcels on attached map)

Owner1	Owner2	Mail_Adrs1	Mail_Adrs2
TAYLOR MICHAEL A	TAYLOR RHONDA L TRUSTEE	7650 SCENIC DR	YAKIMA WA 98908-0000
WHITE DONALD R	WHITE SANDRA WARDE	412 N KENTER AVE	LOS ANGELES CA 90049-0000
VILLAS AT THE CROSSING	TOWNHOUSE OWNERS ASSN INC	PO BOX 254	KETCHUM ID 83340-0000
KETCHUM CITY OF		PO BOX 2315	KETCHUM ID 83340-0000
LANGSTON CATHERINE	YOUELL GLEN B TRUSTEE	16530 ROBINSON RD	SNOHOMISH WA 98296-0000
COMMUNITY LIBRARY ASSOC INC*		PO BOX 2168	KETCHUM ID 83340-0000
KETCHUM CITY OF		BOX 2315	KETCHUM ID 83340-0000

* From Blaine Co. assessor information, "ownership" of streambed may be question but notice provided as a courtesy.

Path: F:\Projects\Hastings-Big w\GIS 2018\Adjacent_Parcels.mxd

0 25 50 100 Feet

HASTINGS AND EMBASSY AUDITORIUMS

ADJACENT PARCEL OWNERS

N

Subject property

Adjacent parcels

BROCKWAY ENGINEERING, PLLC.
ICB - Date: 3/7/2019

NAIP 2017 IMAGERY

SCANNED
MAY 17 2019

Restoration Plan and Bank Stabilization Project for 1200 Warm Springs, Ketchum, Idaho

Brockway Engineering, PLLC
Revised December 26, 2018

A. Overview

This report describes a plan for restoration of streambank and implementation of stabilization measures on a reach of the Big Wood River immediately upstream of Warm Springs Road in Ketchum, Idaho. The plan is intended to satisfy one component of the January 26, 2018 *Consent Order and Agreement* (Consent Order) between a landowner (landowner) and the Idaho Department of Water Resources (IDWR). Responsive to the consent order, the project engineer submitted a restoration plan, dated February 14, 2018, to IDWR. The February 14, 2018 plan was consistent with the Consent Order. That plan was revised on multiple occassions, prior to October 30, 2018, in order to satisfy items expressed by IDWR's representative. Letters, emails, and phone calls that led to revisions to the February 14, 2018 plan are summarized in the first paragraph to the October 30, 2018 plan. The October 30, 2018 plan has similarly been revised through correspondence with IDWR's representative. This plan represents the project engineer's understanding of those requirements.

The property is located in a reach of the Big Wood River that is used by the public for recreation, such as swimming and floating. Due to the property's location, public safety is of utmost concern. Because of public safety, the landowners continue to object to certain elements of the plan; particularly some of the requirements below the ordinary high water level, as well as in close proximity above that level that have been imposed. The elements of this plan reflect the requirements of IDWR after the landowner's concerns and objections were presented. In the interest of complying with the new IDWR requirements, protection of the property, and bringing this matter to a close, the plan is submitted.

In speaking with the IDWR representative about project construction and completion schedule, the IDWR representative stated that acceptable project construction should not be undertaken in the Big Wood River between March 15, 2019 and August 31, 2019 due to the likelihood that vegetation will not properly establish; therefore, landowner will construct the project between September 1, 2019 and December 31, 2019. The proposed completion date of all components of the project is December 31, 2019.

Notwithstanding the Consent Order, a bank stabilization plan is needed to address chronic instability of the west river bank which has caused substantial loss of property, both during the 2017 flood and in prior high water events. In addition, the Warm Springs Road bridge at the lower end of the reach, and Warm Springs Road itself, will be

threatened if the reach is not stabilized. The land upon which the Warm Springs Road Bridge sits was gifted to the City of Ketchum by the landowners.

The subject reach begins at the upstream abutment of the Warm Springs Road bridge and extends upstream 325 feet. In this reach the river is generally well-defined and confined to its banks even during flood conditions. The water surface width ranges from 42 to 73 feet at ordinary high water conditions. Over time, the channel has developed a pronounced asymmetrical morphology, with the thalweg lying hard against the west bank with shallow flow occurring over gravel bars on the east. Near the lower end of the reach, the thalweg kicks sharply eastward so that the deepest part of the channel upstream of the bridge is on the east side. One reason for the sharp eastward deviation of the thalweg is a large cottonwood tree which has been severely undercut but is still rooted in the bank and acting as a jetty. Saving this cottonwood tree is a prime objective of the project.

One consequence of the channel asymmetry is that new high velocity flow impinges severely on the west bank. Based on the hydraulic modeling (see below), average channel velocities during the 100-year event are very high, ranging from 8.4 ft/s to 11.3 ft/s. Near-bank velocities would likely be 30 to 50% greater than the average channel velocities. During the flood of 2017, the high velocity caused undercutting and failure of the west bank, leading to a loss of land of up to 25 feet. The erosion threatened to cut under the large cottonwood tree, an occurrence which would certainly have threatened the Warm Springs Road bridge abutment. Riprap was placed along a 193-foot length of the west bank, which effectively halted the erosion. Some reclamation of bank was accomplished by this operation, but no bank not existing prior to the 2017 flood was reclaimed. This conclusion was made by reviewing pre-placement and post-placement photographs, as well as a comparison of the topographic survey performed in October 2017 with a prior survey performed in 2014. In some locations, less bank exists now than before the flood.

To assist with the project evaluation and design, a topographic survey by Benchmark Associates was completed. The survey included four cross-sections of the river, bank topography, and a delineation of the riprapped area.

B. Proposed project

The high-velocity flow against the west bank continues to persist even after the 2017 flood event and placement of the riprap. Given the likelihood of recurrence of west bank instability, and the need to better align the flow to the Warm Springs Road bridge opening and Warm Springs Road, measures are needed to protect the bank and realign the channel thalweg using a combination of bank barbs and channel excavation. In addition to the proposed structural measures the disturbed riparian areas will be improved and vegetated as follows.

1. Retention and completion of existing riprap

Emergency riprap was placed by a contractor during the 2017 high water event consistent with the verbal approval of the City of Ketchum pursuant to its emergency authority. A written emergency permit was issued by the City of Ketchum on July 31, 2017. Based on U. S. Corps of Engineers design procedures with an average channel velocity of 10 ft/s and the prevailing geometric characteristics of the channel, the minimum d30 size should be 18" with a size range from 5" to 32". The riprap in place appears to be mostly smaller than 18" stone, but the above design procedure applies to riprap without any other protection in place. With bank barbs as proposed, velocities against the riprap toe during a flood will be greatly reduced. For example, with only a moderate reduction in velocity to 8 ft/s, the minimum d30 size would be 11" with a size range from 4" to 27". It is concluded that the in-place riprap on the bank should not be removed and replaced, which would be more disturbing to the bank and the river than warranted according to the above analysis. It should be further stabilized with vegetative plantings as described below. Also, additional buried toe protection is warranted as shown on the drawings, which will include both riprap and longitudinal cottonwood toe logs. The bank toe is the most crucial area to protect to reduce the risk of the type of erosion seen in 2017.

2. Continuation of riprap upstream and downstream

Riprap placement was halted once the landowner was notified that additional permits were required. It is proposed to extend the riprap 35' downstream to protect the large cottonwood tree, while maintaining the historic beach, and 84' upstream to the upstream end of the eroded reach. This will include the bank around the historic wooden bridge abutment which has experienced erosion. It will also encompass the existing power pole which is extremely close to the water and at risk of failure if further erosion were to occur. The downstream portion will encompass the large cottonwood tree and remedy the severe undercut bank at that location.

3. Bank barbs

Four (4) barbs are proposed, spaced at 50 feet, angled at approximately 30° upstream, and extending 12 feet perpendicularly into the flow from the ordinary high water line. According to NRCS and Corps of Engineers guidelines, barbs are an effective method of reducing near-bank velocities, and provide habitat diversity by creating holding locations for aquatic species during high and low flows. These guidelines typically recommend incorporation of woody material in the barb. The barbs as proposed will contain an intact cottonwood log as a core, with a rootball protruding into the flow to provide additional roughness and habitat value; provided, however that the rootball must be well-shaped and relatively compact, without protruding snags or roots that may pose a hazard to the public who use this streatch of the Big Wood River for recreation. If necessary, the rootball will be manually shaped to achieve this goal of public safety. The barbs will be low-height features, with the elevation at the bank equal to the ordinary high water and a sloping top leading to an elevation at the end of 1.5 feet below ordinary high water. The barbs will

thus be submerged during ordinary high water and mostly submerged during lower flow, creating a hydraulic jump downstream of the barb which will act to dissipate energy. The function of the barbs is multifold:

- Reduce the near-bank velocities, providing additional bank protection beyond the riprap alone.
- Create a pool-and-riffle regime to increase habitat value of this reach.
- Protect the large cottonwood tree at the downstream end of the project reach, which is of great value to the landowner and the local community.
- Protect the west bridge abutment.
- Encourage the thalweg to migrate away from the west bank and become better aligned with the bridge.

4. Cottonwood toe logs

Part of the Consent Order requires "large woody material along the streambank (e.g. root wad engineered log jam and brush or tree revetment." The recommended bioengineering treatment for this reach that could provide benefit in the form of increased bank stability is the installation of large cottonwood trees embedded longitudinally at the toe of the riprap. This treatment should increase the stability of the toe, which is the most crucial area. The cottonwood logs will have intact root balls; provided, however that the rootball must be well-shaped and relatively compact, without protruding snags or roots that may pose a hazard to the public who use this streatch of the Big Wood River for recreation. If necessary, the rootball will be manually shaped to achieve this goal of public safety.

5. Removal of gravel within the channel

This activity is needed for two reasons. First, it will aid in shifting the thalweg to the center of the channel, which is a major goal of the project to protect the west bank and to provide a straight alignment upstream of the bridge. Second, the removal of gravel is needed to meet the legal requirement to demonstrate no rise in the flood height, a requirement imposed by FEMA and administered by the City of Ketchum for any work within the floodway. See the discussion of the HEC-RAS modeling, below. The depth of removal will range from zero to 1.5 feet in accordance with the attached cross-sections. Total estimated volume of removal is 197 cubic yards, all of which will be transported to upland area for disposal. Total plan area of gravel removal is estimated to be 0.18 acres.

6. Vegetation

The riparian area was disturbed during the 2017 riprap placement, and further disturbance will occur when the barbs are placed. All disturbance will be re-graded to remove equipment tracks and restore the original grade. Vegetation of the bank area will include native riparian grass and shrub plantings, and plantings of cottonwood seedlings that are "elk friendly" to ensure wildlife that make their way through the property are not harmed.

a) Native riparian grasses and wild flowers will be planted within a zone approximately 15 feet wide measured landward from the ordinary high water line. Planting will occur by the hydroseed method. The estimated area of grass seeding is 3,100 square feet. Prior to seeding, topsoil will be placed and smoothed. Topsoil will also be spread within the riprap stone to allow the grass seeding to extend down the bank close to the ordinary high water level. This will allow grass to establish amongst the riprap stone, leading to a more appealing appearance in addition to increasing the stability of the riprap. The following seed mix is proposed, each species in equal proportions:

Slender Wheatgrass (*Elymus trachycaulus ssp.*)
Streambank Wheatgrass (*Agropyron riparium*)
Big Bluegrass (*Poa secunda ssp. ampla*)
Sandberg Bluegrass (*Poa secunda ssp. sandbergii*)

b) Cottonwood seedlings will be planted along the top of bank at an irregular spacing of 20 to 40 feet. Species will be Siouxland Cottonwood (*Populus deltoides*).

c) Woody riparian shrubs will be planted within a zone approximately 15 feet wide measured landward from the ordinary high water line. Target coverage within this area (based on mature canopy spread) will be approximately 6 shrubs per 1,000 ft^2, for a total of approximately 30 shrubs. Planting will be made in an irregular pattern to simulate natural growth. The following species are proposed, in approximately equal proportions:

Golden currant (*Ribes aureum)*
Woods rose (*Rosa woodsia)*
Black Hawthorne (*Crataegus douglasii*)

Proper establishment of the plantings in this zone will require irrigation. It is expected that the grass will require spray irrigation for two seasons, and thereafter will be sustained by natural precipitation. Tree plantings will be irrigated using a drip system in order to ensure long-term establishment. Some of the irrigation infrastructure is in place, but much washed out or was damaged in the 2017 flood. The irrigation system will be repaired and extended to accomplish the vegetation. Willows were not historically part of this environment, and will not be planted.

d) Woody shrub plantings will be made at the toe of the protected bank between the cottonwood toe log and the riprap. These plantings will be placed at a spacing of approximately 5 feet. This planting is required by the Consent Order even though few species can survive under water and thus the planting regime must be limited to those which are likeliest to survive. Survival cannot be guaranteed, and if the plantings fail, such failure shall not be imputed to the landowner. The following species will be planted at the following proportions:

Redosier dogwood (*Cornus sericea*) – 80%
Water birch (shrub) (*Betula occidentalis*) – 10%
Gray alder (shrub) (Alnus incana) – 10%

The low-growing redosier dogwood is favored, interspersed with the slightly taller water birch and gray alder. Native riparian grasses or sedges, which are favored by the NRCS, may also be placed in this zone at the discretion of the landowner. Willows were not historically part of this environment, and will not be planted.

e) Keyways of barbs will be planted with deep-rooting vegetation situated with roots in permanent moisture. Willows were not historically part of this environment. As a substitute, Redosier dogwood (Cornus sericea) will be used and will be planted as low as possible to increase the moisture contact of the roots.

C. HEC-RAS Modeling

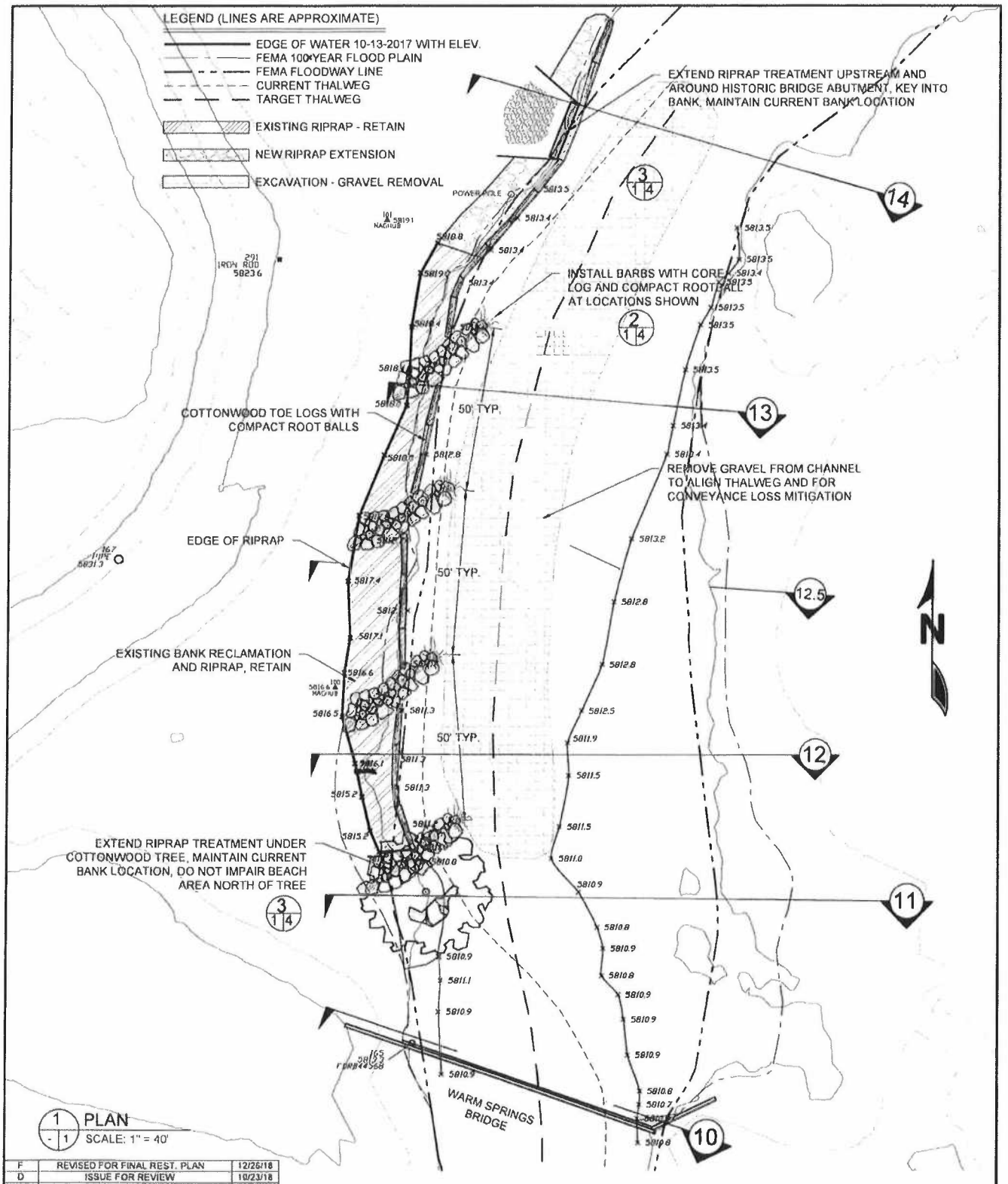
The proposed project will involve placement of protective structures within the channel of the river, and within the regulatory floodway as established by FEMA. Since encroachment into the floodway will occur, the hydraulic effect of the project must be evaluated and mitigated, if necessary, to ensure that no increase in flood elevation during the 100-year event will occur. This requirement was established by FEMA for the National Flood Insurance Program and is administered by local jurisdictions (the City of Ketchum, in this case).

The cross-sections surveyed in October 2017 were used as the baseline channel geometry. Channel and overbank roughness was set to 0.04 and 0.08, respectively, the same values used in FEMA's effective model. The downstream starting elevation was set equal to the computed 100-year elevation at that point in the FEMA model, or 5814.5 feet. The 100-year discharge 2,880 cfs is the value used by FEMA.

Two post-project models were developed: one with barb placement alone, and the second with barbs plus removal of gravel as mitigation. Barbs were placed at Sections 12, 12.5, and 13. Output from the model as well as channel cross-sections are attached, and a summary is provided in the table below. Zero increase in flood height is predicted to occur with the project.

Cross Section	River Station (ft)	Existing Conditions (baseline)		Barbs only		Barbs + mitigation	
		Water Surface Elev (ft)	Channel velocity (ft/s)	Water Surface Elev (ft)	Channel velocity (ft/s)	Water Surface Elev (ft)	Channel velocity (ft/s)
13	1212	5816.64	8.69	5817.05	9.04	5816.56	9.04
12.5	1156.5	5816.19	8.97	5816.63	8.96	5816.01	9.36
12	1101	5814.99	11.27	5815.46	11.10	5814.88	11.16
11	1057	5814.68	9.28	5814.68	9.28	5814.68	9.28
10	1000	5814.50	8.39	5814.50	8.39	5814.50	8.39

Permit-Level Drawings for Proposed Project



1/1 PLAN
SCALE: 1" = 40'

REV	DESCRIPTION	DATE
F	REVISED FOR FINAL REST. PLAN	12/26/18
D	ISSUE FOR REVIEW	10/23/18
C	ISSUE FOR REVIEW	3/21/18
B	ISSUE FOR REVIEW	2/7/18
A	ISSUE FOR REVIEW	1/26/18

SCALE 1" = 40'
(11 X 17 DWG ONLY)

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

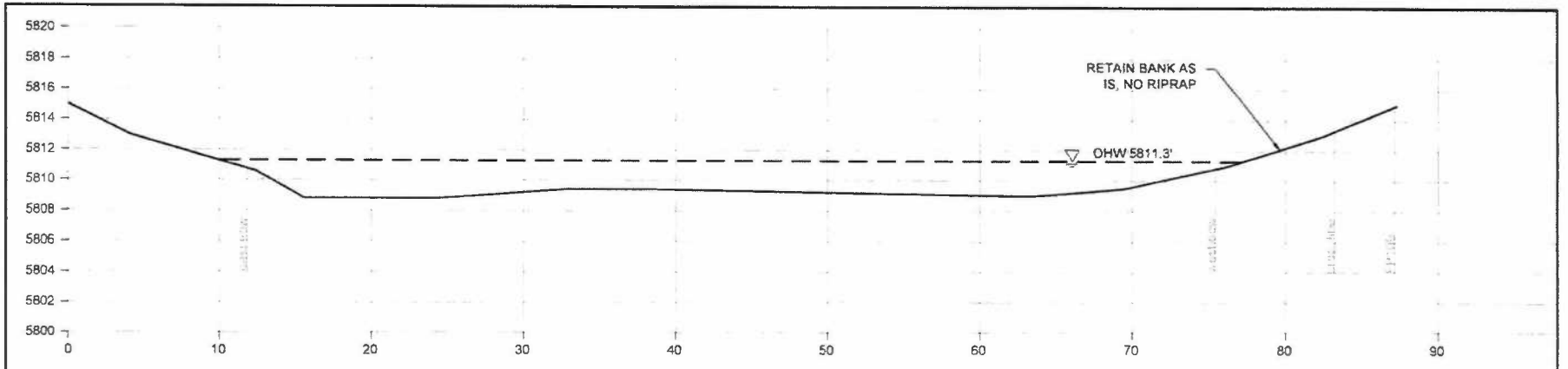
1200 WARM SPRINGS RESTORATION AND RIVER BANK STABILIZATION

SITE PLAN

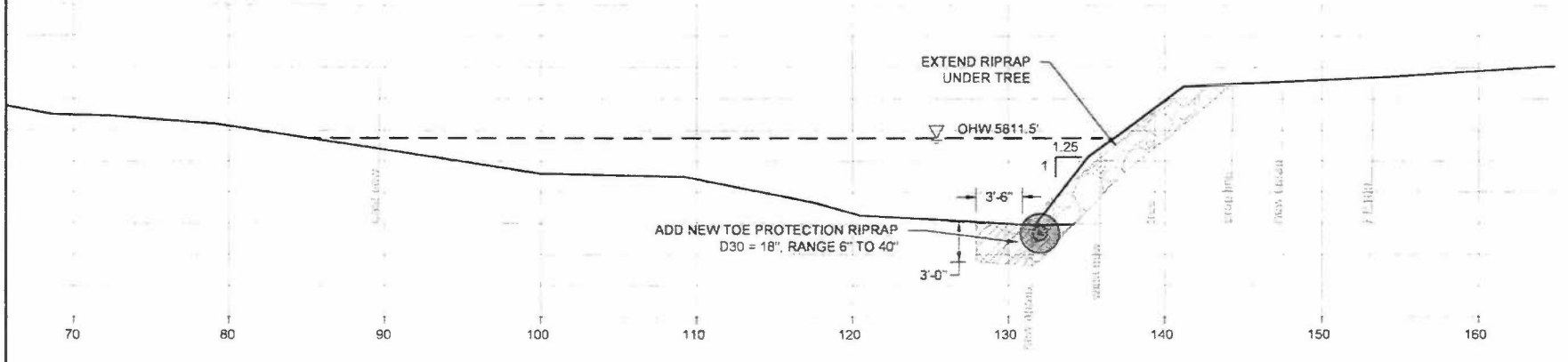
PROJECT # 1085-01-2008

DWG # 1

REV F



10 SECTION
SCALE: 1" = 10'



11 SECTION
SCALE: 1" = 10'

1" = 10' (SCALES FOR 8.5 X11 DWGS ONLY)

REV	DESCRIPTION	DATE	APPRO. BY
F	REVISED FOR FINAL REST. PLAN	12/26/18	
D	ISSUE FOR REVIEW	10/23/18	
C	ISSUE FOR REVIEW	3/21/18	
B	ISSUE FOR REVIEW	2/7/18	
A	ISSUE FOR REVIEW	1/26/18	

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

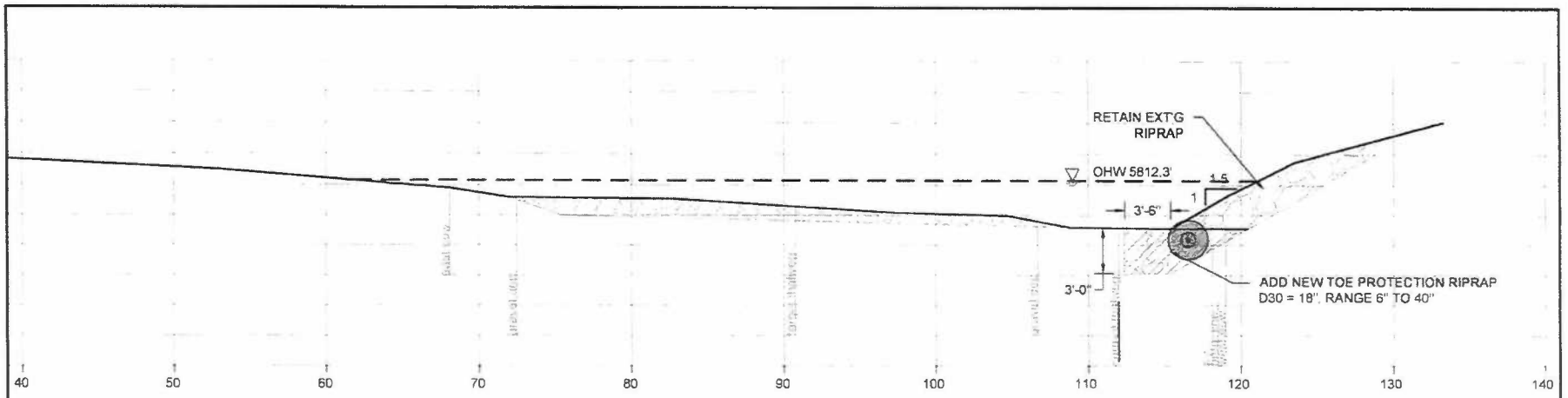
1200 WARM SPRINGS RESTORATION
AND RIVER BANK STABILIZATION

PROJECT #: 1085-01-2009

SECTIONS 1

DWG #: 2

REV: F



12 SECTION
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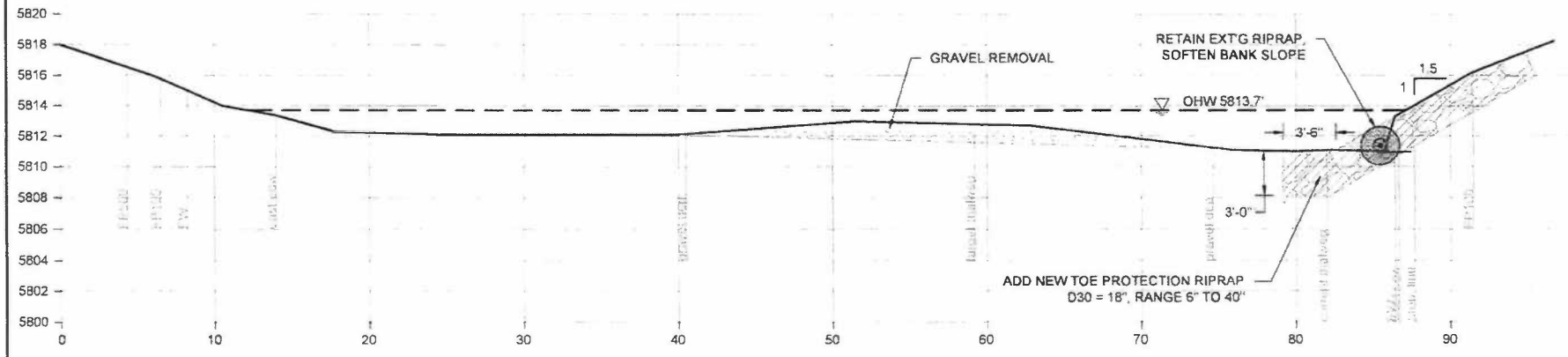


13 SECTION
SCALE: 1" = 10'

1" = 10' (SCALES FOR 8.5 X11 DWGS ONLY)

REV	DESCRIPTION	DATE	APPRO. BY
F	REVISED FOR FINAL REST. PLAN	12/25/18	
D	ISSUE FOR REVIEW	10/23/18	
C	ISSUE FOR REVIEW	3/21/18	
B	ISSUE FOR REVIEW	2/7/18	
A	ISSUE FOR REVIEW	1/26/18	

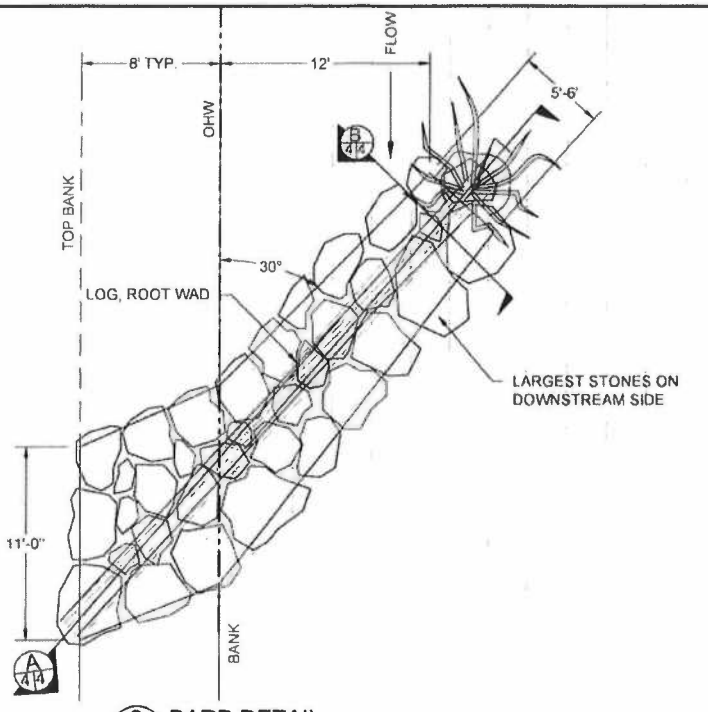
DESIGNED BY: CGB
DRAFTED BY: ICB

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

1200 WARM SPRINGS RESTORATION AND RIVER BANK STABILIZATION

SECTIONS 2

PROJECT # 1085-01-2009
DWG # 3
REV F

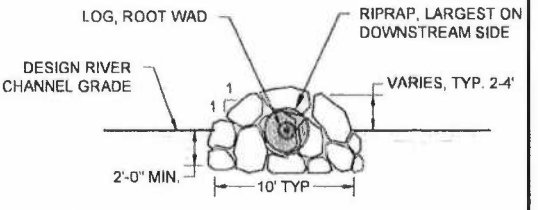


2 BARB DETAIL
1 4 SCALE: 1"=10'

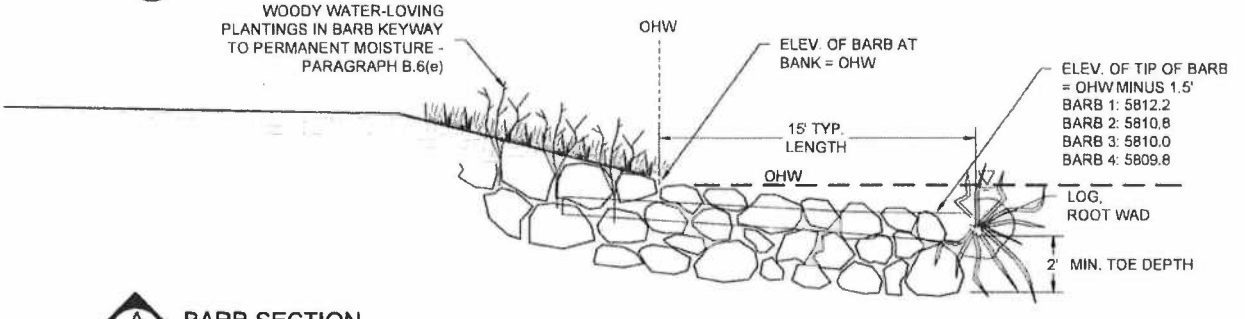
NOTE:

BARB STONE SHALL ADHERE TO THE FOLLOWING SPECIFICATIONS:

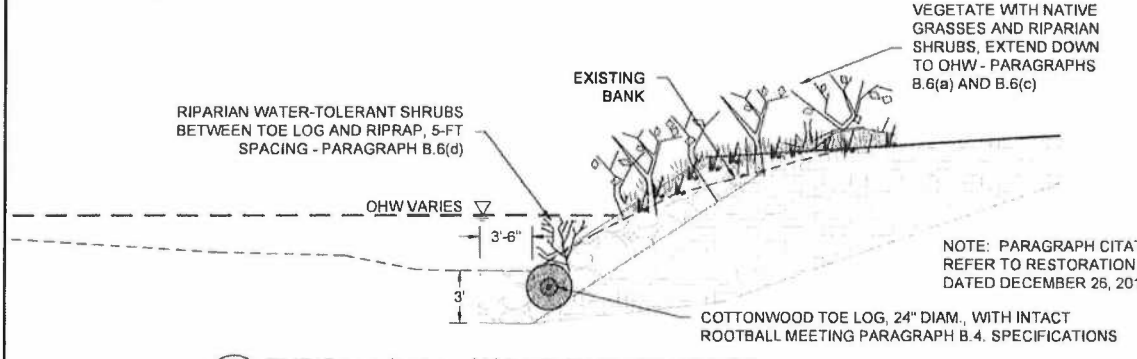
1. ANGULAR, SOLID BASALT, NO FRACTURES.
2. UNIT WEIGHT 165 LB/FT3 OR HEAVIER.
3. D30 (30% SMALLER) = 18" WITH SIZE RANGE 6" TO 40"



B BARB SECTION (TYP.)
4 4 SCALE: 1" = 10'



A BARB SECTION
4 4 SCALE: 1" = 10'



3 TYPICAL RIPRAP AND VEGETATION DETAIL
1 4 SCALE: 1"=10'

REV	DESCRIPTION	DATE
F	REVISED FOR FINAL REST. PLAN	12/26/18
D	ISSUE FOR REVIEW	10/23/18
C	ISSUE FOR REVIEW	3/21/18
B	ISSUE FOR REVIEW	2/7/18
A	ISSUE FOR REVIEW	1/26/18

SCALE 1" = 10'
DESIGNED BY CGB
DRAFTED BY ICB

BROCKWAY ENGINEERING, PLLC
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1200 WARM SPRINGS RESTORATION AND RIVER BANK STABILIZATION

TYPICAL BARB & RIPRAP DETAILS & SECTIONS

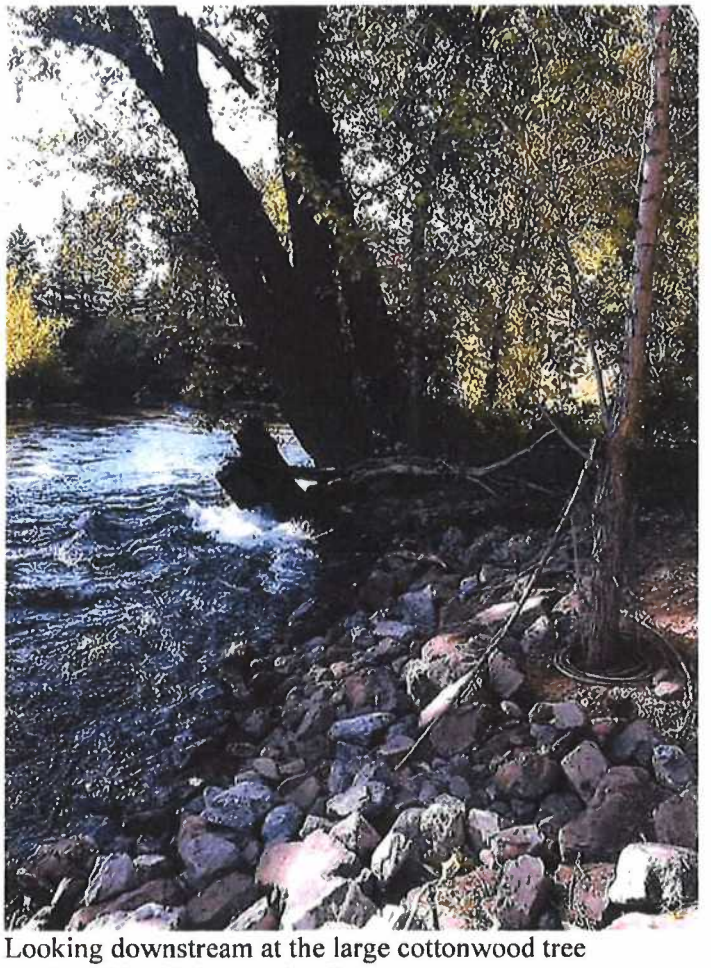
PROJECT # 1085-01-2009
DWG # 4
REV F

Photos of Project Reach

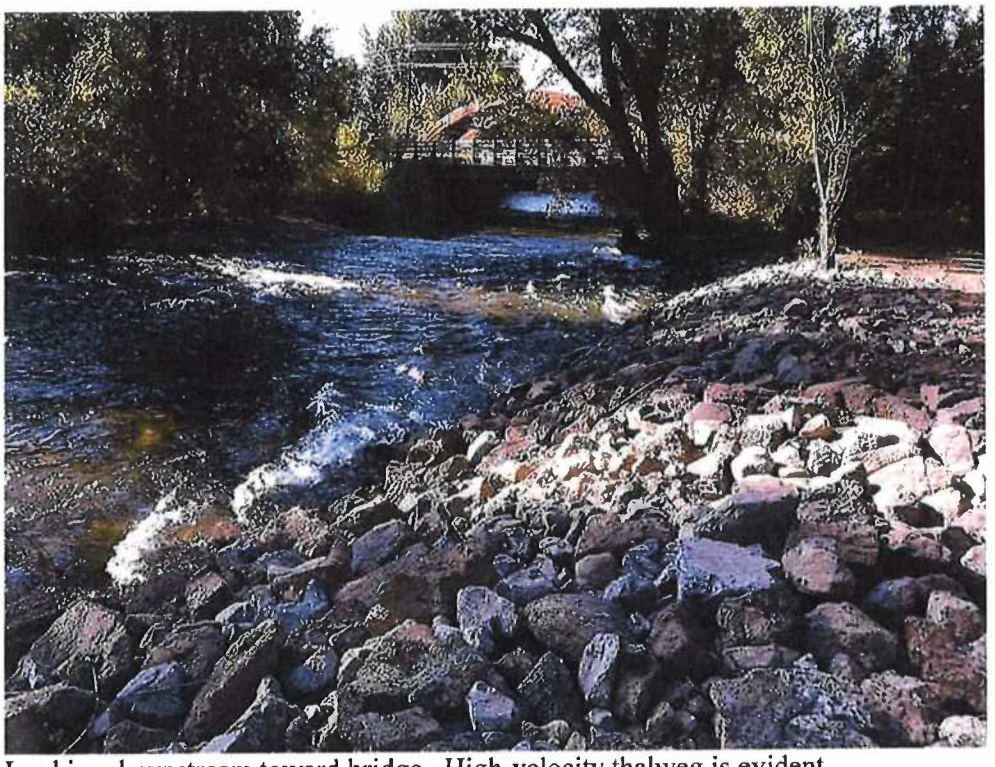
1200 Warm Springs Restoration Plan – Photo Date August 2, 2017

River Flow is 233 cfs, ordinary high water level is approximately 0.5 feet above the level on this date.

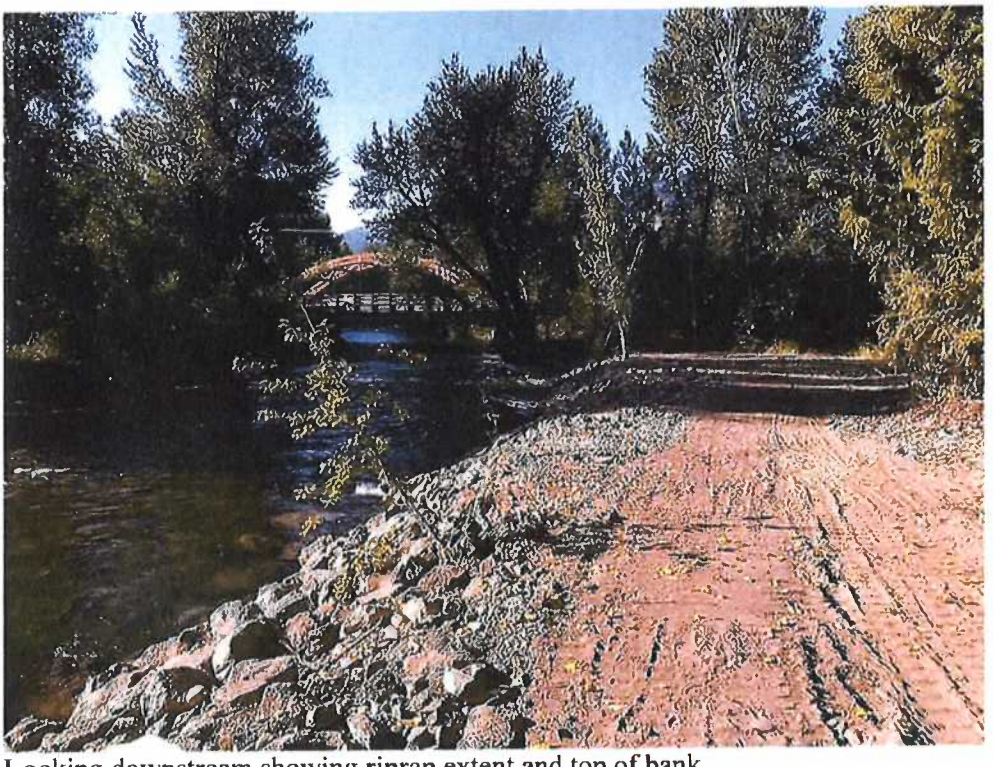
Looking upstream from near the large cottonwood tree.



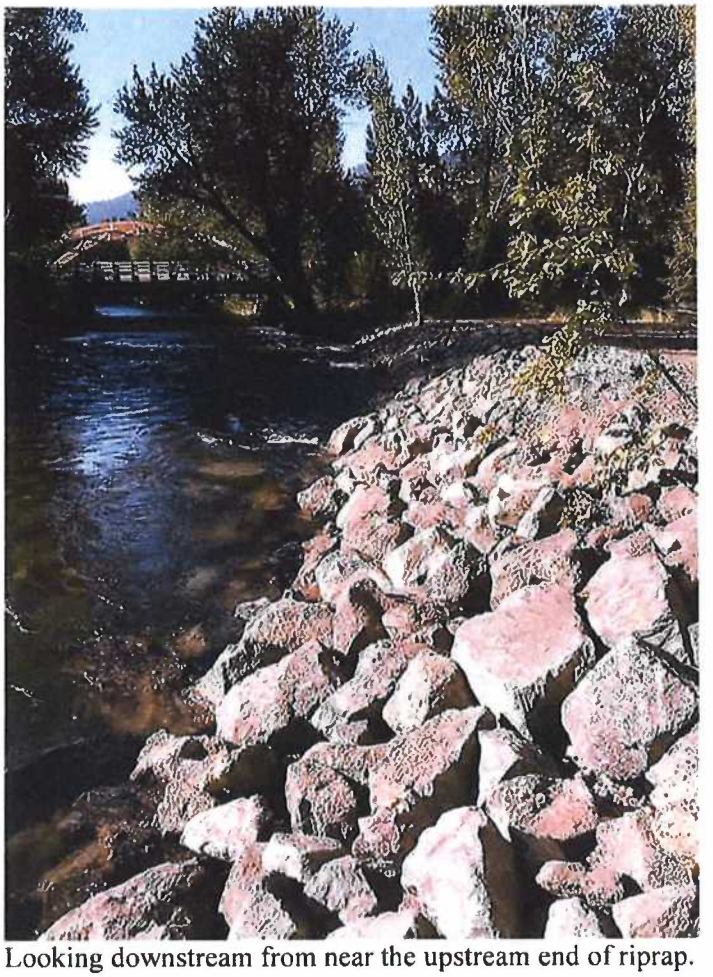
Looking downstream at the large cottonwood tree impinged by high-velocity flow



Looking downstream toward bridge. High-velocity thalweg is evident.



Looking downstream showing riprap extent and top of bank.



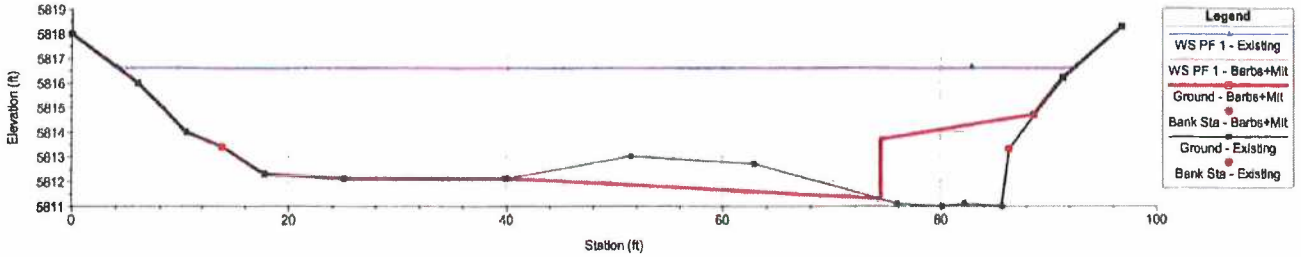
Looking downstream from near the upstream end of riprap.

HEC-RAS Model Output and Cross-Sections

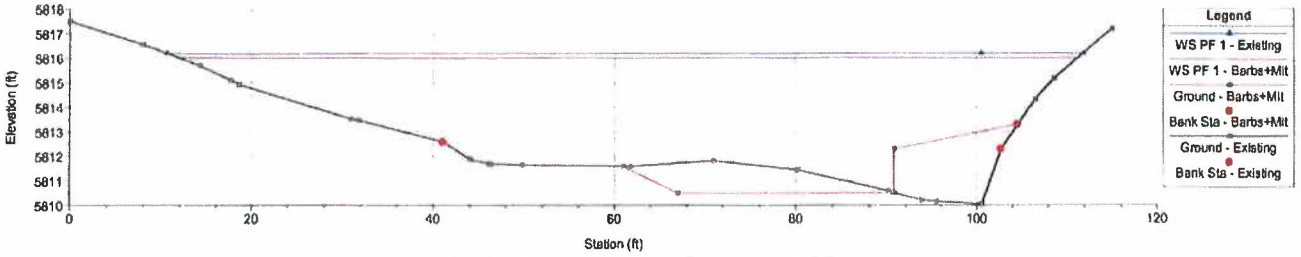
HEC-RAS River: Big Wood Reach: Ketchum Profile: PF 1

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Ketchum	1212	PF 1	Existing	2880.00	5811.00	5816.64		5817.79	0.007696	8.69	351.96	88.43	0.72
Ketchum	1212	PF 1	Barbs	2880.00	5811.70	5817.05		5818.30	0.009502	9.04	335.67	90.75	0.79
Ketchum	1212	PF 1	Barbs+Mit	2880.00	5811.30	5816.56		5817.81	0.009183	9.04	333.59	87.99	0.78
Ketchum	1156.5*	PF 1	Existing	2880.00	5810.05	5816.19		5817.37	0.007227	8.97	376.65	101.33	0.72
Ketchum	1156.5*	PF 1	Barbs	2880.00	5810.80	5816.63	5815.90	5817.79	0.008022	8.96	378.53	106.01	0.74
Ketchum	1156.5*	PF 1	Barbs+Mit	2880.00	5810.50	5816.01	5815.41	5817.30	0.008723	9.36	353.64	99.42	0.77
Ketchum	1101	PF 1	Existing	2880.00	5809.10	5814.99	5814.99	5816.79	0.012428	11.27	323.18	105.21	0.93
Ketchum	1101	PF 1	Barbs	2880.00	5810.10	5815.46	5815.46	5817.16	0.013873	11.10	333.33	112.03	0.98
Ketchum	1101	PF 1	Barbs+Mit	2880.00	5809.50	5814.88	5814.88	5816.67	0.012780	11.16	317.32	104.04	0.93
Ketchum	1057	PF 1	Existing	2880.00	5805.90	5814.68		5815.95	0.005566	9.28	368.72	85.65	0.64
Ketchum	1057	PF 1	Barbs	2880.00	5805.90	5814.68		5815.95	0.005566	9.28	368.72	85.65	0.64
Ketchum	1057	PF 1	Barbs+Mit	2880.00	5805.90	5814.68		5815.95	0.005566	9.28	368.72	85.65	0.64
Ketchum	1000	PF 1	Existing	2880.00	5808.80	5814.50	5813.28	5815.56	0.005727	8.39	375.26	85.05	0.65
Ketchum	1000	PF 1	Barbs	2880.00	5808.80	5814.50	5813.28	5815.56	0.005727	8.39	375.26	85.05	0.65
Ketchum	1000	PF 1	Barbs+Mit	2880.00	5808.80	5814.50	5813.28	5815.56	0.005727	8.39	375.26	85.05	0.65

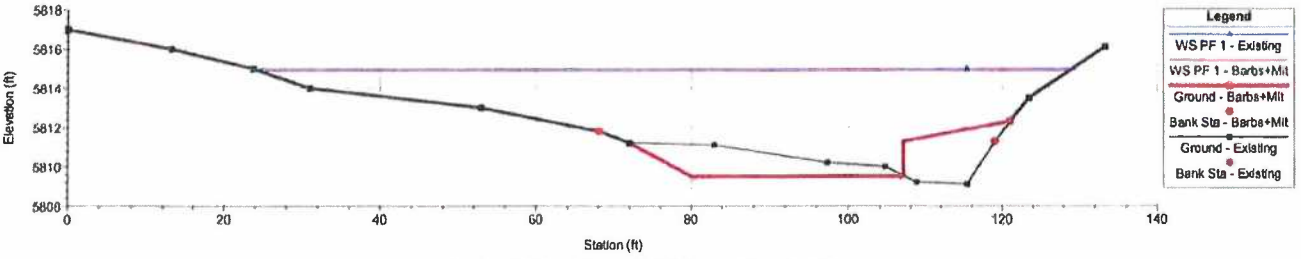
Hastings2018 Plan: 1) Existing 2) Barbs+Mit
RS = 1212 Section 13



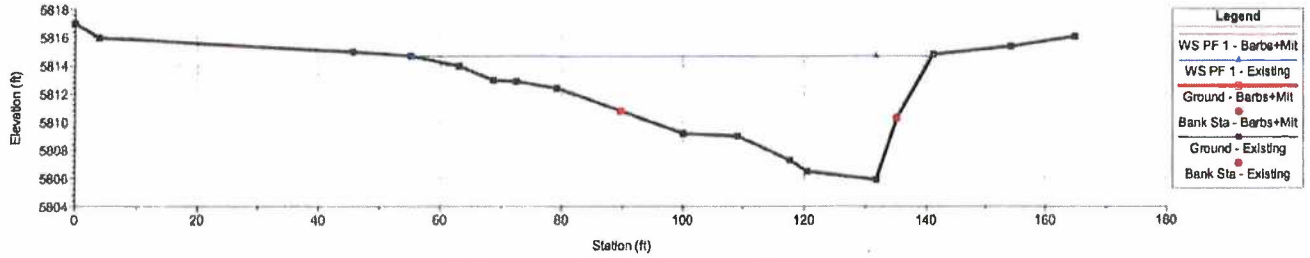
Hastings2018 Plan: 1) Existing 2) Barbs+Mit
RS = 1156.5* Section 12.5 Interpolated



Hastings2018 Plan: 1) Existing 2) Barbs+Mit
RS = 1101 Section 12



Hastings2018 Plan: 1) Existing 2) Barbs+Mit
RS = 1057 Section 11



Hastings2018 Plan: 1) Existing 2) Barbs+Mit
RS = 1000 US of bridge