



US Army Corps  
of Engineers

Sacramento District  
1325 J Street  
Sacramento, CA 95814-2922

# Public Notice

Number: 200575719

Date: February 15, 2006

Comments Due: March 15, 2006

**SUBJECT:** The U.S. Army Corps of Engineers, Sacramento District, (Corps) is evaluating an after-the-fact permit application request to maintain a concreted drop structure and install a new rock cross vane in the Uncompahgre River within the Town of Ridgway. This notice is to inform interested parties of the proposed activity and to solicit comments. This notice may also be viewed at the Corps web site at <http://www.spk.usace.army.mil/regulatory.html>.

**AUTHORITY:** This application is being evaluated under Section 404 of the Clean Water Act for the discharge of dredged or fill material in waters of the United States.

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| <b>APPLICANT:</b> | Town of Ridgway<br>Mr. Greg Clifton, Town Manager<br>P.O. Box 10<br>Ridgway, CO 81432<br>(970) 626-5308, ext. 12<br><a href="mailto:gclifton@town.ridgway.co.us">gclifton@town.ridgway.co.us</a> | <b>AGENT:</b> | Chris Philips, PE<br>Riverbend Engineering<br>140 A Solomon Drive<br>Pagosa Springs, CO 81147<br>(970) 731-0065<br><a href="mailto:cphilips@riverrestoration.com">cphilips@riverrestoration.com</a> |
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**LOCATION:** The project site involves a concrete and rock drop structure located immediately downstream of the pedestrian bridge on the Uncompahgre River downstream of the State Highway 62 bridge in the Town of Ridgway. The site is located in the SE 1/4 NW 1/4 of Section 16, Township 45 North, Range 8 West, Ouray County, Colorado, and can be seen on the Ridgway USGS Topographic Quadrangle.

**PROJECT DESCRIPTION:** The applicant is proposing to retain an existing concreted rock structure (Structure #2) and install a new rock cross vane (Structure #3) downstream of Structure #2. Structure #2 requires an after-the-fact permit due to structure intent and design. Previous Corps permits authorized the use of Nationwide General Permit number 27 (NWP27) for "stream and wetland restoration activities" in 2002 and 2004. These permits were issued for various structures, bar reshaping, and native revegetative efforts to help assist in natural stream recovery on approximately one-half mile of the Uncompahgre River through Ridgway. The goal of natural stream restoration has not been met with the new concrete structure #2. Additionally, the intent of this structure extends beyond stream stabilization and identifies a new use of whitewater recreation.

The subject Structure #2 installed in September 2005 measures approximately 50 feet across by 40 feet wide and exceeds a 3-foot drop in the channel. Fill material placed within the Uncompahgre River includes 120 cubic yards (cy) of rock, 60 cy of concrete (25% of surface area), and 110 cy of alluvium. Additional work is also requested. The proposed #3 structure will replace an existing downstream J-hook with the placement of 75 cy of large boulders and

100 cy of alluvial fill for a new cross vane rock structure. This new structure #3 is proposed 100 feet downstream of Structure #2 for the purpose of controlling bed elevation and lowering the water surface drop over Structure #2 (from 3 feet to 2.4 feet) to render it safer and ensure that it is suitable for fish passage. The attachments provide additional project details.

The basic project purpose is to stabilize the Uncompahgre River at this location. The overall project purpose is to install a structure across the channel at this location to help control streambed and streambank erosion.

The applicant believes there is a need to stabilize the channel and to provide a whitewater recreation improvement. The Town has received citizen comments to see the upper structures become more "boater friendly". Interest in this recreational aspect has increased to the point that it is now viewed by the Town as a needed recreational amenity that would add to the multi-use concepts of the river project. The Town indicates that they have no desire to expand recreation boating improvements in the river beyond this upper reach; downstream the river will remain natural. They recognize that the purpose of recreational boating was not part of the activities envisioned under their previous NWP27 permit.

**ENVIRONMENTAL SETTING AND BACKGROUND:** At this site, the Uncompahgre River is at an elevation of 6,985 msl and drains a basin of approximately 145 square miles. A USGS stream gage located two miles downstream indicates an average annual bankfull discharge of approximately 900 cubic feet per second (cfs). The high flow of record, based on over 40 years of data, occurred in June 1983, measuring 2,100 cfs. The river is a high accretion stream and the reach through Ridgway has been highly disturbed by past instream gravel mining operations. As a result, the river was braided and shallow and lacking in riparian vegetation. Since 2001, instream mining near this site (known as the Coffey Pit) ceased operations. Additionally, in 2003, the Abbott Pit located one mile upstream also terminated instream mining and the river has been on the road to recovery.

As such, the Town of Ridgway has actively invested in channel restoration on the reach (2,400') downstream of the highway bridge. This effort is supported by multiple State and Federal agencies logistically, technically, and financially. The Corps issued two NWPs #27 for "stream and wetland restoration activities" in 2002 and 2004, assigned Corps identification number 200275036. These permits were issued for various structures, bar reshaping, and native revegetative efforts to help assist in natural stream recovery. The river effort is important as indicated by the following:

#### Contributions

- \* \$1 million in grant funds;
- \* \$550,000 of in-kind contributions;
- \* \$260,000 in Town funds;
- \* Land donations to the Town valued at \$560,000.

#### Improvements

- \* Re-channelization of over 1 mile of river channel through Town;
- \* Construction of 2 acres of off-channel wetlands;
- \* Construction of 1 mile of natural trail;
- \* Construction of parking lot, solar-powered restroom, picnic areas, outdoor classroom, signage and solar-powered lights;

- \* Construction of a river pedestrian bridge with connecting sidewalk;
- \* Over 27 acres of protected river channel with public access;
- \* Construction of an off-channel pond with inlet headgate; and
- \* Planting over 500 trees, 1,000 native shrubs, and 2 acres of wetland plants.

Generally, the public feedback has been positive; and, recreational use on the river has increased.

Annual channel maintenance has been required over the last 3 years involving repair, re-design, and re-construction of river structures (primarily in the subject upper 300-foot reach below the Highway bridge). In 2003, the applicant identified a specific problem area immediately downstream of the Highway 62 bridge (and upstream of the pedestrian bridge) where a buried water line had become exposed. While concrete use is generally discouraged, the Corps authorized the use of concrete for a large rock drop structure (Structure #1) at this location for very specific purposes - protection of the buried water line and highway and pedestrian bridges. [NOTE: All utilities were encased and buried 5' below the riverbed.] Maintenance of Structure #1 involving the use of concrete was for the protection of critical utility infrastructure. Eventhough the structure was referenced as "Whitewater Drop 1", the benefit of recreational whitewater use was secondary and not the intent of this maintenance activity.

In April 2005 a pedestrian bridge was installed below Structure #1. In summer 2005, the applicant requested a variety of "maintenance" activities within the Uncompahgre River. Included in the work was the proposal to consolidate two rock drop structures (below the new pedestrian bridge) and build one drop structure with concrete grout (referred to as Whitewater Drop #2). While components of the work were maintenance related, the proposal to build "Whitewater Drop #2" using concrete was not considered maintenance work, but rather structure redesign.

The Corps clarified to the applicant that *"...the authorized use of concrete on the (upstream) "Whitewater Drop 1" structure below the highway bridge last year was intended for one time use and specific to that location to ensure protection of the highway and pedestrian bridges and buried water line. The benefit of recreational whitewater use was secondary. This was not meant to set precedent in allowing concrete structures for whitewater recreation purposes. We generally discourage the use of concrete in river structures; and therefore have carefully considered and consulted others on your latest request."* As such, the actual maintenance activities were authorized on July 29, 2005, and the permit was modified to allow for a consolidated rock drop structure with limited concrete grout use for stream stabilization purposes. The authorization went on to state, *"If this approval for limited use of concrete is unacceptable for construction of the new "Whitewater Drop 2" structure, you may reapply under an Individual permit. We remind you that our original approval of Nationwide General permit number 27 was issued for Phase 1 and Phase 2 river work for the purpose of Uncompahgre River and wetland restoration. Project alterations involving concrete for recreational whitewater use does not meet the permit intent and cannot be authorized without a full public interest review."*

On October 20, 2005, the Corps issued a letter of permit noncompliance to the applicant for the construction of the new concrete grouted rock structure. While concrete was not used along the riverbanks, it was largely used throughout the structure. This permit noncompliance was due to a misunderstanding on the allowable use of concrete and was unintentional. The applicants and

their agents described the work completed in their interpretation of the Corps authorization and expressed a willingness to bring the permit into compliance. The Corps identified that the noncompliance could be resolved by 1) removing the structure and restoring the site to preconstruction contours, or 2) modify the structure to eliminate concrete grout, or 3) apply for an Individual Permit to maintain the concreted structure or a less damaging alternative. The Corps further stated their belief that the concreted rock structure was not the least environmentally damaging practicable alternative. The applicant selected option 3 and signed a tolling agreement to toll the statute of limitations should the Corps decide to pursue an enforcement action.

**ALTERNATIVES:** The applicant has provided information concerning project alternatives at the subject location (Structure #2). Below is their list of alternative criteria:

- \* Provide a water surface drop of less than 2 feet
- \* Sloping surface for fish passage and prevention of base entrapment
- \* Remain stable under various flow conditions, including ice formations
- \* Minimize future maintenance
- \* Smooth bed surface (for boats, people, and/or debris)
- \* Allow sediment transport
- \* Passage of 100-year flood event
- \* Aerate water passing over Structure #2
- \* Sustain a scour pool on the downstream side
- \* Provide a strong hydraulic wave at base (when flows exceed 200 cfs)

**Alternative 1 - Large Rock Structure.** Use of rock-only structures (such as "cross vanes" and "J-hooks") has wide support in other river restoration projects in helping meet the goals of habitat improvement, aeration, fish passage, and consistent movement of sediment down river. Additionally, these structures are aesthetic and provide good macro invertebrate habitat.

However, because these structures tend to concentrate flow energy, they are susceptible to scour. To prevent scour, water surface drop should be limited (1 foot or less). Scour potential is increased as the water surface drop over the structure is increased. This approach was tried in Ridgway, but several scour failures indicate this approach was fundamentally unstable. The previous work included the installation of a continuous row of large footer rocks buried in the channel bed to support the main cross vane rocks. High flows were able to scour the fine grained bed sediment ( $D_{50}=26\text{mm}$ ) allowing the large footer rocks to shift and sink, leaving the grade control structure deformed or failed. A second shortcoming of this approach is the fact that cross vanes and J-hooks are usually built up to the "bankfull" elevation of the river. When flood flows exceed bankfull discharge, the excess water spills onto an adjoining floodplain. Because of the infrastructure constraints at this location, the river channel must pass the 100-year flow without the benefit of a floodplain, and the resulting shear stress in the channel is much greater than would be expected. It is very difficult to contain the 100-year flow in the river channel only, when the channel stability relies only on in-stream rock structures. The previous effort cost approximately \$65,000 and annual maintenance is estimated to be \$15,000.

Alternative 1 is rejected by the applicant because the previous effort was unsuccessful. Small bed sediments in the Uncompahgre River increase the vulnerability of rock structures to scour,

some of the project's needs are not accomplished, and frequent repair is anticipated with this rock-only alternative.

**Alternative 2 - Large Rock Structure with Foundation Rock.** A broad "weir" configuration could be used to reduce the concentration of shear stress. An addition of extra large rock in the streambed at the toe of the structure would help prevent scour undermining. And medium size rock (D50=500mm) would line the streambanks and streambed to prevent erosion during high flow events. This alternative would increase structure stability by creating a stable foundation and spreading the scour energy over a wider area. Rock lining of the bed and banks allows for the safe passage of flows greater than "bankfull", including the 100-year flood. Other benefits are similar to Alternative 1, including good flow aeration, good macro invertebrate habitat, and continuity of sediment movement downstream.

This design was attempted in 2003 and proved to be more stable than Alternative 1, but the rock structure still deformed with the passage of high flows and ice. Shifting of the large rocks made the structure surfaces hydraulically rough and left many large gaps where woody debris tended to catch. While no incidents were reported, the irregular rock surface and gaps create a potential public safety concern. Regular maintenance would be expected to maintain such structures. Total cost for this remedial effort was approximately \$35,000 and if Alternative 2 had been constructed from scratch, the cost estimate is \$80,000. Annual maintenance is estimated at \$5,000.

The applicant rejects Alternative 2 because the previous effort proved unstable. Project needs are partially achieved, but not completely, and regular maintenance is anticipated.

**Alternative 3 - Large Rock Structure w/Concrete Grouted Foundation and Streambanks.** Alternative 3 is similar to Alternative 2 with the addition of concrete grout between the foundation rocks and bank and bed lining (with concrete grout) to prevent erosion. This alternative would increase structure stability by creating a stable foundation and non-erodible bed lining. This would allow the safe passage of high flows, including events up to the 100-year flood. Other benefits are similar to Alternative 2 including good flow aeration and continuity of sediment transport down river. Additionally, concrete use instream is limited to subsurface areas where visible concrete is minimized.

This more rigid option allows for the least change to streambed and banks over time. Interstitial space between the bed sediments and medium rock is eliminated with the continuous concrete grout, which reduces the availability of preferred macro invertebrate habitat. Large surface rocks in the grade control structure must be held in place by careful selection and placement to create an interlocking surface. Even so, the applicant's agent believes some void spaces will exist and would scour out during high flows creating a hazard for debris snags and public recreationalists. Occasional maintenance work is anticipated. Finally, concrete grout use in the streambanks prevents opportunities to establish woody vegetation. The cost estimate, from scratch, for this alternative is \$110,000 and annual maintenance is \$2,500.

Alternative 3 is rejected by the applicant due to the high cost. Additionally, using continuous concrete reinforcement for approximately 300 feet of the river bed and banks is not considered to be the least damaging alternative.

**Alternative 4 - Maintain Existing Concreted Rock Structure #2 & Install new Structure #3 Downstream.** This structure currently exists and involves the a large rock grade control structure with concrete grout between the surface rocks. The streambed and banks are rock lined to accommodate flood flows. Rock revetment is located on the streambanks above the ordinary high water mark and will be planted with woody riparian vegetation to improve terrestrial habitat and supplement bank stability. Concrete grout is limited to the instream structure. Use of concrete grout locks the surface of the rock structures together allowing for a smooth ramp surface. This achieves the applicant's objective of reducing problems with people and debris "hanging up" on the structure, reduces likelihood of damage from ice flows, and achieves the applicant's desired hydraulic effects for recreational boating. This structure is expected to require less maintenance and also is expected to pass the 100-year flood without major damage. A similar structure (#1) was constructed upstream and was stable in the 2005 runoff season. This second structure, built in September 2005, is expected to perform similarly.

Alternative 4 is large and exceeds a 3-foot water surface drop. This vertical drop is in excess of the Corps and CDOW recommended 2-foot drop for aquatic life movement. One disadvantage of a concreted structure is the difficulty to "adjust" or "fine tune". Structure elevation cannot be adjusted easily. So, to help decrease this large drop, the applicant is proposing to install a rock-only cross vane structure downstream. This additional structure is expected to reduce the drop to 2.4 feet and should be installed this spring prior to high river flows. In addition, the strength of concrete will not guarantee its longevity in the dynamic stream environment. Unless well designed, sited, and installed, it can fail quickly and the potential for resource damage is greater than with "less permanent" materials. Finally, the use of concrete compromises macro invertebrate habitat and the aesthetic desirability to limit non-natural materials in the river. Alternative 4 was expense with the actual costs for construction of Structure #1 and #2 at \$100,000. Annual maintenance costs are estimated to be \$2,500 or less.

Alternative 4 is the applicant's preferred alternative. They believe it meets all project needs. It minimizes aesthetic and habitat impacts along the riverbank while maximizing safety considerations and grade stability. On the banks, woody riparian vegetation can be re-established in the rock voids. This option was expensive, but is partially complete. New work involves the construction of a downstream rock cross vane (Structure #3) which will temporarily disrupt the river during construction and require the further expenditure of between \$8,000 and \$15,000. The potential of providing greater longevity for channel stability with expected low maintenance make this alternative desirable.

**Alternative 5 - Remove Structure #2.** This alternative would involve the complete removal of Structure #2. It would eliminate the use of any concrete within the Uncompahgre River at this location.

Removal of Structure #2 leaves the river vulnerable to severe erosion. The upstream Structure #1 would be vulnerable to scour failure as the streambed would be lowered by an additional 3 feet immediately downstream. A downstream water surface wetland (east bank) would also be vulnerable to erosion damage in a flood event, and the diversion providing river water to this wetland would have to be abandoned. Public access to water's edge would require re-grading of the channel side slopes. Additionally, approximately \$40,000 is estimated to remove the

structure. Once removed, this site would likely require annual maintenance in the range of \$10,000 to \$20,000 as the river channel and banks would need constant attention. Long term, the Town anticipates an additional \$30,000 - \$60,000 to supplement erosion control to protect critical infrastructure.

For the reasons above, Alternative 5 is rejected as the least feasible. It does not achieve any of the project needs and creates the greatest amount of future maintenance requirements.

Additional information concerning project alternatives may be available from the applicant or their agent. Other alternatives may develop during the review process for this permit application. All reasonable project alternatives, in particular those which may be less damaging to the aquatic environment, will be considered.

**MITIGATION:** The applicant has proposed to install a cross vane Structure #3 approximately 100 feet downstream of existing Structure #2 to help mitigate the large vertical drop of Structure #2 from 3 feet to 2.4 feet. Best management practices would be utilized during river work to help reduce instream impacts from construction activities.

The Corps requires that applicants consider and use all reasonable and practical measures to avoid and minimize impacts to aquatic resources. If the applicant is unable to avoid or minimize all impacts, the Corps may require compensatory mitigation.

**OTHER GOVERNMENTAL AUTHORIZATIONS:** Water quality certification, after-the-fact, is required for this project under Section 401 of the Clean Water Act from the Colorado Department of Public Health and Environment. The applicant has indicated they have applied for certification. Comments related to water quality should be addressed to Mr. John Hranac at email address [john.hranac@state.co.us](mailto:john.hranac@state.co.us) or telephone (303) 692-3586.

**HISTORIC PROPERTIES:** Based on the available information, cultural resources are not located within the project's area of potential effect.

**ENDANGERED SPECIES:** The project has not affected any Federally-listed threatened or endangered species or their critical habitat that are protected by the Endangered Species Act.

**EVALUATION FACTORS:** The decision whether to issue an after-the-fact permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the described activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit, which reasonably may be expected to accrue from the described activity, must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the described activity will be considered, including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, consideration of property ownership and, in general, the needs and welfare of the people. The activity's impact on the public interest will include application of the Section 404(b)(1) guidelines promulgated by the Administrator, Environmental Protection Agency (40 CFR Part 230).

The Corps is soliciting comments from the public, Federal, State, and local agencies and officials, Indian tribes, and other interested parties in order to consider and evaluate the impacts of this activity. Any comments received will be considered by the Corps to determine whether to issue, modify, condition, or deny a permit for this activity. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the activity.

**SUBMITTING COMMENTS:** Written comments, referencing Public Notice 200575719, must be submitted to the office listed below on or before March 15, 2006:

Susan Bachini Nall, Environmental Engineer  
US Army Corps of Engineers, Sacramento District  
Colorado/Gunnison Basin Regulatory Office  
400 Rood Avenue, Room 142  
Grand Junction, Colorado 81501-2563  
Email: [Susan.Nall@usace.army.mil](mailto:Susan.Nall@usace.army.mil)

The Corps is particularly interested in receiving comments related to the structure's probable impacts on the affected aquatic environment and the secondary and cumulative effects. Anyone may request, in writing, that a public hearing be held to consider this application. Requests shall specifically state, with particularity, the reason(s) for holding a public hearing. If the Corps determines that the information received in response to this notice is inadequate for thorough evaluation, a public hearing may be warranted. If a public hearing is warranted, interested parties will be notified of the time, date, and location. Please note that all comment letters received are subject to release to the public through the Freedom of Information Act. If you have questions or need additional information please contact the applicant or the Corps' project manager Susan Bachini Nall at the address above or telephone 970-243-1199, ext 16.

Attachments: 11