Commenter #	Comment Made By	Comment	Response
			Response to All Comments: The Preferred Alternative, as presented in the Final EIS, is the “Replace In Place With Passages” alternative.
1	David Jackson	The most important thing for me is safe passage for human powered boats (rafts, kayaks, etc) over any structure. Ideally there would be features placed to allow for "play" such as in the whitewater parks being built throughout the region which would improve the tourist economy of Green River.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.
2	Toby Schnuk	A navigation channel for small vessels would have been very nice. If possible, please modify plans to accommodate inflatable and other small boats.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion.
3	Bryan Burke	Thanks for keeping me informed. I'm delighted to see that it looks like boat and fish passage will be enhanced by the new structure.	The “Replace In Place With Passages” Alternative considers the inclusion of boat and fish passage into the design of the diversion.
4	Scott Schreiner	I believe that the "Replace in Place with Passages" should be the preferred alternative for this project. As a boater, the placement of boat chutes or other non-obstructive safe passageways for boats and similar crafts should be built in to the diversion structure to allow safe downstream passage of waterborne craft.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion.

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5	Herm Hoops	I appreciate the detailed work and coordination that you have done on the Draft Environmental Impact Statement (EIS) public comment period for the Green River Diversion Rehabilitation Project. I believe the "Replace in place with passages alternative" should be the Preferred Alternative. I am offering the following comments on the Draft EIS: 1.) One of my primary concerns is related to the boat passage and its location on the diversion. One of the key issues is the section of the Green River from foot of Swaseys Rapid to the Colorado River Confluence that was adjudicated as navigable by the federal courts in the 1960's (United States v. Utah; No. C-201-62; Utah District Court, January 9, 1965). That means the river must be managed for the public trust, including its navigability, and I believe it gives superiority to water rights for navigation over other claims. Thus preserving navigability should be part of the Purpose and Need description in the EIS and all alternatives must serve that purpose and need. I strongly approve the inclusion of the boat passage, however I strongly oppose the left (east) side of the dam location. The deposition fan of Tusher Wash into the Green River in the east side of the dam will most certainly continue to accumulate rock, debris and other erosional materials. Geologically the deposition from side channels (Tusher) will be greater that the ability of a main channel (Green River) to remove that deposition. This concept is widely recognized by mainstream geologists around the world. What that means is that over time the boat passage on the east side of the diversion would be rendered useless and a waste of taxpayers funds. In addition the east side would almost assuredly be unusable at lower water levels. In either of the above cases, heavily loaded boats would lodge on the gravel/debris bar and create a multitude of hazardous conditions. Therefore the only acceptable location for the boat passage would be in the center or west of center location. There is no mention of the potential for serious injury or death created by the diversion - no-action proposal (Section 4.74 - p 4-31). These comments also refer to sections 3.34, 4.13 (Unresolved Issues) and Appendix D. 2.) Section 2.6.4.3 (page 2-36) There are developed BLM sites at Swaseys Rapid (Boat LAUNCH and take-out, parking, trash collection & pit toilets); at The Beach (campsites, parking & pit toilets) and in Green River. You mention the latter in other sections of the Draft EIS	Comment 1) The topic of navigability, while relevant to the project, had not entered into the conversation as a required component until after the EIS scoping period. The Purpose and Need statement was presented to the public and agencies during that period, therefore it has not been changed. However, the project design alternatives have since reflected the need for navigability. Hazard potential has been added to Sections 2 and 4 in Public Health and Safety, including mention of the potential for serious injury or death and the known hazards of low head dams such as this diversion. Comment 2) Section 2.6.4.3 now includes info on BLM-managed sites (the Beach and Swaseys). These two facilities have been added as services provided in the area that are BLM-managed. Comment 3) Photos in Section 2.6.6 are meant to provide an aspect of scenic beauty and the viewshed. These photos were not taken at an angle that would allow for accurate evaluation of the flows for recreational purposes. Picture 2-2 was taken during the summer season and an approximate cfs is now given, along with a low flow example in the narrative. Comment 4) Potential safety issues have been added to Section 2.65. Comment 5) The Bluecastle Power Plant project along with other potentials are mentioned as future foreseeable projects, although water rights for those projects may not be obtained for years. The Cumulative Impacts section (4.8) now includes a list of future potential projects that could impact available flows in the project area. This is very indirectly also tied to Climate Change, in the case that over the long term, flows decrease such that the combined projects requiring a certain flow at the diversion cannot be complied with over longer periods of time. Comment 6) A log of maintenance is not available at this time. The water users perform regular maintenance on the structure in order to obtain their allotted rights and have maintained the function of the structure for over 60 years. Comment 7) Interpretive signage can be a good tool to provide the public with valuable information on a project site. This project has been focused on the historical eligibility of the

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		but not the former two sites. They should be referred to here and in other appropriate sections of the EIS. 3.) Photo 2.2 & photo 2.4 (page 2-41 & page 2-41) should include the c.f.s. shown on the photographs. Otherwise the viewer has no idea of the potential hazard or ability to "run" the diversion - and thus to fully comment on the Draft EIS without personal experience. This would improve the public as well as planners develop a better understanding of the dynamic difference the feature will exhibit related to varying flows. 4.) Section 2.65 (Public Health and Safety) lists the agencies that may be involved in local safety issues. It does not, however, list the potential safety issues such as boating safety. Items like river/diversion related hydraulics, in-stream obstructions (like the current concrete and rebar), and the difficulty of both wet and dry passage should be included in this section. 5.) Section 4.3 .7 (Climate Change) If the future plans for the Bluecastle Nuclear Power Plant in Green River (page 3-13), including water withdrawal for that plant and additional desert land entry or other additional crop irrigation projects there will be an effect upon climate change. If these specific components are included in the new design of the diversion then they should and must be addressed under "Climate Change." 6.) The planned funding for this project is primarily from federal and state governments. As the damage claimed is related to the high water of 2011 it would seem reasonable that the Appendix include a log of maintenance for the past several decades. I would be very interested in seeing this information. 7.) Down the road, as the project unfolds, it would seem appropriate to include interpretive (educational) panels (signs) regarding the value of natural flow regimes, water withdrawals, the purpose of the canal, the water wheel and endangered fish. I appreciate the opportunity to comment on the Draft Environmental Impact Statement (EIS) public comment period for the Green River Diversion Rehabilitation Project.	diversion structure and its' surroundings. Part of the treatment plan for the completion of the Section 106 process is to provide valuable information to the public on the project. Interpretive signs were discussed, however at this time, the treatment plan includes educational displays to be placed at the River History Museum.

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6	Gus and Sandra Scott	We have floated the Green River thru Desolation, etc. a number of times and twice took our raft over and through the Tusher Dam and on down to Green River State Park. It was certainly a thrilling ride over the dam! I understand the Dam is in bad shape and alternatives are being discussed. We would favor replacing it in place if that is necessary but with a passage for river boats, rafts, kayaks, etc.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion.
7	Ted Smith	I would like to see the boat ramp in the middle of the river. This safety measure would greatly reduce the risk and liability for boaters trying to navigate the dam.	The “Replace In Place With Passages” Alternative considers the inclusion of a center boat passage into the design of the diversion.
8	Zig Sondelski	I am happy to see the inclusion of the fish ladder and boat passage. For safety reasons, it is more important to have the boat passage in the middle of the dam, especially at low flows. Boating provides an economic benefit for the communities that we travel through, so your support of boating supports the communities involved. Thanks	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.
9	Nate Pelton	The Green River in Utah is one of my favorite places to go rafting and enjoy nature. We travel over 6000 miles each year to experience the desert rivers of the Western US. It would be best for the boat passage to be constructed in the middle of the river. Thank you for considering whitewater river runners in this project.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion.
10	Hal Crimmel	Thank you for your work on the Green River diversion rehabilitation project and for the opportunity to comment on the project. As a Salt-Lake based river runner, I greatly appreciate and support the inclusion of a boat passage, so I would support the "Replace in Place with Passages Alternative". It's a wonderful addition to existing recreational opportunities on the river, and may provide for additional economic opportunities in the future, such as commercial rafting or tubing day trips. For the sake of fisheries the restoration of an upstream fish passage seems a very important part of the project as well. Given the alluvial fan at the mouth of Tusher Wash--and knowing the amount of debris these washes can put into the river, it might be worth reconsidering the location of the boat passage, lest any new construction get blown out (or clogged) by one or more flash floods.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.

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11	Jeff Wagner	I am writing in support of the Passages Alternative with a boat chute in the center of the new structure. As a licensed Utah River Guide, I believe that a navigable river can support better recreation options, will help people appreciate their natural resources, and will be good for the economy.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion.
12	Karl L. Breitenbach	I remain very concerned about the construction of this diversion dam. My family and friends and I very much enjoy and appreciate the recreational opportunities that the Green River has to offer. We also are very concerned about the habitat for wildlife. This year I have two trips planned on the Green River. One thru Desolation and Gray's Canyon and the other thru Labyrinth Canyon. On both of these trips we will stop and spend money in Green River Utah and support businesses that provide lodging and food and vehicle shuttles. I can easily imagine planning an extended trip that would go from above Desolation Canyon all the way thru the community of Green River and down thru Labyrinth Canyon. If I was a member of the City Council of Green River Utah, a member of the Ute Indian tribe, or a representative of the BLM or National forest, I would be very anxious to be certain that this diversion dam be built in such a way as to meet the needs of the agricultural interests, but also in such a way that it doesn't impede the recreational users of the river or destroy valuable riparian habitat - to do so would be very short sighted and in the end much more expensive. It doesn't seem to me that this project has to just satisfy one interest but should be made to meet all the needs - or at least to come as close to doing so as possible.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion.
13	Sam Dorsi	Thank you for your recent email concerning the Draft Environmental Impact Statement. I am very pleased to find the "Replace in Place with Passages Alternative" among the options considered for the Tusher Dam rehabilitation project, and want to thank you for your efforts on this project. I wanted to voice my strong support for the "Replace in Place with Passages Alternative." I particularly wish to advocate for the adoption of the center-channel boat chute. A dedicated river-center boat channel, rather than just a shallow angle downstream dam slope, will better meet navigability requirements in low-water conditions and offer the safest connection to the main river channel on river-right. At lower water levels, a large gravel bar is exposed on the river-left region below Tusher Dam, and it is possible that this would obstruct boat	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.

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		passage if a river-left boat chute is selected. I also believe it is safer to separate the boat chute from the proposed fish ladder and existing river-left weir, as water flow into these structures could present a hazard for boats navigating into the designated chute. Several photographs of the existing dam at low water seem to show protruding metal features along the dam lip. I wanted to suggest that as an element of ensuring safe boat passage over the dam, that any such features that could cut or entangle boats or humans be eliminated in a final design.	
14	Pat Brown	As a whitewater kayaker and rafter, I would like to lend my support for the Replace in Place with Passages Alternative for the Green River diversion structure. Specifically, I would recommend that the boat/fish ramp be placed in the center of the structure to avoid the gravel bar on river left at low water levels.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.
15	Jarred Jackman	Hello, I'm a kayaker and I would like to advocate for safe passage down the Green River. I support the "replace in place with passages alternative." I travel to Utah at least once every year to experience the amazing beauty found throughout its deserts. I would love to add a float on the Green River to my list of amazing experiences in Utah. Add this to the fact that I think all waterways should be made safely navigable if at all possible, and you have what I think is the general consensus from not only the paddling community but the community at large. I don't think there's a person out there that would say any stretch of water should be made more dangerous or less navigable. Waterways are like woods, public lands for public use. We should all work together in order to make the Green River accessible and passable.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.

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16	Karen Kastos	I am writing in support of the "Replace In Place Alternative and the Replace In Place With Passages Alternative". I believe that this section of river must remain open to navigation ... river running is an important part of the economy of Green River and has the potential of being a more draw in the years to come. Down river boating must be able to continue. I support the passage being in the center of the diversion. I have serious concerns about the proposed East shore passage, as it will not be passable in low water and Tusher Creek will continue to dump debris into the river at this point, eventually blocking this passage ... and wasting our tax dollars. I starting river rafting in 1988 ... 1 still run the rivers and hope to continue to do so for many years. The Desolation Canyon section all the way to Green River State Park is a stunning river section and worth protecting. It draws people from around the world. If the tax payers are to get their monies worth, the diversion should address, WELL, all issues.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.
17	Eric C. Ewert	A rebuilt and configured Tusher dam that allows for safe and easy passage for both fish and Green River boaters is a win-win for everyone. I've rafted Desolation canyon 7-8 times, and have always wished that I could continue downstream.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.
18	Sara Casey	Hi there, I'm writing to let you know that I am a paddler and I stand with American Whitewater to support efforts to allow boats to pass through the dam on the green river. I recently moved out West and paddling the Green is definitely on my to-do list. Please help make this possible by ensuring NRCS finds the "Passages Alternative" to be the Preferred Action under their NEPA review. American whitewater also believes that a passage through the center will be the safest option and I support this recommendation.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.
19	Ila Cote	I am writing strongly advocate for the "Replace in Place with Passages Alternative" for the Green River This alternative would provide a safe boat channel for at a range of flows. The boat chute should be built in the center of the channel, rather than at river-left where low-water passage is obstructed by a gravel bar. Equally important is a fish ladder. Access to so much of the western water ways has been degraded. It is critically important to maintain environmental quality and access for	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.

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		a variety of uses.	
20	Andrew G. Bentley	As a commercial river guide and recreational boater I support the inclusion of a flow-through boat passage in the plans for a new Tusher dam. Be it known that any plan without a flow-through boat passage: Prevents navigability of the river, of which the Green River is a navigable river. Presents a safety hazard/threat to life and limb to boaters who will attempt passage. Prevents boaters from continuing downstream without undue hardship (portaging around is impractical). Conflicts with the Utah Governor's state recreation vision to take a long term view. Be it known that a flow-through boat passage: Enhances recreation opportunities for private boaters by allowing use of Green River State Park, Mineral Bottom as alternative take-out locations. Enhances opportunities for outfitting and guide services by allowing use of Green River State Park, Mineral Bottom as alternative take-out locations. Provides a unique recreation opportunity unavailable anywhere else in the USA and increasing, the world- To travel unfettered for hundreds of miles by boat and connect multiple desert river canyons to Labyrinth and Cataract Canyons. May provide additional revenue sources as an economic generator for local outfitting and guiding services. Supports a non-consumptive land use as compared to other resource uses. In the center of the dam will give boaters a high level of safety by keeping them away from irrigation equipment. Must still allow passage even as water levels vary throughout the season. Additionally: Permanently mounted public interpretive displays should be included at the dam and at Swasey's. These materials should discuss the dam history, boating history of the region, water wheel, etc. Placards at the dam and Swasey's should be mounted that provide information about the risks and directions needed to safely use the boat passage. I request this letter be kept on file for the discovery process by future litigants.	Additional language with regard to the existing structure and the potential for serious injury has been included in the Final EIS, in the Sections pertaining to Public Health and Safety. The Preferred Alternative, as presented in the Final EIS, is the “Replace In Place With Passages” alternative. This alternative provides a center passage for boats and fish passage at river left. The BLM managed Swasey’s boat ramp does have a kiosk with readily available information for recreationists in the area. The BLM website is also a valuable tool for boaters, along with the permitting process. All inform potential users of the diversion and the take-out location. Interpretive displays have been discussed, but placement would be on the BLM side of the diversion, which is not a heavily frequented area by the public. As part of project mitigation, a permanent display will be located at the River History museum with information on the diversion construction, history of the dam and the water wheel.

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21	Jack	To whom it concerns, I have written about the Tusher Dam Diversion project before. I have been over the old dam. Now that it is being rebuilt, it needs to address the needs of boaters. Safety is of primary importance for man made objects like this. If there is not a suitable boat passage, it is only a matter of time before someone is injured or killed. Diversion dams are dangerous things and need to have boater access through them. It is the right thing to do. This diversion is on a major recreation area. I also like the idea of having the boat passage in the middle of the dam. That just seems the safest place to put it. Thanks for letting me have my say on this project.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.
22	Norm Henderson	I have read the subject draft EIS and have the following comment: The project must be constructed with boat passage included. That is the only responsible way to go and will promote goodwill and benefit not only the boating community but the residents and businesses of Green River as well. A diversion dam without boat passage would be a hazard much like it is today and will discourage boaters from continuing their float to Lake Powell. If asked to choose which type of boat passage to construct, I'd opt for the center route since that would be the least obstructed. As I understand it, Utah State Parks has agreed to fund the cost share portion of the boat passage alternative. Kudos to that agency for stepping up to the plate and making recreation as high a priority as agriculture in the state of Utah. Thanks for the opportunity to comment on the proposed project.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.
23	Tim Riesen	As an avid whitewater enthusiast, I am writing to encourage you to consider a passage alternative on the proposed reconstruction of the Green River diversion dam. I support the American Whitewater 's proposal to create the most direct, quickest and safest run through the diversion by locating the chute in the center of the diversion. In the spirit of John Wesley Powell, I hope that passage is fully considered.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.

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24	Maura Hahnenberger	I am writing with comments on the Green River Diversion Rehabilitation Project DEIS. My comments are in support of the "Replace In Place With Passages Alternative" and recommend that this be the preferred alternative in the Final EIS. The "Replace In Place With Passages Alternative" would be advantageous compared to the other alternatives due to improvement in conditions for threatened and endangered species, recreation, and socioeconomic factors. First, inclusion of fish passages with help the threatened and endangered native fishes have expanded access to habitat above and below the diversion and help them to continue to reestablish in this stretch of the Green River. Second, the inclusion of boating passage will improve the quality of recreation in the region as well as improving safety for boaters. The upstream and downstream sections of the Green River are very popular boating destinations, and inclusion of a boating passage would allow for more recreation options and dispersion of boating use. Lastly, due to the opportunity for boating and recreation travel through this section of the Green River there will likely be an increase in tourism dollars in the town of Green River and the vicinity leading to improved socioeconomic conditions. I recommend that the "Replace In Place With Passages Alternative" be the preferred alternative in the Final EIS and that emphasis be placed on safe boating passages as well as fish passages.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.
25	Christina King	I am commenting on behalf of the Pikes Peak River Runners whitewater club and the Private Boaters Coalition based in Colorado. It has come to our attention that in the EIS for this project a center boat/fish passage has not made the preferred recommendation. We propose that for both prime fish passage and safe boater passage (without a portage) a center boat/fish passage be included in the final recommendation decision. Portaging a boat and all the gear is never a preference in any circumstance especially a man-made dam. Imagine hauling a 200lb empty raft, 100lb frame, dry box full of supplies, cooler full of food, etc... the equivalent of several thousand pounds for just one raft around a land portage. This could take a very long time and would be impossible for a small one-boat trip with only one person. Most boaters now can trailer to and from the river fully loaded and offload/onload with ease using a trailer. A portage is a completely different matter. If the passage is in the center, boaters will avoid trespass and erosion issues created by a trail and simply float	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.

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		by any shore-side irrigators equipment without disturbance. The recreational experience of being able to travel via river continuously is very popular and an ideal way to travel any river. The center passage provides a more flexible option when river flows are low and a left/or right passage does not always provide a reasonable portage option. Fish will also benefit by being able to easily swim upstream to spawn and use the entire river corridor, especially at low flows where a bankside (left or right) passage might not be usable.	
26	W.A. Siersma	After reviewing the plan I would like to go on record requesting that the Fish and Boat Passage be kept in the plan. I would also request that the Passage be placed close to the center of the river as shown in figure 3-3, this would keep boats away from irrigation equipment, shore debris and be a safer route.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.
27	Michael Wolfe	Thanks for the opportunity to comment on the Green River Diversion Rehabilitation Project. I support the alternative of replacing the dam while alloaing for a designed boat passage in the center of the river. For various reasons I believe this would be best for allowing safe passage by boats and to keep boaters away from the irrigator's equipment on river left. Thanks for considering this change from the original proposal. Maintaining the Green River as navigable beyond Swasey's is very important to the boating community. I also would like to commend the efforts in mitigation, adverse effects to the historic properties in the construction zone. The further research and proposed documentation and public outreach for presenting this history to the public is greatly appreciated. River runners greatly appreciate knowledge of the history of anything related to the river.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed. The treatment plan to mitigate for adverse effects to the existing diversion would include placement of historical documentation at the John Wesley Powell River History Museum in Green River.
28	Kagen Breitenbach	I am emailing to ask that you please include a center of dam boat passage on the Tusher diversion damn. I have been a frequent river rafter of Desolation Canyon and Gray Canyon, and a center of dam boat passage would be essential for allowing rafts to safely float past Swasey's boat ramp towards labyrinth canyon in lower water. There are a great many voices from the boating community that feel the same way, and I urge you take the time to consider this when making	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.

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		decisions about this diversion dam.	
29	Rob Allen	This is Rob Allen. I reside in Provo Utah and paddle the Green River 2 or 3 times a year. I strongly support the option to Replace in Place with Passages Alternative for the Tusher diversion on the Green River.	Comment noted.
30	Don Oblak	I am writing to urge you to pursue a center boat channel on the Tusher rebuild project. A left channel would bring boaters dangerously close to irrigation equipment and would be a problem at low water. All of the stakeholders have endorsed this center channel as the best option and the best use of funding. We rent rafts and kayaks to the public for use on the Green River. This new center boat channel greatly increases the safety below the Swasey's take-out and provides safe passage for boaters wanting to continue on down below Swasey's.	The "Replace In Place With Passages" Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.
31	Zak Podmore	As rafter and a long time user of the Green River, I have portaged the diversion dam north of the town of Green River on numerous occasions. The dam is currently the single biggest obstacle to boaters between the Flaming Gorge Dam and Lake Powell, a 400+ mile stretch of spectacular river. Please consider including a boat chute in the construction of the new diversion dam to facilitate future access.	The "Replace In Place With Passages" Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.
32	David Kizer	I am writing to express my support for the "Replace in Place with Passages Alternative" for the update to the Tusher Dam. I feel that utilizing this option and placing the boat passage in the middle of the dam would be ideal.	The "Replace In Place With Passages" Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.
33	Harry Dundore	I have been boating the Green for 30 years including over a dozen trips on Deso/Gray and Laby/Stillwater. Tusher is the only man-made down river impedance from Browns Valley, WY to the confluence, approximately 350 river miles. As a long time Utah boater, I whole-heartedly support a SAFE down river passage through Tusher Dam and a clean up of all the garbage that has been used for rip-rap over the decades. It's about damn time!!!!!!!! (no pun intended). We can all	The "Replace In Place With Passages" Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.

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		share the river as before, now it will be easier to take out at Green River instead of going up to Swazeys (something I think the locals are not crazy about), or continue on another 120 miles to Cataract Canyon for the full JW Powell experience. This is a no-brainer!!	
34	Kathy Shelby	I am writing in support of the "Replace in Place with Passages Alternative", at the Green River/Tusher Diversion. As a boater, it would be wonderful to be able to do an extensive trip on the Green River that included Grey and Desolation Canyons and all the way down to the confluence with the Colorado River and perhaps beyond. We do not have that many long stretches of river in this country and it would be wonderful to ensure that the Green River provides this opportunity.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.
35	Guy Dean Bateman	As a boater, I support the Replace in Place with Passages Alternative, with the passage in the center of the structure. Under the "Passages Alternative", a boat chute would be notched into the new structure, either in the center of the diversion, or next to the upstream fish ladder on river left, and new upstream warning signs will be installed directing paddlers to the boat chute. We are requesting the boat chute be located in the center of the structure, as a river-left notch would spit boaters onto the sediment bar downstream of the dam, created by Tusher Wash. We have additional concerns with locating the boat chute on river left and adjacent to the concrete fish ladder and the complex of weirs and headgates that serve to meet the water rights on the eastern side of the Green River. Locating the boat chute in the center of the channel, provides the most direct, quickest and safest run through the diversion. The Project will also reduce the downstream slope of the new concrete structure so as to allow for safe boat passage at all passable flows, and to eliminate the "keeper hydraulic" that now exists below the dam. It has been determined that this alternative does not create additional cost or construction challenges to the project, and improves long-term socioeconomic and recreational benefits to the community.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed. The Project would indeed allow for safe boat passage over the crest of the dam at a broad range of flows and would reduce the likelihood of a keeper hydraulic; however, signage will be used in order to direct boaters toward the boat passage chute in the middle of the channel so as to ensure boater safety. The safe passage of boaters over the diversion structure itself will be addressed further during the final design process. The final design will be independently reviewed by professionals experienced in the design and/or review of structures intended to safely pass boaters over a broad range of flows.

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36	Ann Hopkinson	Regarding the Green River Diversion Structure, I support the "Replace in Place with Passages Alternative" as the Preferred Action. I am pleased that the upgrade is being designed to provide up- and down-stream fish passage, enhanced sediment sluicing, as well as a passage for recreational boats. Recreational boating is becoming more and more popular, and providing a safe route for the public is common sense, especially when it can be done at no added cost. I support a centrally placed notch, as recommended by American Whitewater. At present there is a keeper hydraulic below the dam, and reducing the slope of the new structure should eliminate this safety hazard.	The "Replace In Place With Passages" Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed. The Project would allow for safe boat passage over the crest of the dam at a broad range of flows and would reduce the likelihood of a keeper hydraulic; however, signage will be used in order to direct boaters toward the boat passage chute in the middle of the channel so as to ensure boater safety. The safe passage of boaters over the diversion structure itself will be addressed further during the final design process. The final design will be independently reviewed by professionals experienced in the design and/or review of structures intended to safely pass boaters over a broad range of flows.
37	Jamie Bothwell	I would really like to see a boat passage on the new diversion dam. It would be nice to link those sections without a portage. Having it in the middle of the channel would be appreciated also.	The "Replace In Place With Passages" Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.
38	Hal Jaeke	Please be sure to include a safe way for boats to pass through the Tusher diversion structure on the Green River, when the structure is repaired.	The "Replace In Place With Passages" Alternative considers the inclusion of a center boat passage into the design of the diversion.
39	Gary Scovill	Please include the alternate boat passage into the construction of the new dam. The current dam is unsafe for boat passage.	The "Replace In Place With Passages" Alternative considers the inclusion of a center boat passage into the design of the diversion.
40	John Porcher	Thank You for making the dam less dangerous and more accessible to downstream boaters. I use the Green River daily stretch several times a year, including sometimes running the Price. As a kayaker and rafter, I appreciate you endorsing downstream boat passage, putting the boat chute in the center would facilitate our safe use of the dam, and allow other opportunities to boat below Swasey's.	The "Replace In Place With Passages" Alternative considers the inclusion of a center boat passage into the design of the diversion.
41	Skip Zeller	You must provide for a float thru passage in the design of the Tusher dam. The boating community, commercial and public, have a right to un-restricted passage on rivers in this country. This should be a win-win for all. And with the money, why not?	The "Replace In Place With Passages" Alternative considers the inclusion of a center boat passage into the design of the diversion.

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42	Bill Trevithick	I hope you choose the alternative for this project to replace in place with passages. I have boated past the present dam several times and would like to be able to do so in the future. I would hope that this alternative would also allow for the passage of fish in the river. I would also hope this project is not being proposed now as a way to provide a reliable source of water for the proposed nuclear power plant.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed. The Green River Diversion Rehabilitation project is not related in any way to the proposed nuclear power plant.
43	Kim McFarlane	Please include in the design the ability to add a hydroelectric power plant easily in the future. Have the Fish and Wildlife pay for the fish race ways/passage ways and for the PIT tag detectors. Have the river runners pay for the boat passage. Funding from wildlife and boaters should count as local funding. Prefer expanded/with passage alternative.	The Green River Diversion Rehabilitation project does not include plans to install a hydroelectric facility at present or in the future.
44	Andy Horn	I support the "Replace in Place with Passages Alternative," specifically with the passage in the middle of the channel.	The “Replace In Place With Passages” Alternative considers the inclusion of a center boat passage into the design of the diversion.
45	Dan Sullivan	I'm writing in response to the diversion dam you are working on by Green River Utah. Please include a boat chute for us recreational boaters to use to safely navigate the structure. I feel the best option would to have it located in the center of the river to avoid the sand bars on the sides.	The “Replace In Place With Passages” Alternative considers the inclusion of a center boat passage into the design of the diversion.
46	Gary Coultas	Thank you for the opportunity to comment on this project. Recommendation: Replace In Place With Passages. My family has many years experience with rafting and kayaking western rivers. Our children, grandchildren and great-grandchildren have all enjoyed the Green River Desolation/Gray Canyons. We have seen the growth in private and commercial participation over the last 25 years. I believe it is prudent to provide watercraft passage around Tusher Dam with the planned Rehabilitation Project. This will provide river running opportunities for future generations which are not conceived today.	The “Replace In Place With Passages” Alternative considers the inclusion of a center boat passage into the design of the diversion.
47	Barbara and Randy Tucker	Thank you for your time in Grn Rvr last Thursday. My husband is a Grand Canyon river guide and was not able to attend the meeting...He launched on his first trip of the season that day. He wanted me to pass this along to you. A boat gate would be best in the center of the dam so it could be used in lower water. It could accommodate search and rescue or be beneficial in emergencies. Trips may choose to end their trips at the State Park, and that could	The “Replace In Place With Passages” Alternative considers the inclusion of a center boat passage into the design of the diversion.

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		create more revenue for the State of Utah!	
48	Louis Klusmeyer	I am writing to comment on the proposed placement of the existing Green River diversion dam. I support the replacement of the dam to maintain the benefits of irrigation and flood control to the surrounding residents. I also support including fish passage allowances and including downstream boat passage. However, I would propose locating the downstream boat passage toward the center of the river channel. I believe the center location is better for the following reasons, Rafters, canoeists and kayakers will find it easier to continue downstream in the deeper water toward the center and I believe it is safer. The proposed location on the east bank will aim boaters to the shallow area of the river where the wash enters the river resulting in potentially grounding of the boats, they have a longer path, paralleling the dam and the hydraulic on the backside of the dam, to proceed down river. There is the potential that the shallow area behind the dam resulting from material carried by the wash will extend toward the dam because of additional sediment/rocks from the wash, forcing boaters closer to the dangerous hydraulic behind the dam in the future. This would also result in shallower water in the fish passage area, reducing the likelihood of fish finding the fish passage and possibly higher fish mortality.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.
49	Al Gunter	I am a river runner who has been running Desolation and Gray Canyons almost every year. We have a permit for April 20th 2014 and would like to continue downstream to Mineral Bottom. Unfortunately the current dam destroys any navigability without extreme danger. We would spend money to eat, stay and resupply in green river and support shuttle services to ferry vehicles. Now we have to de-rig all of our equipment and re-rig in Green River. That process is enough of a pain that we will just go back to Colorado. Why is the dam rebuild even considered without a center boat passage. I have talked to many other river runners in Colorado. They all support the center boat channel which would be safer, would assist the economy of Green River, which is in decline, and would support navigability which is supposed to be a requirement. Several years ago I went out to the dam and determined it was too dangerous without a boat passage. As	The “Replace In Place With Passages” Alternative considers the inclusion of a center boat passage into the design of the diversion.

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		I recall the edge boat channel is inadequate in low water due to the run out. A center channel is a better option. Please only rebuild the dam if an adequate boat channel is included. Most of the river sections run at full capacity. This would allow for more and better recreation floats and support more use of the river. Thank you for your consideration of the growing boating needs of the public. The dam has impeded our travel for far too long.	
50	Anthony Edwards	I paddle and fish when I am not rock climbing around Moab. I support the "Replace in Place with Passages Alternative." I would like to see a boat passage notched into the new structure, at the center of the diversion. I like the fish passage on river left. This does not create additional cost or construction challenges to the project, and improves long-term socioeconomic and recreational benefits to the community.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.
51	David J. Mackay	I appreciate the opportunity to comment on the Green River Diversion Rehabilitation Project. I favor the need for a boat passage in the center of the dam. With the number of people rafting and boating on the Green River through Gray and Desolation Canyons, passage over the dam should be a top priority for several reasons, especially: 1. Safety. 2. For the support of nationwide free flowing rivers with complete navigability. 3. Integrated for fish passage. I have been in the river running business since 1965 and I also own farmland in Green River, Utah, with irrigation shares. I believe the boat passage through the center of the dam will benefit the river recreation people, including professional outfitters, without affecting the ability to withdraw irrigation water from the Green River.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.
52	Cody Perry	I'm thankful for all the detailed work and coordination that you have done on the Draft Environmental Impact Statement (EIS) public comment period for the Green River Diversion Rehabilitation Project. I believe the "Replace in place with passages alternative" should be the Preferred Alternative. I am offering the following comments on the Draft EIS: 1.) One of my primary concerns is related to the boat passage and its location on the diversion. One of the key issues is the section of the Green River from foot of Swaseys Rapid to the Colorado River Confluence that was adjudicated as navigable by the federal courts in	Comment 1) The topic of navigability, while relevant to the project, had not entered into the conversation as a required component until after the EIS scoping period. The Purpose and Need statement was presented to the public and agencies during that period, therefore it has not been changed. However, the project design alternatives have since reflected the need for navigability. Hazard potential has been added to Sections 2 and 4 in Public Health and Safety, including mention of the potential for serious injury or death and the known hazards of low head dams such

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		the 1960's (United States v. Utah; No. C-201-62; Utah District Court, January 9, 1965). That means the river must be managed for the public trust, including its navigability, and I believe it gives superiority to water rights for navigation over other claims. Thus preserving navigability should be part of the Purpose and Need description in the EIS and all alternatives must serve that purpose and need. I strongly approve the inclusion of the boat passage, however I strongly oppose the left (east) side of the dam location. The deposition fan of Tusher Wash into the Green River in the east side of the dam will most certainly continue to accumulate rock, debris and other erosional materials. Geologically the deposition from side channels (Tusher) will be greater that the ability of a main channel (Green River) to remove that deposition. This concept is widely recognized by mainstream geologists around the world. What that means is that over time the boat passage on the east side of the diversion would be rendered useless and a waste of taxpayers funds. In addition the east side would almost assuredly be unusable at lower water levels. In either of the above cases, heavily loaded boats would lodge on the gravel/debr is bar and create a multitude of hazardous conditions. Therefore the only acceptable location for the boat passage would be in the center or west of center location. There is no mention of the potential for serious injury or death created by the diversion - no-action proposal (Section 4.74 - p 4-31). These comments also refer to sections 3.34, 4.13 (Unresolved Issues) and Appendix D. 2.) Section 2.6.4.3 (page 2-36) There are developed BLM sites at Swaseys Rapid (Boat LAUNCH and take-out, parking, trash collection & pit toilets); at The Beach (campsites, parking & pit toilets) and in Green River. You mention the latter in other sections of the Draft EIS but not the former two sites. They should be referred to here and in other appropriate sections of the EIS. 3.) Photo 2.2 & photo 2.4 (page 2-41 & page 2-41) should include the c.f.s. shown on the photographs. Otherwise the viewer has no idea of the potential hazard or ability to "run" the diversion - and thus to fully comment on the Draft EIS without personal experience. This would improve the public as well as planners develop a better understanding of the dynamic difference the feature will exhibit related to varying flows. 4.) Section 2.65 (Public Health and Safety) lists the agencies that may	as this diversion. Comment 2) Section 2.6.4.3 now includes info on BLM-managed sites (the Beach and Swaseys). These two facilities have been added as services provided in the area that are BLM-managed. Comment 3) Photos in Section 2.6.6 are meant to provide an aspect of scenic beauty and the viewshed. These photos were not taken at an angle that would allow for accurate evaluation of the flows for recreational purposes. Picture 2-2 was taken during the summer season and an approximate cfs is now given, along with a low flow example in the narrative. Comment 4) Potential safety issues have been added to Section 2.65. Comment 5) The Bluecastle Power Plant project along with other potentials are mentioned as future foreseeable projects, although water rights for those projects may not be obtained for years. The Cumulative Impacts section (4.8) now includes a list of future potential projects that could impact available flows in the project area. This is very indirectly also tied to Climate Change, in the case that over the long term, flows decrease such that the combined projects requiring a certain flow at the diversion cannot be complied with over longer periods of time. Comment 6) A log of maintenance is not available at this time. The water users perform regular maintenance on the structure in order to obtain their allotted rights and have maintained the function of the structure for over 60 years. Comment 7) Interpretive signage can be a good tool to provide the public with valuable information on a project site. This project has been focused on the historical eligibility of the diversion structure and its' surroundings. Part of the treatment plan for the completion of the Section 106 process is to provide valuable information to the public on the project. Interpretive signs were discussed, however at this time, the treatment plan includes educational displays to be placed at the River History Museum. Comment 8) The Preferred Alternative presented in the Final EIS is the "Replace in Place with Passages" alternative, which will provide for boat passage.

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		be involved in local safety issues. It does not, however, list the potential safety issues such as boating safety. Items like river/diversion related hydraulics, in-stream obstructions (like the current concrete and rebar), and the difficulty of both wet and dry passage should be included in this section. 5.) Section 4.3 .7 (Climate Change) If the future plans for the Bluecastle Nuclear Power Plant in Green River (page 3-13), including water withdrawal for that plant and additional desert land entry or other additional crop irrigation projects there will be an effect upon climate change. If these specific components are included in the new design of the diversion then they should and must be addressed under "Climate Change." 6.) The planned funding for this project is primarily from federal and state governments. As the damage claimed is related to the high water of 2011 it would seem reasonable that the Appendix include a log of maintenance for the past several decades. I would be very interested in seeing this information. 7.) Down the road, as the project unfolds, it would seem appropriate to include interpretive (educational) panels (signs) regarding the value of natural flow regimes, water withdrawals, the purpose of the canal, the water wheel and endangered fish. 8.) From the structure at Flaming Gorge down to the reservoir behind Glen Canyon Dam this section of flowing river is the longest stretch of navigable water left on the Colorado River Basin. The ability to float this entire section must be preserved for future generations. In doing so the public can enjoy a rich experience along the river corridor and see firsthand how wildlife, irrigation, energy and recreation are the benefits of healthy river systems. I'm thankful for the opportunity to comment on the Draft Environmental Impact Statement (EIS) public comment period for the Green River Diversion Rehabilitation Project and look forward to hearing more.	
53	Dave Ullrich	As a rafter and conservationist, I urge you to include a raft-passable chute in any plans for replacement of the Green River Diversion. I have rafted the Green River from Flaming Gorge to Lake Powell several times and hope to be able to do that amazing trip again in the future.	The “Replace In Place With Passages” Alternative considers the inclusion of a center boat passage into the design of the diversion.

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54	Robert Stewart, USFWS	As requested, the Department of the Interior (Department) has reviewed the Natural Resources Conservation Service (NRCS) Draft Environmental Impact Statement (DEIS), Green River Diversion Rehabilitation Project, Emery and Grand County, UT, and provides the following comments for your consideration. General Comments - Water Allocation - As acknowledged in the DEIS, the clear partitioning of flows at the diversion is a key aspect of project success. We agree with the flow allocations listed in section 3-3 (page 3-4). The Upper Colorado River Endangered Fish Recovery Program (Recovery Program) estimates that 50 cfs return flow in the Green River Canal (or the raceway) is an appropriate amount for planning purposes for their proposed fish return at this time. However, the Recovery Program cautions that this project is not yet designed, and the amount of water required for operations may change. However, in Table 4-2, the amount of required water is listed as 30 cfs. Please change this to 50 cfs, and adjust the remainder of the table accordingly. Table 4-2 appears to be a priority list, although it is not identified as such. The U.S. Fish and Wildlife Service (USFWS) strongly contends that **upstream and downstream fish passage** should be a higher priority than boat passage. The ability to maintain consistent fish passage at this structure will be a key component for our impact analysis during NRCS' upcoming Endangered Species Act (ESA) section 7 consultation on this project. The USFWS strongly supports the flow allocation agreement stated in section 4.13.2. We believe this would provide certainty for all stakeholders regarding long-term operation and maintenance of facilities. We also believe that all stakeholders would benefit by participating in the ongoing discussions to legally protect flows downstream of Flaming Gorge Dam. Legally protected flows below Flaming Gorge Dam would provide high certainty to all stakeholders. **Specific Comments** - Section S.6.2: We request that the ESA section 7 consultation and subsequent incidental take statement be included in the permits and approvals that are described in this summary section. The NRCS commitment to complete section 7 consultation is apparent throughout the document, but it should also appear here in the summary. Table 2.7: Table 2.7 is incomplete. The southwestern willow	Water Allocation – these tables have been adjusted to show the 50 cfs for the return flow number. Table 4-2 is not a priority list. An Operation and Maintenance agreement will be developed upon completion of the FEIS and the ROD, effectively assigning allocations at particular flows and maintenance responsibilities to ensure that those allocations are being adhered to. The Biological Assessment (dated May 19, 2014) has been drafted with this information. Final BA will be complete for the Final EIS. Sec S.6.2 – this list has been updated with ESA Section 7 and incidental take statement language. Table 2.7 – Southwestern Willow Flycatcher and California Condor have been added to the table, and are documented in the BA. The Utah Prairie Dog does not appear on the Emery or Grand County lists (lists attached to the BA). Humpback chub - Changed to "Yes" for likely to occur in project area in EIS and BA. Bonytail and Humpback chub comments – stated in BA. Razorback sucker – further detailed descriptions have been removed from the EIS. Reader is now directed to the BA for these species descriptions.

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		flycatcher, California condor, and Utah prairie dog appear on the Environmental Conservation Online System (http://ecos.fws.gov/ecos/home.action) Species by County Report for Emery and Grand Counties and should be included on this list. We request that the NRCS change the determination of "likely to occur in the study area" for humpback chub to "yes." The Recovery Program documented entrainment of humpback chub into the Green River Canal in 2013 (see below), indicating that this species occurs in the project area. In addition, because it is a known migration corridor between two existing populations (as stated in the DEIS section 2.5.2.1), it is not unexpected that the species would occur in the vicinity. Section 2.5.2.1: We request the NRCS updates its species descriptions with the following information: • **Bonytail** - In 2011, Recovery Program crews caught bonytail 9 miles upstream of the diversion (Tildon Jones, pers. comm.). In 2013, bonytail were shown to be entrained in the Green River Canal (Kevin McAbee, pers comm). • Humpback chub - Recovery Program crews documented humpback chub individuals between Swasey's and Nefertiti, and have captured individuals as close as 3 miles upstream of the diversion (Tildon Jones, per comm). In 2013, one humpback chub was documented as entrained in the Green River Canal (Kevin McAbee, pers comm). • Razorback sucker - The first sentence in the species description is inaccurate. The razorback sucker is found throughout the main stem Green River from the confluence with the Yampa River to the confluence with the Colorado River. Recovery Program crews capture Razorback sucker up to the diversion structure itself (Tildon Jones, pers comm). In 2013, large numbers of razorback sucker were documented as entrained into the Green River Canal (Kevin McAbee, pers. comm.). Section 2.5.2.2: Although nesting habitat for the southwestern willow flycatcher is not present, the potential exists for the species to migrate through and forage in the project area. We request the NRCS update this section to include a species description of the **southwestern willow flycatcher**. Section 2.5.2.4: **Flannelmouth Sucker and Roundtail Chub** - Please add the following sentence to end of the discussion of both of	Sec 2.5.2.2 - Species descriptions were removed from EA and referred reader to BA Sec 2.5.2.4 - No known occurrence of State/BLM sensitive species within 1 mile of project area – so not likely to occur Sec 2.5.5 – Migratory Bird language added – list from BCC 2008 referenced and habitat discussed. Chap 4 page 4-2 – this should reference Section 3.6.1 (revised). Table 3-1 has been added here as well. BA details impacts to DCH. Section 4.6.2.3 – BA is currently in draft form; construction BMPs are being finalized and will be listed in the Final BA. Presence/absence surveys (and construction window) have been added as a mitigation commitment for potential impact to yellow-billed cuckoo or southwestern willow flycatcher habitat. Section 4.6.4.2 – language added.

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		these species: The [flannelmouth sucker or roundtail chub] occurs along the Green River and may be present in the study area. Section 2.5.5: Only bald and golden eagles have been considered in this section. Please include a discussion of other species protected by the **Migratory Bird Treaty Act (MBTA)** that may occur within the project area. In particular, impacts to migratory bird habitat should be evaluated and minimized, focusing on species on the Service's 2008 List of Birds of Conservation Concern (https://www.fws.gov/migratorybirds/NewReportsPublications/Special Topics/BCC2008/BCC20 08.pdf) and species that are listed among the Partner's in Flight Priority Species. Chapter 4, page 4-2, 1st paragraph, last sentence: The document states that a "preliminary, general list of potential mitigation commitments is presented in Section 3.5.1" however that section contains a description of the Cumulative Impact Area. Please revise. Table 4.1: The 1.4 acres of new riprap in the channel and the use of cobble from Tusher Wash constitute impacts to **designated critical habitat for the endangered Colorado River fishes**. This will need to be clear in the biological assessment. Section 4.6.2.3: The USFWS will work with NRCS during the consultation process to create specific construction BMPs to minimize impacts to listed fish in the project area. There was no discussion of BMPs related to **yellow-billed cuckoo or southwestern willow flycatcher**, species which may use the project area as stop-over or foraging habitat during migration. Because the vegetation to be impacted within the project area includes Russian olive, willow, and cottonwood along the banks and within the riparian fringe of the river, we recommend conducting presence / absence surveys for both species if construction is scheduled to occur between May 15 and August 31. The USFWS Utah Field Office can provide more information regarding survey protocols for these species. Section 4.6.4.2: The Final EIS should specifically evaluate potential impacts to **migratory birds** and establish measures to avoid and minimize impacts to birds. The MBTA prohibits the take of migratory birds, their parts, nests, eggs, and nestlings. Executive Order 13186, issued on January 11, 2001, affirmed the responsibilities of Federal agencies to comply with the MBTA. To ensure ground-disturbing activities do not result in the "take" of an active nest or migratory bird	

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		protected under the MBTA, we recommend: • Any groundbreaking activities or vegetation treatments should be performed before migratory birds begin nesting or after all young have fledged to avoid take; • If activities must be scheduled to start during the migratory bird breeding season, you should take appropriate steps to prevent migratory birds from establishing nests in the potential impact area. These steps could include covering equipment and structures and use of various excluders (e.g., noise). Birds can be harassed to prevent them from nesting on the site. • If activities must be scheduled during the migratory bird breeding season, a site specific survey for nesting birds should be performed starting at least two weeks prior to vegetation treatments. Established nests with eggs or young cannot be moved, and the birds cannot be harassed (see 2nd bullet, above), until all young have fledged and are capable of leaving the nest site; • If nesting birds are found during the survey, appropriate spatial buffers should be established around nests. Vegetation treatments within the buffer areas should be postponed until the birds have left the nest. Confirmation that all young have fledged should be made by a qualified biologist. We recommend use of the Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances which were developed in part to provide consistent application of raptor protection measures statewide and provide full compliance with environmental laws regarding raptor protection. Raptor survey and mitigation measures are provided in the Raptor Guidelines as recommendations to ensure that proposed projects will avoid adverse impacts to raptors. We appreciate the opportunity to provide these comments. If you need further assistance with avian resources, please contact **Melissa Burns, Ecologist** at 2369 West Orton Circle, Suite 50, West Valley City, Utah 84119 or (801) 975-3330 ext. 123. For further assistance with fish and water resources, please contact Kevin McAbee, Instream Flow Coordinator, at (303) 236-9887.	

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55	Ray Peterson **Emery County**	Emery County appreciates the opportunity to provide written comments on the Green River Diversion Rehabilitation Project. The damage sustained by the existing structure in recent high-water events make the proposed rehabilitation of utmost concern and urgency. The unique agricultural resource that exists in Green River, and the obvious seasonal nature of the resource make the implementation of this project of the highest priority. Emery County supports the 'Replace In Place With Passages' alternative. Making provision for fish passage is consistent with existing management of the identified threatened and endangered species. Historic boat passage over the structure should also be accommodated. The center location of this passage appears to be the better option. Funding appears to be in place for these passages, and should not place any undo burden on the agricultural community. It is encouraging to witness the many stakeholders and resource managers collaborating to bring this project to fruition.	The "Replace In Place With Passages" Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed. Funding is in place, with 25% cost share coming from the local canal companies, conservation district and water conservancy district.
56	JR Nelson **Emery County**	As a representative of the people of Emery County, I fully support the Green River Diversion Rehabilitation Project. Furthermore, I encourage the citizens of Green River to likewise support this project. The age of the structure alone merits replacement. The present diversion has lasted nearly seventy-five years and was rudimentary in the beginning. It is a tribute to the ingenuity and hard ward of the original builders. I join with others in Emery County in supporting the alternative "Replace In Place With Passages." This is the most productive choice and will accommodate all users while protecting resource use and the "Threatened and Endangered" fish native to the Green River. It is impressive to see different groups collaborate in the construction of the new diversion. It will be a great benefit to all concerned for many years to come.	The "Replace In Place With Passages" Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.
57	Tim Gaylord	On behalf of Holiday River Expeditions, a river outfitting company that has been providing guided backcountry river trips in Utah for the past 47 years. We feel the "replace in place with boat passages" is the best alternative in the draft EIS for the Green River Diversion Rehabilitation Project. We would like to express our support of the center boat passage design as this location makes the most sense for several reasons and helps to preserve the navigability aspect of the river as required by the federal courts. We feel the center passage is a better alternative to the left side boat passage. The deposition fan of	The "Replace In Place With Passages" Alternative considers the inclusion of a center boat passage into the design of the diversion.

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		rocks and material that has and will continue to accumulate from Tusher Wash on the east side could inhibit boat passage in the future and would very likely cause that side to be unusable in lower water levels. It appears the location of the center passage (or slightly west of center) should allow for the greatest range of access for boats over the dam. Thank you for your consideration of these comments	
58	Walker Mackay	I am a Swiftwater Rescue Instructor for Rescue 3 International and a river guide. I wanted to let you know I feel it is necessary for safety to have a boat passage placed in the center of the new Tusher Diversion Dam. Recreation on the Green River has grown continually over the last 50 years and has become a key driving force in the areas economy. With more people coming down this section of river it is critical to have a safe passage through the Tusher Diversion Dam. A passage through the center makes sense for multiple reasons including, but not limited to: #1. Irrigators don't want boats near their equipment for safety reasons and potential damage to their equipment. #2. The main channel is on river right which makes a left passage unreliable during low water. #3. The design of a passage in the center significantly reduces the cost of a passage on river left.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.
59	Gala Dumas	I SUPPORT a safe passage for boaters and fish placed in the CENTER of the new Tusher Diversion Dam.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.
60	Nick Schou Utah Rivers Council	On behalf of Utah Rivers Council, its members, staff, board and volunteers, I respectfully submit the following comments regarding the Green River Diversion Rehabilitation Project Draft Environmental Impact Statement (DEIS) completed by McMillen, LLC in March of 2014.Utah Rivers Council is a not-for-profit 501(c)(3) grassroots community-based organization that advocates for sound water policy and protection and conservation of Utah’s rivers, streams, and clean water sources for today’s citizens, future generations and wildlife. The Utah Rivers Council has a long history working to protect Utah’s amazing Green River, which is part of the Colorado River watershed. While this proposal stems from the need to rehabilitate the damaged	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed. Electric fish barriers are no longer a component of the project, although the BOR and the Upper Colorado Endangered Fish Recovery Program may install such barriers in a location downstream.

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		diversion dam to protect irrigation and hydropower water rights, we commend McMillen, LLC and the numerous stakeholders including irrigators, river runners, fishermen, conservationists and various State and Federal agencies for their outstanding cooperation and consideration of the numerous and varied values associated with the Green River in Emery and Grand Counties. After carefully reviewing the DEIS and preferred alternative we believe the project stands to benefit the Green River's sensitive aquatic ecosystem and endangered fishes both up and downstream of the Tushar Diversion and would also benefit the State's $12 billion recreation economy. Our comments concern several issues as the proposed action pertains to the Green River: **1)** fish passage and NEPA requirements for four species of endangered native fishes, **2)** boat passage for recreational and scientific monitoring purposes, and **3)** the DEIS' further need for detailed analysis of climate change impacts. **Endangered Fish Passage -**The Tusher Diversion Dam is located on the Green River, the longest and main tributary to the Colorado River, which supplies water to 35 million people in the Southwest. The USDA and NRCS should not approve a project that will lead to any further impacts on the water quality and quantity in the heavily developed Green River, which is the home to four endangered native fishes that inhabit the river and are protected by the Endangered Species Act (ESA).The preferred alternative in the DEIS astutely includes modifications to the diversion dam to allow upstream and downstream fish passage over the structure. In particular, this will greatly benefit the four species of endangered native fish in the Green River; the Colorado pikeminnow, bonytail chub, humpback chub and razorback sucker as well as other species of native fish and wildlife species. Additionally, the proposed rehabilitation incorporates a much needed electric barrier to prevent endangered fish from entering the powerhouse and irrigation canals, reducing accidental takings. We strongly support the inclusion of upstream and downstream fish passage and electric fish barriers as described in the preferred alternative. **Boat Passage -** Our organization strongly supports the proposal to create downstream boat passage past the dam, and we are very pleased with the inclusion of boat passage in the preferred alternative	With the boat passageway near the center of the diversion structure, boaters would exit the chute near the center of the channel, far enough away from the Tusher Wash depositional area to actually float downstream at low flows. This is one of the advantages of placing the boat chute near the center of the structure, rather than off to the east side. Regarding the sediment dredging at the outfall of Tusher Wash, this will be a one-time exercise, intended to clear an area for placement of larger, stabilizing riprap that will form a protective blanket around the fish passageway and at the exit of the east side radial gates. The following text has been added to Section 2.2.8 of the EIS: "Another recent report, prepared by the RAND Corporation for the U.S. Bureau of Reclamation (Groves et al. 2013), investigated the effects of climate change in the Colorado River Basin proper and found the following: • Air temperature within the entire Colorado River Basin will increase by 2.5 to 4.0 degrees Celsius (4.5-7.2° F) by 2080; • Runoff due to snowmelt is expected to shift to earlier in the year; • An overall increase in demand is expected across a variety of uses; • Precipitation declines of up to 15% are expected over the next 50 years in the Upper Basin; • A reduction in streamflow of 10 to 20% is expected over the next 50 to 100 years; • The Upper Basin, including the project reach, has only ever consumed 3.8 million acre-feet (maf) out of its 7.5 maf allocation from the Colorado River Compact of 1922. The existing demand in the Upper Basin is approximately 51% of the total allocated for consumptive use in the Upper Basin. Thus, if streamflow were to decline by 20%, according to conservative estimates, then there would still be 29% of the existing allocation

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		of the DEIS. In addition to aiding the aquatic ecology and local recreation economy, this option would lessen the owner/operator's future need for expensive insurance coverage, as the dam is currently a major public safety liability. Boat passage will help prevent any future navigation accidents rather than prolonging the status quo and hoping for the best. Figure 3-3 of the DEIS shows two proposed boat passage locations, one in the center of the diversion structure and one on river left or the East side of the river. After careful review, it is clear that the safer passage would be in the center of the dam for several reasons. During the scoping process, irrigators were clear they didn't want boaters near their equipment, which is located on both sides of the diversion structure, because it would create inherent dangers, cause injuries, and could lead to damages to equipment. The DEIS states a log boom would be the only deterrent in keeping people and boats out of harms way of irrigation equipment near the East and West side of the diversion. This argues in favor of placing the boat passage in the center of the diversion structure. Moreover, below the diversion structure the main channel of the river is on river right or the West side of the river corridor, which would make a river left or East side boat passage especially problematic for boaters during lower water levels in the Green River. Although the proposed sediment removal in figure 3-3 would likely help boaters passing through the East chute to reach the main channel on the West side of the river corridor at high water levels, it is unlikely that enough sediment will be removed to aid boat passage at low flows. It is also unclear how long this will remain clear of debris and whether there will be continuous dredging and removal of sediment and debris that will continue to come from Tusher Wash on river left and impede boat passage in the future. This argues in favor of placing the boat passage in the center of the diversion structure. Finally, the design of the proposed passage in the center of the diversion structure should ensure that adequate water quantities and water velocities are available for endangered fish passage, as any reduced function of fish passage through the structure would violate the Endangered Species Act (ESA). **Climate Change Impacts -** Because the rehabilitated dam will remain in service for decades the DEIS should have considered project impacts to the Green River associated with reduced flows in the future as a function of warmer air temperatures	that could be accounted for by evaporative losses and increases in demand over the project life. Furthermore, even if this 29% were perfected or otherwise used up over the project life, the existing water rights holders would still have priority over future water rights holders. Additionally, the flows through the project reach are in part regulated and protected by the Record of Decision (ROD) of the Final Environmental Impact Statement for the Operation of Flaming Gorge Dam (USBR 2006). Therefore, it is not a reasonably foreseeable consequence of current climate projections that the existing project stakeholders—including irrigators, power generators, recreational boaters, fish, and others—would face water shortages due to climate change." Groves, David G., Fischbach, Jordan R., Bloom, Evan, Knopman, Debra, and Keefe, Ryan, 2013. "Adapting to a Changing Colorado River: Making Future Water Deliveries More Reliable Through Robust Management Strategies". Published by the RAND Corporation and prepared for U.S. Bureau of Reclamation. U.S. Bureau of Reclamation (USBR), 2006. "Record of Decision, Operation of Flaming Gorge Dam, Final Environmental Impact Statement", USBR Upper Colorado Region, February, 2006.

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		occurring from climate change. Given that hundreds of studies have been published over the last 2 years documenting the very real and impacting nature of air temperature increases to the West, Intermountain West, Southwest, and Colorado River Basin, the DEIS should have acknowledged and analyzed this science when assessing the proposed action's impacts on endangered fishes and recreation. Most notably, the DEIS fails to consider the effect of reduced streamflows on the Green River as a function of increased air temperature. McMillen, LLC surely has qualified personnel who could prepare a streamflow analysis of future reductions of annual flows by virtue of rising temperatures and how this will impact the design of passage for native endangered fish as well as boats. The DEIS is effectively proposing to increase the impacts of climate change upon the Green River ecosystem by implementing the proposed project without adequate analysis of reduced flows in the future. The DEA should have analyzed the 50-year supply and demand study for the Colorado River Basin, published by the Bureau of Reclamation in 2012 which identified a 9 percent reduction in future flows of the Colorado River that may be commonplace by virtue of climate change.1 The DEIS analysis of flows needed for endangered fish and boat passage overlooks the loss of streamflows by virtue of climate change in any meaningful manner and how the proposed action could exacerbate impacts on recreation and the fishery decades after completion. Thank you for the opportunity to submit these comments. Please feel free to contact me with any questions and concerns.	
61	Bonnie Mackay	I just wanted to let you know that I SUPPORT a safe passage for boaters and fish placed in the center for the new Tusher Diversion Dam.	The "Replace In Place With Passages" Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.
62	Adrienne Prosser	As an avid river lover who has spent countless weeks enjoying many rivers in Utah, I support a safe passage for boaters and fish to be placed in the CENTER of the new Tusher Diversion Dam near Green River, Utah. The dam must be repaired, so please use this opportunity to make it safe.	The "Replace In Place With Passages" Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.

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63	Kathleen Clarke **Utah FFSL**	The State of Utah appreciates the opportunity to comment on the proposed rehabilitation of the Green River/Tusher Diversion Dam in Green River, Utah. As provided for in Utah Administrative Code Subsections 65A-1-2 and 65A-10-1, the Division of Forestry, Fire, and State Lands (FFSL) is the agency authorized to manage sovereign lands within the State of Utah, including the Green River. Sovereign lands are managed under multiple-use/sustained-yield principles and the Public Trust Doctrine as directed by statute. In order to meet this mandate, FFSL must ensure that all uses on sovereign lands are regulated such that protection of navigation, fish and wildlife habitat, public recreation, and water quality are balanced against the economic necessity or benefit to be derived from any proposed use. The state, by virtue of its sovereignty, owns the bed of Green River below the ordinary high water mark at statehood from the following boundary: Between Townships 23 and 24 South (approximately the mouth of the San Rafael River) down to the confluence of the Green and Colorado Rivers, excepting the portion within the boundaries of Canyonlands National Park; between the point at which the Green River exits the boundaries of Dinosaur National Monument (Mile 312 above the confluence of the Green and Colorado Rivers) to the mouth of Sand Wash (Mile 212.7 above the confluence of the Green and Colorado Rivers); and between the point where the river emerges from Gray Canyon (Mile 129 above the confluence of the Green and Colorado Rivers) to the boundary line between Townships 23 South and 24 South (Mile 95 above the confluence of the Green and Colorado Rivers). (see United States v. Utah, 283 U.S. 64 (1931) and United States v. Utah, U.S. District Court, Central Division, Civil No. C-201-62). The Proposed Action would require work on the bed of the Green River, within the project area, which is considered sovereign land. A Special Use Lease will be required for the construction activities and the structure. Further consultation and coordination with FFSL will continue as the project progresses to ensure navigability through the Diversion. FFSL considers the issue of navigation/boat passage over the Diversion vital to the rehabilitation. It is one of the foremost tenets of the Public Trust Doctrine and will be required for the Special Use Lease to be obtained. The Division prefers an alternative that allows navigation through the center of the diversion. If you have any questions or need additional information with regard to	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.

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		the Special Use Lease, please contact Laura Ault at 801.538.5540 or lauraault@utah.gov or contact Heather Church, FFSL's Sovereign Lands Coordinator based in Moab, at 435.210.0362 or hchurch@utah.gov. The State supports the Green River Diversion Rehabilitation Project and looks forward to working with the USDA Natural Resources Conservation Service. Please direct any questions regarding this correspondence to the Public Lands Policy Coordination Office at the address below, or call Sindy Smith at (801) 537-9193.	
64	Nathan T. Fey American Whitewater	Thank you for accepting public comments on the Draft EIS for the Green River Diversion Rehabilitation Project. The efforts you and the tram have put into stakeholder outreach on the project are to be applauded. Please accept the following comments from American Whitewater in support of the Replace in Place With Passages Alternative. American Whitewater is a national non-profit 501(c)(3) river conservation organization founded in 1954. We have nearly 7,000 individual members and over 100 club affiliates, representing over 80,000 whitewater paddlers and river enthusiasts from across the nation. American Whitewater's mission is to conserve and restore America's whitewater resources and to enhance opportunities to enjoy them safely. As a conservation-oriented paddling organization whose members enjoy the recreational opportunities the Green River has to offer, American Whitewater has a strong interest in the Green River Diversion Structure and, therefore, strongly supports the NRCS in its decision to improve downstream navigability at the diversion	The "Replace In Place With Passages" Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed. The meeting attendee list has been added to Appendix D. The Project would allow for safe boat passage over the crest of the dam at a broad range of flows and would reduce the likelihood of a keeper hydraulic; however, signage will be used in order to direct boaters toward the boat passage chute in the middle of the channel so as to ensure boater safety. The safe passage of boaters over the diversion structure itself will be addressed further during the final design process. The final

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		site, as well as include boat passage in it's preferred alternative under the Draft EIS the Project. The Green River is a high-value recreational resource for the State of Utah and regionally significant within the upper Colorado River basin. The Green River provides unique multi-day rafting and kayaking opportunities popular with a wide range of recreational users – appealing particularly to families from across the Nation seeking a safe, kid-friendly excursion. Below Flaming Gorge Dam, no major storage impoundments have been constructed on the river, and compared to other rivers in the region, irrigation diversions are minor – allowing for nearly un-impeded navigation from Flaming Gorge to the Colorado River Confluence. The Green River Diversion structure is the most significant in-channel obstruction on the main segment of the Green River, and has starved fish of high quality habitat, while also creating a life threatening recirculating hydraulic that presents significant danger to families of recreational paddlers at higher flows. American Whitewater appreciates the significant commitments directed to recreational improvements at the Project site, including designs for safe passage over the dam that eliminates the "keeper" hydraulic at boatable flows, and the integration of boat passage into the project's final concept design. NRCS has stated that such improvements would allow boaters to pass reliably in the spring and early summer, and on an intermittent basis during the mid-to late-Summer months. American Whitewater supports replacing the diversion structure with boat passage, as this alternative would provide additional public benefit, as well as increased economic benefits to the local community. The Replace In Place With Passages Alternative presents the boat passage component in one of two locations: the center location or the river left location adjacent to the upstream fish passage notch. American Whitewater remains available to provide input into the comparative analysis of these two locations, which we understand is ongoing. American Whitewater recognizes that only one location will be incorporated into the final design for the project, and we ask NRCS to give greater consideration to providing boat passage at the center of the diversion structure. A center located boat passage provides multiple benefits in concept, while also eliminating risks to private property and public safety over the river left location. Boat	design will be independently reviewed by professionals experienced in the design and/or review of structures intended to safely pass boaters over a broad range of flows.

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		passage components, as proposed, include a notch in the diversion structure that could be located either in the center of the diversion or adjacent to the upstream fish passage and the water wheel raceway on the east side. While we support the design of a boat passage section consisting of an opening in the diversion 30-feet wide by 2-feet deep, with a more gradual slope into the tailwater of the diversion, American Whitewater would like to express concern that locating boat passage on the east side of the project site creates possible conflicts with man-made fish structures, sluice gates, and debris. We ask that NRCS advance design principles that minimize the need for boaters to navigate past multiple project components at the project site itself. We recommend locating the boat passage in the center of the channel, combined with upstream signage as proposed in the DEIS, to enable safe downstream passage while eliminating possible risks to private property and demands on emergency response personnel. In addition, locating boat passage in the center of the diversion structure will eliminate the risk of boaters getting stranded below the diversion structure on river left where the Tusher Wash sediment deposit presents an impediment to navigability. **Finally, we request that the meeting minutes from February 13th (appendix D) include a listing of all attendees to the "boaters" meeting, at which stakeholders discussed and supported the benefits of a center-located boat chute. We feel that the meeting facilitated a healthy exchange of information, to your credit, and that stakeholder consensus on this project is important to document.** Thank you in advance for incorporating a range of improvements to the Green River Diversion Structure for the benefit of multiple interests, including recreational boating. American Whitewater applauds the efforts of NRCS and its partners to eliminate a physical barrier to fish seeking to migrate through the site, while also creating safe passage for rafters, kayakers, and canoeists enjoying the outstandingly remarkable recreational opportunities the Green River provides. It is critical that the project meet the needs of local irrigators, while minimizing threats to public safety and downstream navigability. Please contact me if you have any additional questions.	

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65	Tom Martin	Thank you for the opportunity to comment on the Draft EIS period on the Tusher Diversion Dam Rehabilitation. In the book I wrote, Big Water Little Boats, Moulty Fulmer and the First Grand Canyon Dory on the Last of the Wild Colorado River, Vishnu Temple Press, 2012, there is a photo on page 69 of Moulty Fulmer running his first dory named MOJA down the left tongue of the Tusher Diversion Dam. The photo was taken on the 4th of July, 1951. Fulmer is rowing the MOJA, and his passenger is Otis "Dock" Marston's daughter Maradel, sitting in front of him in the footwell of the boat. The flow is 14,600 cfs. The river party floated on downriver to the highway bridge at Green River, UT, and took out there. I found this photo in the Marston Collection at the Huntington Library, and point this out to you as evidence for a very long history of river runners interfacing with and rowing over the Tusher Diversion Dam. I made my first crossing of the Tusher Diversion Dam rowing a rubber raft in September, 1996, on a river trip from Sand Wash at the start of Desolation Canyon to Hite, Utah, below Cataract Canyon. Running the Tusher Diversion dam, as Moulty Fulmer and Dock Marston had done before me, adds immense value to our river trips. I support the Draft Alternative that includes bypasses so long as a native fish and recreational boat bypass is built somewhere along the diversion dam, most likely in the middle of the dam. The bypasses should be suitable for downstream boat passage and upstream and downstream fish passage, at all river flow levels, low, medium and high. This fish and recreational boating bypass will preserve our American heritage and help sustain a viable native fish population into the next 100 years on the Green River.	The "Replace In Place With Passages" Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.
66	Jason Keirns	I am in full support of a mid-channel boat passage at the Green River Diversion Dam. Boating and related tourism brings in valuable tax dollars to the town of Green River and the option of running all of the river into town without portaging your boat will provide that. Thank you for your time.	The "Replace In Place With Passages" Alternative considers the inclusion of a center boat passage into the design of the diversion.
67	Richard Stout	I support the Replace in Place with Passages Alternative and a mid channel passageway.	The "Replace In Place With Passages" Alternative considers the inclusion of a center boat passage into the design of the diversion.

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68	Eileen Wysocki	I would like to offer my support for the “Replace in Place with Passages Alternative” for the replacement of the Tusher Diversion structure on the Green River. The current structure is a little known but significant hazard in an otherwise calm section of river. Now is an ideal time to address this hazard so those that would enjoy an otherwise mild float down the river are not faced with it in the future. A well-marked boat chute in the center of the main channel would be the best solution.	The “Replace In Place With Passages” Alternative considers the inclusion of a center boat passage into the design of the diversion.
69	Alan Swanson	Hi, just want to voice my support for a boat passage in the middle of the dam. Could save a life.	The “Replace In Place With Passages” Alternative considers the inclusion of a center boat passage into the design of the diversion.
70	Jason Quinn	would be great to have a passage for a 16' raft. would hate to see someone get hurt.	The “Replace In Place With Passages” Alternative considers the inclusion of a center boat passage into the design of the diversion.
71	Phillip Rhoades	I support the “Replace in Place with Passages Alternative” to the low head dam reconstruction outside of Green River, Utah. As a boater who uses these resources on annual basis I believe this is the best alternative to the issue. The current structure is a major hazard and severely limits downriver recreational passage. This plan also has the added benefit of supporting native fisheries while providing the local community with their allocated water. This is a win-win for stakeholders involved in the issue.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.
72	John Olson	As a whitewater boater, I support the option of "Replace in Place with Passages Alternative".	The “Replace In Place With Passages” Alternative considers the inclusion of a center boat passage into the design of the diversion.
73	Ken Ransford	I recommend that the Green River Diversion Dam have a usable boat and fish passage as part of its design. I have twice floated down Desolation and Gray Canyons, and also rafted from Ruby Ranch to Mineral Bottom. The Green River offers fantastic recreational boating. It also is home to four endangered fish species. Therefore, a fish- and recreation-friendly design is greatly needed. Fish populations get separated into distinct groups by river wide diversions. They prevent upstream passage to fish and interfere with fish spawning and reproduction. It is critical that rivers have eddies so fish can travel from eddy to eddy upstream. Also, diversion dams should not divert so much of the river as to make the river un-passable downstream. I understand this is a federally adjudicated navigable river that must be managed in the public trust for navigability in priority to other private	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed. The project design does not provide for additional recreational play. However, boat passage is assured at flows above 1,106 cfs.

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		(non-public) diversion interests. The current structure I understand to be navigable to downstream traffic and such navigable passage needs to be maintained as part of any structure should it be added to the river. I would encourage placement of eddies for both fish and kayak surfing so that smaller narrow hull forms can also take advantage of the passage. Large boat passage should be assured down to at least 1,600 CFS, and small boat passage should be assured down to the minimum flow levels that the river goes to. Again, this is important for fish and navigation uses which are the prevailing public interest. Thank you for considering my comment. I am confident that the needs of the community (including people and wildlife) can be easily designed into any and all reasonable solutions for this project.	
74	Michael Gadd	I have reviewed the environmental impact statement and wish to add my voice to those calling for the Replace in Place with Passages Alternative. I am a resident of Utah and have taken my boy scouts on rafting trips through both Desolation/Grey Canyons and Labyrinth Canyon. The ability to link the two trips would add greatly to the recreational value of the river. I also think the additional safety afforded by the passages alternative should be reason enough to move forward with that alternative.	The “Replace In Place With Passages” Alternative considers the inclusion of a center boat passage into the design of the diversion.

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75	Brody Young, **State of Utah**	My name is Brody Young and I represent the Boating Program for the State of Utah which manages the education and enforcement of state boating laws and rules on sole state waters. The Green River falls under that category. The purpose of this letter is to comment on the possible re-construction of the "Tusher" Green River Diversion Dam. We are highly in favor of and support the "Replace in Place with Passage Alternative" in the DEIS. We were thrilled to hear about the re-construction of the "Tusher" Green River Diversion Dam. We realize the functionality and the invaluable need it has provided for the City of Green River for nearly one-hundred years. We also realize the current dam has been a danger to the boating public and greatly hinders the navigability of the Green River outside of higher water flows in the spring and early summer. Thank you for allowing alternatives to be evaluated for all users of the water to comment on. We feel there is an importance of the safety of the dam being well represented by all users and in the design of it. We are in favor of the "Replace in Place with Passage Alternative" for several reasons: -The safety of boaters coming downstream is first and foremost our number one concern. We realize the new construction of the dam is designed for boats to float over in the event there is sufficient water. The Boat passage would provide a safe alternative in the event there isn't sufficient water. -The "navigability" of the river is vital. Most boaters are untrusting of going downstream of Swasey's Boat Ramp because of the dam and its lack of navigability. The Boat passage in the center of the dam would allow safe passage in the current of the river below the dam. The alternative of a boat passage on River left would lead boaters into a gravel bar created by Tusher Wash. -The boat passage will enhance recreational and commercial boating opportunities for Green River and will provide additional economic advancement for growth. It will invite boaters and recreationalist of all types to stay, eat and work in Green River. We are in favor of the" Replace in Place with Passage Alternative" listed in the DEIS. Please consider our comments as a strong voice for the Boating Public in Utah. I appreciate the opportunity to submit our comments and look forward to the outcome of the design of the dam. Thank you for your time.	The "Replace In Place With Passages" Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.

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76	Carter Mills	This message is to express my support for a safe passage for boaters and fish to be placed in the CENTER of the new Tusher Diversion Dam. Thank you for your consideration.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed.
77	Glenn Wysocki	I would like to offer my support for the “Replace in Place with Passages Alternative” for the replacement of the Tusher Diversion structure on the Green River. The current structure is a little known but significant hazard in an otherwise calm section of river. Now is an ideal time to address this hazard so those that would enjoy an otherwise mild float down the river are not faced with it in the future. A well-marked boat chute in the center of the main channel would be the best solution.	The “Replace In Place With Passages” Alternative considers the inclusion of a center boat passage into the design of the diversion.
78	Marty Shelp	Please include a safe boat passage in the new diversion. This is a historic section of river and deserves to be preserved for navigation.	The “Replace In Place With Passages” Alternative considers the inclusion of a center boat passage into the design of the diversion.
79	Dawn Waldrop	I would like to offer my support for the “Replace in Place with Passages Alternative” for the replacement of the Tusher Diversion structure on the Green River. The current structure is a little known but significant hazard in an otherwise calm section of river. Now is an ideal time to address this hazard so those that would enjoy an otherwise mild float down the river are not faced with it in the future. A well-marked boat chute in the center of the main channel would be the best solution.	The “Replace In Place With Passages” Alternative considers the inclusion of a center boat passage into the design of the diversion.

Commenter #	Comment Made By	Comment	Response
80	Landis Arnold	I am writing to ask that the Green River Diversion Dam have a functional, aesthetic, recreationally and navigationally usable boat and fish passage as part of its design. The best fish passage is one which is also navigable by small craft such as rafts and kayaks. Moreover, this is a stretch of river which does, on occasion, have quite large rafts and crafts passing by. Family friends ran J-Boats from Ladore to Lake Powell, then further through the Grand Canyon on the 100th Anniversary of Powell (1969) and numerous other trips have done the same and done stretches there of including through this stretch. J-Boats can be up to 33 ft long. From Biologic point of view, river wide diversions which are impassable (and not understandable) to fish is also one of the reasons that fish populations get segregated to different stretches of rivers. It is critical that rivers have eddies for fish (and river craft) to take refuge in, and channels which carry water, for downward safe downward flow) and yet allow "attainment" for fish (and sometimes kayaks etc) from eddy to eddy upstream. It is also important that diversion dams not divert so much of the river as to make the river un-passable downstream. I understand this is a federally adjudicated navigable river that must be managed in the public trust for navigability in priority to other private (non-public) diversion interests. The current structure I understand to be navigable to downstream traffic and such navigable passage needs to be maintained as part of any structure should it be added to the river. Keeping passage capability for boats up to 33 ft long is in keeping with the historical use of J-Boats on the river. I would encourage placement of eddies for both fish and kayak surfing so that smaller narrow hull forms can also take advantage of the passage. Large boat passage should be assured down to at least 1600 CFS, and small boat passage should be assured down to the minimum flow levels that the river goes to. Again, this is important for fish and navigation uses which are the prevailing public interest. Thank you for your solicitation for comment. I am confident that the needs of the community (including people and wildlife) can be easily designed into any and all reasonable solutions for this project.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed. The project design does not provide for additional recreational play. However, boat passage is assured at flows above 1,106 cfs.

Commenter #	Comment Made By	Comment	Response
81	George Wendt	Thank you for all the work you have done preparing the Draft EIS for the Green River Diversion Rehabilitation Project. We believe that the "Replace In Place With Passages" should be the preferred alternative. We think that it is important to provide a passage either around the west side of the diversion or, probably preferable, in the center of the diversion dam. We are afraid that a passage on the east side of the diversion dam would not be satisfactory because of ongoing deposition of erosional materials coming from Tusher Wash. As river rafting grows in popularity-especially with young families, the town of Green River should be the beneficiary of increased use on the Green River from Swasey's to the Green River State Park and the economic assistance that this can provide to the area. As a long-term river guide-first running as a private rafter, then as a professional river guide and now as the manager of a whitewater rafting company-I think it is important to be concerned about the navigational challenges and safety issues involved with running the diversion dam. It is essential that no exposed rebar or other hazards to property or human safety be allowed. Design work should be done so that the passage through the diversion dam does not present a keeper hydraulic. We appreciate the opportunity to comment on the Draft Environmental Impact Statement and will look forward to reviewing the Final EIS.	The “Replace In Place With Passages” Alternative considers the inclusion of boat passage into the design of the diversion. This alternative would place the boat passage notch close to the center of the structure, and therefore down the middle of the river, and away from river left where irrigation and fish passage structures would be placed. The Project would allow for safe boat passage over the crest of the dam at a broad range of flows and would reduce the likelihood of a keeper hydraulic; however, signage will be used in order to direct boaters toward the boat passage chute in the middle of the channel so as to ensure boater safety. The safe passage of boaters over the diversion structure itself will be addressed further during the final design process. The final design will be independently reviewed by professionals experienced in the design and/or review of structures intended to safely pass boaters over a broad range of flows.
82	Philip Strobel **US EPA**	In accordance with our responsibilities under Section 102(2) (C) of the National Environmental Policy Act (NEPA), and Section 309 of the Clean Air Act (CAA), the U.S. Environmental Protection Agency Region 8 has reviewed the March, 14, 2014 Green River/Tusher Diversion Rehabilitation Draft Environmental Impact Statement (Draft EIS) by the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS).It is the EPA's responsibility to provide an independent review and evaluation of the potential environmental impacts of this project. This includes a rating of the environmental impacts of the proposed action and the adequacy of the Draft Environmental Impact Statement (Draft EIS). The Green River/Tusher Diversion, constructed in the early 1900s, was damaged by flows in the Green River during 2010 and 2011 flood events. The Draft EIS states that in the event of diversion failure due to future flood or high flow conditions, water service to three irrigation canals, the City of Green River, a historic irrigation water delivery system, and	Project conceptual design efforts have been updated; the one-foot elevation raise has been determined unnecessary. The crest elevation will be at its original elevation of 4086.7’, as the structure has been “sagging” in the center of the channel. Aggregate and sediment removal - The sediment from Tusher Wash is not currently classified as suitable habitat for fish nursery since it is dry for a good portion of the year. Excavation

Commenter #	Comment Made By	Comment	Response
		one hydropower plant would be eliminated. The Draft EIS also states that rehabilitating the diversion would directly result in these resources remaining usable for the water rights holders. The NRCS and Utah Department of Agriculture and Food (UDAF) analyzed alternatives for maintaining the existing functions of the diversion for water delivery, upgrading the diversion structure to current design standards, maintaining some features of the historic character of the diversion dam, providing upstream and downstream fish passage, fish tracking and fish screening, and providing enhanced sediment sluicing, and downstream recreational boat passage. Fish protection and passage components are proposed in one alternative for inclusion in the project to meet Endangered Species Act requirements for listed fish species populations in the Green River. The boat passage provision is a navigability requirement of the State of Utah. The EPA appreciates that in September 2013, the NRCS sent notification to several interested parties and stakeholders that the NRCS determined the proposed rehabilitation project will adversely affect the Tusher Diversion Dam and the East Side Canal which are both significant historic structures. This determination led to elevating the NEPA analysis from an Environmental Assessment to preparation of a Draft EIS. The EPA appreciates the comprehensive alternatives analysis provided in the Draft EIS in response to all comments during the project scoping and public comment period. The EPA also appreciates identification and analysis of alternatives that intend to increase the efficiency and flood resiliency of the diversion dam structure while enhancing fish passage and recreational navigation features of the structure within the river system. The EPA considers protection of aquatic resources to be among the most important issues addressed in any NEPA analysis where a project could adversely affect surface and ground water resources. The alternatives presented in the Draft EIS and the actions associated with the diversion dam rehabilitation project have the potential to adversely impact aquatic resources, including wetlands, streams, riparian areas, their supporting hydrology and hydrogeology. **Two specific project actions likely to affect aquatic resources include raising the current dam elevation by one foot, and aggregate and**	of the sediment would create additional open water during low flows increasing fish nursery habitat. The sediment deposition in question is evaluated in the Waters of the U.S. and Wetland Delineation Report, and has been determined to be cobble and gravels within the river bed. It is subject to seasonal flooding and is flooded often enough that it is not a wetland. The Wetland Delineation Report has been finalized and is included in Appendix C. The Final EIS includes monitoring and documentation procedures for construction and post-construction impacts, along with mitigation measures. Stream hydrogeology will be further assessed during an independent modeling and final design review exercise, which would add monitoring and documentation procedures to identify unforeseen construction or post-construction impacts. The BA has been finalized and formal consultation with the USFWS is on-going. It is assumed that the USFWS will issue a Biological Opinion that the project will not jeopardize listed species. The BA provides BMPs and detailed mitigation commitments. The Final EIS will be made available for a 30-day comment period in June 2014.

Commenter #	Comment Made By	Comment	Response
		sediment material removal below the dam. These actions are expected to affect fish nursery habitat, stream hydrogeology and potentially more wetland acres than the low number of temporarily affected wetland acres estimated in the Draft EIS. The EPA recommends that the Final EIS clearly summarize and reference information included in the Draft EIS that could lead to mitigation of any possible adverse effects to aquatic resources at this site. This information includes dam design features, the Green River Canal Sediment Research effort, methods found in the Conjunctive Management of Surface and Ground Water in Utah management plan, The Preliminary Wetland Inventory memo (not found in Appendix C as referenced in the DEIS [2.2.6.] and stream flow modeling predictions that specifically support how aquatic resources listed above will not be adversely affected. The EPA recommends the Final EIS add monitoring and documentation procedures to identify any unforeseen construction or post-construction impacts to aquatic resources, such as wetlands, habitat and hydrogeology. The EPA also recommends that the **Final EIS identify what mitigation measures will be implemented if adverse impacts are identified for any of the aquatic resources listed above, during and after completion of construction.** The Draft EIS identifies that the U.S. Fish and Wildlife Service, a Cooperating Agency for the proposed action, has been consulted and has provided significant input to the alternatives identified in the Draft EIS. **The Draft EIS does not yet include a completed Biological Assessment. Because the Biological Assessment may provide important information to inform this decision, the EPA recommends the NRCS allow a period of time for the public and stakeholders of record to provide input with the benefit of a completed Biological Assessment and Opinion prior to a Final EIS or Record of Decision.** Consistent with Section 309 of the CAA, it is the EPA's responsibility to provide an independent review and evaluation of the potential environmental impacts of this project. Based on the procedures the EPA uses to evaluate the adequacy of the information and the potential environmental impacts of the proposed action, the EPA has rated the alternatives in the Draft EIS	

Commenter #	Comment Made By	Comment	Response
		as "Environmental Concerns- Insufficient Information" (EC-2). The EPA's review identified environmental impacts that should be avoided in order to fully protect the environment and this letter provides recommendations to resolve those concerns. The draft EIS does not contain sufficient information to fully assess environmental impacts that should be avoided in order to fully protect the environment. We identified additional information, data, analyses, or discussion that should be included in the Final EIS. A description of the EPA's rating criteria is available at: http://www.epa.gov/compliance/nepa/comments/ratings.html We hope that our comments will assist you in further reducing the environmental impacts of this project. We appreciate the opportunity to review and comment on this Draft EIS. If we may provide further explanation of our comments, please contact me at 303-312-6704. You may also contact Nat Miullo, lead reviewer for this project, at 303-312-6233, or Miullo.nat@epa.gov.	
83	Floyd Johnson, **BLM**	BLM Comments of the Draft EIS for the Green River Diversion Dam: Tables S-1and 4-1, Xvi 4-2, Water Resources row, Under the no action there would be no temporary effects from construction. Tables S-1 and 4-1, Xviii,4-4, Visual quality, Under the no action there would be no temporary effects from construction. Sec 2.6.4.1, Pg 2-34, To totally understand the Green River as a “wild and scenic “ river the fact that the river is suitable from Sand Wash to Nefertiti should be added; Tables S-1 and 4-1, Xvii, and 4-3, Socio econ: Could add to the impacts under both action alternatives a more reliable supply of water for irrigation of crops and hydropower; Table 4-2, 4-11, The total water demand of 1,066 does not agree with page 3-4 of 1,125.	The No Action Alternative presents an extreme flood event/disaster scenario in which the area is degraded. Clean-up activities would be required. “Construction” has been revised to read “Clean-up” or “Post-event clean-up activities” to better capture the hypothetical here. Additional Green River segments in Utah added here to show that 4 segments upstream and 1 segment downstream are all classified and suitable for Wild and Scenic designation. Socioeconomics – all tables and discussion: added beneficial impact in the provision of a more reliable water supply for irrigation and hydropower. The total water demand is 1,106. All tables have been updated to reflect this number.

Comment Categories

Comment Category	Comment	Commenter(s) #
Recreation/Boat Passage & Navigability	We support the "Replace in Place with Passages" alternative and the chute in the center of the dam.	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 55, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82
Economy & Tourism	Project would enhance tourism/economy in the area.	1, 8, 10, 11, 12, 16, 20, 24, 35, 47, 49, 50, 58, 60, 63, 64, 66, 75, 81
Public Health and Safety	Existing diversion is a danger/threat to public safety.	5, 7, 8, 20, 21, 24, 30, 36, 51, 52, 58, 60, 64, 74, 75, 81
Impacts to T & E Species; Fish	Support fish passage; DEIS does not adequately address this issue; Biological Assessment should be included. Fish passages with help the threatened and endangered native fishes have expanded access to habitat.	24, 42, 43, 48, 51, 52, 54, 55, 56, 60, 63, 65, 71, 73, 80, 82
Nuclear Power Plant	Generally, the addition of a nuclear power plant in the vicinity of the project could impact water availability and should be further addressed in the EIS.	5, 42, 52
Climate Change/Foreseeable Streamflow Changes	DEIS does not adequately address this issue (loss of streamflow due to climate change)	5, 52, 60
Budget	The planned funding for this project is primarily from federal and state governments. As the damage claimed is related to the high water of 2011 it would seem reasonable that the Appendix include a log of maintenance for the past several decades. I would be very interested in seeing this information.	5, 43, 52
Hydroelectric Power	Include hydropower plant in design	43
Irrigation/Flood Control	Support project to maintain the benefits of irrigation and flood control; boat passage a benefit without affecting the ability to withdraw irrigation water from the Green River.	48, 51, 71
Impacts to Aquatic Resources	Project has the potential to adversely impact aquatic resources, including wetlands, streams, riparian areas, their supporting hydrology and hydrogeology.	12, 82

Commenter List

Commenter #	Name	Agency/ Organization	Phone	Address	City	State	Zip	Email
1	David Jackson							
2	Toby Schnuk							
3	Bryan Burke							
4	Scott Schreiner							
5	Herm Hoops							
6	Gus and Sandra Scott							
7	Ted Smith							
8	Zig Sondelski							
9	Nate Pelton	North Creek Rafting Company	800-989-RAFT	9 Ordway Lane, PO Box 10	North Creek	NY	12853	nate@northcreekrafting.com
10	Hal Crimmel							
11	Jeff Wagner							
12	Karl L. Breitenbach							
13	Sam Dorsi							
14	Pat Brown							
15	Jarred Jackman							
16	Karen Kastos							
17	Eric C. Ewert							
18	Sara Casey							
19	Ila Cote							
20	Andrew G. Bentley							
21	Jack							
22	Norm Henderson							
23	Tim Riesen							
24	Maura Hahnenberger							
25	Christina King	Pikes Peak River Runners						pckingco@gmail.com
26	W.A. Siersma							
27	Michael Wolfe							
28	Kagen Breitenbach							

Commenter #	Name	Agency/ Organization	Phone	Address	City	State	Zip	Email
29	Rob Allen							
30	Don Oblak	Canyon Voyages Adventure Co.	435-259-6007					don@canyonvoyages.com
31	Zak Podmore							
32	David Kizer							
33	Harry Dundore							
34	Kathy Shelby							
35	Guy Dean Bateman							
36	Ann Hopkinson							
37	Jamie Bothwell							
38	Hal Jaeke							
39	Gary Scovill							
40	John Porcher							
41	Skip Zeller							
42	Bill Trevithick							
43	Kim McFarlane							
44	Andy Horn	Westwater Hydrology	303-456-1981	7175 W. 42nd Ave.	Wheat Ridge	CO	80033	andyhorn2020@gmail.com
45	Dan Sullivan							
46	Gary Coultas							
47	Barbara and Randy Tucker							
48	Louis Klusmeyer							
49	Al Gunter							
50	Anthony Edwards							
51	David J. Mackay	Colorado River & Trail Expeditions	801-261-1789	PO Box 57575	Salt Lake City	UT	84157	crate@crateinc.com
52	Cody Perry	Rig To Flip	970-819-1610	PO Box 774000 PMB 216	Steamboat Springs	CO	80477	cody.perry@gmail.com
53	Dave Ullrich							
54	Robert Stewart	USFWS		PO Box 25007 (D-108)	Denver	CO	80225	

Commenter #	Name	Agency/ Organization	Phone	Address	City	State	Zip	Email
55	Ray Peterson	Emery County Public Lands	435-381-3556	PO Box 1298	Castle Dale	UT	84513	rayp@emery.utah.gov
56	JR Nelson	Emery County Commissioner						jrn@emery.utah.gov
57	Tim Gaylord	Holiday River Expeditions	801-266-2087	544 East 3900 South	Salt Lake City	UT	84107	tim@bikeraft.com
58	Walker Mackay	Colorado River & Trail Expeditions						walkmin@crateinc.com
59	Gala Dumas							
60	Nick Schou	Utah Rivers Council	801-486-4776	1055 E 2100 S #204	Salt Lake City	UT	84106	nick@utahrivers.org
61	Bonnie Mackay							
62	Adrienne Prosser							
63	Kathleen Clarke	State of Utah FFSL	801-537-9801	PO Box 141107	Salt Lake City	UT	84114	
64	Nathan T. Fey	American Whitewater		1601 Longs Peak Ave	Longmont	CO	80501	nathan@americanwhitewater.org
65	Tom Martin							
66	Jason Keirns							
67	Richard Stout							
68	Eileen Wysocki							
69	Alan Swanson							
70	Jason Quinn							
71	Phillip Rhoades							
72	John Olson							
73	Ken Ransford							
74	Michael Gadd							
75	Brody Young	State of Utah Parks	435-259-3750	1165 S Highway 191, Suite 7	Moab	UT	84532	brodyyoung@utah.gov
76	Carter Mills							
77	Glenn Wysocki							
78	Marty Shelp							

Commenter #	Name	Agency/ Organization	Phone	Address	City	State	Zip	Email
79	Dawn Waldrop							
80	Landis Arnold							
81	George Wendt	The O.A.R.S. Family of Companies	209-736-4677	PO Box 67	Angels Camp	CA	95222	info@oars.com
82	Philip Strobel	US EPA	800-227-8917	1595 Wynkoop Street	Denver	CO	80202	
83	Floyd Johnson	BLM						

Comment 1

From: greenriver@mcmillen-llc.com on behalf of [redacted]
To: greg.allington@mcmillen-llc.com
Subject: Re: NRCS Green River Draft EIS Public Notice
Date: Friday, March 14, 2014 11:42:05 AM

The most important thing for me is safe passage for human powered boats (rafts, kayaks, etc) over any structure. Ideally there would be features placed to allow for "play" such as in the whitewater parks being built throughout the region which would improved the tourist economy of Green River.

Thank you,

[redacted]

On Fri, Mar 14, 2014 at 10:17 AM, Greg Allington <greg.allington@mcmillen-llc.com> wrote:

> Dear Interested Party,
>
> Please find attached the Public Notice for the Draft Environmental Impact Statement (EIS) public comment period for the Green River Diversion Rehabilitation Project.
>
> Electronic copies of the Draft EIS are available on the project website at http://www.nrcs.usda.gov/wps/portal/nrcs/detail/ut/programs/?cid=nrcs141p2_034037.
>
> Official comments should sent to greenriver@mcmillen-llc.com or myself at the physical address listed below prior to the close on April 30, 2014.
>
> Thank you. You may contact me at any time with any questions or comments about the project.
>
> **Greg Allington**
>
> Project Manager/Biologist
>
> McMillen, LLC
>
> 1401 Shoreline Drive, Suite 100 Boise, ID 83702
>
> p 208.342.4214 x 318 | f 208.342.4216 | c 208.340.5721

Comment 2

From: greenriver@mcmillen-llc.com on behalf of [redacted]
To: greg.allington@mcmillen-llc.com
Subject: Boat channel for Dam Project
Date: Friday, March 14, 2014 2:01:40 PM

A navigation channel for small vessels would have been very nice.

If possible, please modify plans to accommodate inflatable and other small boats.

Thank you!

[redacted]

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Version: 2014.0.4336 / Virus Database: 3722/7196 - Release Date: 03/14/14

Comment 3

From: [redacted]
To: Greg Allington
Subject: RE: NRCS Green River Draft EIS Public Notice
Date: Friday, March 14, 2014 8:42:30 PM

Hello,

Thanks for keeping me informed. I'm delighted to see that it looks like boat and fish passage will be enhanced by the new structure.

Sincerely,

[redacted]

From: greg.allington@mcmillen-llc.com
To: greenriver@mcmillen-llc.com
Subject: NRCS Green River Draft EIS Public Notice
Date: Fri, 14 Mar 2014 10:17:18 -0600

Dear Interested Party,

Please find attached the Public Notice for the Draft Environmental Impact Statement (EIS) public comment period for the Green River Diversion Rehabilitation Project.

Electronic copies of the Draft EIS are available on the project website at http://www.nrcs.usda.gov/wps/portal/nrcs/detail/ut/programs/?cid=nrcs141p2_034037.

Official comments should sent to greenriver@mcmillen-llc.com or myself at the physical address listed below prior to the close on April 30, 2014.

Thank you. You may contact me at any time with any questions or comments about the project.

Greg Allington
Project Manager/Biologist

McMillen, LLC
1401 Shoreline Drive, Suite 100 Boise, ID 83702
p 208.342.4214 x 318 | f 208.342.4216 | c 208.340.5721
greg.allington@mcmillen-llc.com | www.mcmillen-llc.com

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Comment 4

From: greenriver@mcmillen-llc.com on behalf of [redacted]
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Rehabilitation Project--Draft EIS Notice of Availability
Date: Monday, March 17, 2014 4:34:13 PM

I believe that the "Replace in Place with Passages" should be the preferred alternative for this project. As a boater, the placement of boat shutes or other non-obstructive save passageways for boats and similar crafts should be built in to the diversion structure to allow safe downstream passage of waterborne craft.

thank you,

[redacted]

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Version: 2014.0.4336 / Virus Database: 3722/7206 - Release Date: 03/17/14

Comment 5

From: [redacted]
To: "Greg Allington"
Subject: RE: NRCS Green River Draft EIS Public Notice
Date: Tuesday, March 18, 2014 12:57:06 PM
Attachments: 140314 Tusher Comments Draft EISx.pdf
Certification.htm

Greg my comments are attached.

[redacted]

From: Greg Allington [mailto:greg.allington@mcmillen-llc.com]
Sent: Friday, March 14, 2014 10:17 AM
To: greenriver@mcmillen-llc.com
Subject: NRCS Green River Draft EIS Public Notice

Dear Interested Party,

Please find attached the Public Notice for the Draft Environmental Impact Statement (EIS) public comment period for the Green River Diversion Rehabilitation Project.

Electronic copies of the Draft EIS are available on the project website at http://www.nrcs.usda.gov/wps/portal/nrcs/detail/ut/programs/?cid=nrcs141p2_034037.

Official comments should sent to greenriver@mcmillen-llc.com or myself at the physical address listed below prior to the close on April 30, 2014.

Thank you. You may contact me at any time with any questions or comments about the project.

Greg Allington
Project Manager/Biologist

McMillen, LLC
1401 Shoreline Drive, Suite 100 Boise, ID 83702
p 208.342.4214 x 318 | f 208.342.4216 | c 208.340.5721
greg.allington@mcmillen-llc.com | www.mcmillen-llc.com

[redacted] [redacted]

Greg Allington, Project Manager/Biologist
McMillen, LLC
1401 Shoreline Drive, Suite 100
Boise, ID 83702

Dear Mr. Allington:

I appreciate the detailed work and coordination that you have done on the Draft Environmental Impact Statement (EIS) public comment period for the Green River Diversion Rehabilitation Project. I believe the "Replace in place with passages alternative" should be the Preferred Alternative.

I am offering the following comments on the Draft EIS:

1.) My primary concern is related to the boat passage and its location on the diversion. One of the key issues is the section of the Green River from foot of Swaseys Rapid to the Colorado River Confluence that was adjudicated as navigable by the federal courts in the 1960's (*United States v. Utah; No. C-201-62; Utah District Court, January 9, 1965*). That means the river must be managed for the public trust, including its navigability, and I believe it gives superiority to water rights for navigation over other claims. Thus preserving navigability should be part of the Purpose and Need description in the EIS and <u>all</u> alternatives must serve that purpose and need. I strongly approve the inclusion of the boat passage, however I strongly oppose the left (east) side of the dam location. The deposition fan of Tuscher Wash into the Green River in the east side of the dam will most certainly continue to accumulate rock, debris and other erosional materials. Geologically the deposition from side channels (Tuscher) will be greater that the ability of a main channel (Green River) to remove that deposition. This concept is widely recognized by mainstream geologists around the world. What that means is that over time the boat passage on the east side of the diversion would be rendered useless and a waste of taxpayers funds. In addition the east side would almost assuredly be unusable at lower water levels. In either of the above cases, heavily loaded boats would lodge on the gravel/debris bar and create a multitude of hazardous conditions. Therefore the only acceptable location for the boat passage would be in the center or west of center location. There is no mention of the potential for serious injury or death created by the diversion - no-action proposal (Section 4.74 - p 4-31). These comments also refer to sections 3.34, 4.13 (Unresolved Issues) and Appendix D .

2.) Section 2.6.4.3 (page 2-36) There are developed BLM sites at Swaseys Rapid (Boat LAUNCH and take-out, parking, trash collection & pit toilets); at The Beach (campsites, parking & pit toilets) and in Green River. You mention the latter in other sections of the Draft EIS but not the former two sites. They should be referred to here and in other appropriate sections of the EIS.

3.) Photo 2.2 & photo 2.4 (page 2-41 & page 2-41) should include the c.f.s. shown on the photographs. Otherwise the viewer has no idea of the potential hazard or ability to "run" the diversion - and thus to fully comment on the Draft EIS without personal experience.

4.) Section 2.65 (Public Health and Safety) lists the agencies that may be involved in local safety issues. It does not, however, list the potential safety issues such as boating safety. Items like river/diversion related hydraulics, in-stream obstructions (like the current concrete and rebar), and the difficulty of both wet and dry passage should be included in this section.

5.) Section 4.3.7 (Climate Change) If the future plans for the Bluecastle Nuclear Power Plant in Green River (page 3-13), including water withdrawal for that plant and additional desert land entry or other additional crop irrigation projects there will be an effect upon climate change. If these specific components are included in the new design of the diversion then they must be addressed under "Climate Change."

6.) The planned funding for this project is primarily from federal and state governments. As the damage claimed is related to the high water of 2011 it would seem reasonable that the Appendix include a log of maintenance for the past several decades.

7.) Down the road, as the project unfolds, it would seem appropriate to include interpretive (educational) panels (signs) regarding the value of natural flow regimes, water withdrawals, the purpose of the canal, the water wheel and endangered fish.

I appreciate the opportunity to comment on the Draft Environmental Impact Statement (EIS) public comment period for the Green River Diversion Rehabilitation Project.

Sincerely Yours

[redacted]

Comment 6

From: greenriver@mcmillen-llc.com on behalf of [redacted]
To: greg.allington@mcmillen-llc.com
Subject: Tushar Dam site
Date: Tuesday, March 18, 2014 5:37:01 PM

Dear Mr. Allington,

We have floated the Green River thru Desolation, etc. a number of times and twice took our raft over and through the Tushar Dam and on down to Green River State Park. It was certainly a thrilling ride over the dam!

I understand the Dam is in bad shape and alternatives are bein discussed. We would favor replacing it in place if that is necessary **but** with a passage for river boats, rafts, kayaks, etc.

Sincerely,

[redacted]

PS: We hope to be driving thru Boise on the morning of March 26th.

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Version: 2014.0.4336 / Virus Database: 3722/7210 - Release Date: 03/18/14

Comment 7

From: greenriver@mcmillen-llc.com on behalf of [redacted]
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Rehabilitation Project
Date: Wednesday, March 19, 2014 7:41:37 AM

Hello,

I would like to see the boat ramp in the middle of the river. This Safety measure would greatly reduce the risk and liability for boaters trying to navigate the dam.

Thank you,

[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2014.0.4336 / Virus Database: 3722/7213 - Release Date: 03/18/14

Comment 8

From: greenriver@mcmillen-llc.com on behalf of [redacted]
To: greg.allington@mcmillen-llc.com
Subject: Diversion Dam Comments
Date: Wednesday, March 19, 2014 3:58:36 PM

I am happy to see the inclusion of the fish ladder and boat passage. For safety reasons, it is more important to have the boat passage in the middle of the dam, especially at low flows. Boating provides an economic benefit for the communities that we travel through, so your support of boating supports the communities involved. Thanks

--
[redacted]
There's no education in the second kick of a mule.

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2014.0.4336 / Virus Database: 3722/7216 - Release Date: 03/19/14

Comment 9

From: greenriver@mcmillen-llc.com on behalf of [redacted]
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Dam Comment
Date: Thursday, March 20, 2014 3:08:59 PM

The Green River in Utah is one of my favorite places to go rafting and enjoy nature. We travel over 6000 miles each year to experience the desert rivers of the Western US.

It would be best for the boat passage to be constructed in the middle of the river.

Thank you for considering whitewater river runners in this project.

Outfitter in NY, Private Boater everywhere else,

[redacted]

--

[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2014.0.4336 / Virus Database: 3722/7222 - Release Date: 03/20/14

Comment 10

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Saturday, March 22, 2014 8:50 AM
To: greg.allington@mcmillen-llc.com

Dear Greg,

Thank you for your work on the Green River diversion rehabilitation project and for the opportunity to comment on the project.

As a Salt-Lake based river runner, I greatly appreciate and support the inclusion of a boat passage, so I would support the "Replace in Place with Passages Alternative". It's a wonderful addition to existing recreational opportunities on the river, and may provide for additional economic opportunities in the future, such as commercial rafting or tubing day trips. For the sake of fisheries the restoration of an upstream fish passage seems a very important part of the project as well.

Given the alluvial fan at the mouth of Tushar Wash--and knowing the amount of debris these washes can put into the river, it might be worth reconsidering the location of the boat passage, lest any new construction get blown out (or clogged) by one or more flash floods.

Sincerely,

[redacted]

--

[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2014.0.4336 / Virus Database: 3722/7231 - Release Date: 03/22/14

Comment 11

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Sunday, March 23, 2014 4:45 PM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Dam Comment

Hello,

I am writing in support of the Passages Alternative with a boat chute in the center of the new structure. As a licenced Utah River Guide, I believe that a navigable river can support better recreation options, will help people appreciate their natural resources, and will be good for the economy.

Sincerely,
[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2014.0.4336 / Virus Database: 3722/7235 - Release Date: 03/23/14

Comment 12

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]

Sent: Sunday, March 23, 2014 10:58 PM
To: greg.allington@mcmillen-llc.com
Subject: Diversion dam on Green River

Dear Sir

I remain very concerned about the construction of this diversion dam. My family and friends and I very much enjoy and appreciate the recreational opportunities that the Green River has to offer. We also are very concerned about the habitat for wildlife.

This year I have two trips planned on the Green River. One thru Desolation and Gray's Canyon and the other thru Labyrinth Canyon. On both of these trips we will stop and spend money in Green River Utah and support businesses that provide lodging and food and vehicle shuttles.

I can easily imagine planning an extended trip that would go from above Desolation Canyon all the way thru the community of Green River and down thru Labyrinth Canyon.

If I was a member of the City Council of Green River Utah, a member of the Ute indian tribe, or a representative of the BLM or National forest, I would be very anxious to be certain that this diversion dam be built in such a way as to meet the needs of the agricultural interests, but also in such a way that it doesn't impede the recreational users of the river or destroy valuable riparian habitat - to do so would be very short sighted and in the end much more expensive.

It doesn't seem to me that this project has to just satisfy one interest but should be made to meet all the needs - or at least to come as close to doing so as possible.

Sincerely,

[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2014.0.4336 / Virus Database: 3722/7235 - Release Date: 03/23/14

Comment 13

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]

Sent: Monday, March 24, 2014 9:41 AM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Dam Comment

Mr. Allington--

Thank you for your recent email concerning the Draft Environmental Impact Statement. I am very pleased to find the "Replace in Place with Passages Alternative" among the options considered for the Tusher Dam rehabilitation project, and want to thank you for your efforts on this project.

I wanted to voice my strong support for the "Replace in Place with Passages Alternative." I particularly wish to advocate for the adoption of the center-channel boat chute. A dedicated river-center boat channel, rather than just a shallow-angle downstream dam slope, will better meet navigability requirements in low-water conditions and offer the safest connection to the main river channel on river-right. At lower water levels, a large gravel bar is exposed on the river-left region below Tusher Dam, and it is possible that this would obstruct boat passage if a river-left boat chute is selected. I also believe it is safer to separate the boat chute from the proposed fish ladder and existing river-left weir, as water flow into these structures could present a hazard for boats navigating into the designated chute.

Several photographs of the existing dam at low water seem to show protruding metal features along the dam lip. I wanted to suggest that as an element of ensuring safe boat passage over the dam, that any such features that could cut or entangle boats or humans be eliminated in a final design.

Thank you for your work on this project,

[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2014.0.4354 / Virus Database: 3722/7241 - Release Date: 03/24/14

Comment 14

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Monday, March 24, 2014 11:23 AM
To: greg.allington@mcmillen-llc.com
Subject: Green River diversion structure

Hello Mr. Allington,

As a whitewater kayaker and rafter, I would like to lend my support for the Replace in Place with Passages Alternative for the Green River diversion structure. Specifically, I would recommend that the boat/fish ramp be placed in the center of the structure to avoid the gravel bar on river left at low water levels.

Thank you,
[redacted]
Boulder, CO

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2014.0.4354 / Virus Database: 3722/7241 - Release Date: 03/24/14

Comment 15

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]

Sent: Monday, March 24, 2014 12:43 PM
To: greg.allington@mcmillen-llc.com
Subject: Green River passage

Hello, I'm a kayaker and I would like to advocate for safe passage down the Green River. I support the "replace in place with passages alternative." I travel to Utah at least once every year to experience the amazing beauty found throughout its deserts. I would love to add a float on the Green River to my list of amazing experiences in Utah. Add this to the fact that I think all waterways should be made safely navigable if at all possible, and you have what I think is the general consensus from not only the paddling community but the community at large. I don't think there's a person out there that would say any stretch of water should be made more dangerous or less navigable. Waterways are like woods, public lands for public use. We should all work together in order to make the Green River accessible and passable.

Thank You
[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2014.0.4354 / Virus Database: 3722/7241 - Release Date: 03/24/14

Comment 16

[redacted]

3/18/14

To: Greg Allington, Project manager/Biologist; McMillen, LLC, 1401 Shoreline Drive, Suite 100 Boise, ID 83702

Re: Green River Tusher Diversion Dam Rehabilitation

I am writing in support of the "Replace In Place Alternative and the Replace In Place With Passages Alternative". I believe that this section of river must remain open to navigation...river running is an important part of the economy of Green River and has the potential of being a more draw in the years to come. Down river boating must be able to continue. I support the passage being in the center of the diversion. I have serious concerns about the proposed East shore passage, as it will not be passable in low water and Tusher Creek will continue to dump debris into the river at this point, eventually blocking this passage...and wasting our tax dollars.

I starting river rafting in 1988...I still run the rivers and hope to continue to do so for many years. The Desolation Canyon section all the way to Green River State Park is a stunning river section and worth protecting. It draws people from around the world...If the tax payers are to get their monies worth, the diversion should address, WELL, all issues.

Sincerely,

Comment 17

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Tuesday, March 25, 2014 9:37 AM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Rehabilitation Project

Please accept these comments for the Green River Diversion Rehabilitation Project.

A rebuilt and configured Tuscher dam that allows for safe and easy passage for both fish and Green River boaters is a win-win for everyone. I've rafted Desolation canyon 7-8 times, and have always wished that I could continue downstream.

Thank you for your thoughtful consideration.

[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2014.0.4354 / Virus Database: 3722/7245 - Release Date: 03/25/14

Comment 18

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]

Sent: Thursday, March 27, 2014 11:38 AM
To: greg.allington@mcmillen-llc.com
Subject: Green river diversion

Hi there,

I'm writing to let you know that I am a paddler and I stand with American Whitewater to support efforts to allow boats to pass through the dam on the green river.

I recently moved out West and paddling the Green is definitely on my to-do list. Please help make this possible by ensuring **NRCS finds the "Passages Alternative" to be the Preferred Action under their NEPA review. American whitewater also believes that a passage through the center will be the safest option and I support this recommendation.**

Thank you,
[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2014.0.4354 / Virus Database: 3722/7256 - Release Date: 03/27/14

Comment 19

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Thursday, March 27, 2014 5:16 PM
To: greg.allington@mcmillen-llc.com
Subject: Public comments on Green River diversion project

I am writing **strongly** advocate for the "Replace in Place with Passages Alternative" for the Green River This alternative would provide a safe boat channel for at a range of flows. The boat chute should be built in the center of the channel, rather than at river-left where low-water passage is obstructed by a gravel bar. Equally important is a fish ladder.

Access to so much of the western water ways has been degraded. It is critically important to maintain environmental quality and access for a variety of uses.

Thank you.

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2014.0.4354 / Virus Database: 3722/7256 - Release Date: 03/27/14

Comment 20

Greg Allington

From: [redacted]
Sent: Friday, March 28, 2014 10:44 AM
To: Greg Allington
Cc: [redacted]
Subject: NRCS Green River Draft EIS Public Notice COMMENT

Dear Greg,
As a commercial river guide and recreational boater I support the inclusion of a flow-through boat passage in the plans for a new Tusher dam.

Be it known that any plan *without* a flow-through boat passage:
Prevents navigability of the river, of which the Green River is a navigable river.
Presents a safety hazard/threat to life and limb to boaters who will attempt passage.
Prevents boaters from continuing downstream without undue hardship (portaging around is impractical).
Conflicts with the Utah Governor's state recreation vision to take a long term view.

Be it known that a flow-through boat passage:
Enhances recreation opportunities for private boaters by allowing use of Green River State Park, Mineral Bottom as alternative take-out locations.
Enhances opportunities for outfitting and guide services by allowing use of Green River State Park, Mineral Bottom as alternative take-out locations.
Provides a unique recreation opportunity unavailable anywhere else in the USA and increasing, the world- To travel unfettered for hundreds of miles by boat and connect multiple desert river canyons to Labyrinth and Cataract Canyons.
May provide additional revenue sources as an economic generator for local outfitting and guiding services.
Supports a non-consumptive land use as compared to other resource uses.
In the center of the dam will give boaters a high level of safety by keeping them away from irrigation equipment.
Must still allow passage even as water levels vary throughout the season.

Additionally:
Permanently mounted public interpretive displays should be included at the dam and at Swasey's. These materials should discuss the dam history, boating history of the region, water wheel, etc.
Placards at the dam and Swasey's should be mounted that provide information about the risks and directions needed to safely use the boat passage.

I request this letter be kept on file for the discovery process by future litigants.

[redacted]

[redacted]

Comment 21

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Friday, March 28, 2014 3:37 PM
To: greg.allington@mcmillen-llc.com
Subject: Tusher Diversion Dam Comment

To whom it concerns,

I have written about the Tusher Dam Diversion project before. I have been over the old dam. Now that it is being rebuilt, it needs to address the needs of boaters. Safety is of primary importance for man made objects like this. If there is not a suitable boat passage, it is only a matter of time before someone is injured or killed. Diversion dams are dangerous things and need to have boater access through them. It is the right thing to do. This diversion is on a major recreation area. I also like the idea of having the boat passage in the middle of the dam. That just seems the safest place to put it.

Thanks for letting me have my say on this project.

[redacted]

[redacted]

[redacted]
Design, custom products and internet issues- [redacted]
Orders for standard products [redacted]
Production- [redacted]

No virus found in this message.
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Version: 2014.0.4354 / Virus Database: 3722/7261 - Release Date: 03/28/14

Comment 22

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]

Sent: Friday, March 28, 2014 11:05 PM
To: greg.allington@mcmillen-llc.com
Subject: Comment on Green River Diversion Rehabilitation Project - Draft EIS

I have read the subject draft EIS and have the following comment:

The project must be constructed with boat passage included. That is the only responsible way to go and will promote goodwill and benefit not only the boating community but the residents and businesses of Green River as well. A diversion dam without boat passage would be a hazard much like it is today and will discourage boaters from continuing their float to Lake Powell.

If asked to choose which type of boat passage to construct, I'd opt for the center route since that would be the least obstructed.

As I understand it, Utah State Parks has agreed to fund the cost share portion of the boat passage alternative. Kudos to that agency for stepping up to the plate and making recreation as high a priority as agriculture in the state of Utah.

Thanks for the opportunity to comment on the proposed project.

[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2014.0.4354 / Virus Database: 3722/7261 - Release Date: 03/28/14

Comment 23

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Saturday, March 29, 2014 3:31 PM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Dam

Dear Mr. Allington,

As an avid whitewater enthusiast, I am writing to encourage you to consider a passage alternative on the proposed reconstruction of the Green River diversion dam. I support the American Whitewater 's proposal to create the most direct, quickest and safest run through the diversion by locating the chute in the center of the diversion. In the spirit of John Wesley Powell, I hope that passage is fully considered.

Sincerely

[redacted]

No virus found in this message.
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Version: 2014.0.4354 / Virus Database: 3722/7261 - Release Date: 03/28/14

Comment 24

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]

Sent: Sunday, March 30, 2014 9:54 AM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Rehabilitation Project DEIS

I am writing with comments on the Green River Diversion Rehabilitation Project DEIS.
My comments are in support of the "Replace In Place With Passages Alternative" and recommend that this be the preferred alternative in the Final EIS. The "Replace In Place With Passages Alternative" would be advantageous compared to the other alternatives due to improvement in conditions for threatened and endangered species, recreation, and socioeconomic factors.

First, inclusion of fish passages with help the threatened and endangered native fishes have expanded access to habitat above an below the diversion and help them to continue to reestablish in this stretch of the Green River.

Second, the inclusion of boating passage will improve the quality of recreation in the region as well as improving safety for boaters. The upstream and downstream sections of the Green River are very popular boating destinations, and inclusion of a boating passage would allow for more recreation options and dispersion of boating use.

Lastly, due to the opportunity for boating and recreation travel through this section of the Green River there will likely be an increase in tourism dollars in the town of Green River and the vicinity leading to improved socioeconomic conditions.

I reccomend that the "Replace In Place With Passages Alternative" be the preferred alternative in the Final EIS and that emphasis be placed on safe boating passages as well as fish passages.

Thank you,
[redacted]

--
[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2014.0.4354 / Virus Database: 3722/7261 - Release Date: 03/28/14

Comment 25

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Sunday, March 30, 2014 11:28 AM
To: greg.allington@mcmillen-llc.com
Subject: the re-build of the (Tusher) Green River Diversion Dam Public Comments

I am commenting on behalf of the Pikes Peak River Runners whitewater club and the Private Boaters Coalition based in Colorado. It has come to our attention that in the EIS for this project a center boat/fish passage has not made the preferred recommendation. We propose that for both prime fish passage and safe boater passage (without a portage) a center boat/fish passage be included in the final recommendation decision. Portaging a boat and all the gear is never a preference in any circumstance especially a man-made dam. Imagine hauling a 200lb empty raft, 100lb frame, dry box full of supplies, cooler full of food, etc... the equivalent of several thousand pounds for just one raft around a land portage. This could take a very long time and would be impossible for a small one-boat trip with only one person. Most boaters now can trailer to and from the river fully loaded and offload/onload with ease using a trailer. A portage is a completely different matter. If the passage is in the center, boaters will avoid trespass and erosion issues created by a trail and simply float by any shore-side irrigators equipment without disturbance. The recreational experience of being able to travel via river continuously is very popular and an ideal way to travel any river. The center passage provides a more flexible option when river flows are low and a left/or right passage does not always provide a reasonable portage option. Fish will also benefit by being able to easily swim upstream to spawn and use the entire river corridor, especially at low flows where a bankside (left or right) passage might not be usable.

Sincerely,

[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2014.0.4354 / Virus Database: 3722/7261 - Release Date: 03/28/14

Comment 26

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Monday, March 31, 2014 8:25 AM
To: greg.allington@mcmillen-llc.com
Subject: Green River/Tusher Diversion Dam Rehabilitation

After reviewing the plan I would like to go on record requesting that the Fish and Boat Passage be kept in the plan. I would also request that the Passage be placed close to the center of the river as shown in figure 3-3, this would keep boats away from irrigation equipment, shore debris and be a safer route.
Respectfully,
[redacted]
Vernal, UT

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2014.0.4355 / Virus Database: 3722/7276 - Release Date: 03/31/14

Comment 27

March 28, 2014

Dear Mr. Allington,

Thanks for the opportunity to comment on the Green River Diversion Rehabilitation Project. I support the alternative of replacing the dam while allowing for a designed boat passage in the center of the river. For various reasons I believe this would be best for allowing safe passage by boats and to keep boaters away from the irrigator's equipment on river left.

Thanks for considering this change from the original proposal. Maintaining the Green River as navigable beyond Swasey's is very important to the boating community.

I also would like to commend the efforts in mitigating adverse effects to the historic properties in the construction zone. The further research and proposed documentation and public outreach for presenting this history to the public is greatly appreciated. River runners greatly appreciate knowledge of the history of anything related to the river.

[redacted]

Comment 28

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]

Sent: Tuesday, April 01, 2014 2:37 PM
To: greg.allington@mcmillen-llc.com
Subject: Include Center of dam boat passage

Hello,

I am emailing to ask that you please include a center of dam boat passage on the Tusher diversion damn. I have been a frequent river rafter of Desolation Canyon and Gray Canyon, and a center of dam boat passage would be essential for allowing rafts to safely float past Swasey's boat ramp towards labrynth canyon in lower water. There are a great many voices from the boating community that feel the same way, and I urge you take the time to consider this when making decisions about this diversion dam.

Best Regards,

[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2014.0.4355 / Virus Database: 3722/7279 - Release Date: 04/01/14

Comment 29

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Tuesday, April 01, 2014 4:10 PM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Dam Comment

Hello,

This is [redacted] I reside in Provo Utah and paddle the Green River 2 or 3 times a year. I strongly support the option to Replace in Place with Passages Alternative for the Tusher diversion on the Green River.

Thank you for the opportunity comment on this project.

[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2014.0.4355 / Virus Database: 3722/7279 - Release Date: 04/01/14

Comment 30

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Thursday, April 03, 2014 2:57 PM
To: greg.allington@mcmillen-llc.com
Subject: Center Boat Passage in rebuild of Tusher, Green River diversion dam.

To Whom It May Concern,

I am writing to urge you to pursue a center boat channel on the Tusher rebuild project. A left channel would bring boaters dangerously close to irrigation equipment and would be a problem at low water. All of the stakeholders have endorsed this center channel as the best option and the best use of funding. We rent rafts and kayaks to the public for use on the Green River. This new center boat channel greatly increases the safety below the Swasey's take-out and provides safe passage for boaters wanting to continue on down below Swasey's.

Sincerely Yours,

[redacted]

Living well requires an adventurous spirit!

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2014.0.4355 / Virus Database: 3722/7293 - Release Date: 04/03/14

Comment 31

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Monday, April 07, 2014 1:02 PM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Dam Comment

Hello,

As rafter and a long time user of the Green River, I have portaged the diversion dam north of the town of Green River on numerous occasions. The dam is currently the single biggest obstacle to boaters between the Flaming Gorge Dam and Lake Powell, a 400+ mile stretch of spectacular river. Please consider including a boat chute in the construction of the new diversion dam to facilitate future access.

Thank you for your time,
[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2014.0.4355 / Virus Database: 3722/7312 - Release Date: 04/07/14

Comment 32

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Monday, April 07, 2014 2:26 PM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Dam Comment

Hi,
I am writing to express my support for the "Replace in Place with Passages Alternative" for the update to the Tusher Dam. I feel that utilizing this option and placing the boat passage in the middle of the dam would be ideal.
Thanks,
[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2014.0.4355 / Virus Database: 3722/7312 - Release Date: 04/07/14

Comment 33

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Monday, April 07, 2014 6:04 PM
To: greg.allington@mcmillen-llc.com
Subject: Tusher Dam

I have been boating the Green for 30 years including over a dozen trips on Deso/Gray and Laby/Stillwater. Tusher is the only man-made down river impedance from Browns Valley, WY to the confluence, approximately 350 river miles. As a long time Utah boater, I whole-heartedly support a SAFE down river passage through Tusher Dam and a clean up of all the garbage that has been used for rip-rap over the decades. It's about damn time!!!!!!!! (no pun intended). We can all share the river as before, now it will be easier to take out at Green River instead of going up to Swazeys (something I think the locals are not crazy about), or continue on another 120 miles to Cataract Canyon for the full JW Powell experience.

This is a no-brainer!!

[redacted]

If I can help in any way, drop me an email.

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2014.0.4355 / Virus Database: 3722/7314 - Release Date: 04/07/14

Comment 34

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Monday, April 07, 2014 7:42 PM
To: greg.allington@mcmillen-llc.com
Subject: boat passage on Green River

Hello,

I am writing in support of the "Replace in Place with Passages Alternative", at the Green River/Tusher Diversion.

As a boater, it would be wonderful to be able to do an extensive trip on the Green River that included Grey and Desolation Canyons and all the way down to the confluence with the Colorado River and perhaps beyond. We do not have that many long stretches of river in this country and it would be wonderful to ensure that the Green River provides this opportunity.

Thank you for your consideration!

regards,
[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2014.0.4355 / Virus Database: 3722/7314 - Release Date: 04/07/14

Comment 35

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]

Sent: Tuesday, April 08, 2014 5:45 AM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Dam Comment

As a boater, I support the Replace in Place with Passages Alternative, with the passage in the center of the structure.

Under the "Passages Alternative", a boat chute would be notched into the new structure, either in the center of the diversion, or next to the upstream fish ladder on river left, and new upstream warning signs will be installed directing paddlers to the boat chute. We are requesting the boat chute be located in the center of the structure, as a river-left notch would spit boaters onto the sediment bar downstream of the dam, created by Tusher Wash. We have additional concerns with locating the boat chute on river left and adjacent to the concrete fish ladder and the complex of weirs and headgates that serve to meet the water rights on the eastern side of the Green River.

Locating the boat chute in the center of the channel, provides the most direct, quickest and safest run through the diversion. The Project will also reduce the downstream slope of the new concrete structure so as to allow for safe boat passage at all passable flows, and to elimminate the "keeper hydraulic" that now exists below the dam. It has been determined that this alternative does not create additional cost or construction challenges to the project, and improves long-term socioeconomic and recreational benefits to the community.

Thank you.

--
[redacted]

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Comment 36

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Tuesday, April 08, 2014 7:45 AM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion structure comment

Regarding the Green River Diversion Structure, I support the "Replace in Place with Passages Alternative" as the Preferred Action. I am pleased that the upgrade is being designed to provide up- and down-stream fish passage, enhanced sediment sluicing, as well as a passage for recreational boats.
Recreational boating is becoming more and more popular, and providing a safe route for the public is common sense, especially when it can be done at no added cost. I support a centrally placed notch, as recommended by American Whitewater. At present there is a keeper hydraulic below the dam, and reducing the slope of the new structure should eliminate this safety hazard.
Thank you for your efforts.

[redacted]

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Version: 2014.0.4355 / Virus Database: 3722/7314 - Release Date: 04/07/14

Comment 37

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Tuesday, April 08, 2014 7:18 PM
To: greg.allington@mcmillen-llc.com
Subject: Green diversion dam

I would really like to see a boat passage on the new diversion dam. It would be nice to link those sections without a portage. Having it in the middle of the channel would be appreciated also.
Thanks
[redacted]
Boise, ID

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Comment 38

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Wednesday, April 09, 2014 12:23 PM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Dam Comment

To whom it may concern,

Please be sure to include a safe way for boats to pass through the Tusher diversion structure on the Green River, when the structure is repaired.

Thank-you. [redacted] Boating Deso-Gray since 1995.

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Comment 39

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Thursday, April 10, 2014 12:22 PM
To: greg.allington@mcmillen-llc.com
Subject: Green River Dam

To whom it may concern,

Please include the alternate boat passage into the construction of the new dam. The current dam is unsafe for boat passage.

Thank you for your consideration,
[redacted]
(Resident of Green River, UT from 1947 to 1966)

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Comment 40

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Saturday, April 12, 2014 11:25 AM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Dam Comment

Thank You for making the dam less dangerous and accessible to downstream boaters. I use the Green River daily stretch several times a year, including sometimes running the Price.
As a kayaker and rafter, I appreciate you endorsing downstream boat passage, putting the boat chute in the center would facilitate our safe use of the dam, and allow other opportunities to boat below Swasey's.

Sincerely,
[redacted]

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Comment 41

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Sunday, April 13, 2014 8:04 AM
To: greg.allington@mcmillen-llc.com
Subject: Tuscher dam

To whom it may concern,
You must provide for a float thru passage in the design of the Tuscher dam. The boating community, commercial and public, have a right to un-restricted passage on rivers in this country. This should be a win-win for all. -And with the Money, why not?
[redacted]
runnin' there rivers since '83...

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Comment 42

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Monday, April 14, 2014 10:18 AM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Rehabilitation Project

I hope you choose the alternative for this project to replace in place with passages. I have boated past the present dam several times and would like to be able to do so in the future. I would hope that this alternative would also allow for the passage of fish in the river. I would also hope this project is not being proposed now as a way to provide a reliable source of water for the proposed nuclear power plant.
Thank You [redacted]

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Comment 43

NRCS
Green River Diversion Rehabilitation

Draft Environmental Impact Statement Public Meeting Comment Card

April 10, 2014

Name: [redacted]

Address: [redacted], Green River, UT

Email: [redacted]

Phone:

Comments:

Please include in the design ~~an~~ the ability to add a hydroelectric power plant easily in the future,

Have the fish and wildlife pay for the fish race ways/passage ways and for the PIT tag detectors,

Have the river runners pay for the boat passages.

~~Fe~~ Funding from wildlife and boaters should count as local funding.

Prefer expanded/with passage alternative.

You can also provide comments by emailing them to greenriver@mcmillen-llc.com, faxing them to 208-342-4216, or by calling 208-342-4214.
http://www.nrcs.usda.gov/wps/portal/nrcs/detail/ut/programs/planning/ewpp

USDA

MCMILLEN, LLC
DESIGN with Vision. BUILD with Integrity.

Comment 44

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Monday, April 14, 2014 3:32 PM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Dam Comment

I support the "Replace in Place with Passages Alternative," specifically with the passage in the middle of the channel.

Thanks,

[redacted]

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Version: 2014.0.4569 / Virus Database: 3882/7343 - Release Date: 04/14/14

Comment 45

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Monday, April 14, 2014 5:47 PM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Dam Comment

I'm writing in response to the diversion dam you are working on by Green River Utah. Please include a boat chute for us recreational boaters to use to safely navigate the structure. I feel the best option would to have it located in the center of the river to avoid the sand bars on the sides.
Thanks for your consideration and work on this project.
[redacted]

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Comment 46

April 9, 2014

Green River Diversion Rehabilitation Project
Greg Allington

Thank you for the opportunity to comment on this project.

Recommendation: Replace In Place With Passages

My family has many years experience with rafting and kayaking western rivers. Our children, grandchildren and great-grandchildren have all enjoyed the Green River Desolation/Gray Canyons. We have seen the growth in private and commercial participation over the last 25 years.

I believe it is prudent to provide watercraft passage around Tusher Dam with the planned Rehabilitation Project. This will provide river running opportunities for future generations which are not conceived today.

Sincerely,

[redacted]

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APR 14 2014
BY:.....

Comment 47

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Tuesday, April 15, 2014 11:47 AM
To: greg.allington@mcmillen-llc.com
Subject: Boat Gate

Thank you for your time in Grn Rvr last Thursday. My husband is a Grand Canyon river guide and was not able to attend the meeting...He launched on his first trip of the season that day. He wanted me to pass this along to you.

A boat gate would be best in the center of the damn so it could be used in lower water. It could accommodate search and rescue or be beneficial in emergencies. Trips may choose to end their trips at the State Park, and that could create more revenue for the State of Utah!

Thank you, [redacted]

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Comment 48

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted] <louis.klusmeyer@gmail.com>
Sent: Tuesday, April 15, 2014 12:41 PM
To: greg.allington@mcmillen-llc.com
Subject: Green River diversion dam

I am writing to comment on the proposed replacement of the existing Green River diversion dam.

I support the replacement of the dam to maintain the benefits of irrigation and flood control to the surrounding residents. I also support including fish passage allowances and including downstream boat passage.

However, I would propose locating the downstream boat passage toward the center of the river channel. I believe the center location is better for the following reasons. Rafters, canoeists and kayakers will find it easier to continue downstream in the deeper water toward the center and I believe it is safer. The proposed location on the east bank will aim boaters to the shallow area of the river where the wash enters the river resulting in potentially grounding of the boats, they have a longer path, paralleling the dam and the hydraulic on the backside of the dam, to proceed down river.

There is the potential that the shallow area behind the dam resulting from material carried by the wash will extend toward the dam because of additional sediment/rocks from the wash, forcing boaters closer to the dangerous hydraulic behind the dam in the future. This would also result in shallower water in the fish passage area, reducing the likelihood of fish finding the fish passage and possibly higher fish mortality.

Thanks
[redacted]

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Comment 49

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Tuesday, April 15, 2014 2:36 PM
To: greg.allington@mcmillen-llc.com

I am a river runner who has been running Desolation and Gray Canyons almost every year. We have a permit for April 20th 2014 and would like to continue downstream to Mineral Bottom. Unfortunately the current dam destroys any navigability without extreme danger.

We would spend money to eat, stay and resupply in green river and support shuttle services to ferry vehicles. Now we have to de-rig all of our equipment and re-rig in Green river. That process is enough of a pain that we will just go back to Colorado.

Why is the dam rebuild even considered without a center boat passage. I have talked to many other river runners in Colorado. They all support the center boat channel which would be safer, would assist the economy of Green River, which is in decline, and would support navigability which is supposed to be a requirement . Several years ago I went out to the dam and determined it was too dangerous without a boat passage. As I recall the edge boat channel is inadequate in low water due to the run out. A center channel is a better option.

Please only rebuild the dam if an adequate boat channel is included. Most of the river sections run at full capacity. This would allow for more and better recreation floats and support more use of the river.

Thank you for your consideration of the growing boating needs of the public The dam has impeded our travel for far too long.

[redacted]

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Comment 50

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Wednesday, April 16, 2014 2:49 PM
To: greg.allington@mcmillen-llc.com
Subject: Comments on the Green River diversion, Utah

I paddle and fish when I am not rock climbing around Moab. I support the "Replace in Place with Passages Alternative."

I would like to see a boat passage notched into the new structure, at the center of the diversion. I like the fish passage on river left. This does not create additional cost or construction challenges to the project, and improves long-term socioeconomic and recreational benefits to the community.

Thanks for recording my comments.

[redacted]

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Comment 51

Colorado River & Trail Expeditions Post Office Box 57575 Salt Lake City, Utah 84157-0575
Email: crate@crateinc.com Reservations: 800-253-7328 Business: 801-261-1789 Telefax: 801-268-1193

April 15, 2014

Green River Diversion Rehabilitation Project
c/o McMillen, LLC – Greg Allington
1401 Shoreline Dr.
Boise, ID 83702

To Whom It May Concern:

RE: Submission of Comments for Proposed Project

I appreciate the opportunity to comment on the Green River Diversion Rehabilitation Project.

I favor the need for a boat passage in the center of the dam. With the number of people rafting and boating on the Green River through Gray and Desolation Canyons, passage over the dam should be a top priority for several reasons, especially:

1. Safety
2. For the support of nation wide free flowing rivers with complete navigability
3. Integrated for fish passage

I have been in the river running business since 1965 and I also own farmland in Green River, Utah, with irrigation shares. I believe the boat passage through the center of the dam will benefit the river recreation people, including professional outfitters, without affecting the ability to withdraw irrigation water from the Green River.

Please integrate my comments into the official record. Thank you very much.

Cordially,

David J. Mackay, President
Colorado River & Trail Expeditions

Comment 52

[redacted]

Greg Allington, Project Manager/Biologist
McMillen, LLC
1401 Shoreline Drive, Suite 100
Boise, ID 83702

Dear Mr. Allington:

I'm thankful for all the detailed work and coordination that you have done on the Draft Environmental Impact Statement (EIS) public comment period for the Green River Diversion Rehabilitation Project. I believe the "Replace in place with passages alternative" should be the Preferred Alternative.

I am offering the following comments on the Draft EIS:

1.) One of my primary concerns is related to the boat passage and its location on the diversion. One of the key issues is the section of the Green River from foot of Swaseys Rapid to the Colorado River Confluence that was adjudicated as navigable by the federal courts in the 1960's (*United States v. Utah; No. C-201-62; Utah District Court, January 9, 1965*). That means the river must be managed for the public trust, including its navigability, and I believe it gives superiority to water rights for navigation over other claims. Thus preserving navigability should be part of the Purpose and Need description in the EIS and all alternatives must serve that purpose and need. I strongly approve the inclusion of the boat passage, however I strongly oppose the left (east) side of the dam location. The deposition fan of Tuscher Wash into the Green River in the east side of the dam will most certainly continue to accumulate rock, debris and other erosional materials. Geologically the deposition from side channels (Tuscher) will be greater that the ability of a main channel (Green River) to remove that deposition. This concept is widely recognized by mainstream geologists around the world. What that means is that over time the boat passage on the east side of the diversion would be rendered useless and a waste of taxpayers funds. In addition the east side would almost assuredly be unusable at lower water levels. In either of the above cases, heavily loaded boats would lodge on the gravel/debris bar and create a multitude of hazardous conditions. Therefore the only acceptable location for the boat passage would be in the center or west of center location. There is no mention of the potential for serious injury or death created by the diversion - no-action proposal (Section 4.74 - p 4-31). These comments also refer to sections 3.34, 4.13 (Unresolved Issues) and Appendix D.

2.) Section 2.6.4.3 (page 2-36) There are developed BLM sites at Swaseys Rapid (Boat LAUNCH and take-out, parking, trash collection & pit toilets); at The Beach (campsites, parking & pit toilets) and in Green River. You mention the latter in other sections of the Draft EIS but not the former two sites. They should be referred to here and in other appropriate sections of the EIS.

3.) Photo 2.2 & photo 2.4 (page 2-41 & page 2-41) should include the c.f.s. shown on the photographs. Otherwise the viewer has no idea of the potential hazard or ability to "run" the diversion - and thus to fully comment on the Draft EIS without personal experience. This would improve the public as well as planners develop a better understanding of the dynamic difference the feature will exhibit related to varying flows.

4.) Section 2.65 (Public Health and Safety) lists the agencies that may be involved in local safety issues. It does not, however, list the potential safety issues such as boating safety. Items like river/diversion related hydraulics, in-stream obstructions (like the current concrete and rebar), and the difficulty of both wet and dry passage should be included in this section.

5.) Section 4.3.7 (Climate Change) If the future plans for the Bluecastle Nuclear Power Plant in Green River (page 3-13), including water withdrawal for that plant and additional desert land entry or other additional crop irrigation projects there will be an effect upon climate change. If these specific components are included in the new design of the diversion then they should and must be addressed under "Climate Change."

6.) The planned funding for this project is primarily from federal and state governments. As the damage claimed is related to the high water of 2011 it would seem reasonable that the Appendix include a log of maintenance for the past several decades. I would be very interested in seeing this information.

7.) Down the road, as the project unfolds, it would seem appropriate to include interpretive (educational) panels (signs) regarding the value of natural flow regimes, water withdrawals, the purpose of the canal, the water wheel and endangered fish.

8.) From the structure at Flaming Gorge down to the reservoir behind Glen Canyon Dam this section of flowing river is the longest stretch of navigable water left on the Colorado River Basin. The ability to float this entire section must be preserved for future generations. In doing so the public can enjoy a rich experience along the river corridor and see first hand how wildlife, irrigation, energy and recreation are the benefits of healthy river systems.

I'm thankful for the opportunity to comment on the Draft Environmental Impact Statement (EIS) public comment period for the Green River Diversion Rehabilitation Project and look forward to hearing more.

With Many Thanks,

[redacted] 4/15/14

Comment 53

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Friday, April 18, 2014 3:16 PM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Dam Comment

To Whom It May Concern:

As a rafter and conservationist, I urge you to include a raft-passable chute in any plans for replacement of the Green River Diversion.

I have rafted the Green River from Flaming Gorge to Lake Powell several times and hope to be able to do that amazing trip again in the future.

Thank-you,

[redacted]

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Comment 54

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
Denver Federal Center, Building 67, Room 118
Post Office Box 25007 (D-108)
Denver, Colorado 80225-0007

TAKE PRIDE IN AMERICA

April 18, 2014

9043.1
ER 14/151

Mr. Greg Allington, NEPA Manager
McMillen, LLC
1401 Shoreline Drive
Boise, ID 83702

Dear Mr. Allington:

As requested, the Department of the Interior (Department) has reviewed the Natural Resources Conservation Service (NRCS) Draft Environmental Impact Statement (DEIS), Green River Diversion Rehabilitation Project, Emery and Grand County, UT, and provides the following comments for your consideration.

General Comments

Water Allocation

As acknowledged in the DEIS, the clear partitioning of flows at the diversion is a key aspect of project success. We agree with the flow allocations listed in section 3-3 (page 3-4). The Upper Colorado River Endangered Fish Recovery Program (Recovery Program) estimates that 50 cfs return flow in the Green River Canal (or the raceway) is an appropriate amount for planning purposes for their proposed fish return at this time. However, the Recovery Program cautions that this project is not yet designed, and the amount of water required for operations may change. However, in Table 4-2, the amount of required water is listed as 30 cfs. Please change this to 50 cfs, and adjust the remainder of the table accordingly.

Table 4-2 appears to be a priority list, although it is not identified as such. The U.S. Fish and Wildlife Service (USFWS) strongly contends that upstream and downstream fish passage should be a higher priority than boat passage. The ability to maintain consistent fish passage at this structure will be a key component for our impact analysis during NRCS' upcoming Endangered Species Act (ESA) section 7 consultation on this project.

The USFWS strongly supports the flow allocation agreement stated in section 4.13.2. We believe this would provide certainty for all stakeholders regarding long-term operation and maintenance of facilities. We also believe that all stakeholders would benefit by participating in

the ongoing discussions to legally protect flows downstream of Flaming Gorge Dam. Legally protected flows below Flaming Gorge Dam would provide high certainty to all stakeholders.

Specific Comments

Section S.6.2: We request that the ESA section 7 consultation and subsequent incidental take statement be included in the permits and approvals that are described in this summary section. The NRCS commitment to complete section 7 consultation is apparent throughout the document, but it should also appear here in the summary.

Table 2.7: Table 2.7 is incomplete. The southwestern willow flycatcher, California condor, and Utah prairie dog appear on the Environmental Conservation Online System (http://ecos.fws.gov/ecos/home.action) Species by County Report for Emery and Grand Counties and should be included on this list.

We request that the NRCS change the determination of "likely to occur in the study area" for humpback chub to "yes." The Recovery Program documented entrainment of humpback chub into the Green River Canal in 2013 (see below), indicating that this species occurs in the project area. In addition, because it is a known migration corridor between two existing populations (as stated in the DEIS section 2.5.2.1), it is not unexpected that the species would occur in the vicinity.

Section 2.5.2.1: We request the NRCS updates its species descriptions with the following information:

- *Bonytail* - In 2011, Recovery Program crews caught bonytail 9 miles upstream of the diversion (Tildon Jones, pers. comm.). In 2013, bonytail were shown to be entrained in the Green River Canal (Kevin McAbee, pers comm).

- *Humpback chub* - Recovery Program crews documented humpback chub individuals between Swasey's and Nefertiti, and have captured individuals as close as 3 miles upstream of the diversion (Tildon Jones, per comm). In 2013, one humpback chub was documented as entrained in the Green River Canal (Kevin McAbee, pers comm).

- *Razorback sucker* - The first sentence in the species description is inaccurate. The razorback sucker is found throughout the main stem Green River from the confluence with the Yampa River to the confluence with the Colorado River. Recovery Program crews capture Razorback sucker up to the diversion structure itself (Tildon Jones, pers comm). In 2013, large numbers of razorback sucker were documented as entrained into the Green River Canal (Kevin McAbee, pers. comm.).

Section 2.5.2.2: Although nesting habitat for the southwestern willow flycatcher is not present, the potential exists for the species to migrate through and forage in the project area. We request the NRCS update this section to include a species description of the southwestern willow flycatcher.

Section 2.5.2.4: Flannelmouth Sucker and Roundtail Chub - Please add the following sentence to end of the discussion of both of these species: The [flannelmouth sucker or roundtail chub] occurs along the Green River and may be present in the study area.

Section 2.5.5: Only bald and golden eagles have been considered in this section. Please include a discussion of other species protected by the Migratory Bird Treaty Act (MBTA) that may occur within the project area. In particular, impacts to migratory bird habitat should be evaluated and minimized, focusing on species on the Service's 2008 List of Birds of Conservation Concern (https://www.fws.gov/migratorybirds/NewReportsPublications/SpecialTopics/BCC2008/BCC2008.pdf) and species that are listed among the Partner's in Flight Priority Species.

Chapter 4, page 4-2, 1st paragraph, last sentence: The document states that a "preliminary, general list of potential mitigation commitments is presented in Section 3.5.1" however that section contains a description of the Cumulative Impact Area. Please revise.

Table 4.1: The 1.4 acres of new riprap in the channel and the use of cobble from Tusher Wash constitute impacts to designated critical habitat for the endangered Colorado River fishes. This will need to be clear in the biological assessment.

Section 4.6.2.3: The USFWS will work with NRCS during the consultation process to create specific construction BMPs to minimize impacts to listed fish in the project area.

There was no discussion of BMPs related to yellow-billed cuckoo or southwestern willow flycatcher, species which may use the project area as stop-over or foraging habitat during migration. Because the vegetation to be impacted within the project area includes Russian olive, willow, and cottonwood along the banks and within the riparian fringe of the river, we recommend conducting presence / absence surveys for both species if construction is scheduled to occur between May 15 and August 31. The USFWS Utah Field Office can provide more information regarding survey protocols for these species.

Section 4.6.4.2: The Final EIS should specifically evaluate potential impacts to migratory birds and establish measures to avoid and minimize impacts to birds. The MBTA prohibits the take of migratory birds, their parts, nests, eggs, and nestlings. Executive Order 13186, issued on January 11, 2001, affirmed the responsibilities of Federal agencies to comply with the MBTA. To ensure ground-disturbing activities do not result in the "take" of an active nest or migratory bird protected under the MBTA, we recommend:

- Any groundbreaking activities or vegetation treatments should be performed before migratory birds begin nesting or after all young have fledged to avoid take;
- If activities must be scheduled to start during the migratory bird breeding season, you should take appropriate steps to prevent migratory birds from establishing nests in the potential impact area. These steps could include covering equipment and structures and use of various excluders (e.g., noise). Birds can be harassed to prevent them from nesting on the site.
- If activities must be scheduled during the migratory bird breeding season, a site specific survey for nesting birds should be performed starting at least two weeks prior to

vegetation treatments. Established nests with eggs or young cannot be moved, and the birds cannot be harassed (see 2nd bullet, above), until all young have fledged and are capable of leaving the nest site;

- If nesting birds are found during the survey, appropriate spatial buffers should be established around nests. Vegetation treatments within the buffer areas should be postponed until the birds have left the nest. Confirmation that all young have fledged should be made by a qualified biologist.

We recommend use of the *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances* which were developed in part to provide consistent application of raptor protection measures statewide and provide full compliance with environmental laws regarding raptor protection. Raptor survey and mitigation measures are provided in the Raptor Guidelines as recommendations to ensure that proposed projects will avoid adverse impacts to raptors.

We appreciate the opportunity to provide these comments. If you need further assistance with avian resources, please contact Melissa Burns, Ecologist at 2369 West Orton Circle, Suite 50, West Valley City, Utah 84119 or (801) 975-3330 ext. 123. For further assistance with fish and water resources, please contact Kevin McAbee, Instream Flow Coordinator, at (303) 236-9887.

Sincerely,

Robert F. Stewart

Robert F. Stewart
Regional Environmental Officer

Comment 55

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Thursday, April 24, 2014 8:29 AM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Rehabilitation Project

April 25, 2014

To Whom It May Concern:

Green River Diversion Rehabilitation Project

c/o McMillen, LLC-Greg Allington

1401 Shoreline Drive, Boise, ID 83702

Emery County appreciates the opportunity to provide written comments on the Green River Diversion Rehabilitation Project.

The damage sustained by the existing structure in recent high-water events make the proposed rehabilitation of utmost concern and urgency. The unique agricultural resource that exists in Green River, and the obvious seasonal nature of the resource make the implementation of this project of the highest priority.

Emery County supports the 'Replace In Place With Passages' alternative. Making provision for fish passage is consistent with existing management of the identified threatened and endangered species. Historic boat passage over the structure should also be accommodated. The center location of this passage appears to be the better option. Funding appears to be in place for these passages, and should not place any undo burden on the agricultural community.

It is encouraging to witness the many stakeholders and recourse managers collaborating to bring this project to fruition.

Regards,

[redacted]

--
[redacted]

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Comment 56

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Friday, April 25, 2014 7:43 AM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion

April 24, 2014

Green River Diversion Rehabilitation Project

McMillen, LLC- Greg Allington

1401 Shoreline Drive

Boise, Idaho 83702

Dear McMillen and Greg Allington,

As a representative of the people of Emery County, I fully support the Green River Diversion Rehabilitation Project. Furthermore, I encourage the citizens of Green River to likewise support this project.

The age of the structure alone merits replacement. The present diversion has lasted nearly seventy-five years and was rudimentary in the beginning. It is a tribute to the ingenuity and hard ward of the original builders.

I join with others in Emery County in supporting the alternative "Replace In Place With Passages." This is the most productive choice and will accommodate all users while protecting resource use and the "Threatened and Endangered" fish native to the Green River.

It is impressive to see different groups collaborate in the construction of the new diversion. It will be a great benefit to all concerned for many years to come.

Sincerely,

[redacted]

[redacted]

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Version: 2014.0.4570 / Virus Database: 3920/7390 - Release Date: 04/24/14

Comment 57

HOLIDAY
RIVER
EXPEDITIONS

April 28, 2014

Greg Allington
McMillen, LLC
1401 Shoreline Drive, Suite 100
Boise, Idaho 83702

Dear Mr Allington:

On behalf of Holiday River Expeditions, a river outfitting company that has been providing guided backcountry river trips in Utah for the past 47 years. We feel the "replace in place with boat passages" is the best alternative in the draft EIS for the Green River Diversion Rehabilitation Project.

We would like to express our support of the center boat passage design as this location makes the most sense for several reasons and helps to preserve the navigability aspect of the river as required by the federal courts. We feel the center passage is a better alternative to the left side boat passage. The deposition fan of rocks and material that has and will continue to accumulate from Tusher Wash on the east side could inhibit boat passage in the future and would very likely cause that side to be unusable in lower water levels. It appears the location of the center passage (or slightly west of center) should allow for the greatest range of access for boats over the dam.

Thank you for your consideration of these comments

Go with the flow,

Tim

Tim Gaylord
Holiday River Expeditions
Director of Operations
tim@bikeraft.com

Comment 58

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Tuesday, April 29, 2014 11:08 AM
To: greg.allington@mcmillen-llc.com
Subject: Tusher Dam Rehabilitation Project

Dear Greg Allington,

I am a Swiftwater Rescue Instructor for Rescue 3 International and a river guide. I wanted to let you know I feel it is necessary for safety to have a boat passage placed in the center of the new Tusher Diversion Dam. Recreation on the Green River has grown continually over the last 50 years and has become a key driving force in the areas economy. With more people coming down this section of river it is critical to have a safe passage through the Tusher Diversion Dam. A passage through the center makes sense for multiple reasons including, but not limited to: #1. Irrigators don't want boats near their equipment for safety reasons and potential damage to their equipment. #2. The main channel is on river right which makes a left passage unreliable during low water. #3. The design of a passage in the center significantly reduces the cost of a passage on river left.

Thanks,

[redacted]

--

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Version: 2014.0.4570 / Virus Database: 3931/7413 - Release Date: 04/29/14

Comment 59

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Tuesday, April 29, 2014 11:28 AM
To: greg.allington@mcmillen-llc.com
Subject: Tusher Diversion Dam

I SUPPORT a safe passage for boaters and fish placed in the CENTER of the new Tusher Diversion Dam.

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Version: 2014.0.4570 / Virus Database: 3931/7413 - Release Date: 04/29/14

Comment 60

Utah Rivers Council
Save Something

April 29, 2014

Attn: Greg Allington
McMillen, LLC
1401 Shoreline Dr.
Boise, ID 83702
greenriver@mcmillen-llc.com
Via Email and U.S. Mail

Re: Utah Rivers Council Comments Regarding the *Green River Diversion Rehabilitation Project Draft Environmental Impact Statement.*

Dear Mr. Allington,

On behalf of Utah Rivers Council, its members, staff, board and volunteers, I respectfully submit the following comments regarding the *Green River Diversion Rehabilitation Project Draft Environmental Impact Statement* (DEIS) completed by McMillen, LLC in March of 2014.

Utah Rivers Council is a not-for-profit 501(c)(3) grassroots community-based organization that advocates for sound water policy and protection and conservation of Utah's rivers, streams, and clean water sources for today's citizens, future generations and wildlife. The Utah Rivers Council has a long history working to protect Utah's amazing Green River, which is part of the Colorado River watershed. While this proposal stems from the need to rehabilitate the damaged diversion dam to protect irrigation and hydropower water rights, we commend McMillen, LLC and the numerous stakeholders including irrigators, river runners, fishermen, conservationists and various State and Federal agencies for their outstanding cooperation and consideration of the numerous and varied values associated with the Green River in Emery and Grand Counties.

After carefully reviewing the DEIS and preferred alternative we believe the project stands to benefit the Green River's sensitive aquatic ecosystem and endangered fishes both up and downstream of the Tushar Diversion and would also benefit the State's $12 billion recreation economy. Our comments concern several issues as the proposed action pertains to the Green River: 1) fish passage and NEPA requirements for four species of endangered native fishes, 2) boat passage for recreational and scientific monitoring purposes, and 3) the DEIS' further need for detailed analysis of climate change impacts.

Endangered Fish Passage

The Tushar Diversion Dam is located on the Green River, the longest and main tributary to the Colorado River, which supplies water to 35 million people in the Southwest. The USDA and NRCS should not approve a project that will lead to any further impacts on the water quality and quantity in the heavily developed Green River, which is the home to four endangered native fishes that inhabit the river and are protected by the Endangered Species Act (ESA).

The preferred alternative in the DEIS astutely includes modifications to the diversion dam to allow upstream and downstream fish passage over the structure. In particular, this will

greatly benefit the four species of endangered native fish in the Green River; the Colorado pikeminnow, bonytail chub, humpback chub and razorback sucker as well as other species of native fish and wildlife species. Additionally, the proposed rehabilitation incorporates a much-needed electric barrier to prevent endangered fish from entering the powerhouse and irrigation canals, reducing accidental takings. We strongly support the inclusion of upstream and downstream fish passage and electric fish barriers as described in the preferred alternative.

Boat Passage

Our organization strongly supports the proposal to create downstream boat passage past the dam, and we are very pleased with the inclusion of boat passage in the preferred alternative of the DEIS. In addition to aiding the aquatic ecology and local recreation economy, this option would lessen the owner/operator's future need for expensive insurance coverage, as the dam is currently a major public safety liability. Boat passage will help prevent any future navigation accidents rather than prolonging the status quo and hoping for the best.

Figure 3-3 of the DEIS shows two proposed boat passage locations, one in the center of the diversion structure and one on river left or the East side of the river. After careful review, it is clear that the safer passage would be in the center of the dam for several reasons. During the scoping process, irrigators were clear they didn't want boaters near their equipment, which is located on both sides of the diversion structure, because it would create inherent dangers, cause injuries, and could lead to damages to equipment. The DEIS states a log boom would be the only deterrent in keeping people and boats out of harms way of irrigation equipment near the East and West side of the diversion. This argues in favor of placing the boat passage in the center of the diversion structure.

Moreover, below the diversion structure the main channel of the river is on river right or the West side of the river corridor, which would make a river left or East side boat passage especially problematic for boaters during lower water levels in the Green River. Although the proposed sediment removal in figure 3-3 would likely help boaters passing through the East chute to reach the main channel on the West side of the river corridor at high water levels, it is unlikely that enough sediment will be removed to aid boat passage at low flows. It is also unclear how long this will remain clear of debris and whether there will be continuous dredging and removal of sediment and debris that will continue to come from Tushar Wash on river left and impede boat passage in the future. This argues in favor of placing the boat passage in the center of the diversion structure.

Finally, the design of the proposed passage in the center of the diversion structure should ensure that adequate water quantities and water velocities are available for endangered fish passage, as any reduced function of fish passage through the structure would violate the Endangered Species Act (ESA).

Climate Change Impacts

Because the rehabilitated dam will remain in service for decades the DEIS should have considered project impacts to the Green River associated with reduced flows in the future as a function of warmer air temperatures occurring from climate change. Given that hundreds of studies have been published over the last 2 years documenting the very real and impacting nature of air temperature increases to the West, Intermountain West, Southwest, and Colorado River

Utah Rivers Council
Save Something

Basin, the DEIS should have acknowledged and analyzed this science when assessing the proposed action's impacts on endangered fishes and recreation. Most notably, the DEIS fails to consider the effect of reduced streamflows on the Green River as a function of increased air temperature. McMillen, LLC surely has qualified personnel who could prepare a streamflow analysis of future reductions of annual flows by virtue of rising temperatures and how this will impact the design of passage for native endangered fish as well as boats.

The DEIS is effectively proposing to increase the impacts of climate change upon the Green River ecosystem by implementing the proposed project without adequate analysis of reduced flows in the future. The DEA should have analyzed the 50-year supply and demand study for the Colorado River Basin, published by the Bureau of Reclamation in 2012 which identified a 9 percent reduction in future flows of the Colorado River that may be commonplace by virtue of climate change.[1] The DEIS analysis of flows needed for endangered fish and boat passage overlooks the loss of streamflows by virtue of climate change in any meaningful manner and how the proposed action could exacerbate impacts on recreation and the fishery decades after completion.

Thank you for the opportunity to submit these comments. Please feel free to contact me with any questions and concerns.

Sincerely,

Nick Schou
Utah Rivers Council
1055 E. 2100 S. #204
Salt Lake City, UT 84106
(801) 486-4776
nick@utahrivers.org

[1] U.S Bureau of Reclamation. *Colorado River Basin Water Supply and Demand Study*. 12/2012. http://www.usbr.gov/lc/region/programs/crbstudy/finalreport/Executive%20Summary/Executive_Summary_FINAL_Dec2012.pdf

Comment 61

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]

Sent: Tuesday, April 29, 2014 2:53 PM
To: greg.allington@mcmillen-llc.com
Subject: Tusher Dam

Hi,

I just wanted to let you know that I SUPPORT a safe passage for boaters and fish placed in the center for the new Tusher Diversion Dam.

Thank you,

--
[redacted]

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Version: 2014.0.4570 / Virus Database: 3931/7413 - Release Date: 04/29/14

Comment 62

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Tuesday, April 29, 2014 3:53 PM
To: greg.allington@mcmillen-llc.com
Subject: SAFE PASSAGE at the Tusher Diversion Dam

As an avid river lover who has spent countless weeks enjoying many rivers in Utah, I support a safe passage for boaters and fish to be placed in the CENTER of the new Tusher Diversion Dam near Green River, Utah. The dam must be repaired, so please use this opportunity to make it safe.

Thank you,

[redacted]

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Version: 2014.0.4570 / Virus Database: 3931/7413 - Release Date: 04/29/14

Comment 63

State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Office of the Governor
PUBLIC LANDS POLICY COORDINATION

KATHLEEN CLARKE
Director

April 30, 2014

Greg Allington
McMillen, LLC
1401 Shoreline Drive
Boise, ID 83702

SUBJECT: Green River Diversion Rehabilitation Project Draft Environmental Impact Statement
RDCC Project Number 42940

Dear Mr. Allington:

The State of Utah appreciates the opportunity to comment on the proposed rehabilitation of the Green River/Tusher Diversion Dam in Green River, Utah. As provided for in Utah Administrative Code Subsections 65A-1-2 and 65A-10-1, the Division of Forestry, Fire, and State Lands (FFSL) is the agency authorized to manage sovereign lands within the State of Utah, including the Green River.

Sovereign lands are managed under multiple-use/sustained-yield principles and the Public Trust Doctrine as directed by statute. In order to meet this mandate, FFSL must ensure that all uses on sovereign lands are regulated such that protection of navigation, fish and wildlife habitat, public recreation, and water quality are balanced against the economic necessity or benefit to be derived from any proposed use.

The state, by virtue of its sovereignty, owns the bed of Green River below the ordinary high water mark at statehood from the following boundary:

> Between Townships 23 and 24 South (approximately the mouth of the San Rafael River) down to the confluence of the Green and Colorado Rivers, excepting the portion within the boundaries of Canyonlands National Park; between the point at which the Green River exits the boundaries of Dinosaur National Monument (Mile 312 above the confluence of the Green and Colorado Rivers) to the mouth of Sand Wash (Mile 212.7 above the confluence of the Green and Colorado Rivers); and between the point where the river emerges from Gray Canyon (Mile 129 above the confluence of the Green and Colorado Rivers) to the boundary line between Townships 23 South and 24 South (Mile 95 above the confluence of the Green and

Colorado Rivers). (see United States v. Utah, 283 U.S. 64 (1931) and United States v. Utah, U.S. District Court, Central Division, Civil No. C-201-62).

The Proposed Action would require work on the bed of the Green River, within the project area, which is considered sovereign land. A Special Use Lease will be required for the construction activities and the structure. Further consultation and coordination with FFSL will continue as the project progresses to ensure navigability through the Diversion. FFSL considers the issue of navigation/boat passage over the Diversion vital to the rehabilitation. It is one of the foremost tenets of the Public Trust Doctrine and will be required for the Special Use Lease to be obtained. The Division prefers an alternative that allows navigation through the center of the diversion.

If you have any questions or need additional information with regard to the Special Use Lease, please contact Laura Ault at 801.538.5540 or lauraault@utah.gov or contact Heather Church, FFSL's Sovereign Lands Coordinator based in Moab, at 435.210.0362 or hchurch@utah.gov.

The State supports the Green River Diversion Rehabilitation Project and looks forward to working with the USDA Natural Resources Conservation Service. Please direct any questions regarding this correspondence to the Public Lands Policy Coordination Office at the address below, or call Sindy Smith at (801) 537-9193.

Sincerely,

Kathleen Clarke
Director

Comment 64

AMERICAN WHITEWATER

Nathan T. Fey
Director
Colorado River Stewardship Program
1601 Longs Peak Ave.
Longmont, Colorado 80501
nathan@americanwhitewater.org

April 30, 2014

Greg Allington, Project Manager/Biologist
McMillen, LLC
1401 Shoreline Drive, Suite 100
Boise, ID 83702
RE: Comments on Draft EIS for the Green River Diversion Rehabilitation Project

Dear Greg,

Thank you for accepting public comments on the Draft EIS for the Green River Diversion Rehabilitation Project. The efforts you and the team have put into stakeholder outreach on the project are to be applauded. Please accept the follow comments from American Whitewater in support of the Replace In Place With Passages Alternative.

American Whitewater is a national non-profit 501(c)(3) river conservation organization founded in 1954. We have nearly 7,000 individual members and over 100 club affiliates, representing over 80,000 whitewater paddlers and river enthusiasts from across the nation. American Whitewater's mission is to conserve and restore America's whitewater resources and to enhance opportunities to enjoy them safely. As a conservation-oriented paddling organization whose members enjoy the recreational opportunities the Green River has to offer, American Whitewater has a strong interest in the Green River Diversion Structure and, therefore, strongly supports the NRCS in its decision to improve downstream navigability at the diversion site, as well as include boat passage in it's preferred alternative under the Draft EIS the Project.

The Green River is a high-value recreational resource for the State of Utah and regionally significant within the upper Colorado River basin. The Green River provides unique multi-day rafting and kayaking opportunities popular with a wide range of recreational users – appealing particularly to families from across the Nation seeking a safe, kid-friendly excursion. Below Flaming Gorge Dam, no major storage impoundments have been constructed on the river, and compared to other rivers in the region, irrigation diversions are minor – allowing for nearly un-impeded navigation from Flaming Gorge to the Colorado River Confluence. The Green River Diversion structure is the most significant in-channel obstruction on the main segment of the Green River, and has starved fish of high quality habitat, while also creating a life threatening re-circulating hydraulic that presents significant danger to families of recreational paddlers at higher flows.

American Whitewater appreciates the significant commitments directed to recreational improvements at the Project site, including designs for safe passage over the dam that eliminates the "keeper" hydraulic at boatable flows, and the integration of boat passage into the project's final concept design. NRCS has stated that such improvements would allow boaters to pass reliably in the spring and early summer, and on an intermittent basis during the mid- to late-Summer months. American Whitewater supports replacing the diversion structure with boat passage, as this alternative would provide additional public benefit, as well as increased economic benefits to the local community.

The Replace In Place With Passages Alternative presents the boat passage component in one of two locations: the center location or the river left location adjacent to the upstream fish passage notch. American Whitewater remains available to provide input into the comparative analysis of these two locations, which we understand is ongoing. American Whitewater recognizes that only one location will be incorporated into the final design for the project, and we ask NRCS to give greater consideration to providing boat passage at the center of the diversion structure. A center located boat passage provides multiple benefits in concept, while also eliminating risks to private property and public safety over the river left location.

Boat passage components, as proposed, include a notch in the diversion structure that could be located either in the center of the diversion or adjacent to the upstream fish passage and the water wheel raceway on the east side. While we support the design of a boat passage section consisting of an opening in the diversion 30-feet wide by 2-feet deep, with a more gradual slope into the tailwater of the diversion, American Whitewater would like to express concern that locating boat passage on the east side of the project site creates possible conflicts with man-made fish structures, sluice gates, and debris. We ask that NRCS advance design principles that minimize the need for boaters to navigate past multiple project components at the project site itself. We recommend locating the boat passage in the center of the channel, combined with upstream signage as proposed in the DEIS, to enable safe downstream passage while eliminating possible risks to private property and demands on emergency response personnel.

In addition, locating boat passage in the center of the diversion structure will eliminate the risk of boaters getting stranded below the diversion structure on river left where the Tusher Wash sediment deposit presents an impediment to navigability.

Finally, we request that the meeting minutes from February 13th (appendix D) include a listing of all attendees to the "boaters" meeting, at which stakeholders discussed and supported the benefits of a center-located boat chute. We feel that the meeting facilitated a healthy exchange of information, to your credit, and that stakeholder consensus on this project is important to document.

Thank you in advance for incorporating a range of improvements to the Green River Diversion Structure for the benefit of multiple interests, including recreational boating. American Whitewater applauds the efforts of NRCS and its partners to eliminate a physical barrier to fish seeking to migrate through the site, while also creating safe passage for rafters, kayakers, and canoeists enjoying the outstandingly remarkable recreational opportunities the Green River provides. It is critical that the project meet the needs of local irrigators, while minimizing threats to public safety and downstream navigability. Please contact me if you have any additional questions.

Sincerely,

Nathan T. Fey
Colorado River Stewardship Director
American Whitewater

Comment 65

Greg Allington

From: [redacted]
Sent: Tuesday, April 29, 2014 5:17 PM
To: greenriver@mcmillen-llc.com
Cc: greg.allington@mcmillen-llc.com
Subject: Comments on the re-build of the (Tusher) Green River Diversion Dam

Green River Diversion Rehabilitation Project c/o McMillen, LLC,
1401 Shoreline Drive, Boise ID 83702
Email: greenriver@mcmillen-llc.com
Fax: (208) 342-4216
Phone: (208) 342-4214 ext. 318

April 29, 2014

Dear Mr. Allington,

Thank you for the opportunity to comment on the Draft EIS period on the Tusher Diversion Dam Rehabilitation.

In the book I wrote, Big Water Little Boats, Moulty Fulmer and the First Grand Canyon Dory on the Last of the Wild Colorado River, Vishnu Temple Press, 2012, there is a photo on page 69 of Moulty Fulmer running his first dory named MOJA down the left tongue of the Tusher Diversion Dam. The photo was taken on the 4th of July, 1951. Fulmer is rowing the MOJA, and his passenger is Otis "Dock" Marston's daughter Maradel, sitting in front of him in the footwell of the boat. The flow is 14,600 cfs. The river party floated on downriver to the highway bridge at Green River, UT, and took out there. I found this photo in the Marston Collection at the Huntington Library, and point this out to you as evidence for a very long history of river runners interfacing with and rowing over the Tusher Diversion Dam.

I made my first crossing of the Tusher Diversion Dam rowing a rubber raft in September, 1996, on a river trip from Sand Wash at the start of Desolation Canyon to Hite, Utah, below Cataract Canyon. Running the Tusher Diversion dam, as Moulty Fulmer and Dock Marston had done before me, adds immense value to our river trips.

I support the Draft Alternative that includes bypasses so long as a native fish and recreational boat bypass is built somewhere along the diversion dam, most likely in the middle of the dam. The bypasses should be suitable for downstream boat passage and upstream and downstream fish passage, at all river flow levels, low, medium and high. This fish and recreational boating bypass will preserve our American heritage and help sustain a viable native fish population into the next 100 years on the Green River.

If you could kindly acknowledge receipt of this e-mail, I would be most appreciative.

Sincerely yours,

[redacted]

Comment 66

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Tuesday, April 29, 2014 9:11 PM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Dam Comment

Hello

I am in full support of a mid-channel boat passage at the Green River Diversion Dam. Boating and related tourism brings in valuable tax dollars to the town of Green River and the option of running all of the river into town without portaging your boat will provide that. Thank you for your time.

--
Sláinte

[redacted]

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Comment 67

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Tuesday, April 29, 2014 10:19 PM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Dam Comment

I support the Replace in Place with Passages Alternative and a mid channel passageway.

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Version: 2014.0.4570 / Virus Database: 3931/7413 - Release Date: 04/29/14

Comment 68

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Wednesday, April 30, 2014 7:43 AM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Dam Comment

I would like to offer my support for the "Replace in Place with Passages Alternative" for the replacement of the Tusher Diversion structure on the Green River. The current structure is a little known but significant hazard in an otherwise calm section of river. Now is an ideal time to address this hazard so those that would enjoy an otherwise mild float down the river are not faced with it in the future. A well-marked boat chute in the center of the main channel would be the best solution. Thank you.

Sincerely,

[redacted]

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Version: 2014.0.4570 / Virus Database: 3931/7421 - Release Date: 04/30/14

Comment 69

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Wednesday, April 30, 2014 8:32 AM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Dam Comment

Hi, just want to voice my support for a boat passage in the middle of the dam. Could save a life. Thanks, [redacted]

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Version: 2014.0.4570 / Virus Database: 3931/7421 - Release Date: 04/30/14

Comment 70

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Wednesday, April 30, 2014 9:06 AM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Dam Comment

would be great to have a passage for a 16' raft. would hate to see someone get hurt.

[redacted]

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Version: 2014.0.4570 / Virus Database: 3931/7421 - Release Date: 04/30/14

Comment 71

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
[redacted]>
Sent: Wednesday, April 30, 2014 3:38 PM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Dam Comment

To Whom It May Concern,

I support the "Replace in Place with Passages Alternative" to the low head dam reconstruction outside of Green River, Utah. As a boater who uses these resources on annual basis I believe this is the best alternative to the issue. The current structure is a major hazard and severely limits downriver recreational passage. This plan also has the added benefit of supporting native fisheries while providing the local community with their allocated water. This is a win-win for stakeholders involved in the issue.

Sincerely,

[redacted]

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Version: 2014.0.4570 / Virus Database: 3931/7421 - Release Date: 04/30/14

Comment 72

Greg Allington

From: greenrivER@mcmillen-llc.com on behalf of [redacted]
Sent: Wednesday, April 30, 2014 4:11 PM
To: greg.allington@mcmillen-llc.com
Subject: Green river diversion dam

As a whitewater boater, I support the option of "Replace in Place with Passages Alternative".

Thanks,

[redacted]

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Version: 2014.0.4570 / Virus Database: 3931/7421 - Release Date: 04/30/14

Comment 73

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Wednesday, April 30, 2014 4:19 PM
To: greg.allington@mcmillen-llc.com
Subject: Please incorporate thsi comment into Green River diversion structure
Attachments: Green River boat ramp EIS comment April 30 2014.docx; _Certification_.htm

April 30, 2014

[redacted]

Greg Allington
Project Manager / Biologist
McMillen, LLC
1401 Shoreline Drive, Suite 100
Boise, ID 83702

Dear Mr. McMillien and Project Team,

I recommend that the Green River Diversion Dam have a usable boat and fish passage as part of its design. I have twice floated down Desolation and Gray Canyons, and also rafted from Ruby Ranch to Mineral Bottom. The Green River offers fantastic recreational boating. It also is home to four endangered fish species. Therefore, a fish- and recreation-friendly design is greatly needed.

Fish populations get separated into distinct groups by river wide diversions. They prevent upstream passage to fish and interfere with fish spawning and reproduction. It is critical that rivers have eddies so fish can travel from eddy to eddy upstream.

Also, diversion dams should not divert so much of the river as to make the river un-passable downstream. I understand this is a federally adjudicated navigable river that must be managed in the public trust for navigability in priority to other private (non-public) diversion interests.

The current structure I understand to be navigable to downstream traffic and such navigable passage needs to be maintained as part of any structure should it be added to the river. I would encourage placement of eddies for both fish and kayak surfing so that smaller narrow hull forms can also take advantage of the passage.

Large boat passage should be assured down to at least 1,600 CFS, and small boat passage should be assured down to the minimum flow levels that the river goes to. Again, this is important for fish and navigation uses which are the prevailing public interest.

Thank you for considering my comment. I am confident that the needs of the community (including people and wildlife) can be easily designed into any and all reasonable solutions for this project.

I am the recreation representative to the Colorado Basin Roundtable. I am also a long-standing advisor to the River Management Society. Please contact me if you have any additional questions at 970-927-1200, 970-963-6800 cell, kenransford@comcast.net.

Sincerely,

[redacted]

[redacted]
[redacted] Work
[redacted] Fax
[redacted] Cell

Both emails below work for replies:
[redacted]

Comment 74

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Wednesday, April 30, 2014 8:33 PM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Dam Comment

I have reviewed the environmental impact statement and wish to add my voice to those calling for the Replace in Place with Passages Alternative. I am a resident of Utah and have taken my boy scouts on rafting trips through both Desolation/Grey Canyons and Labyrinth Canyon. The ability to link the two trips would add greatly to the recreational value of the river.

I also think the additional safety afforded by the passages alternative should be reason enough to move forward with that alternative.

Best wishes,

[redacted]

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Comment 75

State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER
Executive Director

Division of State Parks and Recreation

FRED HAYES
Division Director

McMillen, LLC.
1401 Shoreline Dr., Suite #100, Boise, ID 83702
p 208.342.4214 x 303 | f 208.342.4216 | c 208.869.9918
dan.axness@mcmillen-llc.com | www.mcmillen-llc.com

Dear McMillen, LLC.,
My name is Brody Young and I represent the Boating Program for the State of Utah which manages the education and enforcement of state boating laws and rules on sole state waters. The Green River falls under that category. The purpose of this letter is to comment on the possible re-construction of the "Tusher" Greeen River Diversion Dam. We are highly in favor of and support the "Replace in Place with Passage Alternative" in the DEIS.

We were thrilled to hear about the re-construction of the "Tusher" Green River Diversion Dam. We realize the functionality and the invaluable need it has provided for the City of Green River for nearly one-hundred years. We also realize the current dam has been a danger to the boating public and greatly hinders the navigability of the Green River outside of higher water flows in the spring and early summer.

Thank you for allowing alternatives to be evaluated for all users of the water to comment on. We feel there is an importance of the safety of the dam being well represented by all users and in the design of it.
We are in favor of the "Replace in Place with Passage Alternative" for several reasons:
-The safety of boaters coming downstream is first and foremost our number one concern. We realize the new construction of the dam is designed for boats to float over in the event there is sufficient water. The Boat passage would provide a safe alternative in the event there isn't sufficient water.
-The "navigability" of the river is vital. Most boaters are untrusting of going downstream of Swasey's Boat Ramp because of the dam and its lack of navigability. The Boat passage in the center of the dam would allow safe passage in the current of the river below the dam. The alternative of a boat passage on River left would lead boaters into a gravel bar created by Tusher Wash.
-The boat passage will enhance recreational and commercial boating opportunities for Green River and will provide additional economic advancement for growth. It will invite boaters and recreationalist of all types to stay, eat and work in Green River.

We are in favor of the" Replace in Place with Passage Alternative" listed in the DEIS. Please consider our comments as a strong voice for the Boating Public in Utah. I appreciate the opportunity to submit our comments and look forward to the outcome of the design of the dam. Thank you for your time.
Sincerely,

Brody Young
Assistant Boating Program Manager
(801) 386-2355 brodyyoung@utah.gov

UTAH DNR STATE PARKS

Comment 76

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Thursday, May 01, 2014 3:45 PM
To: greg.allington@mcmillen-llc.com
Subject: Tusher Diversion dam

Hello,
This message is to express my support for a safe passage for boaters and fish to be placed in the CENTER of the new Tusher Diversion Dam. Thank you for your consideration.

Sincerely,

[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2014.0.4570 / Virus Database: 3931/7421 - Release Date: 04/30/14

Comment 77

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Thursday, May 01, 2014 3:46 PM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Dam Comment

I would like to offer my support for the "Replace in Place with Passages Alternative" for the replacement of the Tusher Diversion structure on the Green River. The current structure is a little known but significant hazard in an otherwise calm section of river. Now is an ideal time to address this hazard so those that would enjoy an otherwise mild float down the river are not faced with it in the future. A well-marked boat chute in the center of the main channel would be the best solution.

Sincerely,

[redacted]
Holy Cross Energy
(970) 947-5539

"Holy Cross Energy is committed to providing its members with the best possible services at a reasonable and competitive cost consistent with sound business and environmental practices."

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2014.0.4570 / Virus Database: 3931/7421 - Release Date: 04/30/14

Comment 78

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
[redacted]>
Sent: Thursday, May 01, 2014 3:46 PM
To: greg.allington@mcmillen-llc.com
Subject: diversion

Please include a safe boat passage in the new diversion. This is a historic section of river and deserves to be preserved for navigation.

[redacted]

[redacted]

No virus found in this message.
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Version: 2014.0.4570 / Virus Database: 3931/7421 - Release Date: 04/30/14

Comment 79

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Thursday, May 01, 2014 3:46 PM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Dam Comment

I would like to offer my support for the "Replace in Place with Passages Alternative" for the replacement of the Tusher Diversion structure on the Green River. The current structure is a little known but significant hazard in an otherwise calm section of river. Now is an ideal time to address this hazard so those that would enjoy an otherwise mild float down the river are not faced with it in the future. A well-marked boat chute in the center of the main channel would be the best solution.

Thanks,
[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2014.0.4570 / Virus Database: 3931/7421 - Release Date: 04/30/14

Comment 80

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Thursday, May 01, 2014 3:46 PM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion am Comment - Landis Arnold

To:
Greg Allington
Project Manager / Biologist
McMillen, LLC
1401 Shoreline Drive, Suite 100
Boise, ID 83702

Hello Mr McMillien and Project Team,

I am writing to ask that the Green River Diversion Dam have a functional, aesthetic, recreationally and navigationally usable boat and fish passage as part of its design. The best fish passage is one which is also navigable by small craft such as rafts and kayaks. Moreover, this is a stretch of river which does, on occasion, have quite large rafts and crafts passing by. Family friends ran J-Boats from Ladore to Lake Powell, then further through the Grand Canyon on the 100th Anniversary of Powell (1969) and numerous other trips have done the same and done stretches there of including through this stretch. J-Boats can be up to 33 ft long.

From Biologic point of view, river wide diversions which are impassable (and not understandable) to fish is also one of the reasons that fish populations get segregated to different stretches of rivers. It is critical that rivers have eddies for fish (and river craft) to take refuge in, and channels which carry water, for downward safe downward flow) and yet allow "attainment" for fish (and sometimes kayaks etc) from eddy to eddy upstream.

It is also important that diversion dams not divert so much of the river as to make the river un-passable downstream. I understand this is a federally adjudicated navigable river that must be managed in the public trust for navigability in priority to other private (non-public) diversion interests.

The current structure I understand to be navigable to downstream traffic and such navigable passage needs to be maintained as part of any structure should it be added to the river. Keeping passage capability for boats up to 33 ft long is in keeping with the historical use of J-Boats on the river. I would encourage placement of eddies for both fish and kayak surfing so that smaller narrow hull forms can also take advantage of the passage.

Large boat passage should be assured down to at least 1600 CFS, and small boat passage should be assured down to the minimum flow levels that the river goes to. Again, this is important for fish and navigation uses which are the prevailing public interest.

Thank you for your solicitation for comment. I am confident that the needs of the community (including people and wildlife) can be easily designed into any and all reasonable solutions for this project.

Sincerely,
[redacted]

[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2014.0.4570 / Virus Database: 3931/7421 - Release Date: 04/30/14

Comment 81

The O.A.R.S. Family of Companies

April 30, 2014

Mr. Greg Allington
c/o McMillen, LLC
1401 Shoreline Drive
Boise, ID 83702

RE: Green River Diversion Rehabilitation Project

Dear Mr. Allington:

Thanks for all the work you have done preparing the Draft EIS for the Green River Diversion Rehabilitation Project. We believe that the "Replace In Place With Passages" should be the Preferred Alternative.

We think that it is important to provide a passage either around the west side of the diversion or, probably preferable, in the center of the diversion dam. We are afraid that a passage on the east side of the diversion dam would not be satisfactory because of ongoing deposition of erosional materials coming from Tusher Wash.

As river rafting grows in popularity – especially with young families, the town of Green River should be the beneficiary of increased use on the Green River from Swasey's to the Green River State Park and the economic assistance that this can provide to the area. As a long-term river guide – first running as a private rafter, then as a professional river guide and now as the manager of a whitewater rafting company - I think it is important to be concerned about the navigational challenges and safety issues involved with running the diversion dam. It is essential that no exposed rebar or other hazards to property or human safety be allowed. Design work should be done so that the passage through the diversion dam does not present a keeper hydraulic.

We appreciate the opportunity to comment on the Draft Environmental Impact Statement and will look forward to reviewing the Final EIS.

Sincerely,

George Wendt

George Wendt
O.A.R.S. Companies, Inc.

Comment 82

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
DENVER, CO 80202-1129
Phone 800-227-8917
http://www.epa.gov/region08

APR 30 2014

Ref: EPR-N

Bronson Smart, State Engineer
National Resource Conservation Service-Utah
Wallace F. Bennett Federal Building
125 S. State Street – Room 4010
Salt Lake City, UT 84138-1100

Re: Green River/Tusher Diversion Rehabilitation
Project Draft Environmental Impact Statement
CEQ # 20140071

Dear State Engineer Smart:

In accordance with our responsibilities under Section 102(2) (C) of the National Environmental Policy Act (NEPA), and Section 309 of the Clean Air Act (CAA), the U.S. Environmental Protection Agency Region 8 has reviewed the March, 14, 2014 Green River/Tusher Diversion Rehabilitation Draft Environmental Impact Statement (Draft EIS) by the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). It is the EPA's responsibility to provide an independent review and evaluation of the potential environmental impacts of this project. This includes a rating of the environmental impacts of the proposed action and the adequacy of the Draft Environmental Impact Statement (Draft EIS).

Project Description

The Green River/Tusher Diversion, constructed in the early 1900s, was damaged by flows in the Green River during 2010 and 2011 flood events. The Draft EIS states that in the event of diversion failure due to future flood or high flow conditions, water service to three irrigation canals, the City of Green River, a historic irrigation water delivery system, and one hydropower plant would be eliminated. The Draft EIS also states that rehabilitating the diversion would directly result in these resources remaining usable for the water rights holders.

The NRCS and Utah Department of Agriculture and Food (UDAF) analyzed alternatives for:

- maintaining the existing functions of the diversion for water delivery,
- upgrading the diversion structure to current design standards,
- maintaining some features of the historic character of the diversion dam,

- providing upstream and downstream fish passage, fish tracking and fish screening, and
- providing enhanced sediment sluicing, and downstream recreational boat passage.

Fish protection and passage components are proposed in one alternative for inclusion in the project to meet Endangered Species Act requirements for listed fish species populations in the Green River. The boat passage provision is a navigability requirement of the State of Utah.

The EPA's Comments and Recommendations

The EPA appreciates that in September 2013, the NRCS sent notification to several interested parties and stakeholders that the NRCS determined the proposed rehabilitation project will adversely affect the Tusher Diversion Dam and the East Side Canal which are both significant historic structures. This determination led to elevating the NEPA analysis from an Environmental Assessment to preparation of a Draft EIS.

The EPA appreciates the comprehensive alternatives analysis provided in the Draft EIS in response to all comments during the project scoping and public comment period.

The EPA also appreciates identification and analysis of alternatives that intend to increase the efficiency and flood resiliency of the diversion dam structure while enhancing fish passage and recreational navigation features of the structure within the river system.

Aquatic Resources

The EPA considers protection of aquatic resources to be among the most important issues addressed in any NEPA analysis where a project could adversely affect surface and ground water resources. The alternatives presented in the Draft EIS and the actions associated with the diversion dam rehabilitation project have the potential to adversely impact aquatic resources, including wetlands, streams, riparian areas, their supporting hydrology and hydrogeology. Two specific project actions likely to affect aquatic resources include raising the current dam elevation by one foot, and aggregate and sediment material removal below the dam. These actions are expected to affect fish nursery habitat, stream hydrogeology and potentially more wetland acres than the low number of temporarily affected wetland acres estimated in the Draft EIS.

The EPA recommends that the Final EIS clearly summarize and reference information included in the Draft EIS that could lead to mitigation of any possible adverse effects to aquatic resources at this site. This information includes dam design features, the Green River Canal Sediment Research effort, methods found in the Conjunctive Management of Surface and Ground Water in Utah management plan, The Preliminary Wetland Inventory memo (not found in Appendix C as referenced in the DEIS [2.2.6.] and stream flow modeling predictions that specifically support how aquatic resources listed above will not be adversely affected. The EPA recommends the Final EIS add monitoring and documentation procedures to identify any unforeseen construction or post-construction impacts to aquatic resources, such as wetlands, habitat and hydrogeology. The EPA also recommends that the Final EIS identify what mitigation measures will be

implemented if adverse impacts are identified for any of the aquatic resources listed above, during and after completion of construction.

The Draft EIS identifies that the U.S. Fish and Wildlife Service, a Cooperating Agency for the proposed action, has been consulted and has provided significant input to the alternatives identified in the Draft EIS. The Draft EIS does not yet include a completed Biological Assessment. Because the Biological Assessment may provide important information to inform this decision, the EPA recommends the NRCS allow a period of time for the public and stakeholders of record to provide input with the benefit of a completed Biological Assessment and Opinion prior to a Final EIS or Record of Decision.

The EPA's Rating

Consistent with Section 309 of the CAA, it is the EPA's responsibility to provide an independent review and evaluation of the potential environmental impacts of this project. Based on the procedures the EPA uses to evaluate the adequacy of the information and the potential environmental impacts of the proposed action, the EPA has rated the alternatives in the Draft EIS as "Environmental Concerns - Insufficient Information" (EC-2). The EPA's review identified environmental impacts that should be avoided in order to fully protect the environment and this letter provides recommendations to resolve those concerns. The draft EIS does not contain sufficient information to fully assess environmental impacts that should be avoided in order to fully protect the environment. We identified additional information, data, analyses, or discussion that should be included in the Final EIS.

A description of the EPA's rating criteria is available at: http://www.epa.gov/compliance/nepa/comments/ratings.html We hope that our comments will assist you in further reducing the environmental impacts of this project. We appreciate the opportunity to review and comment on this Draft EIS. If we may provide further explanation of our comments, please contact me at 303-312-6704. You may also contact Nat Miullo, lead reviewer for this project, at 303-312-6233, or Miullo.nat@epa.gov.

Sincerely,

Philip S. Strobel
Acting Director, NEPA Compliance and Review Program
Office of Ecosystem Protection and Remediation

cc: Greg Allington, McMillen, LLC
Larry Crist, Utah Field Supervisor

Comment 83

Comments of the Draft EIS for the Green River Diversion Dam

Section	Page	Comment
Tables S-1and 4-1	Xvi, 4-2	Water Resources row, Under the no action there would be no temporary effects from construction
Tables S-1 and 4-1	Xviii,4-4	Visual quality, Under the no action there would be no temporary effects from construction
2.6.4.1	2-34	To totally understand the Green River as a “wild and scenic “ river the fact that the river is suitable from Sand Wash to Nefertiti should be added
Tables S-1 and 4-1	Xvii, and 4-3	Socio econ: Could add to the impacts under both action alternatives a more reliable supply of water for irrigation of crops and hydropower
Table 4-2	4-11	The total water demand of 1,066 does not agree with page 3-4 of 1,125

USDA

NRCS
Green River Diversion Rehabilitation
Draft Environmental Impact Statement Public Meeting Sign-In Sheet

McMILLEN, LLC
DESIGN with Vision. BUILD with Integrity.

April 10, 2014

Name	Phone	Address	Email
Chu Durham	435 820 8202	G R UT	
Brady Young	801 386-2355	Moab	bradyyoung@utah.gov
Ray Petersen	435 381 3556	Castle Dale, UT	RayD@emeryutah.gov
RANDY TUCKER BARBARA TUCKER	435 564 3305	PO BOX 606 GRN RVR UT 84525	randygcrvrguy@hotmail.com
Kenny Bigelow	435564-8163	Green River Ut.	bigelow@etv.net
Chas D. Captain	435-564-8303	Green River Ut.	
Kaye Nelson	435-564-8210	Green River, UT	
Dan Axness	208-869-9918		
Elmer Hill	208-342-4214		

USDA

NRCS
Green River Diversion Rehabilitation
Draft Environmental Impact Statement Public Meeting Sign-In Sheet

McMILLEN, LLC
DESIGN with Vision. BUILD with Integrity.

April 10, 2014

Name	Phone	Address	Email
Jay A. Ekker	820-820-0032	P.O. Box 232 Green River, Utah.	jekker49@gmail.com
JR Nelson	435-381-3570	Box 629, Castle Dale, Utah 84513	jrn@emery.utah.gov
Kevin & Shelly Barton	435-749-2169	Box 1114 Castle Dale, Utah 84513	kbarton@uacd.org
Blaine Allen	435-820-0297	PO Box 135 Green River ut 84525	BALLEN at Yahoo.com
Calvin Bastian	435-564-3362	PO Box 243 Green River UT 84525	
Lee Thayer	435-564-3325	PO Box 447	
[illegible]	435.381-3570	Box 75 Castle Dale Ut	[illegible]@emery.utah.gov
ANDREW WILLIAMSON	801 524-4556	125 S. State Street SLC, Utah 84138	andrew.williamson@ut.usda.gov
Von Bowerman	435 564-8133	Green River	von73b@yahoo.com
Robert Quist	435 564-8815	GR Box 541	bobquist@etv.net

USDA

NRCS
Green River Diversion Rehabilitation
Draft Environmental Impact Statement Public Meeting Sign-In Sheet

McMILLEN, LLC
DESIGN with Vision. BUILD with Integrity.

April 10, 2014

Name	Phone	Address	Email
Mark Fuller	435-789-0351	297 Kentucky Way Vernal UT 84078	mark-h-fuller@fws.gov
Coby Hunt	435-564-8414	2365 N Long st Green River ut 84525	hunterinthefield@yahoo.com
Judy Ann Scott	435-564-3366	P.O Box 84 350 N 125 E GREEN RIVER, UT 84525	pignut@etv.net
Laurel Nielsen	435-381-2300 ext 119	GR Conservation District	laurel.nielsen@ut.nacdnet.net
Willie Dunkins	435-260-2542	PO Box 322 Green River UT 84525	wdunkins59@hotmail.com
Kim McFarlane		PO Box 356 Green River UT 84525	ktmpac@yahoo.com
Penney Richos	435 564-8180	P.O. Box 278 Green Riv UT 84525	
Duane Rich	435 650-3544	P.O. Box 662 Green Riv UT 84525	
JoAnne Chandler	435-820-0084	PO Box 481 GR UT 84525-0481	gra@etv.net
LEN			

USDA

NRCS
Green River Diversion Rehabilitation
Draft Environmental Impact Statement Public Meeting Sign-In Sheet

McMILLEN, LLC
DESIGN with Vision. BUILD with Integrity.

April 10, 2014

Name	Phone	Address	Email
Quen Young	435-564-3536	Green River Utah	
Jason Johnson	435-210-4578		jasonajohnson@utah.gov
Edward Hansen	435-564-3535	G. R. Utah	
Richey Hansen	435-820-1370	Green River Utah	
Robert C Steuer	4355643226	" " "	steuers@mac.com
Mike Randolph	435-691-1901	Green River	
Chet Hunt	435-570-1665	Green River Utah	
Kelly Dunham	4355648365	Green River	
Thayne Mickelson	801-608-7668	SLC / UDAF	tmickelson@utah.gov
Randy Erwin	801-541-2557	Green River	

United States Department of Agriculture

PUBLIC NOTICE OF AVAILABILITY

The Natural Resources Conservation Service (NRCS), with the Utah Department of Agriculture and Food (UDAF), announces the availability of a Draft Environmental Impact Statement (EIS) describing the proposed rehabilitation of the Green River/Tusher Diversion in Green River, UT. The project is being funded by the Emergency Watershed Protection Program (EWP) and the Draft EIS has been prepared in compliance with the National Environmental Policy Act (NEPA) per 40 CFR Parts 1500-1508.

You are invited to attend a Draft Environmental Impact Statement public meeting which will describe the alternatives analyzed and potential impacts to the environment for the project.

Draft Environmental Impact Statement Public Meeting

Date: April 10, 2014 - Thursday
Time: **Open House:** 6:00 PM to 8:00 PM (MST)
Place: John Wesley Powell River History Museum
1765 East Main Street, Green River, UT

Copies of the Draft EIS are available for public review at:

NRCS Price Field Office, 540 West Price River Drive, Price, UT
Grand County Public Library, 257 East Center Street, Moab, UT
Green River City Hall, 460 East Main Street, Green River, UT
John Wesley Powell River History Museum, 1765 East Main Street, Green River, UT

An electronic copy of the Draft EIS is available at http://www.nrcs.usda.gov/wps/portal/nrcs/main/ut/programs/planning/ewpp or by searching for "NRCS Utah EWP" and selecting the Green River/Tusher Diversion Rehabilitation link.

Comments may be submitted during the public comment period **starting March 14, 2014** and **ending on April 30, 2014** to:

Mail: Green River Diversion Rehabilitation Project
c/o McMillen, LLC,
1401 Shoreline Drive, Boise ID 83702
Email: greenriver@mcmillen-llc.com
Fax: (208) 342-4216
Phone: (208) 342-4214 ext. 318

USDA
United States Department of Agriculture

USDA Natural Resources Conservation Service-Utah
Wallace F. Bennett Federal Building
125 S. State Street – Room 4010
Salt Lake City, UT 84138-1100

Green River Diversion Rehabilitation Project – Draft EIS Notice of Availability

March 14 , 2014

Dear Interested Parties:

The Natural Resources Conservation Service (NRCS), with the Utah Department of Agriculture and Food (UDAF) as the project sponsor, is announcing the availability of a Draft Environmental Impact Statement (EIS) describing the proposed rehabilitation of the Green River/Tusher Diversion Dam in Green River, Utah. The proposed project is located approximately 6.6 miles north of the city of Green River on North Long Street. **You are invited to comment on the project and attend a public meeting** which will describe the alternatives analyzed and potential impacts to the environment**.**

Draft EIS Public Comment Period
Open: Friday, March 14, 2014
Close: Wednesday, April 30, 2014

Draft EIS Public Meeting
Date: Thursday, April 10, 2014
Time: 6:00 p.m. - 8:00 p.m. (MST)
Place: John Wesley Powell River History Museum
1765 East Main Street, Green River, UT

Hard copies of the Draft EIS have been distributed to the following publicly accessible facilities for review:

- NRCS Price Field Office, 540 W Price River Drive, Price, Utah
- Grand County Public Library, 257 E Center Street, Moab, Utah
- Green River City Hall, 460 E Main Street, Green River, Utah
- John Wesley Powell River History Museum, 1765 E Main Street, Green River, Utah

Electronic copies of the Draft EIS are available on the project website: http://www.nrcs.usda.gov/wps/portal/nrcs/main/ut/programs/planning/ewpp

More project specific information is available by contacting Greg Allington (McMillen, LLC) with the project team by phone at (208) 342-4214 or email at greenriver@mcmillen-llc.com.

Draft EIS

The purpose of the proposed action is to rehabilitate the existing Green River Diversion Dam. The project will rehabilitate the diversion due to damage caused by past flood events, upgrade the dam infrastructure to current design standards, maintain the level of water delivery to the existing water rights holders, and comply with applicable Federal rules and regulations. The need for the project is to maintain existing functions of the diversion dam for water delivery to water rights holders (irrigation canals and a local powerhouse).

The following alternatives were analyzed in detail in the Green River Diversion Rehabilitation Draft EIS:

- No Action
- Replace In Place
- Replace In Place With Passages

Public Participation

The participation of the public is a vital component of the project so that those who are interested in or potentially affected by the proposed project have an opportunity to share their comments, ideas, and concerns regarding actions during the Draft EIS stage of the NEPA process. In order to provide the public with an opportunity to comment on the Draft EIS, NRCS has opened a public comment period. You are encouraged to attend the public meeting and express your comments, ideas, and concerns. You may also submit your comments via letter, email or fax anytime during the public comment period. For comments to be considered and to become part of the public record for the project, **we need to receive them by the end of the day on Wednesday, April 30, 2014**.

Please mail your written comments to:

Green River Diversion Rehabilitation Project
c/o McMillen, LLC – Greg Allington
1401 Shoreline Drive
Boise, ID 83702

You may also submit comments by email, phone or fax to McMillen:

Email: greenriver@mcmillen-llc.com
Phone: (208) 342-4214
Fax: (208) 342-4216

After receiving comments by the end of the day on Wednesday, April 30, 2014, the NRCS will review the comments, select a Preferred Alternative, and prepare the Final EIS. You may also visit the project website at http://www.nrcs.usda.gov/wps/portal/nrcs/main/ut/programs/planning/ewpp or perform an internet search for "NRCS Utah EWP" and select the Green River/Tusher Diversion Rehabilitation link to check on the status of the project, view an electronic copy of the Draft EIS, and download project related documents during the course of the NEPA analysis.

The project team values your feedback and encourages you to contact us with questions and comments

Sincerely,

Bronson Smart
NRCS State Engineer

cc: Anthony Beals – NRCS
Norm Evenstad – NRCS
Thayne Mickelson – UDAF
Roger Barton – UACD
Greg Allington – McMillen, LLC
Dan Axness – McMillen, LLC

Notice of Upcoming Draft EIS – NRCS Green River/Tusher Diversion Rehabilitation

The Natural Resources Conservation Service (NRCS), with the Utah Department of Agriculture and Food (UDAF) as the project sponsor, has prepared a Draft Environmental Impact Statement (EIS) describing the proposed rehabilitation of the Green River/Tusher Diversion Dam in Green River, Utah.

- The Draft EIS comment period will be open from March 14, 2014 until April 30, 2014.
- The Draft EIS public meeting will be held at the John Wesley Powell River History Museum in Green River, Utah on April 10, 2014 from 6:00 – 8:00 pm (MST).

An electronic copy will be available for download on March 14, 2014 on the project website at http://www.nrcs.usda.gov/wps/portal/nrcs/main/ut/programs/planning/ewpp

with 40 CFR 52.21 to issue a final PSD permit to PPLLC for the PPEC.

Following completion of the remand proceedings, pursuant to 40 CFR 124.19(l)(2), EPA Region 9 issued a final permit decision to PPLLC for the PPEC on February 28, 2014. All conditions of the PPEC PSD permit, Permit No. SD 11–01, issued February 28, 2014, become final and effective on April 7, 2014.

Dated: March 7, 2014.

Deborah Jordan,

Director, Air Division, Region IX.

[FR Doc. 2014–05740 Filed 3–13–14; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

[ER–FRL–9013–9]

Environmental Impact Statements; Notice Of Availability

Responsible Agency: Office of Federal Activities, General Information (202) 564–7146 or *http://www.epa.gov/compliance/nepa/.*

Weekly receipt of Environmental Impact Statements

Filed 03/03/2014 Through 03/07/2014

Pursuant to 40 CFR 1506.9.

Notice:

Section 309(a) of the Clean Air Act requires that EPA make public its comments on EISs issued by other Federal agencies. EPA's comment letters on EISs are available at: *http://www.epa.gov/compliance/nepa/eisdata.html.*

EIS No. 20140062, Final EIS, NPS, CA, Tuolumne Wild and Scenic River Final Comprehensive Management Plan, Review Period Ends: 04/14/2014, Contact: Kathleen Morse 209–379–1110.

EIS No. 20140063, Draft EIS, BLM, NM, San Juan Basin Energy Connect Project, Comment Period Ends: 04/28/2014, Contact: Marcy Romero 505–564–7600.

EIS No. 20140064, Draft Supplement, USFS, MT, Beaverhead-Deerlodge National Forest Land and Resource Management Plan to Comply with a District of Montana Court Order (Temporary Roads), Comment Period Ends: 06/12/2014, Contact: Jan Bowey 406–842–5432.

EIS No. 20140065, Draft EIS, USFS, OR, Proposed Revised Land Management Plans for the Malheur, Umatilla, and Wallowa-Whitman National Forests, Comment Period Ends: 06/16/2014, Contact: Sabrina Stadler 541–523–1264.

EIS No. 20140066, Final EIS, BLM, NV, Arturo Mine Project, Review Period Ends:04/14/2014, Contact: John Daniel 775–753–0277.

EIS No. 20140067, Final EIS, USFS, ND, North Billings County Range Allotment Management Plan Revision, Review Period Ends: 04/28/2014, Contact: Nickole Dahl 701–227–7830.

EIS No. 20140068, Draft Supplement, USFS, UT, Leasing and Underground Mining of the Greens Hollow Federal Coal Lease Tract UTU–102, Comment Period Ends: 04/28/2014, Contact: Marianne Orton 435–896–1090.

EIS No. 20140069, Draft EIS, USFS, MT, Divide Travel Plan, Helena National Forest, Comment Period Ends: 04/28/2014, Contact: Heather DeGeest 406–449–5201.

EIS No. 20140070, Final EIS, NASA, CA, Proposed Demolition and Environmental Cleanup Activities at Santa Susana Field Laboratory, Review Period Ends: 04/14/2014, Contact: Allen Elliott 256–544–0662.

EIS No. 20140071, Draft EIS, NRCS, UT, Green River Diversion Rehabilitation Project, Comment Period Ends: 04/30/2014, Contact: Bronson Smart 801–524–4559.

EIS No. 20140072, Final EIS, NPS, NC, Fort Raleigh National Historic Site, General Management Plan, Review Period Ends: 04/14/2014, Contact: David Libman 404–507–5701.

Amended Notices

EIS No. 20140054, Revised Draft EIS, USFS, CA, Harris Vegetation Management Project, Comment Period Ends: 04/21/2014, Contact: Emelia H. Barnum 530–926–4511 ext. 1600. Revision to FR Notice Published 03/07/2014; Correcting Comment Period from 4/25/2014 to 4/21/2014.

Dated: March 11, 2014.

Dawn Roberts,

Management Analyst, Office of Federal Activities.

[FR Doc. 2014–05674 Filed 3–13–14; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

[EPA–R04–OAR–2013–0577; EPA–R04–OAR–2013–0431; and EPA–R04–OAR–2013–0648; FRL–9907–98–Region–4]

Notice of Issuance of Final Air Permits for Statoil Gulf Services, LLC, Florida Power & Light—Port Everglades Next Generation Clean Energy Center, and Tampa Electric Company.

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of final action.

SUMMARY: This notice is to announce that on October 28, 2013, the EPA issued final Outer Continental Shelf (OCS) air quality permit numbered OCS–EPA–R4012 for Statoil Gulf Services, LLC (Statoil); and on November 25, 2013 and December 18, 2013, the EPA issued final Prevention of Significant Deterioration (PSD) air quality permits numbered PSD–EPA–R4010 and PSD–EPA–R4014 for the Florida Power & Light (FPL)—Port Everglades Next Generation Clean Energy Center (PEEC) and Tampa Electric Company (TECO), respectively.

ADDRESSES: The final permits, the EPA's response to public comments for these permits, and supporting information are available at *http://www.epa.gov/region4/air/permits/index.htm.* Copies of the final permits and the EPA's response to comments are also available for review at the EPA Regional Office and upon request in writing. The EPA requests that you contact the person listed in the **FOR FURTHER INFORMATION CONTACT** section to schedule your inspection. The Regional Office's official hours of business are Monday through Friday, 8:30 a.m. to 4:30 p.m. excluding Federal holidays.

FOR FURTHER INFORMATION CONTACT: Please contact Ms. Heather Ceron, Air Permits Section Chief, Air Planning Branch, Air, Pesticides and Toxics Management Division, Region 4, U.S. Environmental Protection Agency, 61 Forsyth Street SW., Atlanta, Georgia 30303–8960. The telephone number is (404) 562–9185. Ms. Ceron can also be reached via electronic mail at *ceron.heather@epa.gov.*

SUPPLEMENTARY INFORMATION: On August 9, 2013, EPA Region 4 requested public comments on a preliminary determination to issue an OCS air permit for Statoil. During the public comment period, which ended on September 9, 2013, the EPA received no comments.

On May 31, 2013, EPA Region 4 requested public comments on a preliminary determination to issue a PSD air quality permit for the FPL PEEC project. A total of 26 comments from 3 commenters, including 1 request for a public hearing, were received (via email and letter) during the public comment period, which closed on July 2, 2013.

On September 24, 2013, EPA Region 4 requested public comments on a preliminary determination to issue a PSD air quality permit for the TECO project. A total of 25 comments from two commenters were received (via email) during the public comment

Green River Diversion Rehabilitation-Environmental Assessment

Scoping Report

Final

Contract No. AG-3A75-C-10-0025
Task No. AG-8D43-D-12-0020

Dan Axness
Project Manager

December 19, 2012

McMILLEN, LLC

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SECTION 1
INTRODUCTION

1.0 Introduction

The Natural Resources Conservation Service (NRCS) and Utah Department of Agriculture and Food (UDAF), as the project sponsor, are analyzing alternatives to repair damage to the Green River diversion structure from the late 2010 and early 2011 (2010/2011) flood events. The United States Fish and Wildlife Service (USFWS) is proposing to install a fish barrier as part of this project, through funding from the United States Bureau of Reclamation (USBOR), at the entrance to the west irrigation and hydropower plant canal to prevent Endangered Species Act (ESA) listed fish species from entering the canal and/or hydropower plant.

NRCS, as the lead federal agency, is initiating the NEPA analysis in the form of an Environmental Assessment (EA) to analyze impacts to the natural and human environment from this project. The U.S. Bureau of Reclamation (BOR) is proposing to fund the installation of the fish barrier and is a cooperating agency in the NEPA analysis. The EA will comprise of the following elements:

- Alternatives analysis of potential options for structure rehabilitation;
- Detailed analysis of resources that may be affected for each of the alternatives that may satisfy the purpose and need for the project;
- Identification of potential mitigation measures to reduce or eliminate potential impacts; and
- A plan of public participation and government agency coordination throughout development of the EA.

The participation of the public is a vital component of the project so that those who are interested in or potentially affected by proposed alternatives have an opportunity to share their concerns and provide input regarding the EA during the initial stages of the process. This Scoping Report outlines the comments received from the agencies and general public during the scoping process.

1.1 Project Purpose and Need

The Green River diversion structure was constructed in the early 1900's and has been modified over the years to maintain the structure. During the 2010/2011 flood events, flows in the Green River caused severe damage to the diversion structure compromising its structural integrity. If the dam fails water service to two irrigation canals, a historic irrigation water delivery system and one hydropower plant would be eliminated. Repairing the dam would directly result in these resources remaining open and usable. The purpose and need of the project is to maintain existing functions of the diversion dam for water delivery to irrigation canals and the powerhouse.

1.2 Scoping Goals and Objectives

The main goal of public participation is to involve a diverse group of public and government agency participants to solicit input and provide timely information throughout the NEPA review process regarding their concerns for the project and the proposed alternatives. The main goals are to 1) establish ongoing communication with stakeholders, agencies and the general public, 2) educate the public about the environmental review process and each party's role, 3) evaluate the

effectiveness of public participation activities on a continual basis and utilize the most effective techniques throughout the NEPA process, and 4) document all public and government agency input.

SECTION 2
SCOPING PROCESS SUMMARY

2.0 Scoping Overview

Scoping questions, comments and concerns were requested from the public and government agencies during the preliminary scoping period via written submittal of comments. The following summarizes the scoping process and efforts made to engage the public and government agencies.

2.1 Scoping Terms

The following terms were used during the scoping process to identify specific actions:

- Comment: a distinct statement or question about a topic or issue relating to the project.
- Comment Category: a topic to which a comment is addressed.
- Comment Document: a written version of comment(s) submitted by a commenter. One comment document may contain multiple comments.
- Commenter: an individual, organization or agency providing one or more comments.

2.2 Scoping Schedule

The following dates outline the milestones for the scoping process:

- October 30, 2012: Scoping Notice Mailed and Scoping Period Opened
- November 5, 2012: Poster Display Boards Placed in Community Gathering Places
- November 6, 2012: Public Notice Published in the Emery County Progress and Sun Advocate Newspapers
- November 8, 2012: Public Notice Published in the Moab Times-Independent Newspaper
- November 13, 2012: Public Notice Published in the Emery County Progress and Sun Advocate Newspapers
- November 15, 2012: Public Notice Published in the Moab Times-Independent Newspaper
- November 15, 2012: Scoping Meeting
- November 30, 2012: Scoping Period Closed

2.3 Scoping Notice

A scoping notice was prepared and sent to interested parties and regulatory agencies on Oct. 30, 2012. The list of recipients was prepared by the NRCS, UDAF, Utah Association of Conservation Districts (UACD), and the local Green River irrigators. The scoping notice gave a description of the project, location and overview, purpose and need, identified preliminary scoping issues, and requested public participation. The scoping notice also identified the location of public meetings, contact information to submit written comments, and the scoping period closure date. A copy of the scoping notice is attached in Appendix A. The scoping notice was also posted on the NRCS website.

Public notices were published in the Moab Times-Independent, Sun Advocate and Emery County Progress newspapers announcing the project and public meeting. Copies of the newspaper scoping notices are attached in Appendix B.

A poster display ad was placed at government buildings and various businesses and other community gathering places in the project area (Green River, Emery County and Grand County). A copy of the poster ad is attached in Appendix C.

2.4 Scoping Meeting

The primary purpose of the scoping meeting was to gather input and feedback on the project's purpose and need statement, potential alternatives for consideration, environmental issues to be addressed in the EA, methodologies to be used to evaluate impacts, and the overall public participation process. To gather as broad an audience as possible, a combined government agency and general public scoping meeting was held Nov. 15, 2012 from 6:00 PM to 9:00 PM at City Hall in Green River, Utah. The scoping meeting presentation can be found in Appendix D.

There were 34 attendees at the public meeting. Participants were invited to submit comments in writing either at the meeting or subsequently by mail, fax or e-mail during the scoping comment period. Attendance at the meeting was counted using a sign-in sheet that is located in Appendix E. Comment cards were handed out at the meeting which also provided a blank space to submit written comments.

Scoping Meeting – November 15, 2012

2.5 Scoping Mailing List

The mailing list was prepared by the NRCS, UDAF, UACD, and local Green River irrigators to inform the government agencies and general public about the scoping process for the project. A total of 69 mailings were sent to government agencies and 316 mailings were sent to the public.

SECTION 3
SCOPING COMMENTS

3.0 Scoping Meeting

The combined agency/public scoping meeting was conducted on Nov. 15, 2012 from 6:00PM to 9:00PM. There were 34 attendees at this meeting and there were two (2) written comments submitted.

The following project personnel were in attendance for the public meeting.

Name	Organization	Title
Norm Evenstad	NRCS	Water Resource Coordinator
Anthony Beals	NRCS	EWP Specialist
Chris Christiansen	NRCS	EWP Engineer
Bob Normal	BOR	Project Manager
Terry Stroh	BOR	NEPA Specialist
Roger Barton	UACD	Resource Coordinator
Thayne Mickelson	UDAF	Conservation and Resource Manager
Kevin McAbee	USFWS	Fish Biologist
Dan Axness	McMillen, LLC	Project Manager
Greg Allington	McMillen, LLC	NEPA Specialist

3.1 Written Comments

The scoping period officially opened on October 30, 2012 and ended on November 30, 2012 for a total of 32 days. Written comments could have been submitted via mail, e-mail, facsimile, or comment card.

There were eleven (11) written scoping comments received from a commenter via comment document during the scoping period for the Green River Diversion Rehabilitation project. Written comments are presented in Appendix E.

3.2 Comment Categories

Each of the comments was separated into comment categories to identify the nature of the comment. The following categories were created for scoping and are listed below. Specific comment details are listed in the Open House Comment Matrix in Appendix E.

- Fish Passage
- Boat Passage
- E-Barrier
- Sediment
- Water Wheel
- Funding
- Construction Alternatives
- Agriculture
- History

APPENDIX A

SCOPING NOTICE

USDA Natural Resources Conservation Service-Utah
Wallace F. Bennett Federal Building
125 S. State Street – Room 4010
Salt Lake City, UT 84138-1100

October 30, 2012

Dear Interested Parties:

The Natural Resources Conservation Service (NRCS), in cooperation with Utah Department of Agriculture and Food as the project sponsor, are proposing to address flood damage on the Green River diversion structure in Green River, Utah. The proposed project is located approximately 6.6 miles north of the city of Green River on North Long Road. **You are invited to attend a public meeting** where a wide range of conceptual alternatives addressing damage rehabilitation to the Green River diversion structure will be presented and discussed at the meeting.

When: Thursday November 15, 2012
Time: Formal Presentation: 6 p.m. – 6:45 p.m.
Informal Open House: 6:45 p.m. – 9 p.m.
Where: Green River City Hall
460 East Main St
Green River, Utah 84525

More project specific information is available by contacting Greg Allington (McMillen, LLC) with the project team by phone at 208-342-4214 or email at greenriver@mcmillen-llc.com.

……
……..

Environmental Assessment Introduction

The NRCS is proposing to partially fund, through the Emergency Watershed Protection (EWP) program, a project to address and reduce flood damage to the existing Green River diversion structure. The National Environmental Policy Act (NEPA) and the Council on Environmental Quality's regulations at 40 CFR Parts 1500-1508 require an evaluation of potential environmental impacts associated with federal projects and actions. The project will require an environmental analysis and the environmental impacts will be documented in the form of an Environmental Assessment (EA) for the project.

Project Purpose and Need

In accordance with the rehabilitation provisions of the NRCS's EWP program, the area is eligible for rehabilitation funding due to recent flood damage in late 2010 and early 2011. The purpose of the project is to rehabilitate the structure so it continues to function as originally intended.

Public Participation

The participation of the public is a vital component of the project so that those who are interested in or potentially affected by the proposed project have an opportunity to share their comments, ideas, and concerns regarding actions during the initial scoping stage of the NEPA process. You are encouraged to attend the public meeting and express your comments, ideas, and concerns. You may also submit your

comments via letter, email or fax anytime during the public comment period. For comments to be considered and to become part of the public record for the projects, **we need to receive them by close-of-business on November 30, 2012**.

Please mail your written comments to:

Green River Diversion Rehabilitation Project
c/o McMillen, LLC – Greg Allington
1401 Shoreline Drive
Boise, ID 83702

You may also submit comments by email, phone or fax to McMillen:

Email: greenriver@mcmillen-llc.com
Phone: 208-342-4214
Fax: 208-342-4216

After receiving comments by close-of-business on November 30, 2012, the NRCS will begin reviewing the comments and reviewing conceptual alternatives for analysis in the EA. Preliminary resource concerns identified during this initial project scoping process will also be addressed in the EA.

You may also visit the project website at http://www.ut.nrcs.usda.gov/programs/EWP/index.html to check on the status of the project and download project related documents during the course of the NEPA analysis.

The project team values your feedback and encourages you to attend the open house on November 15, 2012.

Sincerely,

Bronson Smart
NRCS State Engineer

cc: Norm Evenstad – NRCS
Chris Christiansen – NRCS
Thayne Mickelson – UDAF
Roger Barton – UACD
Dan Axness – McMillen, LLC
Greg Allington – McMillen, LLC

APPENDIX B

NEWSPAPER SCOPING NOTICES

Emery County Progress and Sun Advocate

NRCS PUBLIC OPEN HOUSE

The Natural Resources Conservation Service (NRCS), in cooperation with Utah Department of Agriculture and Food as the project sponsor, are proposing to address flood damage on the Green River Diversion Structure (Tusher Wash Diversion) under the Emergency Watershed Protection program. The proposed project is located approximately 6.6 miles north of the City of Green River, Utah on North Long Road. The National Environmental Policy Act (NEPA) and the Council on Environmental Quality's regulations at 40 CFR Parts 1500-1508 require an evaluation of potential environmental impacts associated with federal projects and actions within put from the public.

You are invited to attend a public scoping meeting where a wide range of conceptual alternatives addressing damage rehabilitation to the Green River Diversion Structure will be presented and discussed at the meeting.

When: November 15, 2012 - Thursday
Time: 6:00 PM to 9:00 PM
Where: Green River City Hall
460 East Main St
Green River, Utah

Interested parties may voice their comments, ideas, and concerns to the project sponsors during this meeting. Comments may also be submitted via the following methods prior to the **end of the scoping period on November 30, 2012**:

Mail: Green River Diversion Rehabilitation Project
c/o McMillen, LLC
1401 Shoreline Drive
Boise, Idaho 83702
Email: greenriver@mcmillen-llc.com
Fax: (208) 342-4216
Phone: (208) 342-4214 ext. 318

Bishop notes the outdoors groups are not talking with [illegible] officials about how those lands should be managed and said this is one reason state leaders are

Times-Independent

Tuesday that a legislative route [illegible]on for the Great[illegible] has seemed out of reach.

"Congress has not passed

derness Alliance, v
outdoor industry
and says he is n
that the group wer
president for help.

"Utah politicia
begging for this,"
"Governor [Gar
launched his att
public lands by de
federal governmen
million acres of lar
ing over 20 lawsuits
That is not a way to
sion. People's favor
their businesses ar
and that triggers
seek protection."

A spokeswoma
said the governor's
contacted by anyon
national monumen
and opposes its cr
president.

"We certainly h
have another Bill
proach to creating a
Ally Isom said. "
was established by
any expansion ough
ly created by statut

Leaders of the
crafted the letter to
said in a conference
that they don't pla
changes should G
yonlands National
become a reality.

"Most [changes
to do with resourc
Korenblat said. "
leasing system no

NRCS

PUBLIC OPEN HOUSE

The Natural Resources Conservation Service (NRCS), in cooperation with Utah Department of Agriculture and Food as the project sponsor, are proposing to address flood damage on the Green River Diversion Structure (Tusher Wash Diversion) under the Emergency Watershed Protection program. The proposed project is located approximately 6.6 miles north of the City of Green River, Utah on North Long Road. The National Environmental Policy Act (NEPA) and the Council on Environmental Quality's regulations at 40 CFR Parts 1500-1508 require an evaluation of potential environmental impacts associated with federal projects and actions with input from the public.

You are invited to attend a public scoping meeting where a wide range of conceptual alternatives addressing damage rehabilitation to the Green River Diversion Structure will be presented and discussed at the meeting.

When: November 15, 2012 - Thursday
Time: 6:00 PM to 9:00 PM
Where: Green River City Hall
460 East Main St
Green River, Utah

Interested parties may voice their comments, ideas, and concerns to the project sponsors during this meeting. Comments may also be submitted via the following methods prior to the **end of the scoping period on November 30, 2012**:

Mail: Green River Diversion Rehabilitation Project
c/o McMillen, LLC
1401 Shoreline Drive
Boise, Idaho 83702
Email: greenriver@mcmillen-llc.com
Fax: (208) 342-4216
Phone: (208) 342-4214 ext. 318

Hiring Crew

Hiring Bo
up to $75

APPENDIX C

OPEN HOUSE POSTER DISPLAY AD

PUBLIC OPEN HOUSE

You are invited to attend a public scoping meeting where a wide range of conceptual alternatives addressing damage rehabilitation to the Green River Diversion Structure (Tusher Wash Diversion) will be presented and discussed at the meeting. Interested parties may voice their comments, ideas, and concerns to the project sponsors during this meeting.

When: November 15, 2012 - Thursday
Time: 6:00 PM to 9:00 PM
Where: Green River City Hall
460 East Main St, Green River, Utah

The Natural Resources Conservation Service (NRCS), in cooperation with Utah Department of Agriculture and Food as the project sponsor, are proposing to address flood damage on the Green River Diversion Structure under the Emergency Watershed Protection program. The proposed project will require an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA).

More information is available by contacting McMillen, LLC with the project team.

Email: greenriver@mcmillen-llc.com
Phone: (208) 342-4214 ext. 318

NRCS
Natural Resources Conservation Service

UDAF
Utah Department of Agriculture and Food

APPENDIX D

SCOPING MEETING PRESENATION

NRCS Emergency Watershed Protection (EWP) Green River Diversion Rehabilitation Environmental Assessment

Public Open House

November 15, 2012

Project Team

Natural Resources Conservation Service
(NRCS)
Lead Funding Agency

Bureau of Reclamation
(BOR)
Cooperating Funding Agency

Utah Department of Agriculture and Food
(UDAF)
Project Sponsor

McMillen, LLC
NEPA Project Manager/Concept Design

NRCS EWP Process Review

Norm Evenstad – NRCS

- Water Resource Coordinator

- Utah State: $70 million+ in 2012
- Flood, Wind and Fire Damage

NRCS - EWP Review

- Green River Diversion
- Damaged by Floods of 2011

Project Review

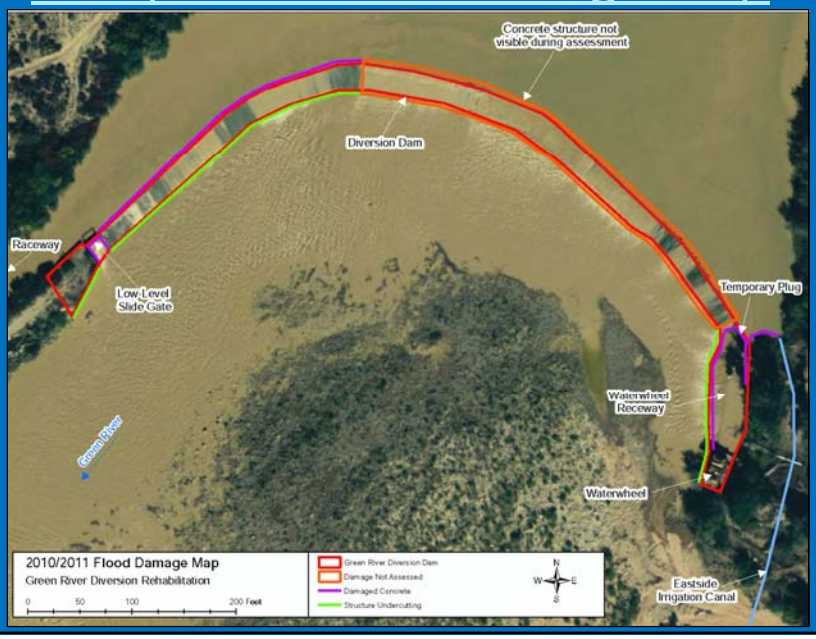
McMILLEN
DESIGN with Vision. BUILD with Integrity.

Dan Axness – McMillen, LLC
– Concept Design Project Manager

Project Vicinity Map

Project Overview Map

2010/2011 Flood Damage Map



Photos

West End of Diversion

East End of Diversion

Photos

East End of Diversion Damage to Waterwheel Raceway (looking u/s)

East End of Diversion Damage to Waterwheel Raceway (looking d/s)

Photos

West End of Diversion Damage to Diversion Dam (looking u/s)

West End of Diversion Damage to Diversion Dam (looking u/s)

Photos

Damage to Slide Gate West End of Dam (looking u/s)

Damage to Concrete West End of Diversion

Photos

Damage to Concrete West End of Diversion

Damage to Concrete and Entrance to Raceway West End of Diversion

Conceptual Project Alternatives

- No Action
- Rehabilitate Diversion (4 Options)
- Diversion Decommissioning
- Fish Passage Upstream/Downstream
- Boat Passage Upstream/Downstream
- Electric Fish Barrier

Conceptual Project Alternatives

- Rehabilitate Diversion Options
  - Repair Existing Diversion
  - Replace Existing Diversion
  - Replace Existing Diversion Downstream
  - Replace Existing Diversion Upstream

Electric Fish Barrier

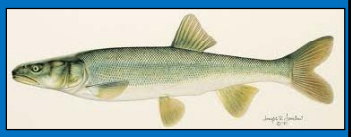
- Deter fish from swimming down powerhouse and irrigation canal raceway

EXAMPLE

Fish Passage

- Endangered and Threatened Fish Species
- Downstream: Notches in Dam
- Upstream: Passage System
- Electronic Tag Reader

Razorback Sucker


Colorado Pikeminnow

Humpback Chub

Bonytail

National Environmental Policy Act

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Greg Allington – McMillen, LLC
– NEPA Project Manager

National Environmental Policy Act (NEPA) of 1969 (Public Law 91-190) and the Council on Environmental Qualities regulations at 40 CFR Parts 1500-1508

NRCS NEPA

- Environmental analysis required for major federal actions.
- The NRCS is the funding agency for the diversion dam rehabilitation project (75%).
- The project sponsor provides the remaining 25% cost-share for the diversion dam rehabilitation project.

BOR NEPA

- Upper Colorado River Endangered Fish Recovery Program
- The BOR is the funding agency for the electric fish barrier project (100%)
- The US Fish and Wildlife Service is providing technical oversight of the barrier

NEPA Requirements

- Environmental Assessment (EA)
  - NRCS and BOR NEPA requirements
  - Analysis looks at potential impacts to the natural and man-made environment

NEPA Requirements

- NEPA Process
  - Scoping
    - Express initial concerns and suggest alternatives to be considered
  - Draft EA
    - Public review of alternatives and environmental impacts
  - Final EA
    - Proposed alternative published to public
  - Finding of No Significant Impact (FONSI)
    - Project approval by NRCS and BOR

Typical Scoping Concerns

- Project Purpose and Need
- Design Alternatives
  - Including a No-Action Alternative
- Natural Environment
- Man-made Environment
- Mitigation

Scoping Comments

- Formal comments may be submitted by:
  - Email
  - Written Letter
  - Comment Card
  - Oral

- Scoping Report: Summarizes issues, alternatives and concerns from the public

Schedule

- NEPA Environmental Assessment
  - Start: September 2012
  - **Public Scoping Comment End: Nov. 30, 2012**
  - Draft EA Public Comment: March 2013
  - FONSI: Late Summer 2013
- Construction
  - Start: Late Fall 2013
  - End Early Spring 2014

NEPA Contact Information

- Please contact Greg Allington with McMillen project with questions and comments:

Phone: 208-342-4214

Fax: 208-342-4216

Email: greenriver@mcmillen-llc.com

Address: 1401 Shoreline Drive
Boise, ID 83702

Informal Questions

???

APPENDIX E

COMMENTS AND SCANNED SIGN-IN SHEETS

Commenters and Commenter Reference Numbers

Commentor #	Name	Organization	Phone	Address	City	State	Zip	Email	Comment Document
1	Kathy Ryan		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Comment Card
2	Thayne Mickelson	UDAF	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Comment Card
3	Dan Harrison		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Comment Card
4	Kirk Dunham		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Comment Card
5	Julie Zwahlen		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Email
6	Penny Riches		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Email
7	Von Bowerman		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Email
8	Pat Brady		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Email
9	Kelly Dunham		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Email
10	John Weisheit	Colorado Riverkeeper	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Email
11	Chet D. Hunt		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Email

Commenters and Commenter Reference Numbers

Comment Category	Comment	Commenter
Boat Passage	Don't Do	1
	Boat passage not needed, boat ramps up and downstream of dam	9, 11
	Government focusing on small sector of private boating so companies can get money, focus on what benefits the majority, not private companies	3
	Create boat ramp upstream of dam for boaters	3
Fish Passage	Concentrate on fish flow	1
	Did the current dam cause extinct/endangered fish species?	3
E Barrier	Maintenance, operations and liability directly to BOR and F&WL, not canal, conservation or local landowners	2
Sediment	Any alternative would still require a sluicing system, at high flows the gates will be left open 24/7 and low flows only bi-weekly	3
	Add gates by the pump house to remove sediment from the raceway quicker	7
	Large gates should be added so sediment can be washed downstream	7
Water Wheel	The water wheel should receive it's 60cfs at the height of the dam and with the dam having a matched curve to fit the water wheel to maintain energy flows	7
	Thaynes' sluicing doing more good before the generator than all smaller gates downstream	3
Funding	Spend the money where it benefits the most	3
	Do the dam with the funds on hand	4
	Fulfill other's wishes when funds become available	4
	The Bureau of Reclamation should be consulted to provide further funding opportunities via the WaterSMART	10
	Stay within grandfather clause with the fish protection expenses, cannot have any changes that will burden the Green River Canal Co.	7
	Comparative financial analysis of diversion dam vs. pumping station	10
Construction Alternatives	Replace existing dam or build new one downstream	3
	Green River needs to have their own dam, because they already have the rights.	5
	Power turbines should be added to the dam to supply power to Green River	6,7,11
	Desilting basin could be built above the flood plain to reduce cause of sediment removal and reduce wear to water works and sprinklers	10

Construction Alternatives	The City of Green River should pursue a hydro-power plant adjacent to the dam with the ability to expand into nuclear power in the future	8
	A pumping station would include saving from protecting the overall investment from the damages that may be caused by a maximum flood event, reduce fish mortality and drift wood snag	10
	Intermittent overflow from floods on a raised dam height can be handled by a raceway that can compensate for the increased height	7
	Repair existing dam only if it would remain effective, secure and stable	9
	Combine fish passage, boat passage and E-Barrier at the west side of raceway, add 5 gates downstream of the 125ft E-Barrier to flush sediment, the passage can also be used as a place to skim trash	7
	Widen the raceway to 75ft	7
	Include a pumping station alternative with the goal of decommissioning the current dam	10
	Replace the dam and move upstream away from the Tusher Wash drainage	10
Agriculture	Farms upstream can sustain flooding if water level was raised too much.	9
History	The Green River has experienced flood events far exceeding the 2011, 43,700 cfs flood and should be built to withstand 19th century flows projected at 100,000-300,000 cfs	10

NRCS

NRCS Green River Diversion Rehabilitation
Environmental Assessment

McMILLEN
DESIGN with Vision. BUILD with Integrity.

UDAF

Public Scoping Meeting Sign-In Sheet

November 15, 2012

Name	Phone	Address	Email
Von Bowerman	[redacted]	[redacted]	[redacted]
Norm Evenstad	[redacted]	[redacted]	[redacted]
Tony Beals	[redacted]	[redacted]	[redacted]
Thayne Mickelson	[redacted]	[redacted]	[redacted]
JOHN WEISHEIT	[redacted]	[redacted]	[redacted]
ED WHICKER	[redacted]	[redacted]	[redacted]
Terry Stroh	[redacted]	[redacted]	[redacted]
Bob Norman	[redacted]	[redacted]	[redacted]
Pat Brady	[redacted]	[redacted]	[redacted]
Randy W Tucker	[redacted]	[redacted]	[redacted]

NRCS

NRCS Green River Diversion Rehabilitation
Environmental Assessment

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UDAF

Public Scoping Meeting Sign-In Sheet

November 15, 2012

Name	Phone	Address	Email
Kathy Ryan	[redacted]		
Char D. Lupton	[redacted]		
Nancy Dunham	[redacted]		
Lee Thayn	[redacted]		
Randy Erwin	[redacted]		
Judy Ann Scott	[redacted]		
Robert D Scott	[redacted]		
Diane Maxfield	[redacted]		
LEON MAXFIELD	[redacted]		
Robert C Steuer	[redacted]		

NRCS

UDAF

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NRCS Green River Diversion Rehabilitation
Environmental Assessment

Public Scoping Meeting Sign-In Sheet

November 15, 2012

Name	Phone	Address	Email
Robert Quist	[redacted]		
Kelly Dunham Rie Schmidt	[redacted]		
Lance Erwin	[redacted]		
Jason Johnson	[redacted]		
Bo Harrison	[redacted]		
[illegible]	[redacted]		
Eugene Sudberg	[redacted]		
Bruce Nelson	[redacted]		
[illegible]	[redacted]		
Chu Dunham	[redacted]		

NRCS

UDAF

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NRCS Green River Diversion Rehabilitation
Environmental Assessment

Public Scoping Meeting Sign-In Sheet

November 15, 2012

Name	Phone	Address	Email
Dan Harrison	[redacted]		
Greg Vetere	[redacted]		
Roger Barth	[redacted]		
Wayne Urie	[redacted]		
Greg Allington McMillen, LLC	[redacted]		
Dan Axness McMillen, LLC	[redacted]		

Commenter #1

NRCS

NRCS Green River Diversion Rehabilitation Environmental Assessment .

Public Scoping Meeting Comment Card

November 15, 2012

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UDAF

Name: Kathy Ryan

Address: [redacted]

Email:

Phone:

Comments:

I think don't do a boat passage in the dam concentrate on fish flows.

You can also provide comments by emailing them to greenriver@mcmillen-llc.com, faxing them to 208-342-4216, or by calling 208-342-4214.

Commenter #2

NRCS

NRCS Green River Diversion Rehabilitation Environmental Assessment

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IDAF

Public Scoping Meeting Comment Card

November 15, 2012

Name: Thayne Mickelson

Address: [redacted]

Email:

Phone:

Comments:

E Barrier Maintanence + operations as well as liability clearly stated as the responsibility (with signiture of acceptance through contract or agreement) of the F+WL and BOR with no liability to canal, conservation districts or local landowners

You can also provide comments by emailing them to greenriver@mcmillen-llc.com, faxing them to 208-342-4216, or by calling 208-342-4214.

Commenter #3

NRCS

NRCS Green River Diversion Rehabilitation Environmental Assessment

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Public Scoping Meeting Comment Card

November 15, 2012

Name: Dan Harrison

Address: [redacted]

Email:

Phone:

Comments:

Fish issues: The existing diversion dam is over 120 years old. How is it all the endangered fish are still alive when no special consideration was given to protecting these fish? Are there any extinct species of fish that went extinct because of the dam? Most fish migrate up stream to spawn in the spring when high water is present. Could this be why these endangered fish continue to exist - they can move upstream without any special Dam modifications? Build the dam to last let nature adjust!

Boat issues: This should be a dead issue. Since when does the gov. care about providing a living for private group. River trip companies are in it for the money. Boaters are only on the river for about 5 months out of the year. during 3 of those months the water flow is too low to use below the dam. Boaters have never had use of this area of the river, why now? The extra money spent on the this small, select group of people does not give the tax payer a very good pay back.

You can also provide comments by emailing them to greenriver@mcmillen-llc.com, faxing them to 208-342-4216, or by calling 208-342-4214.

You can't be everything to everybody. Spend your money where it benifits the most.

over

Commenter #4

NRCS

NRCS Green River Diversion Rehabilitation Environmental Assessment

MCMILLEN
DESIGN with Vision. BUILD with Integrity.

UDAF

Public Scoping Meeting Comment Card

November 15, 2012

Name: Kirk Dunham

Address: [redacted]

Email:

Phone:

Comments:

I believe we need to repair/ modify the existing structure for the following reasons:

#1 It is a proven design. It has served 106 years. If it weren't for the bureaucratic encumbrances the community would have repaired it already.

#2 We don't want to incurr a large debt to pass on to water users for future generations. I resent the remark that the farmers are un able to do it them selves, they built it themselves 106 yrs ago. My son is an engineer with the Bureau of Reclamation in Grand Junction office, He has talked with his Uncle Chris about this extensively. If a simple design can be developed it could be done with the funds

You can also provide comments by emailing them to greenriver@mcmillen-llc.com, faxing them to 208-342-4216, or by calling 208-342-4214. over

on hand.

Draw in options for everyone wishes should funds become available.

Lets get it Done

Kirk Durham

Commenter 5

From: greenriver@mcmillen-llc.com on behalf of [redacted]
To: greg.allington@mcmillen-llc.com
Subject: Green River
Date: Monday, November 26, 2012 11:43:16 AM

Green River Need to have their own dam for power since they already have the rights to it first. Not somebody else coming in to do one.

Thanks
Julie Zwahlen
[redacted]

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Commenter 6

From: greenriver@mcmillen-llc.com on behalf of [redacted]
To: greg.allington@mcmillen-llc.com
Subject: green river diversion project
Date: Tuesday, November 27, 2012 3:30:38 PM

Green River Diversion Project
The diversion dame does need to be replaced and I would love to have power turbans installed for the purpose of producing power. This could be a good way to help pay for keeping the dame updated and do repairs,
Penney Riches
Green River, Utah

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Commenter 7

From: Von Bowerman
To: Dan Axness
Subject: Re: FW: Draft email to project team - Green River/Tusher Wash
Date: Sunday, November 25, 2012 8:28:34 AM

Hi Dan

The public meeting on Nov. 15, 2012 went well. Good work conducting the meeting.
These comments are my own and are not voted on by the Green River Canal Board.

1) The most important issue is to stay in the grandfathered clause with the fish protection expenses. We can not have any changes that will put the burden to the G.R.Canal Co., or any water rights before 1988 date.

2) Low water height, to raise the diversion dam a foot has a long list of benefits. With the only down fall is the high water level that only happens about every ten years and this can be handled with by having a over flow area along the raceway bank on the green river side that is long enough to compensate for the increased height.

3) The water wheel has first right to Its 60 C.F.S.,it needs a slot the will let out that flow rate at a low river level. But i think that the water wheel would work best if the wheel receives the 60 c.f.s.at the height of the dam and had a curve that matched the wheel in order to keep the energy from the water it is getting, put to better use. If the people owning the water wheel will agree to receiving the 60 c.f.s at a higher level it would be better for everybody, but that is not our problem, just the slot at the dam.

4) Sediment up stream of the dam needs to be able to be flushed down stream at some point in time when the sediment gets buildup, like right now. So some large gates that could be opened in low river flow to accomplish letting the sediment wash down river. Dropping the sediment out first in the river and having the raceway be the second place to catch sediment , the canals be the last place to have to deal sediment would be a big improvement.

5) E-Barrier, gates, trash skimmer, boat passage, and fish passage on the west side at the head of the race way will work best if combined together. A) The E-Barrier needs to be long enough, so the flow is slower for the fish to get away easier. Also it can not hinder the flow into the raceway. B) If the e-barrier was 125 feet long and we put five, 25 foot radial gates a few feet up stream of the e-barrier, this would work as gates to the raceway and then we could flush the sediment off of the e-barrier by opening one gate at a time to remove sediment that will get build up. Also, we could use the same radial gates as the skimmer for trash coming down the river by lowering the radial gates a foot or so down in the top of the water. C) Having the boat/fish passage in line with the e-barrier, so the slot in the dam for the boat/fish can double as a place for the trash from the skimmer to pass over the dam easier. D) Sediment collected in the raceway needs to be handled faster when we need to flush it out. So if we had a large gates placed down by the pump house, this would help in removing sediment in the raceway, also when we have a flooding problem this gate would help relieve water height passing over the dam. In 2011 the small radial gates that we have now do not come clear out of the water and have more of a problem getting plugged up. That also makes them a lot harder to clean trees and other trash away from the gates.

6) I feel the raceway needs to be wider, from 50 feet to 75 feet at least down to where the hill starts becoming a issue. Now the 50 foot structure with the 8 gates is a bottle neck in the flow we need. In 2011 flooding, the 8 gate structure became plugged with trees and junk that came from the river, this caused the dam to have more flow going over it, that added to more flooding problems up river. How ever if the trees and trash was not caught at the 8 gates it would of plugged up are small radial gates at the pump house. That could of been even a bigger problem, if the raceway may of not held the extra pressure from the water height in the raceway. This is also a benefit to having a large gate at the pump house area to handle more water during flooding times.

Please let me know if you got this e-mail. Thanks Von

Commenter 8

From: greenriver@mcmillen-llc.com on behalf of [redacted]
To: greg.allington@mcmillen-llc.com
Subject: power plant addition
Date: Thursday, November 29, 2012 9:59:03 AM

Hello,

Since our meeting it has been brought up that the City of Green River should pursue putting
in a hydro-power plant along side the dam.

Therefore, I would appreciate it if you also draw up plans that would include a power plant
suitable to sustain our town and projected growth with the Nuclear Power plant addition.

Any questions, please feel free to write or call.

Sincerely,

Pat Brady
Mayor, City of Green River
[redacted]

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Commenter 9

From: kelly dunham
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Dam Comments
Date: Thursday, November 29, 2012 10:39:46 AM

Greg,

I would like to send an official comment concerning the improvements to the GR Diversion Dam.

I am a local farmer/water user and commercial river rafter.

I have talked with fellow river rafters along with local jet boat operators and everyone agrees that there is no need for "up stream" travel for any water crafts. As long as there is some kind of slot for down stream floating that is sufficient. No need to spend much additional time or funds.
When the river levels are "low" (say below 3-5,000 cfs) there are too many rocks down stream of the dam for any water craft to even access the dam area. In the event of a rescue situation, boats can launch from the Swasey's boat ramp up stream or from the Green River State Park down stream.

Another concern that I have would be to maintain the current up stream water level. The farms up stream from the diversion dam could sustain flooding if the water level was raised much.

My vote would be to repair the existing dam if it would remain effective, secure, and stable, instead of replacing it.

Thank you for your concerns and effort with this project.
Feel free to email or call me if you have any questions.

Kelly Dunham
[redacted]

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Commenter 10

From: John Weisheit
To: greenriver@mcmillen-llc.com; greg.allington@mcmillen-llc.com; dan.axness@mcmillen-llc.com
Cc: John Weisheit; Terence Stroh; Kevin McAbee
Subject: Scoping for Green River Diversion Rehabilitation Project
Date: Friday, November 30, 2012 2:52:52 PM

November 30, 2012

Green River Diversion Rehabilitation Project
c/o McMillen, LLC – Greg Allington
1401 Shoreline Drive
Boise, ID 83702
Email: greenriver@mcmillen-llc.com
Phone: 208-342-4214
Fax: 208-342-4216

Re: Scoping for Green River Diversion Rehabilitation Project

Dear Mr. Allington,

This letter is submitted by Living Rivers and Colorado RIverkeeper, which is based in Moab, Utah. Our organization works on many issues related to water resource management in the Colorado River basin that is shared by people and wildlife in seven states and Mexico.

INTRODUCTION

This diversion dam was built in 1906 and originally constructed of wood cribs filled with large rocks. In 1936 the diversion dam was capped with a concrete slab about 12 feet wide. The components of the facility include a water wheel on the east side, a gravity-fed canal on the west side, and a pumping station and power plant on the west side.

The snowmelt of 2011 damaged the diversion dam and water works and the dam is thus slated for rehabilitation or replacement. There are concerns about reducing the "take" of endangered fish, and creating a passage for boats to improve navigation, and to reduce the build-up of driftwood snags and trees during the annual snow melt, or summer cloudbursts.

The preferred action would appear to include the repairing of the dam, install a boat passage, and install an electric fence to reduce mortality of

endangered fish. It is not arbitrary to state that the status quo operations of the diversion dam are not in the public interest, as it relates to protecting endangered fish and preventing navigation accidents.

GEOMORPHIC AND HYDROLOGIC CONCERNS

The peak flow for 2011 occurred on June 14 and the discharge was 43,700 cubic feet per second (cfs). Since the diversion dam has endured higher floods in the past, such as the 1917 peak of 65,500 cfs, it is correct to provide a solution to this aging infrastructure problem. However, even with a new or repaired diversion dam, it must be appreciated that the 20th century was generally kind when it came to large flood events. The 19th century actually had more extremes of hydrology and with greater frequency.

For example, it is generally accepted that a flood of 100,000 cfs flowed through the Gunnison Valley in 1884, following the eruption of Krakatoa in Sumatra. When it was decided to build Hoover Dam, the spillways were designed to accommodate the flood volume of the 1884 snowmelt at that location. The volume of that flood was determined by measuring the height of the driftwood that accumulated on the margins of the river channel (approximately 300,000 cfs). On the Colorado River above the Confluence with the Green RIver, the flood of 1884 was measured by gages below Grand Junction and the peak flow was determined to be 125,000 cfs.

According to various pioneer diaries (especially John Doyle Lee), a regional storm lasted 44 days from December 1861 to February 1862, and though the total yield of this storm is not yet known, the driftwood snags from this flood were photographed in Cataract Canyon by John Wesley Powell during his second expedition in 1871. The photograph was matched in the 1990's and the location of the camera station indicates that the combined flow of the Green and Colorado rivers was at least as high as the flood of 1884, and possibly higher. Slack water deposits were analyzed in Cataract Canyon by the University of Arizona in the summer of 2012. Unfortunately the analysis of the data has not yet been finalized; perhaps in a few more months the data can be shared with the public.

It is also generally accepted, anecdotally, that the snowmelt that followed the 1816 eruption of Mt. Pinatubo in Sumatra ("the year of no summer"), had at peak flow that was probably greater than the flood of 1884.

This information is useful for three reasons: 1) the 20th century escaped the consequences of a 100-year flood, but the 19th Century had at least three 100-year events; 2) the frequency and magnitude of a 100-year flood event is poorly understood (but improving) in the Colorado River basin; 3) it is likely that a flood(s) of 100,000 cfs or greater can be expected in the lifetime of this diversion dam and it should be properly constructed to withstand such volumes of water.

To better understand the nature of probable maximum floods in the Colorado River basin, please refer to the following publication (and references): "The Moab Mill Project: A technical report towards reclaiming uranium mill tailings along the Colorado River in Grand County, Utah. 2005." http://www.riversimulator.org/Resources/Hydrology/MoabMillProject.pdf

The other concern is the location of the diversion dam near the mouth of Tusher Wash. The debris flow (gravel bar) directly below the dam indicates that a massive cloudburst in the East Tavaputs Plateau (Book Cliffs) could create damaging debris flows from the Tusher Wash drainage. It is recommended that should the dam be replaced, that the location is moved further upstream and out of harms way.

PUMPING STATION ALTERNATIVE

An economic analysis should be presented with the goal of weighing the costs of the water delivered via diversion dam, versus the costs of water delivered via pumping station, and with the goal of eliminating this low-head dam altogether and combining this alternative with the dam decommissioning alternative.

The expenses of dam construction would include (not a conclusive list): the building of the dam (or rehabilitating the existing dam), demolition of the old dam (or not), the cost of repairs or replacement from damages caused by a probable maximum flood, long-term maintenance costs, endangered fish protection costs, and other such expenses.

The expenses of a pump station would include (not a conclusive list): removal of the dam, construction of screened intakes and pumps on both sides of the river, the cost of electricity, the cost of a pipeline to deliver water to the irrigation ditches and the Thayn Hydroplant, the cost of land purchases or exchanges, and other such expenses.

The benefits of a pump station, provided the pump station is perched above the floodplain, would include savings from protecting the overall investment from the damages incurred by a probable maximum flood, reduction of fish mortality and driftwood snags.

Perhaps a desilting basin could also be built above the floodplain, to reduce the cost of sediment removal in the ditches, and to reduce wear to water works and sprinklers.

We would also recommend that the Bureau of Reclamation be consulted to provide further additional funding opportunities for the project via the WaterSMART program, or other similar community investment programs.

Thank you for this opportunity to provide information and possible alternatives for this project. Please do not hesitate to contact me if you have any questions or concerns.

Sincerely yours,

/s/ John Weisheit

Living Rivers
Conservation Director
Colorado RIverkeeper
[redacted]

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Commenter 11

From: greenriver@mcmillen-llc.com on behalf of Chet Hunt
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Rehabilitation Project
Date: Saturday, December 01, 2012 9:09:46 AM

To Whom It May Concern,

The dam should be put in the same spot. It's already the right level for east and west side irrigation canals. A place for the boats to come over is not neccesary because of the boat dock just above the dam, and there is a boat dock just below the dam. I think that turbance should be put in for power generation for the city of Green River at the time of the rebuilding. The little city's power bill is just below $100, 000 a year, and the city should have done that 100 years ago when the dam was put in the first time.

Chet D. Hunt

[redacted]

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Green River Diversion Rehabilitation – Environmental Impact Statement

Scoping Report

Final

Dan Axness
Project Manager

July 16, 2013

McMILLEN, LLC

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APPENDICES

Appendix A Scoping Notice
Appendix B Newspaper Scoping Notices
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SECTION 1
INTRODUCTION

1.0 Introduction

The Natural Resources Conservation Service (NRCS) and the Utah Department of Agriculture and Food (UDAF), as the project sponsor, are analyzing alternatives to repair damage to the Green River diversion structure from the late 2010 and early 2011 (2010/2011) flood events. The Upper Colorado River Endangered Fish Recovery program (Recovery Program) is proposing to install a fish barrier as part of this project at the entrance to the west irrigation and hydropower plant canal to prevent Endangered Species Act (ESA) listed fish species from entering the canal and/or hydropower plant. The United States Fish and Wildlife Service (USFWS) and the United States Bureau of Reclamation (USBOR) are representing the Recovery Program by providing technical oversight of the fish barrier design and installation.

In August 2012, NRCS, as the lead federal agency, initiated the National Environmental Policy Act (NEPA) analysis in the form of an Environmental Assessment (EA) to evaluate potential impacts to the natural and human environment from this project. An initial project scoping period for the elements to be addressed in the EA was opened for 32 days (October 30 through November 30, 2012). A public meeting attended by 34 participants was held November 15, 2012 to gather input and feedback on the project's purpose and need statement, potential alternatives for consideration, environmental issues to be addressed, methodologies to be used to evaluate impacts, and the overall public participation process. Eleven written comments were received and were included in the 1st Scoping Report titled *Final Green River Diversion Rehabilitation – Environmental Assessment Scoping Report* issued December 19, 2012.

Following the first scoping period, further consultation was performed with the Utah State Historic Preservation Office (SHPO) under Section 106 of the National Historic Preservation Act. NRCS determined that the dam is 90+ years old and may be eligible for listing on the National Register of Historic Places. Any modifications to the dam may be considered an "adverse effect", which may make it ineligible for listing after rehabilitation. Some of the impacts to the diversion dam from the rehabilitation alternatives may be considered "significant" to cultural resources and as a result, NRCS has decided to prepare an Environmental Impact Statement (EIS) for the project instead of the previously-proposed EA. The EIS will comply with the Council on Environmental Quality's regulations at 40 CFR Parts 1500-1508, which require an evaluation of potential environmental impacts associated with federal projects and actions.

Participation of the public is a vital component of the project so that those who are interested in or potentially affected by proposed alternatives have an opportunity to share their comments, ideas, and concerns regarding actions during the scoping stage of the NEPA process. To provide the public with an opportunity to comment on the preparation of the EIS and a second opportunity to comment on the overall project, NRCS opened a second public scoping period. The second scoping period was opened from May 29, 2013 and closed on July 2, 2013. This EIS Scoping Report presents the comments received from the agencies and the general public during the 2nd scoping period.

1.1 Project Purpose and Need

The Green River diversion structure was constructed in the early 1900s and has been modified over the years to maintain the structure. During the 2010/2011 flood events, flows in the Green

River caused severe damage to the diversion structure, compromising its structural integrity. If the dam failed, water service to two irrigation canals, a historic irrigation water delivery system, and a hydropower plant would be eliminated. Repairing the dam would directly result in these resources remaining open and usable. The purpose of the project is to rehabilitate the existing diversion dam. The need for the project is to maintain existing functions of the diversion dam for water delivery to irrigation canals and the hydropower plant's powerhouse.

1.2 Scoping Goals and Objectives

The main goal of public participation is to involve a diverse group of public and government agency participants in order to solicit input and provide timely information throughout the NEPA review process regarding their concerns about the project and the proposed alternatives. The main goals are to (1) establish ongoing communication with stakeholders, agencies, and the general public; (2) educate the public about the environmental review process and each party's role; (3) evaluate the effectiveness of public participation activities on a continual basis and utilize the most effective techniques throughout the NEPA process; and (4) document all public and government agency input.

SECTION 2
SCOPING PROCESS SUMMARY

2.0 Scoping Overview

Scoping questions, comments, and concerns were requested from the public and government agencies during the 2nd scoping period. The following summarizes the scoping process and efforts made to engage the public and government agencies.

2.1 Scoping Terms

The following terms were used during the scoping process to identify specific actions:

- Comment: a distinct statement, question about a topic, or issue relating to the project.
- Comment Category: a topic to which a comment is addressed.
- Comment Document: a written version of comment(s) submitted by a commenter. One comment document may contain multiple comments.
- Commenter: an individual, organization, or agency providing one or more comments.

2.2 Scoping Schedule

The following dates outline the milestones for the scoping process:

May 28, 2013	Public notice published in the Emery County Progress and the Sun Advocate newspapers
May 28, 2013	Scoping notice mailed and emailed to interested parties
May 29, 2013	2nd scoping period opened
May 29, 2013	Public notice published in the Salt Lake Tribune newspaper
May 30, 2013	Public notice published in the Daily Herald and Moab Times newspapers
June 3, 2013	An Intent to Prepare an Environmental Impact Statement for the Green River/Tusher Diversion Dam Rehabilitation Project, Emery/Grand County, UT published in the Federal Register, Vol. 78, No. 106
June 4, 2013	Public notice published a second time in the Emery County Progress and the Sun Advocate newspapers
June 5, 2013	Public notice published a second time in the Daily Herald
June 6, 2013	Public notice published a second time in the Moab Times newspaper
June 12, 2013	Two public telebriefings conducted consisting of a formal presentation (2:00–2:45 pm MDT and 6:00–6:45 pm MDT), each followed by an informal question and answer session
June 21, 2013	Website updated and email sent to interested parties to announce the extension of the 2nd scoping period closing date to July 2, 2013
July 2, 2013	2nd scoping period closed

2.3 Scoping Notice

A scoping notice was prepared and sent to interested parties and regulatory agencies on May 28, 2013. The list of recipients was prepared by NRCS, UDAF, the Utah Association of Conservation Districts (UACD), and the local Green River irrigators. The scoping notice identified the project and its location, the projects' purpose, and the reasons for preparing an EIS. The scoping notice requested public participation, listed the opening and closing dates for the scoping period, and provided information about the two public telebriefings (date, times, and call number) describing the current status of the project. In addition, the scoping notice listed contact information for submitting written comments. A copy of the scoping notice is attached in Appendix A. The scoping notice was also posted on the NRCS project website (http://www.ut.nrcs.usda.gov/programs/EWP/green_river/index.html).

As noted in Section 2.2, public notices were published in the Salt Lake Tribune, Moab Times-Independent, Daily Herald, Sun Advocate, and Emery County Progress newspapers identifying the project and providing information about the public telebriefings. On June 3, 2013, a Notice of Intent to Prepare an Environmental Impact Statement for the Green River/Tusher Diversion Dam Rehabilitation Project, Emery/Grand County, UT was published in the Federal Register, Vol. 78, No. 106. Copies of the newspaper scoping notices are attached in Appendix B, and the Federal Register Notice of Intent is attached in Appendix C.

2.4 Scoping Telebriefings

The primary purpose of the two scoping telebriefings on June 12, 2013 (2:00 pm MDT and 6:00 pm MDT) was to inform interested parties about the preparation of the EIS and update them regarding the status of the overall project. Interested parties were given the opportunity after the formal presentation to ask questions and provide comments on the preparation of the EIS and overall project. In order to gather as broad an audience as possible, two separate telebriefings were held (see Section 2.2). McMillen, LLC gave a presentation regarding the project and NEPA process at the beginning of each telebriefing. Interested parties could have downloaded the presentation from the project website prior to the meeting and the presentation is located in Appendix D.

Five interested parties and three speakers attended the first telebriefing at 2:00 pm MDT, and six interested parties and two speakers attended the second telebriefing 6:00 pm MDT. Participants were invited to submit comments in writing by mail, facsimile, e-mail, or oral comment during the 2nd scoping comment period for the project. Attendance at the meetings was recorded prior the meeting by the operator who connected each participant to the telebriefing and this list can be found in Appendix D.

2.5 Scoping Mailing List

As mentioned above, the scoping mailing list was prepared by NRCS, UDAF, UACD, and local Green River irrigators to inform the government agencies and general public about the 2nd scoping period for the project. A total of 70 mailings were sent to government agencies and 374 mailings were sent to the general public.

SECTION 3
SCOPING COMMENTS

3.0 Scoping Telebriefings

Two scoping telebriefings were conducted on June 12, 2013 from 2:00 to 2:45 pm MDT and again from 6:00 to 6:45 pm MDT. Each telebriefing was followed by an informal question and answer session. There were zero informal questions asked at either telebriefing.

The following project personnel were in attendance for the telebriefings:

Name	Organization	Title	Telebriefing
Bronson Smart	NRCS	State Conservation Engineer	2:00 pm
Dan Axness	McMillen, LLC	Project Manager	2:00 pm and 6:00 pm
Greg Allington	McMillen, LLC	NEPA Manager	2:00 pm and 6:00 pm

3.1 Written Comments

The 2nd scoping period officially opened on May 29, 2013 and ended on July 2, 2013 for a total of 35 days. Written comments could be submitted via mail, facsimile, e-mail, or oral comment.

Commenters submitted 39 written comments during the scoping period and zero oral comments. Formal written comments are presented in Appendix E.

3.2 Comment Categories

The comments were separated into comment categories to group together similar topics. The categories that were created summarizing the 2nd scoping period are listed below. Specific comment details are listed in the Comment Category Matrix in Appendix E.

- Boat Passage
- Construction Impacts
- Dam Rehabilitation
- Dam Decommission
- Electrical Barrier
- Fish Passage
- Floods
- Funding/Economics
- Habitat
- Historic Preservation
- Hydropower Plant
- Irrigation
- NEPA Process
- Permits

APPENDIX A

SCOPING NOTICE

USDA Natural Resources Conservation Service-Utah
Wallace F. Bennett Federal Building
125 S. State Street – Room 4010
Salt Lake City, UT 84138-1100

May 28, 2013

Dear Interested Parties:

The Natural Resources Conservation Service (NRCS), with the Utah Department of Agriculture and Food (UDAF) as the project sponsor, are proposing to address flood damage on the Green River/Tusher Diversion Dam in Green River, Utah. The proposed project is located approximately 6.6 miles north of the city of Green River on North Long Street. **You are invited to comment on the project and attend a public Telebriefing** which will describe the current status of the project**.**

2nd Scoping Period
Open: Wednesday, May 29, 2013 (12:00 a.m. MDT)
Close: Friday, June 28, 2013 (5:00 p.m. MDT)

Telebriefing #1
When: Wednesday, June 12, 2013
Time: Formal Presentation: 2:00 p.m. – 2:45 p.m. (MDT)
Informal Q&A: 2:45 p.m. – 4:00 p.m. (MDT)
Call: **(**800) 346-7359 (entry code 840561)

Telebriefing #2
When: Wednesday, June 12, 2013
Time: Formal Presentation: 6:00 p.m. – 6:45 p.m. (MDT)
Informal Q&A: 8:45 p.m. – 8:00 p.m. (MDT)
Call: **(**800) 346-7359 (entry code 840561)

Please call 15 minutes prior to the start of the Telebriefing and an operator will connect you to the meeting. Additional Telebriefing information will be posted to the project website prior to June 12, 2013. More project specific information is available by contacting Greg Allington (McMillen, LLC) with the project team by phone at (208) 342-4214 or email at greenriver@mcmillen-llc.com.

……..

Environmental Impact Statement

The NRCS conducted the 1st public scoping period for the project from October 30, 2012 to November 30, 2012 and a public meeting was held on November 15, 2012 at Green River City Hall in Green River, Utah. After the scoping period closed, NRCS consulted with the Utah State Historic Preservation Office under Section 106 of the National Historic Preservation Act regarding the project. It was determined that the diversion dam may be eligible for listing on the National Register of Historic Places and any modifications to the dam may be considered an "adverse effect" which may make it ineligible for listing after rehabilitation. Some of the impacts to the diversion dam from conceptual alternatives considered may be considered "significant" to cultural resources. As a result, NRCS has decided to prepare an Environmental Impact Statement (EIS) for the project instead of an Environment Assessment (EA).

Public Participation

The participation of the public is a vital component of the project so that those who are interested in or potentially affected by the proposed project have an opportunity to share their comments, ideas, and concerns regarding actions during the public scoping stage of the NEPA process. In order to provide the public with an opportunity to comment on the preparation of an EIS and a second opportunity to comment on the overall project, NRCS has open a second public scoping period. You are encouraged to attend the Telebriefing and express your comments, ideas, and concerns. You may also submit your comments via letter, email or fax anytime during the public comment period. For comments to be considered and to become part of the public record for the project, **we need to receive them by close-of-business (5:00 p.m. MDT) on Friday, June 28, 2013**.

Please mail your written comments to:

Green River Diversion Rehabilitation Project
c/o McMillen, LLC – Greg Allington
1401 Shoreline Drive
Boise, ID 83702

You may also submit comments by email, phone or fax to McMillen:

Email: greenriver@mcmillen-llc.com
Phone: (208) 342-4214
Fax: (208) 342-4216

After receiving comments by close-of-business (5:00 p.m. MDT) on Friday, June 28, 2013, the NRCS will begin reviewing the comments and continuing to prepare conceptual alternatives for analysis in the EIS.

You may also visit the project website at http://www.ut.nrcs.usda.gov/programs/EWP/index.html to check on the status of the project and download project related documents during the course of the NEPA analysis.

The project team values your feedback and encourages you to attend the Telebriefing on Wednesday, June 12, 2013 at 2:00 p.m. or 6:00 p.m. (MDT)

Sincerely,

Bronson Smart
NRCS State Engineer

cc: Anthony Beals – NRCS
Norm Evenstad – NRCS
Thayne Mickelson – UDAF
Roger Barton – UACD
Dan Axness – McMillen, LLC
Greg Allington – McMillen, LLC

APPENDIX B

NEWSPAPER SCOPING NOTICES

NRCS PUBLIC NOTICE

The Natural Resources Conservation Service (NRCS), in cooperation with Utah Department of Agriculture and Food as the project sponsor, are proposing to address flood damage on the Green River/ Tusher Diversion Dam under the Emergency Watershed Protection program. The proposed project is located approximately 6.6 miles north of the City of Green River, Utah on North Long Street. The National Environmental Policy Act (NEPA) and the Council on Environmental Quality's regulations at 40 CFR Parts 1500-1508 require an evaluation of potential environmental impacts associated with federal projects and actions with input from the public.

The NRCS conducted the 1st public scoping period for the project from October 30, 2012 to November 30, 2012. After the scoping period closed, NRCS decided to prepare an Environmental Impact Statement for the project due to potential significant impacts to cultural resources.

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Call: (800) 346-7359
Entry Code 840561

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Time: 6:00 PM to 8:00 PM (MDT)
Call: (800) 346-7359
Entry Code 840561

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c/o McMillen, LLC - Greg Allington
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Boise, Idaho 83702
Email: greenriver@mcmillen-llc.com
Fax: (208) 342-4216
Phone: (208) 342-4214
Website: http://www.ut.nrcs.usda.gov/programs/EWP/index.html

trapped in the mountains by snow.

When the film does stick to the handcarters, events are filtered mostly through the eyes of Thomas Dobson, a young English pioneer nursing a healthy portion of regret for having left his old life behind.

"Ephraim's Rescue" has some of the same problems that "17 Miracles" did. There's an over-reliance on sonorous music and slow-motion photography to punch up the drama of certain scenes. It's almost comical in some spots, like when a mob of angry hooligans appears at the scene of a Mormon baptism in England. There's surely no shortage of hooligans in England — ask any soccer fan — but there's nothing to ground us even a little bit in the persecution of Mormon converts abroad.

Baptism, rejoicing — blam. Cue slo-mo hooligans.

The film's sense of humor is also hit-and-miss. An attempt to weave in a running polygamy joke mostly falls flat, while a more organic chuckle neatly arises from Thomas comparing notes with pretty Esther about the romantic at-

shoehorned into this or that predicament for the sake of faith-promoting drama. When the handcart company crosses a river in high summer, a pioneer mother, apparently without consulting anyone else in the group, decides that her only means of getting to the opposite bank is to wade the deep water with her young son on her shoulders.

Whether or not it really happened that way (we're told that it did) is beside the point — the filmmaker's job is to suggest why it would have, or might have, happened that way.

Instead, the film has her simply struggle across in full view of any number of people who could have — and, more importantly, would have — rushed to her assistance.

One thing that's conveyed powerfully from start to finish is Ephraim Hanks' uncanny ability to give miraculous healing blessings employing Mormon priesthood rites. Hanks apparently manifested this remarkable gift early in life and Christensen gradually show him put it to use, carefully and respectfully building to scenes that show nearly the entire ritual. Especially tender

Location: Opens Friday at theater in Utah

is Hanks' humble insistence on washing his hands before every blessing.

As the film's frontier savior, Darin Southam is both suitably meek and appropriately rugged, if occasionally somewhat inscrutable. Christensen might have served his star better by giving Hanks a little more human frailty. When Hanks says at one point that his personal failings are too numerous to be counted, Southam makes it sound sincere. Aside from a humorous flash of temper at the expense of two ministers, on the other hand, we haven't seen much to sugges that "Eph" was anything but courteous, kind, obedient, cheerful, thrifty, brave, clea reverent and so forth. A Boy Scout before his time.

Even viewers familiar with the handcart tragedy may no know about Hanks' role in re sponding to it. Despite its ow shortcomings, "Ephraim's Re cue" is a worthwhile tribute t a forgotten hero.

three nights in the valley

Thursday

Stop holding it and just go with the flow: Two tickets to see **"Urinetown"** at Hale Center Theater Orem will help you make a splash as you kick off the weekend.

Pete Widtfeldt

Friday

Who's afraid of Tyrannosaurus rex? Don't make any sudden moves when you sit down to watch **"Jurassic Park"** at Movies 8 in Provo.

Saturday

Ride 'em cowboy! Saddle up the family minivan and head to Springville's rodeo arena (767 W. 1600 South) for the 5th annual **Art City Days Hometown Rodeo**. Admission is just $10 per car, or $5 per person.

Perfect date:
En-gendered to the arts

Jann Haworth

If you want to astound your date this weekend by displaying your vast knowledge of women's issues, or even if you're just up for a good (and free) time, Brigham Young University's Museum of Art is the place to go.

A new contemporary exhibition is set to explore the unique gender politics of Utah from the perspective of four of the state's top artists.

"We're not trying to be critical or negative about the roles of women," curator Jeff Lambson said. "We're just trying to ask some of those tough questions and appreciate all aspects of women's work, whether it's domestic, in the work place or in a social sphere."

"Work to Do" is on display at the museum now until Sept. 28 during regular museum hours. For more information on visiting, go to moa.byu.edu.

— Kari Kenner

STAFF

EDITOR
Doug Fox
dfox@heraldextra.com
801.344.2546

ENTERTAINMENT REPORTERS
Cody Clark
cclark@heraldextra.com
Kari Kenner

CALENDAR LISTINGS
theticket@heraldextra.com
801.344.2540

DESIGN
Marydalene Lawrence
Joseph Tolman Jordan Carroll

The Ticket is published Thursdays in the Daily Herald.

To submit an item for consideration by **The Ticket** editors, send a letter, postcard or email that gives a complete description of the event including the name of the sponsoring organization, time, date, place, cost and nature of the activity; and a full name and telephone number of a person to call for more information. Send items to **The Ticket Listings**, Daily Herald, 1555 N. Freedom Blvd., Provo, 84603, or email complete info to **theticket@heraldextra.com**. Items must be received no later than noon on the Friday preceding the publication date. No listings will be accepted by phone.

Wrinkle

Continued from D1

"Our approach to the production itself is quite unique," Sorensen said. "There's a quote I use in my program note taken from Friedrich Nietzsche which says, 'Man's maturity: To have regained the seriousness that he had as a child at play.' We, as a production, are working to create a space where we are imaginatively creating this journey that these children go on, and (are) inviting the audience to go on it with us — asking them to suspend their own disbelief and journey with us."

According to Sorensen, the fact that the show is performed as if by young neighborhood friends and children is just one aspect of the creativity involved. All props, set and costumes were created from found objects and require a touch of imagination to bring to life.

Collaboration and creativity form the foundation of the show's direction and production.

"We are approaching it from the completely collaborative idea that anyone who is participating can make comments on any parts of the show, and that their ideas will be listened to and respected," he said. "We make decisions to use those ideas or not collaboratively. ... The company pretty much decides what we want to work on when and how. It's an exploration. This show has creativity and invites people to bring their own creativity to the show."

Sorensen said that despite the unique take on the production, one thing audience members can count on is that the show is true to the original story.

"We have kept the storyline intact and it feels to me that we have stayed very true to her work," he said. "It has values, values that resonate with LDS culture and Christian culture. Values we commend within the mission of this institution. The characters are wonderful, it's fun and it's a work that has shaped people's thoughts and lives for a long time. ... For more than 40 years it has shaped people's thoughts and been a part of how they think about life, and it's still very relevant to today."

The story of "A Wrinkle in Time" centers around the Murry family, especially young Meg and Charles, as well as their friend, Calvin O'Keefe. In an attempt to save their father, who has gotten lost while experimenting with time travel, the trio must journey through the universe and harness the power of love to defeat the forces of evil that try to overcome them.

"Calvin O'Keefe is an older boy from school that becomes friends with Charles and his sister Meg then gets toted along for the ride across the galaxy and universe," said Logan Hayden, who portrays Calvin in the show. "He doesn't know what's going on at first and he and Meg are both kind of shocked by what they see, but he's there to support Meg and becomes a part of the family eventually."

With such a creative foundation, Hayden said above all he hopes audiences can take something good away from the production.

"I don't know if people would come expecting something they've already seen before, but it's going to be unlike anything they've seen," he said. "It's a new experience and I hope any audience member can come look at it with a creative eye or just appreciate it for what it is. ... Imagination and creativity is not something we should shy away from but something we should embrace and seek out. Things aren't always as we think they are, and if an audience member were to feel a renewed desire for imagination and creativity in their lives, that would make me really happy."

SUMMER CONCERT LIST

(Club shows not included)

DEER VALLEY AMPHITHEATER
July 4 — Los Lonely Boys, Alejandro Escovedo
July 15 — Bruce Hornsby & the Noisemakers
July 19 — Steve Martin and The Steep Canyon Rangers featuring Edie Brickell with the Utah Symphony
July 20 — Indigo Girls with the Utah Symphony
July 30 — Natalie Maines
Aug. 3 — Mandy Patinkin with the Utah Symphony
Aug. 4 — Darlene Love and Muscle Shoals Live
Aug. 10 — The Music of The Rolling Stones with the Utah Symphony
Aug. 17 — Lyle Lovett and His Large Band
Aug. 24 — Jewel
Aug. 31 — One Republic, Churchill

THE DEPOT
June 8 — They Might Be Giants
July 7 — Moe
July 10 — Robert Randolph and the Family Band
July 13 — Ratt, Lita Ford
July 18 — Jimmy Eat World
Aug. 1 — The Cult
Aug. 24 — Three Days Grace
Aug. 31 — Pinback
Sept. 20 — Hanson

ENERGYSOLUTIONS ARENA
Saturday — Taylor Swift
Sept. 19 — Muse
Oct. 11 — Josh Groban
Oct. 17 — P!nk
Nov. 14 — Selena Gomez
Nov. 19 — Michael Bublé

THE GREAT SALTAIR
June 21 — Killswitch Engage
July 27 — Slightly Stoopid & Atmposphere
Aug. 23 — fun.

KINGSBURY HALL
Sept. 24 — Diana Krall

LAVELL EDWARDS STADIUM
July 4 — Stadium of Fire (Kelly Clarkson, Carly Rae Jepsen)

THE MAVERIK CENTER
July 25 — One Direction
Aug. 1 — Megadeth, Black Label Society
Aug. 2 — Bruno Mars, and Fitz and the Tantrums
Sept. 3 — Rock Allegiance Tour (Volbeat, HIM, and All That Remains)

RED BUTTE GARDEN
Tonight — Edward Sharpe, The Magnetic Zeroes
June 9 — Trombone Shorty & Orleans Avenue, Big Head Todd and the Monsters
June 16 — Grace Potter and the Nocturnals
June 19 — Jackson Browne
June 20 — Tony Bennett
June 24 — Tedeschi Trucks Band
June 25 — She & Him
July 5 — Old Crow Medicine Show
July 9 — Pink Martini
July 12 — Rodrigo y Gabriela
July 14 — Brandi Carlile
July 15 — David Byrne & St. Vincent
July 17 — Garrison Keillor's A Prairie Home Companion Radio Romance Tour
July 23 — Kenny Loggins
July 25 — Dwight Yoakam
July 30 — Merle Haggard
Aug. 4 — Medeski Martin & Wood, and John Scofield's Uberjam Band
Aug. 7 — Steve Miller Band
Aug. 10 — Steely Dan
Aug. 14 — John Butler Trio
Aug. 18 — Michael Franti & Spearhead
Aug. 20 — John Prine
Aug. 27 — George Thorogood and the Destroyers, Buddy Guy
Aug. 29 — Wayne Shorter 80th Birthday Celebration
Sept. 15 — The Black Crowes
Sept. 16 — Neko Case

RIO TINTO STADIUM
July 27 — Jason Aldean

SANDY AMPHITHEATER
June 7 — Ryan Shupe and the RubberBand
June 8 — King Niko, Hang Time
June 15 — Rhonda Vincent
June 21 — Rockapella
June 26 — American West Symphony and Chorus
July 3 — Pat Benatar and Neil Giraldo
July 6 — Arrival: The Music of Abba
July 9 — Happy Together 2013 (Flo & Eddie, Chuck Negron, Gary Puckett & the Union Gap and more)
July 12 — Exile, Juice Newton
July 13 — New Electric Sound, The North Valley
July 16 — Under the Sun 2013 (Smash Mouth, Sugar Ray, Gin Blossoms, Vertical Horizon, and Fastball)
July 20 — Stayin' Alive
July 23 — Huey Lewis and The News
Aug. 21 — Sail Rock (Christopher Cross, Orleans, Gary Wright, Firefall, John Ford Coley and more)
Aug. 24 — Golden Sun, Polytype
Aug. 29 — Chris Isaak
Sept. 6 — Rockin' the Decades With the Salamanders
Sept. 7 — The Souvenirs, and The Hollering Pines
Sept. 9 — Charley Jenkins
Sept. 13 — Creedence Clearwater Revisited

SCERA SHELL
June 18 — Utah's Stars and Friends (Reunion, Shaun King, Jenny Oaks Baker, Dallyn Vail Bayles, Kendra Lowe, Joshua Creek and more)
June 25 — Josh Turner
July 22 — The 5th Dimension featuring Florence LaRue
Aug. 19 — The Righteous Brothers' Bill Medley
Aug. 29 — Richard Marx
Sept. 2 — Hotel California: A Salute to the Eagles

SPRING ACRES ARTS PARK
June 7 — Lou Gramm Band

STEEL DAYS IN AMERICAN FORK
July 20 — Little River Band

USANA AMPHITHEATRE
Tuesday — Alice Cooper, Marilyn Manson
June 14 — Tim McGraw
June 20 — Barenaked Ladies
July 5 — Free the People 2013
July 18 — Kenny Chesney
July 30 — 311
July 31 — Rush
Aug. 1 — Americanarama Festival of Music (Bob Dylan, Wilco, My Morning Jacket, and Ryan Bingham)
Aug. 2 — Brad Paisley
Aug. 10 — Alan Jackson
Aug. 27 — Dave Matthews Band
Sept. 2 — Uproar Festival (Alice in Chains, Jane's Addiction, Coheed and Cambria, and more)
Sept. 20 — Luke Bryan

UTAH STATE FAIRPARK
June 29 — Vans Warped Tour

Concerts

Continued from D1

check out Steve Martin and The Steep Canyon Rangers (July 19), Mandy Patinkin (Aug. 3) or Selena Gomez (Nov. 14).

Got crooners? Yes we do, with Michael Bublé (Nov. 19), Josh Groban (Oct. 11), Tony Bennett (June 20) and Bruce Hornsby (July 15).

In the legacy category, there is Jackson Browne (June 19), Bob Dylan (Aug. 1) and Steely Dan (Aug. 10).

If you like more bang for your buck, check out these shows with guaranteed fireworks: Stadium of Fire (Kelly Clarkson and Carly Rae Jepsen on July 4), Little River Band (Steel Days on July 20) and Chris Cagle (Saturday as the finale to Pony Express Days).

It's a lively summer for tribute acts as well with Hotel California: A Salute to the Eagles (Sept. 2), Stayin' Alive (The Bee Gees on July 20), Arrival: The Music of Abba (July 6) and Creedence Clearwater Revisited (Sept. 13). OK, we're just joking about that last one, but seriously, without John Fogerty this CCR is pretty close to a tribute.

Be sure to check out our full list of the main summer concerts currently scheduled to find out when and where your favorite bands may be performing.

Ephraim

Continued from D1

whose large spirit belies his small stature.

Yet while the new film devotes substantial screen time to the hardships endured by the handcart companies, the focus is much more on Hanks, who spent his late teenage years in the Navy before following his brother into The Church of Jesus Christ of Latter-day Saints in 1845. After eventually winning the trust of early Mormon leader Brigham Young, Hanks was ready to take immediate action in the fall of 1856 when Mormon leaders in Salt Lake City received word of settlers trapped in the mountains by snow.

When the film does stick to the handcarters, events are filtered mostly through the eyes of Thomas Dobson, a young English pioneer nursing a healthy portion of regret for having left his old life behind.

"Ephraim's Rescue" has some of the same problems that "17 Miracles" did. There's an over-reliance on sonorous music and slow-motion photography to punch up the drama of certain scenes. It's almost comical in some spots, like when a mob of angry hooligans appears at the scene of a Mormon baptism in England. There's surely no shortage of hooligans in England — ask any soccer fan — but there's nothing to ground us even a little bit in the persecution of Mormon converts abroad.

Baptism, rejoicing — blam. Cue slo-mo hooligans.

The film's sense of humor is also hit-and-miss. An attempt to weave in a running polygamy joke mostly falls flat, while a more organic chuckle neatly arises from Thomas comparing notes with pretty Esther about the romantic attachments they've each left behind. Esther, who's been making a steady (and steadily amusing) play for Thomas' affections, is apparently aiming to trade up. "He was quite plain, actually," she says of her former sweetheart. "I just tried not too look at him too much."

Certain scenes come across as forced, with characters shoehorned into this or that predicament for the sake of faith-promoting drama. When the handcart company crosses a river in high summer, a pioneer mother, apparently without consulting anyone else in the group, decides that her only means of getting to the opposite bank is to wade the deep water with her young son on her shoulders.

Whether or not it really happened that way (we're told that it did) is beside the point — the filmmaker's job is to suggest why it would have, or might have, happened that way.

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Even viewers familiar with the handcart tragedy may not know about Hanks' role in responding to it. Despite its own shortcomings, "Ephraim's Rescue" is a worthwhile tribute to a forgotten hero.

Review **C+**

EPHRAIM'S RESCUE

Director: T.C. Christensen

Cast: Darin Southam, Katherine Nelson, James Gaisford, Christina Torriente

Running time: 1 hr., 50 min.

Rating: PG for thematic elements and some disturbing images

Location: Opens Friday at theaters in Utah

NRCS

PUBLIC NOTICE

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Fax: (208) 342-4216
Phone: (208) 342-4214
Website: http://www.ut.nrcs.usda.gov/programs/EWP/index.html

Previous assistance has been provided in China, Morocco, Bolivia, Mexico and Belarus. More information is available at www.shareasmile.net.

Oakeson said the company has a history of helping the community.

drugs. She began using drugs herself. She ended up getting married to a man much like her dad." He said the clinic does care to alleviate pain for someone who does drugs, but does not provide other care until they are clean. When

said. "If we can take them off the street and have them get a job, they can get a social life with some degree of confidence. If they can have some joy in their life and some dignity, it is great. It is about seeing people's lives change."

NRCS PUBLIC NOTICE

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Telebriefing #1		**Telebriefing #2**	
When:	June 12, 2013	**When:**	June 12, 2013
Time:	2:00 PM to 4:00 PM (MDT)	**Time:**	6:00 PM to 8:00 PM (MDT)
Call:	(800) 346-7359 Entry Code 840561	**Call:**	(800) 346-7359 Entry Code 840561

Comments may be submitted during this 2nd scoping period starting May 29, 2013 and **ending on June 28, 2013 5:00 PM (MDT)** to the following:

Mail: Green River/Tusher Diversion Rehabilitation Project
c/o McMillen, LLC - Greg Allington
1401 Shoreline Drive
Boise, Idaho 83702
Email: greenriver@mcmillen-llc.com
Fax: (208) 342-4216
Phone: (208) 342-4214
Website: http://www.ut.nrcs.usda.gov/programs/EWP/index.html

Train

Continued from A1

Nelson explained to the commission that the railroad needs to build a structure to house the train so they can make Vivian Park a starting point on the line. He also said it would be wise to include a ticket booth, a concession stand and additional parking areas to get things started at the canyon park.

Nelson estimated the railroad would need about $100,000 to get the Vivian Park location up and running. He added that in the future the railroad could make additions at the park, such as a turntable, to increase public interest in the park.

Commissioner Gary Anderson agreed with Nelson that Vivian Park was underutilized by the railroad and said he was interested in moving forward with discussions about how the county can be involved in aiding the railroad. Commissioners Doug Witney and Larry Ellertson also stated they were supportive of seeing if the county can support the railroad in some way but none of the three commissioners were ready to say the county would commit any money to the railroad.

"I think this could be a great little venture," Witney said.

After the meeting with the commissioners Nelson explained that he is trying all avenues to find a way to increase the viability of the railroad. He said he has courted the Legislature for money in the past two legislative sessions but failed in his attempts. He said there was a possibility that the railroad could be altered from being an independent entity of the state to a interlocal agreement between Utah and Wasatch counties and a state department such as UDOT or the state parks.

The Heber Valley Railroad has attempted to evolve from being a scenic train that runs through Provo Canyon to a more family friendly attraction. In the past year the railroad has offered some theme-based rides, like the North Pole Express during the Christmas season and a Harry Potter-based train in the summer.

The railroad has also teamed up with other businesses that operate in Provo Canyon to offer rafting and rail trips as well as a train that includes a zip line excursion.

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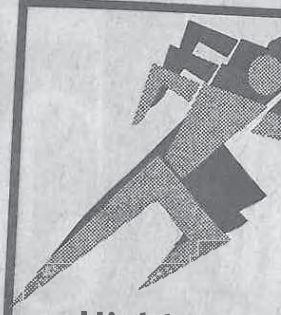

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Clay Taylor,
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P.T.

Fracking...

Continued from page A1

still has not justified the rule from an economic or scientific point of view.

"At a time of limited federal budgets, DOI is canceling lease sales and struggling to issue permits in a timely manner. We continue to question why DOI is taking on a whole new regulatory regime when it lacks resources, expertise, and personnel to implement it."

DOI spokeswoman Jessica Kershaw in Washington, D.C., said the proposed rule should be printed in the Federal Register within days and will then be subject to a 30-day comment period from the public.

The BLM said in a news release the proposal would establish "commonsense safety standards" for hydraulic fracturing.

"Approximately 90 percent of wells drilled on federal and Indian lands use hydraulic fracturing, but the Bureau of Land Management's current regulations governing hydraulic fracturing operations on public lands are more than 30 years old and were not written to address modern hydraulic fracturing activities," according to the news release.

The revised proposed rule will modernize BLM's management of fracking "and help to establish baseline environmental safeguards for these operations across all public and Indian lands," the news release stated.

Steve Bloch, energy program director and attorney with the Southern Utah Wilderness Alliance's Salt Lake City office, said most oil and gas wells in Utah are fracked.

"It is not less controversial here than in other places," he said. "I know folks in Moab are concerned about it. Any time the BLM sells an oil or gas lease it comes with the potential for fracking."

The BLM proposed a draft rule covering fracking in 2012. The current updated draft proposal results from more than 177,000 public comments on that plan.

The latest proposal "revises the array of tools operators may use to show that water is being protected, and provides more guidance on trade secret disclosure, while providing additional flexibility for meeting these objectives," according to the BLM news release.

The BLM noted it is not proposing a change to the provision that allows hydraulic fracturing flowback fluids to be stored either in tanks or in lined pits. But the agency said it is seeking comments on the costs and benefits of requiring those fluids to only be stored in closed tanks.

Deadline looms for municipal elections

By Lisa J. Church
Staff Writer

Candidates for office in Moab and Castle Valley, or for a seat on the Spanish Valley Water and Sewer Improvement District (SVWSID), must file the required paperwork during the first week of June.

In Moab, city council seats now held by Kyle Bailey and Jeff Davis, and the position of mayor will be up for election Nov. 5.

Declarations of candidacy must be filed between June 3 and June 7 at the Moab City Recorder's Office, 217 E. Center St., 435-259-2683.

Under Utah law, candidates for city elections must be current residents who have lived within the city for at least one year.

Castle Valley residents will also choose a mayor, one two-year council position and two four-year council representatives. Candidacy forms are available at the Castle Valley Town Clerk's office, 435-259-9828.

Two seats are also up for election on the Castle Valley Fire District. Candidates must file declarations of candidacy with Bob Lippman, fire commission clerk, between June 3 and June 7 at 5 p.m. Contact Lippman at 259-1182.

Three SVWSID trustee positions will be up for election. Candidacy documents must be filed June 3-7 with the SVWSID Clerk at the Grand Water & Sewer Service Agency office, 3025 E. Spanish Trail Road.

Climbing...

Continued from page A1

Miller said the climbing closures will become an annual event, although the list of routes to be closed probably will change each year as park officials learn more about nesting and lambing habits.

The current closures have a termination date, although Miller noted the temporary bans could be lifted earlier or later depending on the results of area wildlife surveys. Changes in the re-opening dates will be posted on the NPS website at www.nps.gov/arch and announced through the local news media, he said.

The routes now closed but slated to re-open Aug. 15 are Harkened Castle, including the entire rock feature known as Ham Rock; and Tonka Tower, including the entire feature known as Tonka Tower and the feature to the north of Tonka Tower.

Scheduled for re-opening on Aug. 31 are The Pickle, Canyonlands by Night, El Second, The Coup, Cohn's Odyssey, Left Route, Project One and Project Two, Klondike Bluffs Crack Route One and Route Two, Cuddle Bunny Tower, False Start, North Marcher, Sand Hearse, Unknown Matching Men, Fun Ramp, The Hyena, Trail of the Navajo, Pop Tarts and Escape Route.

The Industrial Disease route will re-open Sept. 30.

Local guiding companies are not affected because no commercial operators have worked in Arches since the 1990s, said Heidi Wiley, NPS concessions management specialist.

Canyonlands permit changes

At Canyonlands National Park, visitors requesting backcountry permits will have a shorter period in which to apply.

The change, which goes into effect Sept. 1, affects four-wheel-drive and mountain bike camping, four-wheel-drive day use in the Needles District, group camping in the Needles, river trips, and trips involving combined backpacking and pack rafting, according to a news release from the NPS.

Currently, visitors may book reservations beginning on the second Monday in July for the following year, said Keri Nelson, reservations supervisor for Canyonlands. After the change, reservations will be taken no more than four months, and no less than two days, prior to the permit start date.

Permits and/or sites not reserved at least two days before the permit start date will be available to visitors in person at the park's visitor centers and park headquarters reservation office on a first-come, first-served basis, according to the news release.

Nelson said the change is being made because Canyonlands is updating its reservation process to an online system as opposed to the current mail or fax application process. She added that with the longer time frame to make reservations, many people ended up canceling their reservations, particularly on the popular White Rim.

More information and availability calendars will be posted on Canyonlands' website at www.nps.gov/cany.

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Groups seek to block oil shale, tar sands development

By Steve Kadel
Staff Writer

Moab-based Living Rivers has joined other environmental groups in filing a notice of intent to sue the U.S. Bureau of Land Management (BLM) for allegedly failing to protect endangered species on public lands offered for oil shale and tar sands development.

The 60-day notice was filed May 23 in federal court in Denver, said John Weisheit of Living Rivers. The notice is the first step toward filing a lawsuit.

The BLM has allocated more than 800,000 acres of public land in the Colorado River Basin for oil shale and tar sands development, according to a news release from Grand Canyon Trust, one of the groups that filed the notice of intent.

"This plan threatens to industrialize backcountry, pollute air and water, destroy habitat, and commit the Colorado River Basin to an even drier future," Grand Canyon Trust's Taylor McKinnon said in the release.

However, U.S. Rep. Rob Bishop, R-Utah, said in a letter to the U.S. Department of Interior (DOI) that litigation from environmental groups already has reduced the available BLM land for oil shale development in Utah, Colorado and Wyoming from 1.9 million acres to 679,000 acres.

Bishop said the BLM is also proposing "significant changes" to the oil shale commercial leasing program. Those changes include a policy of granting commercial leases for oil shale research and development only after the agency has determined the drilling operations can occur without "unacceptable environmental risk," according to the BLM.

Bishop's letter called that "a nebulous term." He said it duplicates safeguards already in place under the National Environmental Policy Act.

The letter, also signed other senators and representatives, including Sen. Orrin Hatch, R-Utah, asked the DOI to extend the public comment period on the new regulations by 60 days from its May 28 closure. Bishop's spokeswoman Melissa Subbotin said the request was granted.

The BLM's proposed new policy also would replace the current royalty rates industry must pay, a change Bishop and others believe will deter energy development. The new rule would boost the present 5 percent rate adopted in 2008 under the Bush administration to 12.5 percent.

But Steve Bloch, attorney for the Southern Utah Wilderness Alliance, said the oil shale industry now pays les for development rights than does the traditional oil and gas industry.

"It's almost like a taxpayer-funded incentive," Bloch said.

County declines to sign up for American Lands Council membership

By Steve Kadel
Staff Writer

The Grand County Council has rejected a request to become a member of American Lands Council, a group that lobbies for states to take control of federal lands.

Kane County Commissioner Doug Heaton made a pitch for membership during the Grand County Council's meeting on May 7. There was little discussion then, but the issue arose again during the council's Tuesday, May 21, meeting with an agenda item to approve memberships and subscriptions for 2013.

Membership in the American Lands Council would have cost $5,000. However, that wasn't the main reason council members vetoed the idea.

Council vice chairman Lynn Jackson said there are "fundamental problems" with the organization.

"They are a secret Super PAC," he said. "They are not required to report who gives them money or how much money they have."

Jackson said such political action committees "allow our democracy to be purchased."

Officially known as "independent-expenditure only committees," Super PACs are not allowed to give money directly to political candidates' campaigns or political parties. But unlike traditional PACs, there is no legal limit on the size of donations they can accept from individuals, unions, corporations or other groups.

Jackson said many residents of Grand County probably agree with the American Land Council's philosophies while just as many probably are opposed. He said it is wrong to use taxpayer money to support a particular political agenda.

Council chairman Gene Ciarus said he is a member of American Lands Council. Still, he said, "You can question using public money" for membership.

Council member Elizabeth Tubbs also went on record against joining the group, saying she doesn't agree with its primary goal of returning federal lands to states. Tubbs added that $5,000 is too much money to spend for a membership.

Council member Jim Nyland cited the group's private nature in opposing membership.

"I hate to see taxpayer dollars go to a private organization and I'm not sold on this organization," he said.

The American Lands Council's mission is to "secure and defend local control of land access, land use and land ownership," according to an information brochure from the group.

"Federal control of public lands is destroying forests and watersheds, shutting off access, constricting economic opportunity, breaking state and local government budgets, and threatening our way of life," the brochure states.

Fatal Fall...

Continued from page A1

of nature. Your show of love and understanding is met with gratitude."

Patterson's death is the fifth fatality to occur in the backcountry near Moab this year. On March 13, Zachary Taylor, 20, of Moab, died after falling approximately 120 feet while rappelling with friends at Teardrop Arch in the Pritchett Canyon area southwest of town. On March 24, Kyle Lee Stocking, 22, of West Jordan, died while attempting to rope-swing at Corona Arch, northwest of Moab. On May 5, Adam Jason Weber, 32, of Salt Lake City, died from injuries sustained in a 150-foot fall while rope-swinging and rappelling in Day Canyon, about seven miles west of U.S. 191 and the Gemini Bridges parking area. On May 7, Christina Elizabeth Allen, 19, from San Luis Obispo, Calif., died after falling approximately 20 feet while hiking with her family near Kane Creek in San Juan County.

A memorial service for Elizabeth Patterson will be held Sunday, June 9, at 10 a.m. at the top of the gondola in Telluride.

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2nd Session	*July 15-18*
7-9 age group	8 to 10 a.m.
10-11 age group	10 a.m. to 12 noon
12-16 age group	12 noon to 2:00 p.m.

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CERT TRAINING is a 24 hour course held over 2 weeks. The next class starts in mid-June. *To register or for more information contact Kris Hurlburt 260-8824 or certgrand@gmail.com.* **$20.00 one-time fee, waivers available. Must be 18+ years old. CERT is a Federal Emergency Management Agency (FEMA) program.**

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A silent auction with many items and beautiful works of art from local artists and several others throughout the state. Other items besides artwork will also be available at the auction.

More information, call Debbie 435-650-3441 or Sara 435-259-0910.
http://wildliferehabilitationinutah.blogspot.com/

To the Citizens of Grand County:

The Solid Waste District is the current owner/operator of Moab's Community Recycle Center. Included in the District's 5-year plan, is a goal to increase recycling throughout Grand County.

The Community Recycle Center accepts a wide variety of recycling materials including plastics #1-7, tin cans, aluminum cans, newspaper, office paper, cardboard and glass.

All of the materials collected, except glass, is crushed and baled and sold to various markets with the revenue used to offset the cost of operating the recycling center.

Due to the difficulty of getting trucks to haul the glass to markets, the District was hauling the glass to the Moab Landfill where it was crushed and used as an intermediate cover for the construction and demolition waste that is disposed of at the landfill.

The District is happy to announce that they have located a buyer for the glass.

The District is working with Interwest Paper of Salt Lake City who will purchase the glass, crushed and stored in boxes, in a mixed load with baled newspaper.

Interwest Paper will ship the boxes of crushed glass to Momentum Recycling in Salt Lake City.

Momentum Recycling will use the glass for various industries including making fiberglass insulation to sell to Utah construction firms, water filtration systems for cities and counties here in Utah and for use in sandblasting.

These are just some of the ways they will use the glass.

The District is committed to serving the recycling needs of our residents and visitors and we will continue to work to make improvements that will maximize our recycling potential.

Any concerns or comments can be directed to the Solid Waste District office at 435-259-3867 or emailed to gcswmss@yahoo.com.

For more information
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Nightly 7:00 & 9:20
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NRCS PUBLIC NOTICE

The Natural Resources Conservation Service (NRCS), in cooperation with Utah Department of Agriculture and Food as the project sponsor, are proposing to address flood damage on the Green River/Tusher Diversion Dam under the Emergency Watershed Protection program. The proposed project is located approximately 6.6 miles north of the City of Green River, Utah on North Long Street. The National Environmental Policy Act (NEPA) and the Council on Environmental Quality's regulations at 40 CFR Parts 1500-1508 require an evaluation of potential environmental impacts associated with federal projects and actions with input from the public.

The NRCS conducted the 1st public scoping period for the project from October 30, 2012 to November 30, 2012. After the scoping period closed, NRCS decided to prepare an Environmental Impact Statement for the project due to potential significant impacts to cultural resources.

You are invited to comment on the project and attend a public Telebriefing which will describe the current status of the project. Please call 15 minutes prior to the start and an operator will connect you to the meeting. Additional Telebriefing information will be posted to the project website prior to June 12, 2013.

Telebriefing #1		**Telebriefing #2**	
When:	June 12, 2013	**When:**	June 12, 2013
Time:	2:00 PM to 4:00 PM (MDT)	**Time:**	6:00 PM to 8:00 PM (MDT)
Call:	(800) 346-7359	**Call:**	(800) 346-7359
	Entry Code 840561		Entry Code 840561

Comments may be submitted during this 2nd scoping period starting May 29, 2013 and **ending on June 28, 2013 5:00 PM (MDT)** to the following:

Mail: Green River/Tusher Diversion Rehabilitation Project
c/o McMillen, LLC - Greg Allington
1401 Shoreline Drive
Boise, Idaho 83702
Email: greenriver@mcmillen-llc.com
Fax: (208) 342-4216
Phone: (208) 342-4214
Website: http://www.ut.nrcs.usda.gov/programs/EWP/index.html

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6:30 – 8:30 PM
Star Hall 125 E. Center Street, Moab

Featuring:
Michael Brune,
Executive Director of the Sierra Club

John Davis, Sojourner of the 2,000-mile Trek West

Including:
Panel discussion and conversation on the proposed
Greater Canyonlands National Monument
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Photo: Neal Clark/SUWA

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NRCS

PUBLIC NOTICE

The Natural Resources Conservation Service (NRCS), in cooperation with Utah Department of Agriculture and Food as the project sponsor, are proposing to address flood damage on the Green River/Tusher Diversion Dam under the Emergency Watershed Protection program. The proposed project is located approximately 6.6 miles north of the City of Green River, Utah on North Long Street. The National Environmental Policy Act (NEPA) and the Council on Environmental Quality's regulations at 40 CFR Parts 1500-1508 require an evaluation of potential environmental impacts associated with federal projects and actions with input from the public.

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Boats leaving Lake Powell must be de

Searchers are still finding quagga mussels at Lake Powell. As summer gets closer, you need to be aware of a three-step process you must put your boat through if it's been on the lake.

So far this spring, searchers have found more than 115 quagga mussels attached to boats and boat docks at the Wahweap and Antelope Point marinas at the lake in southern Utah. Larry Dalton, aquatic invasive species coordinator for the Utah Division of Wildlife Resources, says searchers will likely find more mussels as they continue looking.

"No matter where you boat in Utah," Dalton says, "it's absolutely vital that you clean, drain and dry your boat and any equipment that comes in contact with the water."

Once mussels establish themselves in a body of water, Dalton says it's extremely difficult, expensive and sometimes impossible to remove them.

To reduce the chance that boaters accidently transport mussels from Lake Powell to other bodies of water in Utah, effective immedia you must do the followi

Before you leave I Powell, you must beg three-step decontamina process. Before you leav lake, you must clean all n plants, mussels and o debris off of your boat. must also drain all of the water from the boat's bi live and bait wells, bal tanks and lower engine u

After you've comple the first two steps (clean and draining your boat), y can legally leave the lake travel into or through U where you must complet third step: Drying your b at home or having the b serviced at a professio decontamination station.

If you've been boati

NRCS

PUBLIC NOTICE

The Natural Resources Conservation Service (NRCS), in cooperation with Utah Department of Agriculture and Food as the project sponsor, are proposing to address flood damage on the Green River/Tusher Diversion Dam under the Emergency Watershed Protection program. The proposed project is located approximately 6.6 miles north of the City of Green River, Utah on North Long Street. The National Environmental Policy Act (NEPA) and the Council on Environmental Quality's regulations at 40 CFR Parts 1500-1508 require an evaluation of potential environmental impacts associated with federal projects and actions with input from the public.

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Fax: (208) 342-4216
Phone: (208) 342-4214
Website: http://www.ut.nrcs.usda.gov/programs/EWP/index.html

Pet Of

Liberty is a Heeler mix. Sh female! Found off of 1831

Fo information call 637-6654 or visit

Sp

Juanita

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CASTLE COUNTRY

O'Neil

would like to take this opportunity to thank all our many friends, neighbors, and family for the out pour of love for our dear Patti. Words cannot express our appreciation for the visits, cards, calls, food, flowers and contributions.

A very special thanks to Dr. Karen Radley, the emergency room staff, the paramedics, police and fire department and the tender loving care given to Patti at the Utah Valley Regional Neuro Trauma ICU who took care of her every need as well as her family.

Thank you to Father Don Hope for the beautiful vigil and mass, Steve Lasslo and Mike Schmidt for the music, the Funeral Dinner Committee for the lovely dinner, Bobby, Patrick, Annette, and Bob at Mitchells for their compassion and love.

We are blessed to have so many dear and wonderful friends.

Pat O'Neil
Tiffany and Richard
Tyson and Carrie
Pat Colosimo
Sidnee, Bob and Mandee Kraync
Kelli and Allen Nielsen

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NRCS

PUBLIC NOTICE

The Natural Resources Conservation Service (NRCS), in cooperation with Utah Department of Agriculture and Food as the project sponsor, are proposing to address flood damage on the Green River/Tusher Diversion Dam under the Emergency Watershed Protection program. The proposed project is located approximately 6.6 miles north of the City of Green River, Utah on North Long Street. The National Environmental Policy Act (NEPA) and the Council on Environmental Quality's regulations at 40 CFR Parts 1500-1508 require an evaluation of potential environmental impacts associated with federal projects and actions with input from the public.

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APPENDIX C

FEDERAL REGISTER NOTICE OF INTENT

ACTION: Notice of extension of public scoping comment period.

DATES: Comments must be received no later than July 8, 2013.

SUMMARY: The Mt. Baker-Snoqualmie National Forest hereby gives notice that it is extending the public scoping comment period for the Green Mountain Lookout Removal Project. A notice was originally published in the **Federal Register** on May 2, 2013 (Volume 78, No. 85), beginning a 30 day comment period. Please see the Notice of Intent (FR Doc. 2013–10322) for more information related to the project. In response to requests for additional time, the Forest Service will extend the comment period from June 3, 2013, to July 8, 2013.

ADDRESSES: Send written comments to Todd Griffin, Project Leader, Mt. Baker-Snoqualmie National Forest, 2930 Wetmore Avenue, Suite 3A, Everett, Washington 98201. Comments may also be sent via email to *toddgriffin@fs.fed.us,* or via facsimile to (425) 783–0141.

FOR FURTHER INFORMATION CONTACT: Todd Griffin, Project Leader, at the address listed above or by telephone (360) 677–2258.

Dated: May 28, 2013.

Steve Kuennen,

Acting Forest Supervisor.

[FR Doc. 2013–13008 Filed 5–31–13; 8:45 am]

BILLING CODE 3410–11–P

DEPARTMENT OF AGRICULTURE

Grain Inspection, Packers and Stockyards Administration

Advisory Committee Meeting

AGENCY: Grain Inspection, Packers and Stockyards Administration, USDA.

ACTION: Notice of advisory committee meeting.

SUMMARY: Pursuant to the Federal Advisory Committee Act, this constitutes notice of the upcoming meeting of the Grain Inspection, Packers and Stockyards Administration (GIPSA) Grain Inspection Advisory Committee (Advisory Committee). The Advisory Committee meets twice annually to advise the GIPSA Administrator on the programs and services that GIPSA delivers under the U.S. Grain Standards Act. Recommendations by the Advisory Committee help GIPSA better meet the needs of its customers who operate in a dynamic and changing marketplace.

DATES: June 18, 2013, 8:00 a.m. to 4:30 p.m.; and June 19, 2010, 8:00 a.m. to Noon.

ADDRESSES: The Advisory Committee meeting will take place at GIPSA's National Grain Center, 10383 N. Ambassador Drive, Kansas City, Missouri 64153.

Requests to orally address the Advisory Committee during the meeting or written comments may be sent to: Administrator, GIPSA, U.S. Department of Agriculture, 1400 Independence Avenue SW., STOP 3601, Washington, DC 20250–3601. Requests and comments may also be faxed to (202) 690–2173.

FOR FURTHER INFORMATION CONTACT: Terri L. Henry by phone at (202) 205–8281 or by email at *Terri.L.Henry@usda.gov*.

SUPPLEMENTARY INFORMATION: The purpose of the Advisory Committee is to provide advice to the GIPSA Administrator with respect to the implementation of the U.S. Grain Standards Act (7 U.S.C. 71–87k). Information about the Advisory Committee is available on the GIPSA Web site at *http://www.gipsa.usda.gov/fgis/adcommit.html*.

The agenda will include an overview of Federal Grain Inspection Service operations-market overview, international programs, moisture meter implementation, update on biotech proficiency program, Field Management Division updates and initiatives, and an overview of the quality pilot in New Orleans and results to date.

For a copy of the agenda please contact Terri L. Henry by phone at (202) 205–8281 or by email at *Terri.L.Henry@usda.gov*.

Public participation will be limited to written statements unless permission is received from the Committee Chairperson to orally address the Advisory Committee. The meeting will be open to the public.

Persons with disabilities who require alternative means of communication of program information or related accommodations should contact Terri L. Henry at the telephone number listed above.

Larry Mitchell,

Administrator, Grain Inspection, Packers and Stockyards Administration.

[FR Doc. 2013–13063 Filed 5–31–13; 8:45 am]

BILLING CODE 3410–KD–P

DEPARTMENT OF AGRICULTURE

Natural Resources Conservation Service

Intent to Prepare an Environmental Impact Statement for the Green River/Tusher Diversion Dam Rehabilitation Project, Emery/Grand County, UT

AGENCY: Natural Resources Conservation Service, USDA.

ACTION: Notice of Intent (NOI) to Prepare an Environmental Impact Statement.

SUMMARY: Pursuant to section 102(2)(c) of the National Environmental Policy Act (NEPA) of 1969, 42 U.S.C. 4321–4370d, as implemented by the Council of Environmental Quality regulations (40 CFR parts 1500–1508) and Natural Resources Conservation Service (NRCS) regulations that implement NEPA at 7 CFR part 650, the NRCS Utah State Office announces its intent to prepare an Environmental Impact Statement (EIS) for the Green River/Tusher Diversion Dam Rehabilitation project.

The purpose of this notice is to alert interested parties regarding the intent to prepare the EIS, to provide information on the nature of the proposed action and possible alternatives, and to invite public participation in the EIS process (including providing comments on the scope of the draft EIS, to announce that a public scoping meeting will be conducted, and to identify cooperating agency contacts). The EIS process will evaluate alternatives recommended for detailed study as a result of previous planning-level studies completed by NRCS and any additional (new) alternatives identified during scoping.

DATES: Written comments on the scope of the draft EIS, including the project's purpose and need, the alternatives to be considered, types of issues that should be addressed, associated research that should be considered, and the methodologies to be used in impact evaluations should be sent to NRCS starting on May 29, 2013 and ending on or before June 28, 2013 (5:00 p.m. MDT), to the address listed in the **ADDRESSES** section below. Comments submitted after June 28, 2013 will be considered to the extent practicable by the project team.

Two scoping meetings to present the project and develop the scope of the EIS will be held on Wednesday, June 12, 2013, via Tele-briefings. Participants should call (800) 346–7359 (entry code 840561) at least fifteen minutes prior to the meeting and an operator will connect you to the Tele-briefing. The first Tele-briefing will start at 2:00 p.m. (MDT) with a formal presentation and

last until 2:45 p.m. An informal question and answer period will be held from 2:45 p.m. to 4:00 p.m. The second Tele-briefing will start at 6:00 p.m. (MDT) with a formal presentation and last until 6:45 p.m. An informal question and answer period will be held from 6:45 p.m. to 8:00 p.m. Presentation materials will be available on the project Web site (*http://www.ut.nrcs.usda.gov/programs/EWP/index.html*) for participants to download prior to the meeting.

Any individual who requires special assistance to participate in a scoping meeting, such as hard copy documentation of the meeting or other assistance, should contact Mr. Greg Allington, McMillen, LLC, (208) 342–4214 or *greenriver@mcmillen-llc.com* by Friday, May 24, 2013 to allow sufficient time for documents to be mailed or special arrangements to be made.

Scoping meeting presentation materials will be available on the NRCS Utah Emergency Watershed Protection Web site (*http://www.ut.nrcs.usda.gov/programs/EWP/index.html*) prior to the meeting. Electronic copies of the scoping materials may also be obtained from Mr. Greg Allington, McMillen, LLC, (208) 342–4214 or *greenriver@mcmillen-llc.com*. Representatives of Native American tribal governments and of federal, State, regional and local agencies that may have an interest in any aspect of the project will be invited to be cooperating agencies, as appropriate.

ADDRESSES: Formal scoping comments may be submitted via mail, email, fax, or oral telephone comment to:

- Contact: Mr. Greg Allington, McMillen, LLC,
- Mail: 1401 Shoreline Dr., Boise, Idaho 83702
- Email: *greenriver@mcmillen-llc.com*
- Fax: (208) 342–4216
- Telephone: (208) 342–4214.

Details of the public scoping meeting are given above under DATES. Comments should be submitted by close-of-business (5:00 p.m. MDT) June 28, 2013. Respondents should provide contact information if you wish to be included on the EIS mailing list. Please note that any respondent's entire scoping comment, including their personal contact information, may be made publicly available at any time during the EIS process.

FOR FURTHER INFORMATION CONTACT: Mr. Bronson Smart, State Conservation Engineer, Wallace F. Bennett Federal Building, 125 South State Street, Room 4010, Salt Lake City, Utah 84138–1100, or via email at *bronson.smart@ut.usda.gov*. Information may also be obtained from Mr. Greg Allington, McMillen, LLC, 1401 Shoreline Dr., Boise, Idaho 83702, or via email at *greenriver@mcmillen-llc.com*.

SUPPLEMENTARY INFORMATION:

Background—The NRCS and Utah Department of Agriculture and Food (UDAF) are analyzing alternatives to rehabilitate the Green River/Tusher Diversion Dam due to damage from the late 2010 and early 2011 flood events. The dam was constructed in the early 1900's and has been modified over the years to maintain the structure. During the 2010/2011 flood events, flows in the Green River caused severe damage to the diversion structure compromising its structural integrity. If the dam fails, water delivery to two irrigation canals, a historic irrigation water wheel delivery system, and one hydropower plant would be eliminated.

The rehabilitation of the diversion dam would be funded through the NRCS Emergency Watershed Protection (EWP) program (CFR, Title 7: Agriculture, Part 624—Emergency Watershed Protection) via technical assistance and partial construction funding. A National Environmental Policy Act (NEPA) Programmatic EIS was prepared by NRCS for the overall EWP program in 2004; however, the rehabilitation of this diversion dam does not fit within the analysis parameters of the Programmatic EIS. Therefore, additional NEPA analysis is required for this project.

The project started out under the analysis of an Environmental Assessment (EA) during the first scoping period that was opened from October 30, 2012 to November 30, 2012. A public scoping meeting was held on November 15, 2012 at Green River City Hall in Green River, Utah. Through additional consultation with the Utah State Historic Preservation Office (SHPO) under Section 106 of the National Historic Preservation Act, it was determined that the diversion dam may be eligible for listing on the National Register of Historic Places. Any modifications to the dam may be considered an ''adverse effect'' which may make it ineligible for listing after rehabilitation. A wide range of alternatives is being considered for the project as listed in the Alternatives section below. Some of the impacts to the diversion dam from these alternatives may be considered ''significant'' to cultural resources and as a result, NRCS has decided to prepare an EIS for the project. The EIS will be prepared consistent with Title 390, The National Emergency Watershed Protection Program Manual.

The Upper Colorado Endangered Fish Recovery Program (Recovery Program) is proposing to fund and install a fish barrier in the west irrigation and hydropower plant canal to prevent Endangered Species Act (ESA) listed fish species from entering the canal and/or hydropower plant. As part of the dam repair, upstream and downstream fish passage may also be incorporated into the design. These fish protection and passage components are proposed for inclusion in the Green River diversion rehabilitation project to help reduce mortality of ESA listed fish species populations in the Green River.

Scoping Process—NRCS invites all interested individuals and organizations, public agencies, and Native American Tribes to comment on the scope of the EIS, including the project's purpose and need, alternatives proposed to date, new alternatives that should be considered, specific areas of study that might be needed, and evaluation methods to be used.

Background information including the project purpose and need and alternatives developed to date will be available prior to the scoping meeting on the NRCS Utah EWP Web site (*http://www.ut.nrcs.usda.gov/programs/EWP/index.html*). Electronic and hard copies of supporting documentation are also available from Mr. Greg Allington, McMillen, LLC, (208) 342–4214 or *greg.allington@mcmillen-llc.com*.

Once the scope of the EIS is confirmed upon the close of scoping, NRCS will begin preparation of the draft EIS. A summary of comments received during the scoping period will be compiled in a scoping report which will be available on the NRCS Utah EWP Web site.

Project Study Area and Environmental Setting—The proposed project is located approximately 6.6 miles north of the city of Green River in Emery/Grand Counties, Utah. The project study area includes land that is unincorporated on both sides of the Green River. The primary study area includes the diversion dam where rehabilitation activities would occur. Secondary study areas include areas required for alternatives of the project as described in the Alternatives section below such as the powerhouse raceway, irrigation canal on the east side of the diversion dam, construction staging areas on both sides of the river, and potential impacts to the river and riparian area upstream of the diversion dam.

The environmental setting for the project area is primarily located in a riverine environment surrounded by a relatively narrow riparian plant

community adjacent to the river. Beyond the riparian community are agricultural fields on the east side of the diversion dam and BLM land on the west side of the diversion dam that is primarily comprised of desert shrubs and grasses.

Environmental resources consist of the natural and man-made environment. Preliminary resource concerns associated with the rehabilitation of the diversion dam may include both beneficial and negative impacts to water quality and supply, fish, threatened and endangered species, cultural, recreation, aesthetics, and public health and safety.

Alternatives—NRCS is analyzing the following conceptual alternatives to rehabilitate the diversion dam:

- Repair Existing Diversion Dam: Repair the existing diversion to safely pass flood events.
- Replace Existing Diversion Dam: Demolish the existing diversion dam and install a new dam in the same location.
- Replace Diversion Dam Downstream: Demolish the existing diversion dam and install a new diversion dam downstream.
- Replace Diversion Dam Upstream: Demolish the existing diversion dam and install a new diversion dam upstream.
- Diversion Decommissioning: Completely remove the diversion dam from the river and stabilize the diversion site. The existing water rights at the dam would be supplemented via pumping out of the river or other options to provide water to the water rights holders.
- Fish Passage Upstream/Downstream: Construct a passage system(s) on the dam to allow safe upstream and downstream passage of fish over the diversion dam.
- Electric Fish Barrier: Install an electric fish barrier to prevent fish from swimming into the powerhouse and irrigation canal on the west side of the diversion dam.
- Fish Barrier: Install a fish barrier to prevent fish from swimming into irrigation canal on the east side of the diversion dam.
- Boat Passage Upstream/Downstream: Construct a passage system(s) on the dam to allow safe downstream passage of boats past the diversion dam.

NRCS will consider any viable alternatives brought forward during scoping if it is substantially different from the alternatives described above. NRCS will also study a No-Action alternative which would consist of no Federal money used for the rehabilitation of the diversion dam.

Cooperating Agencies—Federal, state, and local agencies that may be interested in or affected by the project may request or be requested by NRCS to become a cooperating agency in the development of the EIS.

Signed this 24th day of May, 2013, in Salt Lake City, Utah.

David C Brown,

Utah State Conservationist, Natural Resources Conservation Service.

[FR Doc. 2013–13062 Filed 5–31–13; 8:45 am]

BILLING CODE 3410–16–P

DEPARTMENT OF AGRICULTURE

Natural Resources Conservation Service

Non-Rock Alternatives to Shoreline Protection Demonstration Project (LA–16) Iberia, Jefferson, and Lafourche Parishes, LA

AGENCY: Natural Resources Conservation Service, Department of Agriculture.

ACTION: Notice of Finding of No Significant Impact.

SUMMARY: Pursuant to Section 102(2)(C) of the National Environmental Policy Act of 1969; the Council on Environmental Quality Guidelines (40 CFR part 1500); and the Natural Resources Conservation Service Guidelines (7 CFR part 650); the Natural Resources Conservation Service, U.S. Department of Agriculture, gives notice that an environmental impact statement is not being prepared for the Non-Rock Alternatives to Shoreline Protection Demonstration Project (LA–16), Iberia, Jefferson, and Lafourche Parishes, Louisiana.

FOR FURTHER INFORMATION CONTACT: W. Britt Paul, Acting State Conservationist, Natural Resources Conservation Service, 3737 Government Street, Alexandria, Louisiana 71302; telephone (318) 473–7751.

SUPPLEMENTARY INFORMATION: An environmental assessment of the federally assisted action indicates that the project will not cause significant local, regional, or national impacts on the environment. As a result of these findings, W. Britt Paul, Acting State Conservationist, has determined that preparation and review of an environmental impact statement is not needed for this project.

The project will install and monitor various shoreline protection systems in areas of the state where physical, logistical and environmental limitations preclude the use of rock structures. The shoreline protection systems will be demonstrated in up to three (3) test sites in coastal Louisiana. Up to five (5) ''non-rock'' shoreline protection systems will be installed in 500 linear foot sections at each site, extending a maximum of 4,200 linear feet (including buffer areas) along the shoreline at each site. The sites selected include the western side of the peninsula separating Vermilion and Weeks Bay in Iberia Parish; the southeast shoreline of Lake Salvador in Jefferson Parish; and the western shoreline of Bayou Perot in Lafourche Parish.

The Notice of Finding of No Significant Impact (FONSI) has been forwarded to the Environmental Protection Agency and to various federal, state, and local agencies and interested parties. A limited number of copies of the FONSI are available to fill single copy requests at the above address. Basic data collected during the environmental assessment are on file and may be reviewed by contacting W. Britt Paul.

No administrative action on implementation of the proposal will be taken until 30 days after the date of this publication in the **Federal Register**.

W. Britt Paul,

Acting State Conservationist.

[FR Doc. 2013–13060 Filed 5–31–13; 8:45 am]

BILLING CODE 3410–16–P

DEPARTMENT OF COMMERCE

Foreign-Trade Zones Board

[B–53–2013]

Notification of Proposed Production Activity, The Gas Company, LLC dba Hawai'i Gas, Subzone 9F (Synthetic Natural Gas), Kapolei, Hawaii

The Gas Company, LLC dba Hawai'i Gas (Hawai'i Gas), operator of Subzone 9F, submitted a notification of proposed production activity to the Foreign-Trade Zones (FTZ) Board for their facility in Kapolei, Hawaii. The notification conforming to the requirements of the regulations of the FTZ Board (15 CFR 400.22) was received on May 22, 2013.

The subzone currently has authority to produce synthetic natural gas, carbon dioxide, hydrogen, hydrocarbon gas mixtures and zinc sulfide using certain foreign-status feedstocks produced within Subzone 9A. The current request would allow Hawai'i Gas to admit the feedstocks listed below from any source in foreign status. Pursuant to 15 CFR 400.14(b), FTZ activity would be limited to the specific foreign-status materials and components and specific finished

APPENDIX D

TELEBRIEFING PRESENTATION

Conference Participant List *Client Instant Access, LLC*

2nd Scoping Telebriefing Presentation Attendance List 2:00 PM
Company: McMillen, LLC
Chairperson: Greg Allington
Date of Conference: 6/12/13
Conference ID: 840561

	Last Name	First Name	Company
1	Beals	Tony	USDA NRCS
2	Czapla	Tom	Fish Wildlife
3	Johnson	Floyd	BLM
4	Schou	Nick	Utah Rivers Council
5	Smith	Ted	Software AG
6	**Axness**	Dan	****Speaker****
7	**Allington**	**Greg**	****Speaker****
8	**Smart**	**Bronson**	****Speaker****

Conference Participant List *Client Instant Access, LLC*

2nd Scoping Telebriefing Presentation Attendance List 6:00 PM
Company: McMillen, LLC
Chairperson: Greg Allington
Date of Conference: 6/12/13
Conference ID: 840561

	Last Name	First Name	Company
1	Beals	Tony	USDA & RCF
2	Carey	Jason	River Restoration
3	Hanson	Makeda	Division of Wildlife Resources
4	Hunt	Chet	Green River Canal Company
5	Ryan	Cathy	The City of Green River
6	Young	Brody	Utah State Parks & Recreation
7	**Axness**	**Dan**	****Speaker****
8	**Allington**	**Greg**	****Speaker****

NRCS Emergency Watershed Protection (EWP) Green River/Tusher Diversion Dam Rehabilitation

Environmental Impact Statement

2nd Scoping Period
Public Telebriefing
June 12, 2013
2:00 PM & 6:00 PM (MDT)

Project Team

Natural Resources Conservation Service (NRCS)
Lead Funding Agency

Utah Department of Agriculture and Food (UDAF)
Project Sponsor

McMillen, LLC
NEPA Project Manager/Concept Design

NRCS EWP Program

Bronson Smart – NRCS Utah
- State Conservation Engineer
- bronson.smart@ut.usda.gov
- 801-524-4559

NRCS EWP Program

- Utah State: $70 million+ in 2012
- Damage to Watersheds from Natural Disasters
- Rehabilitate Structure from 2010/2011 Flood Damage
- Upgrade Structure to Current Engineering Standards and Technology
- Comply with Federal, State and Local Regulations

NRCS EWP Program

- Green River/Tusher Diversion Dam is eligible for funding from 2010/2011 flood event
- The Diversion Dam is a conservation practice and complies with the EWP regulations
- Completing additional NEPA Analysis in the form of an EIS
  - Project not covered in the 2004 Programmatic EIS

NRCS EWP Program

- National EWP Program Manual (Title 390 Part 510-515)
  - http://directives.sc.egov.usda.gov/RollupViewer.aspx?hid=26433
- EWP Program Final Programmatic EIS (2004)
  - http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/ewp/

Project Review

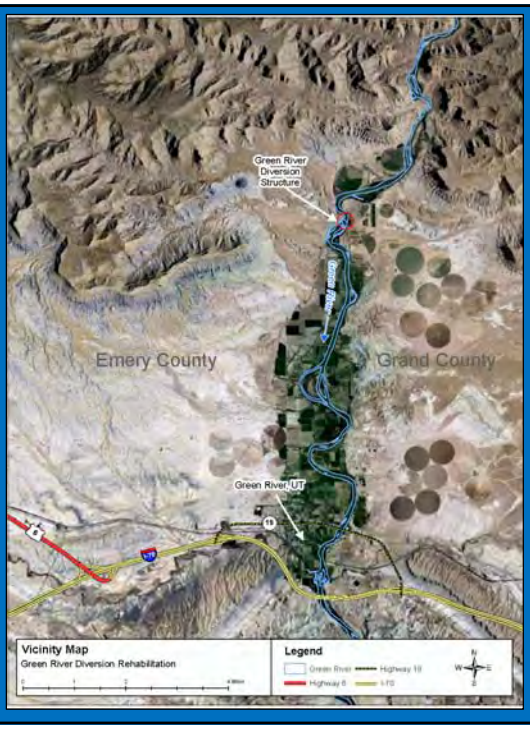
McMillen
DESIGN with Vision. BUILD with Integrity.

Dan Axness – McMillen, LLC

- Concept Design Project Manager
- greenriver@mcmillen-llc.com
- 208-342-4214

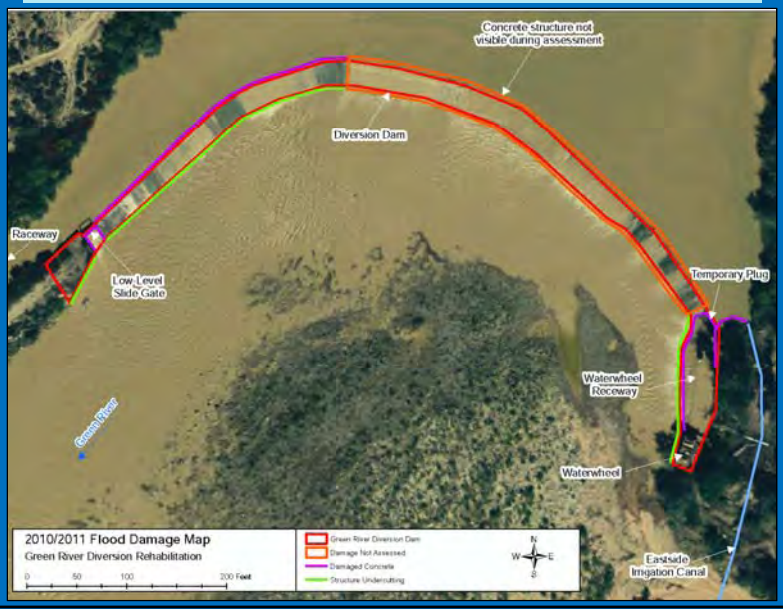
Project Vicinity Map

Dam is ~6 miles north of Green River, Utah



Project Overview Map

2010/2011 Flood Damage Map



Photos

West End of Diversion

East End of Diversion

Photos

East End of Diversion Damage to Waterwheel Raceway (looking u/s)

East End of Diversion Damage to Waterwheel Raceway (looking d/s)

Photos

West End of Diversion Damage to Diversion Dam (looking u/s)

West End of Diversion Damage to Diversion Dam (looking u/s)

Photos

Damage to Slide Gate West End of Dam (looking u/s)

Damage to Concrete West End of Diversion

Photos

Damage to Concrete West End of Diversion

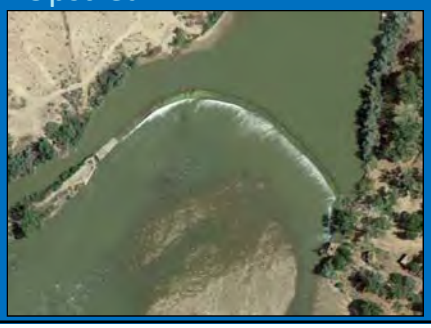
Damage to Concrete and Entrance to Raceway West End of Diversion

Conceptual Project Alternatives

- No Action
- Rehabilitate Diversion (4 Options)
- Diversion Decommissioning
- Fish Passage Upstream/Downstream
- Fish Passage Monitoring
- Boat Passage Upstream/Downstream
- Fish Barrier(s)

Conceptual Project Alternatives

- Rehabilitate Diversion Options
  - Repair Existing Diversion
  - Replace Existing Diversion
  - Replace Existing Diversion Downstream
  - Replace Existing Diversion Upstream



Fish Passage

- Endangered and Threatened Fish Species under the Endangered Species Act

Razorback Sucker

Colorado Pikeminnow

- Downstream: Notches in Dam
- Upstream: Passage System
- Electronic Tag Reader

Humpback Chub

Bonytail

Fish Barrier(s)

- Electric Barrier: Deter fish from swimming down powerhouse and west irrigation canal raceway
- Barrier: Deter fish from swimming down east irrigation canal

ELECTRIC BARRIER EXAMPLE

Fish and Boat Passage

- Fish and Boat Passage: System to allow safe upstream passage of fish and safe downstream passage of boats past the dam
- Boat Portage: Access around dam during low flow scenarios

FISH AND BOAT PASSAGE SYSTEM EXAMPLE

National Environmental Policy Act

Greg Allington – McMillen, LLC
– NEPA Project Manager
– greenriver@mcmillen-llc.com
– 208-342-4214

National Environmental Policy Act (NEPA) of 1969 (Public Law 91-190) and the Council on Environmental Qualities regulations at 40 CFR Parts 1500-1508

NRCS NEPA

- Environmental analysis required for major federal actions
- The NRCS is the funding agency for the rehabilitation of the diversion dam (75%)
- The project sponsor provides the remaining 25% cost-share for the diversion dam rehabilitation project

Other Components

- Upper Colorado River Endangered Fish Recovery Program will be implementing the installation of the electric fish barrier project (100%) in the raceway
  - US Bureau of Reclamation is the funding agency
  - US Fish and Wildlife Service is providing technical oversight of the barrier

NEPA Project History

- NEPA process began in September 2012
- Started under the analysis of an Environmental Assessment (EA)
  - 1st Scoping Period
    - Opened: October 30, 2012
    - Public Meeting: November 15, 2012
    - Closed: November 30, 2012
  - 1st Scoping Report is available on the project website

NEPA Project History

- Preliminary Section 106 Consultation with the Utah State Historic Preservation Office after 1st Scoping Period
  - Diversion Dam may be eligible for listing on the National Register of Historic Places
  - Any modification may be considered an "adverse effect" which may make it ineligible for listing depending on the selected alternative
  - NRCS concluded that some of the impacts from alternatives may be considered "significant" to cultural resources

NEPA Project History

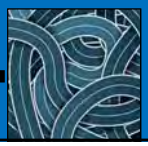
- NRCS has decided to prepare an Environmental Impact Statement (EIS) for the project
- Federal Register Notice of Intent (NOI)
  - 2nd Scoping Period
    - Opened: May 29, 2013
    - Public Telebriefings: June 12, 2013
    - **Closes: July 2, 2013 (extended)**

NEPA Public Involvement

- EIS Scoping (30-day)
  - Express initial concerns and suggest alternatives to be considered
- Draft EIS Public Comment Period (45-day)
  - Public review of alternatives and environmental impacts
- Final EIS Public Comment Period (30-day)
  - Proposed alternative published to public with summary of Draft EIS comments
- Record of Decision (ROD) Protest/Appeal (30-day)
  - Project approval by NRCS

Typical Scoping Concerns

- Project Purpose and Need
- Design Alternatives
  - Including a No-Action Alternative
- Mitigation
- Natural Environment
  - Water Quality and Quantity
  - Fish
  - T&E Species
- Man-made Environment
  - Cultural
  - Recreation
  - Aesthetics
  - Public Health and Safety



Scoping Comments

- Formal comments may be submitted by:
  - Email
  - Written Letter
  - Oral (Phone)

- Scoping Report: Summarizes issues, alternatives and concerns from the public

2nd Public Scoping Comment Closes: July 2, 2013

NEPA Contact Information

- Please contact Greg Allington with McMillen regarding questions and comments:

Phone: 208-342-4214

Fax: 208-342-4216

Email: greenriver@mcmillen-llc.com

Address: 1401 Shoreline Drive
Boise, ID 83702

http://www.ut.nrcs.usda.gov/programs/EWP/index.html

Informal Questions

???

APPENDIX E

COMMENTS

NRCS Green River EIS 2nd Scoping Period – Commenters and Commenter Reference Numbers

Commenter #	Name	Organization	City	State	Comment Document
1	Jack Kloepfer	Public			E-mail
2	Landis Arnold	Public	Longmont	CO	E-mail
3	Helen Howard	Public			E-mail
4	Hal Crimmel	Public	Ogden	UT	E-mail
5	Andrew G. Bentley	Public	Poultney	VT	E-mail
6	Janet Oertli	Public			E-mail
7	Leif M. Johnson	Public	Grand Junction	CO	Mail
8	Herman Hoops	Public	Jensen	UT	Mail
9	Karen Nelson	Public	Castle Valley	UT	E-mail
10	S. Young	Public			E-mail
11	Nick Schou	Utah Rivers Council	Salt Lake City	UT	E-mail
12	John Weisheit	Living Rivers and Colorado Riverkeeper	Moab	UT	E-mail
13	Sam Dorsi	Public	Boulder	CO	E-mail
14	Roy Webb	Public	Salt Lake City	UT	E-mail
15	Eugene Swalberg	Utah State Parks	Green River	UT	Mail
16	Kelly Baustian	Public			E-mail
17	David Jackson	Public	Aurora	CO	E-mail
18	Scott Schreiner	Public	Eagle	CO	E-mail
19	Jordan Witbeck Sherma Witbeck	Public	Vernal	UT	E-mail
20	Thomas Rampton	Public			E-mail
21	Kirk Cooley	Public	Bountiful	UT	E-mail
22	Denny Huffman	Public	Ridgefield	WA	E-mail
23	Dave Kelly	Public	Salt Lake City	UT	E-mail
24	Bill D'Olier	Public	Sandpoint	ID	E-mail
25	Pat Larkin	Public			E-mail
26	Tom Martin	Public	Flagstaff	AZ	E-mail
27	Richard Mingo	USBOR	Salt Lake City	UT	E-mail
28	Ted Smith	Public			E-mail
29	Carole Sue Prescott	Public			E-mail
30	Jennifer Jones	Public			E-mail
31	Karen Hastings Bartlett	Public			E-mail
32	Todd Havener	Public			E-mail
33	Kagan Breitenbach	Public			E-mail
34	Von Bowerman	Public			E-mail
35	Bob Brister	Public	Salt Lake City	UT	E-mail
36	Alice H. Peterson	Public	Santa Cruz	CA	E-mail
37	Kathleen Clarke	Public Lands Policy Coordination Office	Salt Lake City	UT	E-mail
38	Nathan Fey	American Whitewater	Longmont	CO	E-mail
39	Larry Crist	USFWS	West Valley City	UT	Mail

NRCS Green River EIS 2nd Scoping Period – Comment Categories and Commenter Reference Numbers

Comment Category	Comment	Commenter
Boat Passage	Create a flow-through (navigable bypass) for boaters at the diversion dam.	1, 2, 4, 5, 7, 8, 9, 11, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 30, 33, 37, 38
	The lack of a flow-through represents a safety hazard for boaters.	1, 5, 7, 8, 10, 11, 13, 14, 15, 17, 22, 28
	The Green River Diversion structure is the most significant in-channel obstruction on the main segment of the Green River, and starves fish of high quality habitat, while also creating a life threatening recirculating hydraulic that presents significant danger to recreational paddlers at higher flows. Including downstream passage into the rehabilitation plan will eliminate the threat to public safety. We ask that the NRCS and its project partners contact local law enforcement and search and rescue for more information on these non-fatal incidents.	38
	Providing boat passage at the dam will enhance recreational opportunities and bring revenue to the local and/or regional economy.	5, 8, 11, 14, 15, 18, 30
	A white water park would enhance recreational use of the river and would provide economic benefit to the town and/or region.	6, 7, 8, 17
	Providing boat passage would allow boating on the Green River to extend from Flaming Gorge to Lake Powell or to connect other areas of the river.	4, 5, 7, 8, 15, 16, 18, 20, 21, 22, 23, 25, 26
	Portaging around the dam is impractical.	5, 14
	Boat ramps at points upstream and downstream of the dam do not provide a solution to boat passage issues.	13
	If a navigable channel is not provided, consider building boat landings on either side of the dam, connected by a pathway to allow river travelers to manually portage their boats.	13
	Historically, the river was navigable prior to constructing the dam; the dam should not infringe on this navigability.	5, 13, 14, 26
	Provide boat passage in the middle or on the right side of the dam (when facing downstream).	14
	Boating is a non-consumptive use of the Green River and a source of economic generation.	30
	In the past the river trips below the diversion dam to the town of Green River is long and boring because of how slow of speed the river flows. Anybody that did take the trip will not take it again.	34
	If boat passage is included in the project, the boat passage design must be able to maintain the important fish passage components.	39
Construction Impacts	Avoid impacts whenever feasible by following proper construction BMPs, work timing, material selection, and de-watering.	39
Dam Rehabilitation	Make the entire diversion dam a foot higher than the high side is now.	34
	Rebuild/repair dam in the current location.	32

NRCS Green River EIS 2nd Scoping Period – Comment Categories and Commenter Reference Numbers

Comment Category	Comment	Commenter
Dam Decommission	Decommission the Tusher Division Dam in the interest of aiding the aquatic ecology, safety, and local recreation economy.	35
Electrical Barrier	Assist the Upper Colorado River Endangered Fish Recovery Program in the effective design, construction, and operation of an electric barrier to prevent fish entrainment into the Green River canal and Thayn Hydroelectric facility.	39
	Rehabilitation should incorporate a barrier to prevent endangered fish from entering the powerhouse and irrigation canals.	11, 14
Fish Passage	The diversion dam should have a fish ladder.	2, 14
	Modifications should allow upstream and downstream fish passage.	11, 14, 16, 19, 29, 39
Floods	Field research shows that the Green River has experienced large floods of at least 250,000 cubic feet per second. Human-occupied structures and non-human occupied facilities, such as power generation structures, should not be constructed in the floodplain.	12
Funding/Economics	Federal (public) dollars should be used to the make the project safe and beneficial to multiple river user groups.	8
	Provide a cost-benefit analysis to determine whether rehabilitating the existing dam is more cost-effective than replacing it with a pump house.	11, 32
	Provide information about the nature of the insurance coverage carried by the dam's owner and/or operator, and consider possible financial damages accruing from loss of life due to safety issues.	11
Habitat	Maintain suitable fish habitat in the project vicinity, by providing adequate hydrological, thermal, and chemical conditions.	39
Historic Preservation	Listing on the historic register is not a good idea if it means that the dam cannot be torn out, rebuilt, or changed.	1
	The old dam does not warrant historic protection.	3
Hydropower Plant	Do not need to change the plans to the point of falling out of the original protection. Add hydro to tie into the large sluice gates that will be installed in the structure for sluicing sediment on the water wheel side and build a channel down the east side downstream like the west side, so as to copy the west side pump and hydro structure that is in place.	34

NRCS Green River EIS 2nd Scoping Period – Comment Categories and Commenter Reference Numbers

Comment Category	Comment	Commenter
Irrigation	Leave the dam in its present location and continue to use the water wheel.	29, 31, 32
	The dam should be removed in favor of building a pump house on the bank of the river.	11
	On the lower Colorado River, pumps take out water and do not hinder recreation by all types of boaters.	3
	The water wheel is an historic landmark. Protect this resource.	32, 36
	Irrigation is an important consumptive use of the Green River and a source of economic generation in rural Utah.	30
	Use of the water wheel is green technology.	32
NEPA Process	An EA would have been appropriate for this effort.	27
Permits	The State of Utah owns the bed of the Green River in the project area. A permit will be required from the Utah Division of Forestry, Fire, and State Lands for construction activities on the beds of sovereign lands.	37
	Project must comply with the Endangered Species Act of (ESA) of 1973. Any reduced function of a fish passage structure would be considered in an interagency consultation under the ESA.	39

Commenter #1

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Tuesday, May 28, 2013 8:22 PM
To: greg.allington@mcmillen-llc.com
Subject: Green River/ Tusher diversion Dam comment

Dear Sir,

Some rules are just plain worn out or they do not apply. In the case of a diversion dam on a heavily silt laden river, the idea of listing it in the registry of historical places is not a good idea, if that means that It can not be torn out, rebuilt, or changed in any way. It simply negates the reason why the thing was built in the first place. With that being said, I believe it will be changed is some way, and when it does, it needs to have a flow through for rafters.

Diversion dams have an expected life span, must be removed or rebuilt. Perhaps when this one was built there was no EPA, or environmental impact statement, and perhaps they did not even have a plan for removal or upgrade. I can not see something like this happening today. We would have a plan for the life span of the diversion, with a definite solution when it reached the end of its life, or a method to upgrade it so it would still be usefull. I also believe that we would not put something as serious as a diversion dam on a major river in moth balls because of some historical value that will have little meaning to anyone who uses the river. It is a chunk of cement and rebar, that must be delt with in some manner that is both safe and efficient for those who use the river in a variety of ways.

My point here is that we use the Green river for recreation as well as for irrigation of crops. I would like to see a diversion with a flow through for rafters. It is an extremely bad Idea not to do this. Many boaters do some of their first trips on Desolation Canyon. When they get down to Swayseys rapid, they think that all the big stuff is behind them. I have seen this attitude hurt people in the past. If they get to a diversion dam with no flow through, then there could be casualties or drownings just because of complacency, or even because of inadequate skill when dealing with something like a diversion dam.

I think something will be done about the condition of this Diversion dam. If it is changed in anyway, there must be a flow through for boaters who want to take out at the state park. To do otherwise is to risk life needlessly. We owe it to future generations to make things a little bit better than they have been in the past.

Finally with the knowledge of the risk to life at diversion dams I think it is a good idea to step forward and make this one an example of what can happen for the good of everyone, the liability risk is also not worth doing nothing or rebuilding it without a flow through.

Thank you for asking for my comment.

Sincerely,
Jack Kloepfer

--
[redacted]

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Greg Allington

Commenter #2

From: greenriver@mcmillen-llc.com on behalf of Landis Arnold [redacted]
Sent: Tuesday, May 28, 2013 8:53 PM
To: greg.allington@mcmillen-llc.com
Subject: Boat passages and Fish Ladders should be one and the same - ref Green River Diversion Rehabilitation Project

Hello,
Any sort of Dam or Diversion in a navigable river needs to have a Navigable Boat Passage and Fish Ladder. They should be one and the same. Around the country disfunctional fish ladders have been built that purport to lead fish upstream but they have proven time and time again to not work. Fish want to follow a real channel that acts like a real river.

A Navigable boat passage is the answer to this. The state of Colorado has countless Boat Passages at diversion points that allow functional and complete navigation and which enhance fish habitat along with recreational habitat.

Please follow this approach on the Green River Diversion Rehabilitation Project. I can see no reason for not having a fully navigable bypass.

thank you for your interest and understanding.

--
Landis Arnold
Interstate Boater

[redacted]

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Greg Allington

Commenter #3

From: greenriver@mcmillen-llc.com on behalf of Helen Howard [redacted]
Sent: Wednesday, May 29, 2013 6:27 AM
To: greg.allington@mcmillen-llc.com
Subject: Diversion dam above Green River.

I am writing to object to any thing on the river that hinders access to private boaters. The old dam is in poor shape and does not warrent historic protection. On the lower Colorado where I live there are pumps taking water out ofthe Colorado River every half mile or so in some areas. They do not hinder recreation by all types of boaters. (one of the major sources of income to us at Desert River Kayak). I work in recreation here and the Green River is where I go for vacation. Having another dam on that river for just pulling irrigation off is offensive. Helen Howard

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Commenter #4

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of Hal Crimmel [redacted]
Sent: Wednesday, May 29, 2013 7:59 AM
To: greg.allington@mcmillen-llc.com
Subject: Diversion Dam / Green River / Comments

Dear Public Comment Group:

As an avid river runner I think it absolutely essential that a boat passage be built at the Tuschar Diversion dam rebuild. I will be doing a Deso trip in three weeks and would certainly appreciate having such a feature be built in.

Nationally, the trend is to make our rivers usable by a wide range of users--not just industry or agriculture, and having this boat passage would be a very positive step in the right direction--making it possible to run from Flaming Gorge dam hundreds of miles without encountering any obstacles (short of the river permits).

I know there are many of us who would like to see this feature be installed.

Thank you for your time.

Sincerely,

Hal Crimmel

--

[redacted]

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Version: 2013.0.3343 / Virus Database: 3184/6365 - Release Date: 05/28/13

Commenter #5

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of Andrew Bentley [redacted]
Sent: Wednesday, May 29, 2013 8:53 AM
To: greg.allington@mcmillen-llc.com
Subject: Public comment about NRCS Green River EIS 2nd Scoping Period Public Notice

Hello Project Team,
Recently I heard about the dam rehab project and have a background in recreation resource use from the University of Idaho. Also, I have guided numerous multi-day, whitewater and flat water float trips on the Green River above and below the dam. As such, I have various concerns about the project, explained below.

Concern one.
The current proposal offers inadequate passage around the dam for river runners seeking to start or end trips on either side of the dam. Those attempting passage in small watercraft (canoe/kayaks, rafts/dories) may therefore experience unnecessary threat of loss to life, limb, or equipment/ goods.

Concern two.
As is well documented, Major Powell's party, ranchers, miners, and others have traveled this river section on more than one occasion for the purpose of trade and industry. There is precedence that the Green River is historically navigable, prior to the establishment of the Tuscher Dam. Replacement of the dam without a passage for watercraft will infringe on this historic navigability.

Concern three.
Outdoor recreation is a top economic generator for Utah tourism. According to the Utah Governor's "State of Utah Outdoor Recreation Vision," taking a long term perspective is key to decision making regarding recreation resource management. Not including boat passage in the dam rehab project may save capital resources on the front end, though opportunities for recreation will be diminished for the long term.

Concern four.
Unique recreation opportunities will be diminished without a boat passage. The ability to connect and float multiple river sections is a rare recreation experience in the United States. The Green River in Utah represents one such opportunity, with one able to travel for hundreds of miles in habitats relatively desolate from other humans. While some may suggest providing a portage route around the dam is sufficient for passage, this suggestion is likely made by those who have never disassembled and portaged fully loaded raft that weighs 2500 pounds. Additionally, for those with hard hulled dory boats, portaging puts undue hardship on those parties who cannot safely carry an empty 500-750 pound boat around the dam.

Thank you for hearing my concerns.
Drew

Sent from an iPhone

Andrew G. Bentley
[redacted]

Greg Allington

Commenter #6

From: greenriver@mcmillen-llc.com on behalf of Janet Oertli [redacted]
Sent: Wednesday, May 29, 2013 9:08 AM
To: greg.allington@mcmillen-llc.com
Subject: NRCS Green River EIS 2nd Scoping Period Public Notice

Dear Mr. Allington,

As a life long user of the Green River and particularly the area around the city of Green River, Utah. I would like to suggest that the Tusher dam rehabilitation project take into account the recreational use and safety of the river.

The Canadian city of Calgary had a dam much like this, which was a danger and old and they have replaced it with a excellent white water park, which draws people to use an area that was once unusable.

http://www.acr-alberta.com/Portals/0/articles/weir.pdf

If something like this could be done in Green River it would draw boaters from all over and provide economic benefit to the town.

I know I'd stay a bit extra to be able to run some more white water.

Sincerely,
Janet Oertli

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Version: 2013.0.3343 / Virus Database: 3184/6365 - Release Date: 05/28/13

Leif Johnson Resource Marketing

Commenter #7

May 30, 2013

Greg Allington, Project Manager/Biologist
McMillen, LLC
1401 Shoreline Drive, Suite 100
Boise, ID 83702

Dear Mr. Allington:

RE: Tushar Diversion Dam Project

I am aware of the Tushar Diversion Dam Project on the Green River between Swasey's Rapid and U.S. Highway 6 in Green River, Utah. As an avid boater (*raft/kayak*) of the area, I urge you to include a design passage for rafts and kayaks through or around this project.

Background: I have been Director of Sales at Grand Canyon National Park, South Rim (*AZ*); General Sales Manager at Mammoth Mountain Ski Area (*CA*); Director of Sales at Lake Powell Resorts & Marinas (*AZ/UT*); General Manager of the Yellowstone IMAX Theatre (*West Yellowstone, MT*); Director of Sales at the Adams Mark Hotel (*Grand Junction, CO*); Executive Director of the Palisade Chamber of Commerce (*CO*); Marketing Consultant for San Juan County, Utah; and currently serve as Membership/Marketing Director of the Grand Junction Area Chamber of Commerce (*CO*). Why am I providing you with my background? I believe I have an extensive background to realize the economic benefits. I have been involved in many opportunities of economic development of tourism-related product. I will assure you, economic studies will back up my viewpoint.

Economic Development: This is an unprecedented opportunity for the town of Green River and Emery County to increase recreational tourism, including multi-day trips through Desolation/Gray Canyons and daily trips through Gray Canyon from Nefertiti Rapid (*put-in*) to Green River State Park. The net result: Increased tourism to Green River; more overnight stays in hotels/motels, more expenditures at restaurants, grocery and convenience stores, gas stations, and visitation to the John Wesley Powell Museum. River outfitting companies and rental companies will benefit. Towns and cities - Denver, Steamboat, Glenwood Springs, Durango, and Golden, Colorado - are discovering economic benefits of recreational river parks as part of their marketing. Whitewater boating and kayaking are a multi-million dollar industry. It will draw more people to the area.

Safety: Many low-head diversions are being rehabilitated due to lawsuits that have shown them to be hazards. A boat passage will prevent people from being seriously injured or killed. It will affect the operation of the Endangered Fish Recovery Project by the U.S. Fish and Wildlife Service, State of Utah and other agencies.

The Experience: This project is the only place on the Green River from Flaming Gorge to Lake Powell where one cannot safely run a boat. Each year a number of river runners recreate what is known as "The Powell Trip," launching far upriver and running this section to Hite or Mineral Bottom. Nothing is more exhilarating than exiting Desolation/Gray Canyons and the Book Cliffs, observing the birds and wildlife along the banks, and learning about the history of fur trappers, outlaws, the Powell Expeditions, and river runners along the Green River.

Summary: I believe tourism and ranching can coexist. I've seen it happen in yet another industry in Palisade, Colorado – agritourism - including peach growers, winery/vineyards, alpaca farms, and lavender growers. For reference, I request this letter be kept on file so future litigants may use it in the discovery process. Thank you.

Sincerely,

Leif M. Johnson
President

cc: Bureau of Land Management, Emery County Board of Commissioners, Town of Green River

Commenter #8

April 13, 2013

[redacted]

[redacted]

Greg Allington, Project Manager/Biologist
McMillen, LLC
1401 Shoreline Drive, Suite 100
Boise, ID 83702

Dear Mr. Allington:

I just became aware of the proposal to rebuild the diversion dam at Tuscher (mp8.5 – 1914 survey) on the Green River between Swasey's Rapid (mp12) and the U.S. highway 6 bridge in Green River and I have several comments.

In the rebuilding of this structure you MUST include design for raft passage (approximately ten feet wide).

Not allowing boat passage through this river obstruction is a step backwards, with the new construction making passage more dangerous than the present structure. There are burgeoning rafting rental businesses and outfitting companies that use this section of river. Failure to include a boat passage will have a negative financial impact on those businesses. In addition novice recreational rafters regularly use this section of river, unless at armed guard is posted they will continue to attempt using this section and someone is going to become seriously injured or killed.

In the U.S. many low head diversions are being rehabilitated because lawsuits have shown them to be hazards (attractive nuisance, like an unfenced swimming pool). Without a boat passage you will be creating a hazard even though people have been notified that it will do so. In addition towns and cities are discovering (Denver, Palisade, Craig , Steamboat, and Grand Junction Colorado for example) the recreational and attractive opportunities of river trails and they are developing that resource as a part of their marketing. Whitewater boating and kayaking are a multi-million dollar industry (indeed if all the commercial companies operating on the Colorado/Green Rivers were one company it would be near the top of the Fortune 500 list). Projections by America Outdoors and the Utah travel people indicate that day trips have not yet come close to their marketing potential. By failing to include a boat passage, and failing to allow for future incorporation of a competition type slalom you are restricting opportunities for green River down the road.

Lots of public (federal) dollars are being spent on this, so it should be made safe and beneficial for multiple river user groups. This proposed project will be the ONLY place on the Green from Flaming Gorge to Lake Powell where one cannot safely run a boat. Each year a number of river runners recreate what is known as "The Powell Trip" and launch far upriver, run through this section and take out at Hite or Mineral Bottom downriver. In addition it will negatively affect the operation of the Endangered fish Recovery project monitoring by the U.S. Fish and Wildlife

service, State of Utah and other agencies.
Finally, I have contacted a number of environmental and river related organizations, who were unaware of this project. I can almost guarantee litigation if a boat passage is not included.

I request this letter be kept on file in order that future litigants may use it in the discovery process.

Herman Hoops
[redacted]

Commenter #9

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of Karen Nelson [redacted]
Sent: Thursday, May 30, 2013 8:33 AM
To: greg.allington@mcmillen-llc.com
Subject: Green River Tuscher Dam

Just one short comment. PLEASE include a boat passage channel in the new replacement for this dam. I don't see any reason to exclude boats from passing through this section of river. The use currently coexisted and would like to see that use continue!!!!

Karen Nelson, Castle Valley UT

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Greg Allington

Commenter #10

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Thursday, May 30, 2013 6:17 PM
To: greg.allington@mcmillen-llc.com
Subject: Rusher diversion dam

Curious to the mindset of not having a safe place to run boats, and locals on inner tubes around the diversion? Maybe check out how many deaths happen on low head dams and diversions on the eastern rivers. River management wise it seems the State would be asking and making sure their river bed (sovereign lands), would be safe and free of liability. I bet if it is built in this day and age without a safe option, someone will die, and a law suit will happen. The taxpayers will pay through the nose.

Let's get a safe option, it also helps with searches, and rescues.

S Young

Sent from my iPhone=

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Commenter #11

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of Nick Schou [nick@utahrivers.org]
Sent: Monday, June 03, 2013 2:11 PM
To: greg.allington@mcmillen-llc.com
Subject: Comments Regarding the Green River Tusher Diversion Dam Rehabilitation
Attachments: Tusher Diversion Comments-URC.pdf

Dear Mr. Allington,

On behalf of Utah Rivers Council, its members, staff, board and volunteers, I respectfully submit the following comments regarding the *Green River Tusher Diversion Dam Rehabilitation* NEPA analysis. Comments are attached. Please don't hesitate to contact me if you have any questions or concerns. Thank you for this opportunity.

Sincerely,

Nick Schou
Water Outreach Manager
Utah Rivers Council
Save Something

1055 East 2100 South, Suite 204
Salt Lake City, Utah 84106
801-486-4776
www.utahrivers.org

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Utah Rivers Council
Save Something

June 3, 2013

Attn: Greg Allington
McMillen, LLC
1401 Shoreline Dr.
Boise, ID 83702
greenriver@mcmillen-llc.com
Via Email

Re: Comments Regarding the *Green River Tusher Diversion Dam Rehabilitation*

Dear Mr. Allington,

On behalf of Utah Rivers Council, its members, staff, board and volunteers, I respectfully submit the following comments regarding the *Green River Tusher Diversion Dam Rehabilitation* NEPA analysis.

Utah Rivers Council is a not-for-profit 501(c)(3) grassroots community-based organization that advocates for sound water policy and protection and conservation of Utah's rivers, streams, and clean water sources for today's citizens, future generations and wildlife. The Utah Rivers Council has a long history working to protect Utah's amazing Green River and while this proposal stems from the need to rehabilitate the damaged diversion dam to protect irrigation and hydropower water rights, we assert that there are numerous stakeholders other than irrigators, including river runners, fishermen and conservationists, as well as a native fishes who have a vested interest in seeing the Tusher Dam's removal or modern renovation—rather than simply a rehabilitation of the existing antiquated and deadly obstruction.

The current diversion dam is a dangerous safety hazard to recreation enthusiasts such as river runners, hunters, anglers and bird-watchers. The failed structure constitutes the only river-wide obstacle in the Green River downstream of Flaming Gorge Dam, requiring a mandatory portage by those who value their lives and their personal property. Our organization supports the proposal to remove the dam in favor of building a pump-house on the bank of the river. This would be a win-win solution for all stakeholders, allowing the river to flow free while continuing to meet water delivery obligations to irrigators and the powerhouse. We recognize that this proposal burdens the water users with an additional cost, yet one should not ignore the cost of lost lives which accrue as a function of this hazard. The reality of lost lives in the future is one to which the water users must acknowledge and be prepared to accept. The additional costs associated with future litigation on the part of family of the deceased should also not be overlooked.

Should the dam remain in place our organization strongly supports the proposal to create downstream boat passage past the dam, specifically in the form of an in-stream channel. Upstream boat passage does not seem necessary. In addition to aiding the aquatic ecology and local recreation economy, this option would lessen the owner/operator's future need for expensive insurance coverage as the dam is currently a major public safety liability.

In this regard, we have a number of questions. We have received numerous calls about this deadly hazard posed to the public and many concerned parties have inquired about the ownership of the dam and whether or not the owners/operators have adequate insurance coverage in the likely

event of an accident and subsequent litigation. The first scoping report identifies the project sponsors NRCS and UDAF, but could you please write back to our organization to let us know who owns and operates the dam, as well as the nature of insurance coverage carried by those responsible for the damaged structure? For example, would a single entity like the Green River Canal Company be liable for an accident that occurred because of a single-use structure that obstructs this navigable water way? While dam owners should certainly not have to bare the financial cost of boat passage alone, it only seems reasonable for the owner/operators and other project proponents to seek to prevent any future navigation accidents rather than to prolong the status quo and hope for the best.

Moreover, if the dam is to stay in place its rehabilitation should also include modifications that allow upstream and downstream fish passage over the structure. In particular, this will greatly benefit the four species of endangered native fish in the Green River; Colorado pikeminnow, bonytail chub, humpback chub and razorback sucker as well as other species of native fish and wildlife. Additionally, the rehabilitation should incorporate a much-needed barrier to prevent endangered fish from entering the powerhouse and irrigation canals, reducing accidental takings.

Our organization would also like to see a detailed cost-benefit analysis in order to determine whether rehabilitation of the existing dam is more cost-effective than decommissioning the structure altogether, in favor of a pump house taking water from the main channel of the river. A complete economic analysis should be produced that attempts to weigh the costs of water diverted by the Tusher diversion dam, against the costs of water delivered by a contemporary pumping system.

The eminent threat to human life and the subsequent increase to owner/operator's insurance premiums, alongside possible financial damages accruing from said loss of life must also be considered against the relatively small costs of removing/rehabilitating the dam to avoid fatalities. A thorough analysis will include an estimate of financial damages caused by litigation from mortality alongside an assessment of the likelihood of damages being awarded by the courts. Our organization believes a comprehensive cost-benefit analysis is an indispensable part of determining the most environmentally and economically sound option for rehabilitating the Green River Tusher Diversion Dam. Thank you for the opportunity to provide these comments.

Sincerely,

Nick Schou
Water Outreach Manager

Commenter #12

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of John Weisheit [john@livingrivers.org]
Sent: Monday, June 03, 2013 2:29 PM
To: greg.allington@mcmillen-llc.com
Subject: Tusher Wash Dam: New information for the administrative record
Attachments: SiteFuturesCommLetterFromLRandUWmay2013.pdf; ATT00044.htm

Hi Greg,

Attached please find a letter from Living Rivers dated May 28 written to the "Site Futures Committee," related to the flood history of the Colorado River above Moab, UT. The Site Futures Committee is a group of citizens considering the possible development (or not) of the land now occupied by the Atlas Tailings Pile, which is a waste pile from the milling of uranium ore. This waste is currently being moved off the Colorado River floodplain by the Department of Energy.

Please include this letter as a part of the administrative record for the Environmental Impact Statement regarding the rehabilitation of Tusher Wash Dam.

We mentioned in our scoping letter of November 30, 2012 that we might be able to provide more flood data specific to the Green River. Unfortunately the paleoflood sediment samples are still being processed in Israel. Once they are fully processed and analyzed, we will be able to provide the volume and frequencies of Green River flood events.

In the meantime, let me explain what our field research revealed as it relates to large floods on the Green River above the Confluence with the Colorado River in Canyonlands National Park.

The field work was accomplished in July of 2012. We began our work on the Green River 20 miles above the Confluence with the Colorado River. We dug drenches in many slack water deposits to take measurements and acquire samples for optically stimulated luminescence dating (OSL).

We acquired enough information during our research to reasonably conclude that the Green River has experienced large floods of at least 250,000 cubic feet per second. At one site we noted the evidence of at least 20 individual floods of high volume.

All the best,
John Weisheit
Living Rivers and Colorado Riverkeeper
435-259-1063

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To: Site Futures Committee
Norm Boyd, Krissie Braun, Sabrina Henry, Saxon Sharpe, Rock Smith, and Russ von Koch

From: Living Rivers & Uranium Watch
John Weisheit and Sarah Fields

May 28, 2013

Dear sub-committee members:

During the federal National Environmental Policy Act (NEPA) process for the remediation of the Atlas Tailings Pile, a group of citizens obtained a grant from the Citizens' Monitoring and Technical Assessment Fund to include paleoflood data for the administrative record and to demonstrate scientifically that it was in the public's interest to move the tailings pile out of the Colorado River floodplain.

We submitted our final report about the same time that the US Geological Survey (USGS) submitted their findings (circa 2006). The citizens' distributed their report liberally to all interested parties via US Mail and it is posted permanently on the World Wide Web.

2005 USGS Report: http://pubs.usgs.gov/sir/2005/5022/pdf/SIR2005_5022.pdf

2006 Citizens' Report: www.livingrivers.org/pdfs/LRlibrary/MoabMillProject/MoabMillProject.pdf

2007 Citizens' Addendum: www.riversimulator.org/Resources/Hydrology/PaleofloodsColoradoHECRASmagnitudesOctober2006.pdf

The USGS calculated the peak discharge, using the Probable Maximum Precipitation - Probable Maximum Flood (PMP-PMF) model, to be about 300,000 cubic feet per second (cfs). The results of the citizens' paleoflood study shows that at least 2 floods with similar magnitudes did occur during the late history of the Colorado River. Such magnitudes are nearly five times greater than the magnitude of the floods of 1983 and 1984.

To visualize just how large a flood of 300,000 cfs in the Moab Valley would be, Highway 191 would be underwater from where the Grand County Credit Union building is to the junction of the Potash Highway 279. In the city limits of Moab, the river would encroach and parallel 100 West (Swanny City Park). Along our study reach (Highway 128 at Milepost 10.3), such a flood would be more than 15 meters (49 feet) above present winter water levels.

The two studies were different in determining the magnitude and frequency of the largest expected floods. The USGS did two types of analyses: (1) statistical analysis of the measured data and (2) Iteration of the PMP-PMF model. Whereas the citizens' group did a detailed paleoflood study under the supervision of Dr. Victor Baker from the University of Arizona and Dr. Noam Greenbaum from the University of Haifa (Israel).

The USGS's statistical analysis estimated the frequency of the probable maximum flood (PMF) at about 10,000-years. The citizens' paleoflood study revealed that the frequency of floods with magnitude the size of the PMF occurs in much higher frequency. For example, the citizens' report has found geological evidence of at least two floods with a PMF magnitude greater than 300,000 cfs that have occurred in the last 2,100-years, suggesting an average frequency of about 1,000-years to these floods.

We already understand that the Colorado River breaches the river right (north) bank at levels approaching 70,000 cfs. For example, there is a photo of the 1917 flood inundating the land between the Colorado River Bridge and Courthouse Wash Bridge. www.riversimulator.org/Resources/Photos/Moab/1917FloodMoab.jpg

There is a photo from 1957 that shows the Colorado River encroaching upon the site operations of the original uranium mill. www.riversimulator.org/Resources/Photos/Moab/ColoradoRiverFlood1957MoabMill.jpg

We also understand that the flood of 1884 peaked at 125,000 cfs above the mouth of the Dolores River and that this level has been confirmed by other proxies, such as the driftwood lines that still exist along the margins of the Colorado River from this flood. One of these driftwood lines exists at our paleoflood study site above the BLM "take-out" (Milepost 10.3) on the Colorado River "Daily."

Our paleoflood study has not been concluded. Since 2005, we have increased our level of understanding thanks to additional grant money from the Bureau of Reclamation to study paleofloods on the Green River in Canyonlands National Park and to model the flood history of the Upper Colorado River Basin. Dr. Tess Harden (Bureau of Reclamation) provided assistance for this modeling. The model is called FLDFRQ3. The following information will be shortly submitted to publication in a leading journal of hydrology.

The USGS report (Kenney, 2005) has determined the following probabilities for flood magnitudes at Moab, Utah as follows:

1) A 100-year flood – peak discharge of 97,645 cfs.
2) A 500-year flood – peak discharge of 120,070 cfs.
3) The PMF peak discharge – 300,175 cfs.
4) Estimated frequency of the PMF – 10,000-years.

The citizens' report (Greenbaum et al., 2007) determined the following flood frequencies in the last 2,140-years (+/- 220-years):

1) 34 to 40 floods have exceeded the magnitude of the USGS 100-year flood determination.
2) 20 to 25 floods have exceeded the magnitude of the USGS 500-year flood determination.
3) 5 floods have exceeded a peak discharge of 282,000 cfs.
4) The two largest floods exceeds peak discharge of 349,000 cfs.
5) The frequency of these floods is about 1,000-years. This value was also assigned to the USGS PMF.

FLDFRQ3 modeling suggests that flood recurrence intervals would have the following values:

1) The 100-year flood would have a peak discharge ranging from 156,440 to 179,050 cfs.
2) The 500-year flood would have a peak discharge ranging from 224,780 to 265,570 cfs.
3) A 1000-year flood would have a peak discharge ranging from 256,740 to 310,770 cfs.

INTERPRETATION

This data (USGS and Citizens') is more severe than the human instrument record reveals. The instrument record began when the railroad lines entered Grand County in 1883. In 1884 the Loma, Colorado, river gage measured a flood of 125,000 cfs. The second most severe flood happened in 1917, with a peak volume of 76,800 cfs.

According to the USGS statistical data, Grand County hasn't experienced a 100-year flood event since 1884 (129-years ago). According to the FLDFRQ3 modeling, Grand County hasn't experienced a 100-year flood in the chronology of its human history.

The take-home message is: According to our knowledge from the measured data, floods greater than what occurred in 1884 are indeed possible, and the frequency of these floods occur in much shorter intervals. Such floods can severely affect the tailings pile, and, therefore, it is critically important to continue to move the contaminated waste materials from the floodplain as quickly as possible.

The ultimate concerns are: 1) A 100-year flood is overdue, 2) When will the 500-year flood event arrive?, and 3) When will the 1,000-year flood arrive?

We cannot make a prediction regarding these three possible events, but we clearly know that such floods have already occurred in the late history of the Colorado River (twice in the last 2,000-years). Therefore, a prediction is not really vital information for planners. The best planning policy for the moment is to assume that such a flood will arrive someday and the community should be prepared for such an event. The community should adopt a development plan that is compatible with the reality of the Colorado River's flood history.

SUGGESTIONS FOR DEVELOPMENT, OR NOT

1) We suggest strongly that no permanent structures for human occupation be built in the floodplain. Analysis of drill records (DOE Borehole #453) at the mill site indicate significant reworking of driftwood, sediment and gravels during floods. Thus, structures and their foundations would very likely be compromised during major flood events.

2) We also suggest that non-human occupation facilities, such as power generation structures, not be constructed in the floodplain.

3) We strongly suggest that the best use of this land is to respect it for what it truly is—a floodplain buffer. Consider its true value as a free ecological service to lessen the impacts of flooding in the Moab Valley.

Sincerely yours,

John Weisheit
Living Rivers
PO Box 466
Moab, UT 84532
435-259-1063
john@livingrivers.org

Sarah Fields
Uranium Watch
PO Box 344
Moab, UT 84532
435-259-9450
sarah@uraniumwatch.org

Greg Allington

Commenter #13

From: greenriver@mcmillen-llc.com on behalf of Samuel W Dorsi [redacted]
Sent: Tuesday, June 04, 2013 8:04 AM
To: greg.allington@mcmillen-llc.com
Subject: Green River 2nd Scoping Period comments

Mr. Allington --

Please include these comments in the official public record for the 2nd Scoping Period.

I would like to advocate for a safe, navigable route through the current diversion structure that lies on the Green River above the town of Green River, UT. The existing dam divides two sections of river--Desolation Canyon and Labyrinth Canyon, both of which are popular with recreating families--with a structure that is at least inconvenient and at worst dangerous. Water travel is a traditional use of the river and should be facilitated with a basic downstream boat channel.

For non-motorized users, who are limited to downstream travel, the presence of the dam prevents access to the section of river that starts at the dam and runs downstream to the next access point.

Earlier public comments stated that no channel was needed, since boat ramps were available at points upstream and downstream of the dam. However, this is an inadequate solution for many river users. These two closest access points are some distance from the dam itself, and would not provide a realistic alternative for many users, especially those on longer trips who don't have access to their vehicles as they travel this section of river. This would be the case, for example, for a party that wished to travel from Desolation Canyon down to Crystal Geyser or to Mineral Bottom: the vehicles used to access this section of water would not easily be available at Swazey's Beach to bypass the dam.

Please include a navigable channel in any plan for renovations made to the current diversion dam. A less desirable option that would still represent an improvement to the current situation would be to build boat landings on either side of the dam, connected by a pathway to allow for river travelers to manually portage their boats.

Thank you for considering the installment of a boat channel,

Sam Dorsi
[redacted]

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Greg Allington

Commenter #14

From: greenriver@mcmillen-llc.com on behalf of Roy Webb [redacted]
Sent: Wednesday, June 05, 2013 11:33 AM
To: greg.allington@mcmillen-llc.com
Subject: Re: NRCS Green River EIS 2nd Scoping Period Public Notice

Mr. Allington,

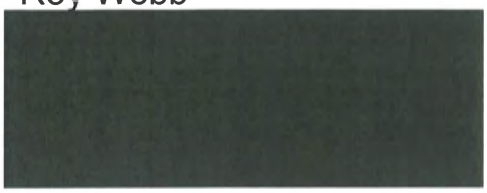
Thanks for the notice and the opportunity to comment on this project. As an historian who has studied travel on the Green River for many years, I have strong opinions about how this project should proceed. I agree with the stated goals of protecting the irrigation and hydropower stake holders; feel that the endangered fish should be given special consideration both in keeping them out of places where they will be trapped and killed; and with the idea of a fish ladder or passage around the dam in both directions, to ensure that they can spawn and travel up and downriver safely.

My particular concern, however, is in the downstream boat passage. As has been noted by others, this is the longest remaining free-flowing stretch of the Green River, and I would argue that not only is the dam itself, as a structure, historic, the idea of being able to float a stretch of the Green without portages or barriers is likewise worthy of consideration as a cultural resource. From John Wesley Powell in 1869, people in boats have been able to float this stretch of the Green and that historic use should be taken into consideration when planning for this repairs to this dam. This would have to be in the form of a safe downstream passage, preferably in the middle or on the right side of the dam (when facing downstream). The current slot, on the left, leads a boat onto the island just below and has been the scene of more than one mishap. Running the center of the dam at anything but high water is a dangerous undertaking. A downstream boat passage should allow for safe and easy passage at any water level.

A portage path by itself around the dam is really not an option in this day and age. Unless one is on a day trip in a small, light craft, unloading and de-rigging your boat to carry the whole thing around the dam is not feasible. Many people who do long extended journeys on the Green are in small parties or even solo, and moving the boat by yourself is not possible. Also, wouldn't private land have to be set aside for such a passage, requiring negotiations with the land-owners?

I support the repairs to this dam since it has qualified as a historic cultural resource, but I would argue that a downstream boat passage, passable safely in any water level, is equally important. Not only will those who do through-trips use it, it could foster the development of a recreational boating industry in Green River that is not presently possible, because there is no safe passage through the dam. I would encourage the planners to make sure that safe downstream boat passage is included in the final specifications for any changes made to the Tusher Dam.

Roy Webb



From: Greg Allington <Greg.Allington@mcmillen-llc.com>
To: Greg Allington <Greg.Allington@mcmillen-llc.com>
Sent: Tuesday, May 28, 2013 4:55 PM
Subject: NRCS Green River EIS 2nd Scoping Period Public Notice

Good Afternoon Interested Party,

Please find attached the Public Notice for the 2nd Scoping Period for the Green River Diversion Rehabilitation Project.

Official comments should sent to greenriver@mcmillen-llc.com or myself at the physical address listed below.

Additional project information is also listed on the project website at http://www.ut.nrcs.usda.gov/programs/EWP/index.html which will be updated throughout the course of the NEPA analysis and project.

For some of you this may be a duplicate notice. If you would not like to receive duplicate notices in the future, please respond to this email how you would like to be notified (email or mail).

Thank you. You may contact me at any time with any questions or comments about the project.

Greg Allington
Project Manager/Biologist

McMillen, LLC
1401 Shoreline Drive, Suite 100 Boise, ID 83702
p 208.342.4214 x 318 | f 208.342.4216 | c 208.340.5721
greg.allington@mcmillen-llc.com | www.mcmillen-llc.com

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GARY R. HERBERT
Governor

GREG BELL
Lieutenant Governor

State of Utah

DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER
Executive Director

Division of State Parks and Recreation

FRED HAYES
Division Director

Commenter #15

May 29, 2013

Green River diversion rehabilitation project
c/o McMillen, LLC – Greg Allington
1401 Shoreline Drive
Boise, ID 83702

Dear Greg:

Green River State Park is located at river mile zero on the Green River approx. 8.5 river miles below the diversion dam. The park has been a historic launching point for downstream travel, but due to the diversion dam and the associated private property rights, the park has not been able to safely function as a take-out for any upstream river activity. The diversion dam is located between two major river recreation access points – Swasey's beach/boat ramp located at river mile 10 and Green River State Park.

On behalf of Utah State Parks we would encourage a serious look at dam design options that would allow for safe downstream recreational vessel travel from Swasey's beach to the Green River State Park. This would create positive economic impacts/benefits for the park and for all tourism related businesses in the city of Green River. Allow access across the dam would offer recreational boaters a wonderful float trip between two easy river access points. Visitors seeking an 'on your own' float trip would be treated to beautiful vistas of the Bookcliffs and an abundance of wildlife viewing opportunities. Local commercial river outfitters could enjoy an increase in potential business and other ancillary business opportunities that may result from the increased visitation to a 'new' recreation opportunity.

Redesigning the dam to allow for safe passage downstream would alleviate the current dangerous conditions faced by boaters who missed Swasey's take out. Currently boaters, after a 'daily trip' or the more extensive river trip through Desolation Canyon, have to deal with the terror of an overhead dam if they miss Swasey's. A redesign allowing access would eliminate this dangerous navigational hazard and improve the public's recreational experience on the Green River. A recent article published in the Salt Lake Tribune on the Century-old Tusher diversion dam quotes an engineer with the Colorado firm River Restoration as saying, "It is not unreasonable to have safe boating and great melons in Green River." We concur with this statement.

Sincerely,

Eugene Swalberg, Manager
Utah State Parks

Green River State Park/Goblin Valley State Park, 130 S Fairway Drive, PO Box 637, Green River, UT 84525-0637
telephone (435) 564-3633 • facsimile (435) 564-3223 •TTY (801) 538-7458 • *www.stateparks.utah.gov*

UTAH DNR STATE PARKS

Greg Allington

Commenter #16

From: greenriver@mcmillen-llc.com on behalf of Kelly Baustian [redacted]
Sent: Thursday, June 06, 2013 8:12 AM
To: greg.allington@mcmillen-llc.com
Subject: Green River/Tusher Dam Refurbishment_Public Comment

Dear Greg,

Thank you for your willingness to collect public comments regarding the rehabilitation of the Green River/Tusher Diversion Dam project.

As a avid boater of Western waterways, I would like to see a small boat channel included as part of the refurbishment so the river can be safely floated at all levels. I see this as unprecedented opportunity to improve navigation and fish migration in the Green river. As the only dam on the Green River below Flaming Gorge, the addition of a boat passage would enable boaters to link several sections of great river.

Thank you,
Kelly Baustian=

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2013.0.3343 / Virus Database: 3184/6386 - Release Date: 06/05/13

Commenter #17

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of David Jackson [redacted]
Sent: Saturday, June 08, 2013 8:40 PM
To: greg.allington@mcmillen-llc.com
Subject: Tusher Dam revision

Thank you for taking comments about the Tusher diversion dam.

I am first and foremost concerned about having safe passage for boats. More and more people are continuing their Desolation Canyon float trips through Green River and on into Canyonlands. Placing an unrunnable obstacle in the middle of that float is dangerous and all but guarantees future expenditures on fixing that mistake. I am locally familiar with, and would refer you to, the modifications to countless low-head dams along the South Platte through Denver that caught and killed unexpecting swimmers to see the future of any dam that does not include boat passage.

Secondly, I think this is a great opportunity to enhance the recreation economy of Green River by including a whitewater play park. Even a single wave with good and consistent surf is a huge draw, and would bring people to Green River specifically to kayak and surf throughout the year. Including a play feature in the initial design would add minimal cost and yet give great benefit to the region's economy for years.

Please feel free to contact me with any questions.

Thank you,
David Jackson
[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2013.0.3343 / Virus Database: 3199/6391 - Release Date: 06/07/13

Commenter #18

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of scott schreiner [redacted]
Sent: Sunday, June 09, 2013 9:19 AM
To: greg.allington@mcmillen-llc.com
Subject: Green River/Tusher Diversion Dam

I have recently been informed of the proposed changes/repairs proposed for the Tusher Diversion Damn on the Green River. This would seem like the perfect opportunity to create a safe passage for all downstream traffic in the form of a boat shoot or other navigable bypass structure. As the only obstruction on the Green River from Flaming Gorge to the confluence, this damn creates various headaches and logistical problems for downstream travel. With the addition of safe passage for downstream travel, boaters could extend their trips to Green River State Park and provide a boost to the local businesses in Green River rather than merely passing by on their way home. Furthermore, boaters looking to float Labrynth and Stillwater Canyons could extend there trips to include the rapids of the Green River Daily, or, perhaps, create a longer daily run starting with the Green River Daily and taking out at Crystal Geyser. i am sure that your local rafting companies would love the opportunity to offer linger trips that expose their clinets to the beauty of both Utah and the Green River area.

Sincerely,

Scott Schreiner

[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2013.0.3343 / Virus Database: 3199/6391 - Release Date: 06/07/13

Commenter #19

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of Sherma Witbeck [redacted]
Sent: Sunday, June 16, 2013 3:05 PM
To: greg.allington@mcmillen-llc.com
Subject: Green River

Too whom it may concern,

Upon review of the proposal: **Green River/Tusher Diversion Dam Rehabilitiation**
We would hope that some thought and provision are made to allow river access through an in stream channel for boats, rafts and any other water craft. This same in stream channel could also be designed not to imped but encourage the movement of animals including fish around the dam.

Jordan Witbeck
Sherma Witbeck
[redacted]

Sent from Windows Mail

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2013.0.3345 / Virus Database: 3199/6407 - Release Date: 06/13/13

Commenter #20

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of Thomas Rampton [redacted] enterprises.com]
Sent: Friday, June 21, 2013 11:59 PM
To: greg.allington@mcmillen-llc.com
Subject: Fwd: [Rafting_Grand_Canyon] Tusher Diversion Dam Rehabilitation Comments

I too consider it important that a way for rivercraft be included in any work on Tusher Dam. There is a river trip upstream of Green River (Desolation Canyon) and another downstream (Labyrinth Canyon), not to mention Stillwater and Cataract Canyons. It ought to remain possible to connect these trips.

Thomas Rampton
Author, *Desolation and Gray Canyons River Guide* and *Labyrinth Canyon River Guide*

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2013.0.3345 / Virus Database: 3199/6432 - Release Date: 06/22/13

Commenter #21

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Saturday, June 22, 2013 5:30 AM
To: greg.allington@mcmillen-llc.com
Subject: Tusher Diversion Dam Rehabilitation

Dear Mr Allington,

I am one of many whitewater boaters who have run the Tusher Dam during the coarse of it's life. This was done to link my Desolation Gray Canyon river trip with continuing on down through Labyrinth, Stillwater and Cataract Canyons to Hite. Please include a boatable passage in the revision of the Tusher damn so that the next generation of boaters can enjoy the thrill of running the damn and having a nice long river trip experience (almost a Grand Canyon length river trip). Thank you for the opportunity to comment on the revision project.
Sincerely,

Kirk Cooley
[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2013.0.3345 / Virus Database: 3199/6432 - Release Date: 06/22/13

Commenter #22

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of Denny Huffman [redacted]
Sent: Saturday, June 22, 2013 8:16 AM
To: greg.allington@mcmillen-llc.com
Subject: Safe Boat Passage - Public Comment

Dear Mr. Allington:

As one of thousands of private river users along the Green River stem I write with grave concern about the proposal to rebuild the diversion dam at Tuscher between Swasey's Rapid and the U.S. highway 6 bridge in Green River. It is imperative that this proposal include a safe boat passage for those river users. If the rebuilding of this dam does not include such a passage it would be the only such obstacle to safe river running between the Flaming Gorge Dam and the Lake Powell Dam. The implications of not including a safe boat passage related to the high potential for loss of life and attendant legal ramifications are well known throughout our country.

I write to specifically ask that such a safe boating option be added to this project. Please keep this email as part of the public involvement process.

Denny Huffman
[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2013.0.3345 / Virus Database: 3199/6432 - Release Date: 06/22/13

Commenter #23

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of David Kelly [redacted]
Sent: Saturday, June 22, 2013 7:11 PM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Dam

Dear Sir or Madam,

My name is Dave Kelly and I am boater in support of a navigable passage through the Tusher Diversion Dam located north of Green River, Utah and south of Swasey's Rapid. I support having a navigable passage that makes boating from Flaming Gorge to Lake Powell a journey safe from man-made hazards.

Thanks,
Dave Kelly
[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2013.0.3345 / Virus Database: 3199/6432 - Release Date: 06/22/13

Commenter #24

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Sunday, June 23, 2013 8:29 AM
To: greg.allington@mcmillen-llc.com
Subject: Tusher Diversion Dam

Mr. Greg Allington
McMillen LLC

Dear Mr. Allington;

I'm writing to ask that a boater bypass be included in the rehab of the Tusher Diversion Dam on the Green upstram of Green River. We floaters wouldn't need anything elaborate. We'd probably be easier to accomodate than the fish. Thanks for your consideration.

Bill D'Olier
Sandpoint, Idaho
(a multiple time Green River floater)

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2013.0.3345 / Virus Database: 3199/6432 - Release Date: 06/22/13

Commenter #25

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of Steve Larkin [redacted]
Sent: Sunday, June 23, 2013 8:29 AM
To: greg.allington@mcmillen-llc.com
Subject: Tusher Dam

To Whom It May Concern:

It has come to my attention that work is being considered on the Tusher Dam on the Green River, and that due to this work, the dam may become impassable to rafts, dories, etc.

I first ran the Tusher Dam in 1989 on a trip from Sand Wash to Hite. Being able to run such a long stretch of river remains one of my most memorable trips. I would hate to think that I could never repeat this journey.

In considering what needs to be done to the dam I would ask that you please include something that would keep the dam passable by water craft.

Thank you for your consideration,
Pat Larkin

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2013.0.3345 / Virus Database: 3199/6432 - Release Date: 06/22/13

Commenter #26

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of Tom Martin [redacted]
Sent: Sunday, June 23, 2013 8:29 AM
To: greg.allington@mcmillen-llc.com
Subject: Tusher Diversion Dam Rehabilitation Comments

Emergency Watershed Protection, Green River/Tusher Diversion Dam Rehabilitation
Mr. Greg Allington
McMillen, LLC
1401 Shoreline Dr.
Boise, ID 83702

June 21, 2013

Dear Mr. Allington,

Thank you for the opportunity to comment during the public scoping period on the Tusher Diversion Dam Rehabilitation.

In the book I wrote, *Big Water Little Boats, Moulty Fulmer and the First Grand Canyon Dory on the Last of the Wild Colorado River*, Vishnu Temple Press, 2012, there is a photo on page 69 of Moulty Fulmer running his first dory named MOJA down the left tongue of the Tusher Diversion Dam. The photo was taken on the 4th of July, 1951. Fulmer is rowing the MOJA, and his passenger is Otis "Dock" Marston's daughter Maradel, sitting in front of him in the footwell of the boat. The flow is 14,600 cfs. The river party floated on downriver to the highway bridge at Green River, UT, and took out there. I found this photo in the Marston Collection at the Huntington Library, and point this out to you as evidence for a very long history of river runners interfacing with and rowing over the Tusher Diversion Dam.

I made my first crossing of the Tusher Diversion Dam rowing a rubber raft in September, 1996, on a river trip from Sand Wash at the start of Desolation Canyon to Hite, Utah, below Cataract Canyon. Running the Tusher Diversion dam, as Moulty Fulmer and Dock Marston had done before me, adds immense value to our river trips. I urge you to include a downstream boat passage in-stream channel on the Tusher Diversion Dam in the FEIS of this project, preserving our American heritage into the next 100 years of river running on the Green River.

If you could kindly acknowledge receipt of this e-mail, I would be most appreciative.

Sincerely yours,

Tom Martin

[redacted]

Commenter #27

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of Mingo, Richard [rmingo@usbr.gov]
Sent: Monday, June 24, 2013 8:57 AM
To: greg.allington@mcmillen-llc.com
Subject: green river tusher diversion dam

I just received and reviewed your scoping notice for the subject project. I don't have any comments other than an "adverse effect" under Section 106 is different than "significant impact" under NEPA and an EA would have been appropriate, all else the same.

--

Richard Mingo | Utah Reclamation Mitigation & Conservation Commission
230 South 500 East Suite 230 | Salt Lake City, Utah 84102
p. 801.524.3168 | c. 801.884.6130 | rmingo@usbr.gov

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2013.0.3345 / Virus Database: 3199/6433 - Release Date: 06/23/13

Commenter #28

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of Smith, Ted [redacted]
Sent: Monday, June 24, 2013 4:25 PM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Rehabilitation Project c/o McMillen, LLC – Greg Allington

Hello,

Thanks you for the opportunity to comment on the green river diversion dam.
I would like to see a boat ramp built into the diversion dam. Currently this dam requires portage to be safe to get by it. This can be a lengthy and dangerous in it's self.
I have heard stories of the dangers people have encountered running over this dam.

Thank you for your time.

Best regards,
Ted Smith
[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2013.0.3345 / Virus Database: 3199/6433 - Release Date: 06/23/13

Commenter #29

Greg Allington

From: [redacted]
Sent: Tuesday, June 25, 2013 10:31 AM
To: greg.allington@mcmillen-llc.com
Subject: Green River Diversion Repair input

Dear Greg,
Please send us any information you have now or have in the future regarding the status of the Green River/Tusher Diversion Dam Rehabilitation Project. We are concerned property owners or family members of the Hasting Ranch in which the water wheel is located:

[redacted]

We are most concerned about the Green River /Tusher Diversion Dam Rehabiltation project as to its impact on our obtaining water from the Green River using the water wheel to irrigate part of the Hastings Ranch property as it has in some form since the early 1900's and since the 1880 Survey. We will be sending you facts about the water wheel and dam recorded by Howard Laurence Hastings to the Grand County Historical Preservation Commission and the Utah State Historical Society, February 16, 2000. We feel the dam should be left in its present location with the rehabilitation or reconstruction that is proposed to repair flood damage of 2010/2011. Please advise us and send us any information you have on this project as it greatly affect our land.

Most sincerely:
Carole Sue Prescott
[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2013.0.3345 / Virus Database: 3199/6438 - Release Date: 06/24/13

Commenter #30

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of Jennifer Jones [redacted]
Sent: Tuesday, June 25, 2013 5:21 PM
To: greg.allington@mcmillen-llc.com
Subject: public comment

To Whom It May Concern:

Please consider the recreational boating potential of the Green River... If a boater pass through is created it would allow for the potential increase in generation of economic revenue to the community of Green River. A new passage for boats would increase the floating opportunities for paddlers of all types. By not considering this option you will effectively continue to discourage through boater traffic that may otherwise continue downstream. The engineering required for a boater pass through is viable and should be implemented.

Obviously irrigation is an important consumptive use of the Green River and a source of economic generation in rural Utah. Boating is a non-consumptive use of the Green River and a source of economic generation.

Thank you for considering my comments during the analysis.

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2013.0.3345 / Virus Database: 3199/6438 - Release Date: 06/24/13

Commenter #31

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of Bartlett, Karen [redacted]
Sent: Wednesday, June 26, 2013 9:13 AM
To: greg.allington@mcmillen-llc.com
Subject: NRCS Green River EIS scoping request

Irrigation water for the property (tax record parcels 05-016-0003 and 05-017-0007) is taken from the Green River at the point the diversion dam meets the east shore of the river. The land (234.23 acres) has been under continuous irrigation for garden, orchard, and hay fields using either water wheel and/or electric pump since 1912.

I support re-construction of the dam to continue to provide water to existing irrigation ditches that service the east side of the river, and for the point of take out for the property described above.

I am a co-owner of this property (10% share tenants in common).

Regards,
Karen Hastings Bartlett

No virus found in this message.
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Version: 2013.0.3345 / Virus Database: 3199/6440 - Release Date: 06/25/13

Commenter #32

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of Todd Havener [redacted]
Sent: Wednesday, June 26, 2013 9:13 AM
To: greg.allington@mcmillen-llc.com
Subject: Greenriver Diversion Rehabilitation Project

To whom it may concern:
I'm in favor or rebuilding/ repairing the diversion dam in it current location for economic, cultural/historical and environmental reasons.

The infrastructure for both the East/West irrigation canals are in place and do not need to be modified by keeping the diversion dam in its current location. If the dam is rebuilt up or downstream these would also have to be modified costing both more money and further damage to the surrounding environment.

The waterwheel on the Hastings ranch is a historical landmark and part of Greenrivers cultural heritage. Keeping and repairing the diversion dam in its current location maintains the functionality of the waterwheel and preserves our heritage. Moving the dam will destroy the waterwheels inflow and bring to an end this important part of our history. The waterwheel has been functioning in various forms for decades, has lasted through many floods and has proven its ability to irrigate. This type of irrigation is green technology (no pun intended) using the rivers energy to elevate the water.

The energy cost of a using a pumping station must be considered in your analysis.

Thank you for your consideration,

Todd Havener MD
Sent from my iPhone=

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2013.0.3345 / Virus Database: 3199/6440 - Release Date: 06/25/13

Commenter #33

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of Kagan Breitenbach [redacted]
Sent: Thursday, June 27, 2013 9:45 AM
To: greg.allington@mcmillen-llc.com
Subject: Diversion Dam

To whom it may concern,

I am emailing to express that I am in favor of making a diversion dam on the Green River that would be passable with flat bottom boats such as rafts and dories. Please keep me updated as the project progresses.

Best Regards,

Kagan Breitenbach=

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2013.0.3345 / Virus Database: 3204/6443 - Release Date: 06/26/13

Commenter #34

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of Von Bowerman [redacted]
Sent: Thursday, June 27, 2013 7:35 PM
To: greg.allington@mcmillen-llc.com
Subject: comments on the G.R. Diversion

Hi Greg

1) In the past the river trips below the diversion dam to the town of Green River is long and boring because of how slow of speed the river flows. Anybody that did take the trip will not take it again.

2) We are hearing a lot about putting in a hydro power plant in the new construction. I do not feel we need to change the plans to the point of falling out of the grandfathered protection that we have now. If anybody wants to add hydro they can tie into the large sluice gates that will be installed in the structure for sluicing sediment on the water wheel side and build a channel down the east side down stream like we have on the west side, so as to copy the west side pump and hydro structure that is in place now.

3) I want to keep the other comments from the last comment period to still be considered.
I still want to have the entire diversion dam a foot higher than the high side is now.

Thanks Von Bowerman

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2013.0.3345 / Virus Database: 3204/6443 - Release Date: 06/26/13

Commenter #35

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of [redacted]
Sent: Friday, June 28, 2013 8:59 AM
To: greg.allington@mcmillen-llc.com
Subject: decommission Tusher Diversion Dam

Dear Greg Allington,
Please decommission the Tusher Diversion Dam in the interests of aiding the aquatic ecology, safety, and local recreation economy.
Thanks,

Bob Brister
[redacted]

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2013.0.3345 / Virus Database: 3204/6443 - Release Date: 06/26/13

Commenter #36

Greg Allington

From: [redacted]
Sent: Wednesday, June 26, 2013 1:24 PM
To: greg.allington@mcmillen-llc.com
Subject: Water wheel at the Hastings ranch in Green River, Utah
Attachments: water wheel letter 23 June 2013.docx

Greg,

Here is a letter from Alice (Hastings) Peterson. I am a granddaughter of Effie and Howard Hastings, and Lawence Hastings' daughter.

Sincerely,

AliceH. Peterson

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2013.0.3345 / Virus Database: 3204/6443 - Release Date: 06/26/13

Greg Allington Mailto:Greg.Allington@McMillen-llc.com

To the question of making the water wheel at the Hastings Ranch un-usable, I would bring to your attention a publication entitled "Howard Laurence Hastings – Oral History" that was produced by the Human History Program, Grand County Preservation Commission. This was compiled from personal interviews by Bette L. Stanton, 683 Mountain View Drive, Moab UT, 84532, Phone 435 259 7809, Fax 435 719 4066, E-mail bls @lasal.net. There is a computer disk on file at the Dan O'Laurie Canyon County Museum and also at the Utah State Historical Society.

There is a chapter beginning on page 18 which talks about the history of water wheels on the Green River. On page 22 there is a photo of the Hastings Ranch water wheel. On Page 29, 30 there is an article from The Sun Advocate Lifestyle" by Layne Miller, staff writer.

There is a lot of History on the Hastings Ranch regarding the water wheel. It would indeed be sad to not try to protect this part of a colorful bygone era!

As a Hastings granddaughter and daughter I spent many summers on the Ranch and realized how special the Hastings Ranch was because of this beautiful wheel. Later on as a "grown up" I am continually amazed by the number of people that I meet who have visited the "water wheel ranch" on trips to Green River or have passed the wheel on trips down the Green River. Not to mention the practical value of using the wheel to help water the property.

Steel Water Wheel Designed by U. of Arizona

The Old Wooden Water Wheel Built in 1940

Sincerely yours,

Alice H. Peterson

400 – 36th Ave., Santa Cruz, CA 95062

Commenter #37

Greg Allington

From: Sindy Smith [sindysmith@utah.gov]
Sent: Tuesday, July 02, 2013 2:19 PM
To: Greg Allington
Subject: State Comment -- Green River Diversion Rehabilitation Project
Attachments: Green River Diversion Rehabilitation.doc

Greg,

The state comment concerning the Green River Diversion Rehabilitation project is attached.

Please contact me if you have any questions.

Sindy

--
Sindy Smith
RDCC Coordinator
Public Lands Policy Coordination Office
801-537-9193

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2013.0.3345 / Virus Database: 3204/6451 - Release Date: 06/30/13

State of Utah

GARY R. HERBERT
Governor

GREG BELL
Lieutenant Governor

Office of the Governor
PUBLIC LANDS POLICY COORDINATION OFFICE

KATHLEEN CLARKE
Director

July 2, 2013

Greg Allington
McMillen, LLC
1401 Shoreline Drive
Boise, ID 83702

Subject: Green River Diversion Rehabilitation - Scoping Comments

Dear Mr. Allington:

The State of Utah, through the Public Lands Policy Coordination Office (PLPCO), has reviewed this project. Utah Code (Section 63J-4-601, et. seq.) designates PLPCO as the entity responsible to coordinate the review of technical and policy actions that may affect the physical resources of the state, and to facilitate the exchange of information on those actions among federal, state, and local government agencies. As part of this process, PLPCO makes use of the Resource Development Coordinating Committee (RDCC). The RDCC includes representatives from the state agencies that are generally involved or impacted by public lands management.

Department of Natural Resources
Division of Forestry, Fire and State Lands

The State of Utah owns the bed of the Green River in the project area by virtue of the Equal Footing Doctrine and several legal decisions including *United States v. State of Utah*, 283 U.S. 801 (1931), *United States v. State of Utah*, 283 U.S. 64 (1931), and *United States of America v. State of Utah*, Civil No. C-201-62 (D. Utah 1965).

Uses upon these sovereign lands must be consistent with the Public Trust doctrine. This doctrine ensures that these lands are managed for the benefit of the public. It has been interpreted broadly to protect navigation, recreational use, fish and wildlife habitat, and aquatic beauty on sovereign land. In addition, all uses must be consistent with state statutes and regulations. *See* Utah Code § 65A.

The Utah Division of Forestry, Fire, and State Lands ("Division") requires a permit for construction activities on the beds of sovereign lands. The NRCS should contact the Division to obtain a permit application.

The Division requests the NRCS to ensure that members of the public continue to enjoy the use of the Green River in the project area for recreational purposes. It is the understanding of the Division that a passage for boats was previously constructed. The Division requests that the NRCS continue to provide for recreational vessel passage in the area.

As the owner of the lands, the Division requests to be consulted regarding the particular details of the plan. Division employees will be able to consult with the NRCS to ensure that the proposed activities are consistent with the governing legal requirements.

The Division appreciates the opportunity to provide comments and input on a proposed project of this magnitude. If any questions or concerns arise regarding the contents of this response, please contact Laura Ault at 801.538.5540 or at lauraault@utah.gov.

The State of Utah appreciates the opportunity to review this proposal and we look forward to working with you on future projects. Please direct any other written questions regarding this correspondence to the Public Lands Policy Coordination Office at the address below, or call Sindy Smith at (801) 537-9193.

Sincerely,

Kathleen Clarke
Director

Commenter #38

Greg Allington

From: greenriver@mcmillen-llc.com on behalf of Nathan Fey [nathan@americanwhitewater.org]
Sent: Tuesday, July 02, 2013 4:48 PM
To: greg.allington@mcmillen-llc.com
Subject: Comments - Green River Diversion Rehabiliation Project
Attachments: Green River Rehab - NRCS Comments.pdf; ATT00402.htm

Mr. Allington,
Attached, please find a short letter providing comment on the Green River Diversion Rehabilitation Project.

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2013.0.3345 / Virus Database: 3204/6451 - Release Date: 06/30/13

AMERICAN WHITEWATER

Nathan T. Fey
Director
Colorado River Stewardship Program
1601 Longs Peak Ave.
Longmont, Colorado 80501
nathan@americanwhitewater.org

July 2, 2013

Greg Allington, Project Manager/Biologist
McMillen, LLC
1401 Shoreline Drive, Suite 100
Boise, ID 83702
RE: Comments on Proposed Green River Diversion Rehabilitation Project

Dear Mr. Allington,

American Whitewater is a national non-profit 501(c)(3) river conservation organization founded in 1954. We have nearly 7,000 individual members and over 100 club affiliates, representing over 80,000 whitewater paddlers and river enthusiasts from across the nation. American Whitewater's mission is to conserve and restore America's whitewater resources and to enhance opportunities to enjoy them safely. As a conservation-oriented paddling organization whose members enjoy the recreational opportunities the Green River has to offer, American Whitewater has a strong interest in the Green River Diversion Structure and, therefore, strongly encourages NRCS to include downstream boat passage at the dam to improve public safety.

The Green River is a high-value recreational resource in the upper Colorado River basin, and provides unique multi-day rafting and kayaking opportunities popular with a wide range of recreational users – particularly families. Below Flaming Gorge Dam, no major storage impoundments have been constructed on the river, and compared to other rivers in the region, irrigation diversions are minor – allowing for nearly un-impeded navigation from Flaming Gorge to the Colorado River Confluence. The Green River Diversion structure is the most significant in-channel obstruction on the main segment of the Green River, and starves fish of high quality habitat, while also creating a life threatening re-circulating hydraulic that presents significant danger to recreational paddlers at higher flows.

While American Whitewater has no recorded information on fatal accidents caused by Tusher Canyon Diversion in our database[1], we have been aware of numerous near-fatal incidents associated with the diversion structure and downstream hydraulic. Including downstream passage into the rehabilitation plan will eliminate the threat to public safety, while minimizing demands on emergency personnel. We ask that the NRCS and its project partners contact local law enforcement and search and rescue for more information on these non-fatal

[1] The American Whitewater Accident Database is a nation-wide collection and analysis of whitewater accidents and close calls. This database, while extensive, is not complete. A significant number of accidents are not reported to us. http://www.americanwhitewater.org/content/Safety/view/

incidents, and to incorporate safe passage into the final project proposal to eliminate these existing risks.

Thank you in advance for considering a range of improvements to the Green River Diversion Structure. American Whitewater applauds the efforts of NRCS and its partners to eliminate a physical barrier to fish seeking to migrate through the site, while also creating safe passage for rafters, kayakers, and canoeists enjoying the outstandingly remarkable recreational opportunities the Green River provides. It is critical that the project meet the needs of local irrigators, while minimizing threats to public safety. Please contact me if you have any additional questions.

Sincerely,

Nathan T. Fey
Colorado River Stewardship Director
American Whitewater

Comment 39

United States Department of the Interior
FISH AND WILDLIFE SERVICE
UTAH FIELD OFFICE
2369 WEST ORTON CIRCLE, SUITE 50
WEST VALLEY CITY, UTAH 84119

July 1, 2013

In Reply Refer To:
FWS/R6
ES/UT
09-I-0217

Mr. Bronson Smart, State Engineer
Natural Resource Conservation Service
125 S. State Street – Room 4010
Salt Lake City, UT 84138-1100

RE: Green River Diversion Rehabilitation, Grand & Emery Counties, Utah; EIS Scoping Comments

Dear Mr. Smart:

On June 3, 2013, we received your Notice for a 2nd Scoping Period for the rehabilitation of the Green River Diversion (Diversion), which spans the Green River upstream of the town of Green River, Utah. We appreciate the coordination between our offices and your support of endangered species considerations during the preliminary discussions concerning this project. As we further describe below, it is important that the rehabilitation of the Green River Diversion consider impacts to federally listed fish species. In response to your scoping notice, we submit the following comments pursuant to our authorities under the National Environmental Policy Act and the Endangered Species Act (ESA) of 1973.

Importance of the Green River to endangered fish recovery

Four federally endangered species inhabit the Green River: bonytail (*Gila elegans*); Colorado pikeminnow (*Ptychocheilus lucius*); humpback chub (*Gila cypha*); and razorback sucker (*Xyrauchen texanus*). Portions of the Green River are designated as critical habitat to all four species; the entire length of the Green River and its 100 year floodplain is designated as critical habitat for at least one species between the Yampa River confluence and the Colorado River confluence (Appendix A)[1]. Furthermore, the Diversion is located within critical habitat for the Colorado pikeminnow and razorback sucker, and directly downstream of Desolation Canyon, which is designated critical habitat for the bonytail and humpback chub.

The Green River Basin, particularly the mainstem Green River, is vital to the recovery of these four species. Maintaining self-sustaining populations in the Green River is a recovery goal for all four

[1] For a detailed description of the critical habitat reaches, please see the Federal Register: 59 FR 13374

species (U.S. Fish and Wildlife Service 2002a, 2002b, 2002c, 2002d). Currently, the Green River Basin harbors:

- the largest, most productive, and most robust population of the Colorado pikeminnow;
- two known, active spawning locations of the Colorado pikeminnow;
- two known population centers of humpback chub;
- two known, active spawning locations of the razorback sucker; and
- populations of stocked individuals of razorback sucker and bonytail;

These four species are adapted to desert river hydrology (characterized by large spring peaks of snow-melt runoff and low, relatively stable base flows) and long, unimpeded stretches of river. Unimpeded stretches of river are crucial to the life histories of these species in order to support migrations of spawning individuals, drifting of newly produced young-of-year fish, and home-range expansion of juveniles. Specifically, razorback sucker and Colorado pikeminnow annually migrate to established spawning areas to reproduce (U.S. Fish and Wildlife Service 2002b, 2002d). Individuals travel long distances to reach these sites (745 river kilometers round-trip on record for Colorado pikeminnow) (U.S. Fish and Wildlife Service 2002b). Colorado pikeminnow spawn in two principal sites: Gray Canyon in the lower Green River; and the lower Yampa River (U.S. Fish and Wildlife Service 2002b). Known spawning sites for razorback sucker are located in the lower Yampa River and in the Green River near Escalante Ranch, but other, less-used sites are probable (U.S. Fish and Wildlife Service 2002d). Because all of the spawning sites are upstream of the Diversion, any individual fish that occurs downstream of the Diversion (or in the Colorado River) must pass over the Diversion to reach these spawning sites (and conversely must pass over it in the downstream direction to return to their home range).

After viable eggs are produced at spawning areas, eggs hatch into larval fish. Larval fish remain in the river substrate for about a week and then emerge into the water column. Larval fish are very small (<0.5 inches total length) and incapable of directed swimming from the time of hatching through the first 2-4 weeks of their life. As a result, they drift downstream with the current, ending up in slow water habitats where they can grow and achieve swimming ability. Because the Diversion is downstream of spawning locations, many larval fish pass over the Diversion each year. This input of larval fish makes the lower Green River an important nursery area for young fish.

As young fish in the lower Green River grow and reach sexually maturity, they require an ability to migrate to spawning locations and other new habitats. In fact, juvenile fish in the lower Green River commonly leave this area and establish new home areas upstream. Increased recruitment[2] that resulted in increased abundance of adult Colorado pikeminnow in the Green River Basin in 2006 to 2008 likely originated from a large year class of age-0 Colorado pikeminnow produced in the lower Green River during 2000 (Bestgen *et al.* 2010). Furthermore, population studies indicate that many small Colorado pikeminnow leave the lower Green River and immigrate into upstream areas such as Desolation Canyon and the White River (Bestgen *et al.* 2010). Overall transition rates reflect a general movement pattern of Colorado pikeminnow from Desolation-Gray Canyon and the lower Green River into upstream reaches; this trend demonstrates that young fish reared in the lower Green River support populations of adult fish throughout the Green River basin (Bestgen *et al.* 2010).

[2] Recruitment is defined as an organism transitioning from an immature individual to a sexually mature individual; thus becoming a reproductively active member of the population

As you can see, maintaining connectivity between population centers and spawning sites is vital to reaching the de-listing goals of self-sufficient populations of these endangered fish species for a variety of biological reasons.

Considerations for the Green River Diversion rehabilitation

In the course of designing any future modifications to the Green River Diversion, it is important to consider how the modifications may impact the endangered fish species and how the impacts may be avoided, minimized, or mitigated. We foresee the following considerations as being important for any design modification:

1. *Fish Passage* – Providing safe, effective fish passage for both up- and downstream movements year-round in most years;
2. *Reducing Construction Impacts* – Avoiding impacts whenever feasible by following proper construction BMPs, work timing, material selection, and de-watering protocols;
3. *Maintaining Habitat* – Maintaining suitable habitat in the project vicinity, by providing adequate hydrological, thermal, and chemical conditions; and
4. *Electrical Barrier Component* – Assisting the Upper Colorado River Endangered Fish Recovery Program (Recovery Program) in the effective design, construction, and operation of an electric barrier to prevent fish entrainment into the Green River Canal and Thayn Hydroelectric facility.

Fish Passage

As described in detail above, it is critical to species recovery that the Green River Diversion does not act as a barrier to fish movement. If individuals are prevented from migrating up- and downstream, the populations of the four species will be heavily impacted. We have spoken with your office about designing an appropriate suite of fish passage options, including an upstream passage on river left (near the water wheel), downstream fish passage 'notches', and a fish return system from the 'raceway'[3] section.

Designing fish passage for native, warm-water fishes requires special design criteria because these species are not equipped with strong burst speeds or jumping abilities. Therefore, fish-ladders (or other structures designed for salmonids) will not work for these species. Fish passage design must take into account native fish swimming ability, which is related to body size. At this time we believe any upstream fish passage must be able to move individuals that are 200 millimeters and longer. This size requirement should allow the smallest juvenile fish (and therefore the weakest swimmer) that might leave the lower Green River to access upstream habitats.

In addition, designs must analyze flows available inter- and intra-annually, to ensure that flows will be available year round to operate the facility. In other words, the fish passage options must work year round, under a variety of flow regimes, in the vast majority of years. Most importantly the fish passage must work in the majority of dry years, when little flow is available at the Diversion. However, our office understands that the fish passage should not infringe upon any existing water right in the local area, so passage operation will need to be closely monitored.

[3] The large channel that takes water to both the Green River Canal and Thayn Hydroelectric facility

We have recently seen comments requesting downstream boat passage at the structure. We have no opposition in principle to boat passage – in fact scientific research crews would likely benefit from the use of such a boat passage. However, we strongly emphasize that any boat passage design must be able to maintain the important fish passage components. That is, the design of a boat passage must ensure that proper water velocities and quantities are maintained at the fish passage, and funds are still available to construct the fish passage. Any reduced function of a fish passage structure would be considered in an inter-agency consultation under the Endangered Species Act.

We believe that designing an effective set of fish passage options is quite feasible. We are encouraged by initial discussions with your office that demonstrate the potential for such structures. We would like to continue coordinating and working with your office's engineers to help design a long-lasting Diversion that will support water use and benefit native fish species.

Construction Impacts

Once a preferred alternative is chosen for the Diversion rehabilitation, it will be important for our offices to work closely on appropriate construction methods to reduce impacts to the river and to individual fish. When working in designated critical habitat it is important to choose the least impactful techniques for accomplishing effective construction. Usually the least impactful timing for construction is in the fall, as the reproductive season has ended and flows are safer for construction crews.

The de-watering component of the project is a key decision that will affect construction and fish. We support using the existing structure as a possible de-watering feature, as it may reduce the impact of installing new de-watering structures. Whatever de-watering option is chosen, we ask that it not act as a fish passage barrier, that it be cleared of fish trapped inside before work begins, and that it not contribute large sediments loads to the downstream areas.

Maintaining Habitat

It is important that suitable habitat for endangered fish species is maintained in the vicinity of the Diversion after the project is complete. In fact, because this stretch of river is designated critical habitat for the razorback sucker and Colorado pikeminnow, a project cannot adversely modify the habitat. We have specific habitat criteria, called primary constituent elements (PCEs) for the designated critical habitat in the Green River.

Water, physical habitat, and the biological environment are the PCEs of critical habitat for these fish species. This includes a quantity of water of sufficient quality that is delivered to a specific location in accordance with a hydrologic regime that is required for the particular life stage for each species. The physical habitat includes areas of the Colorado River system that are inhabited or potentially habitable for use in spawning and feeding, as a nursery, or serve as corridors between these areas. In addition, oxbows, backwaters, and other areas in the 100-year floodplain, when inundated, provide access to spawning, nursery, feeding, and rearing habitats. Food supply, predation, and competition are important elements of the biological environment.

Habitat in the vicinity of the project would need to remain suitable for endangered fish. For this project, habitat condition is largely controlled by flows in the river channel. Habitat conditions regulated by flows that must be considered include, but are not limited to:

- Adequate water depth for fish movement, both over the diversion through a passage facility and local movement across the river channel; and
- Suitable chemical conditions, such as temperature, dissolved oxygen, and pollution levels.

Proper water management at the Diversion will ensure that the project does not dry dam the Green River. Dry damming the river will result in significant entrainment issues and effectively remove habitat from that portion of the river. Analyses must be conducted to clearly identify the flows necessary to provide adequate habitat for the endangered fish downstream of the Diversion.

Electrical Barrier Component

It is the responsibility of the Recovery Program to enact a project that reduces the existing entrainment of fish into the Green River Canal and Thayn Hydroelectric facility. After careful deliberation, the Recovery Program has chosen to fund the construction and operation of an electric barrier that inhibits fish entrainment into these facilities by creating an electric field which irritates fish and compels them to leave the area. The Recovery Program believes that this electric barrier is a superior option to an alternative of installing a physical rolling drum screen structure because it will offer more effective entrainment prevention and will not negatively affect water use in the area.

Because the two projects (the Diversion rehabilitation and the electric barrier) will each benefit if designed, constructed, and operated as one, your office and the Recovery Program have been in consistent discussions about the electrical barrier component. We applaud your early coordination that will ensure that both projects are congruous.

To enact the project, the Recovery Program will fund the design, construction, and operation of the electrical barrier components. To assist in this process your office has agreed to consider these design, construction, and operation components in your project planning. To ensure successful implementation of both projects, please continue this coordinated effort. The effective operation of the electric barrier is a key component of species recovery, and your assistance in the project is greatly valued.

Conclusion

We appreciate your office's continued coordination with us concerning this project. Through the entire process, your office has been very supportive of ideas to promote native species. Thank you for the opportunity to comment on this project. We look forward to working with you in the future. If you have any questions or need further information please contact Kevin McAbee at (801) 975-3330 extension 143.

Sincerely,

Larry Crist
Utah Field Supervisor

cc: Upper Colorado River Endangered Fish Recovery Program; Attn: Tom Chart

Region 6 RO; Attn: Dave Carlson

Lisa Chetnik Treichel
DOI Office of Environmental Policy and Compliance
1849 C Street, NW --MS 2462-MIB
Washington, DC 20240

Stephanie M. Nash, Environmental Protection Specialist
Division of Habitat and Resource Conservation
Branch of Conservation Planning Assistance
4401 North Fairfax Drive, ARLSQ-840J
Arlington, VA 22203

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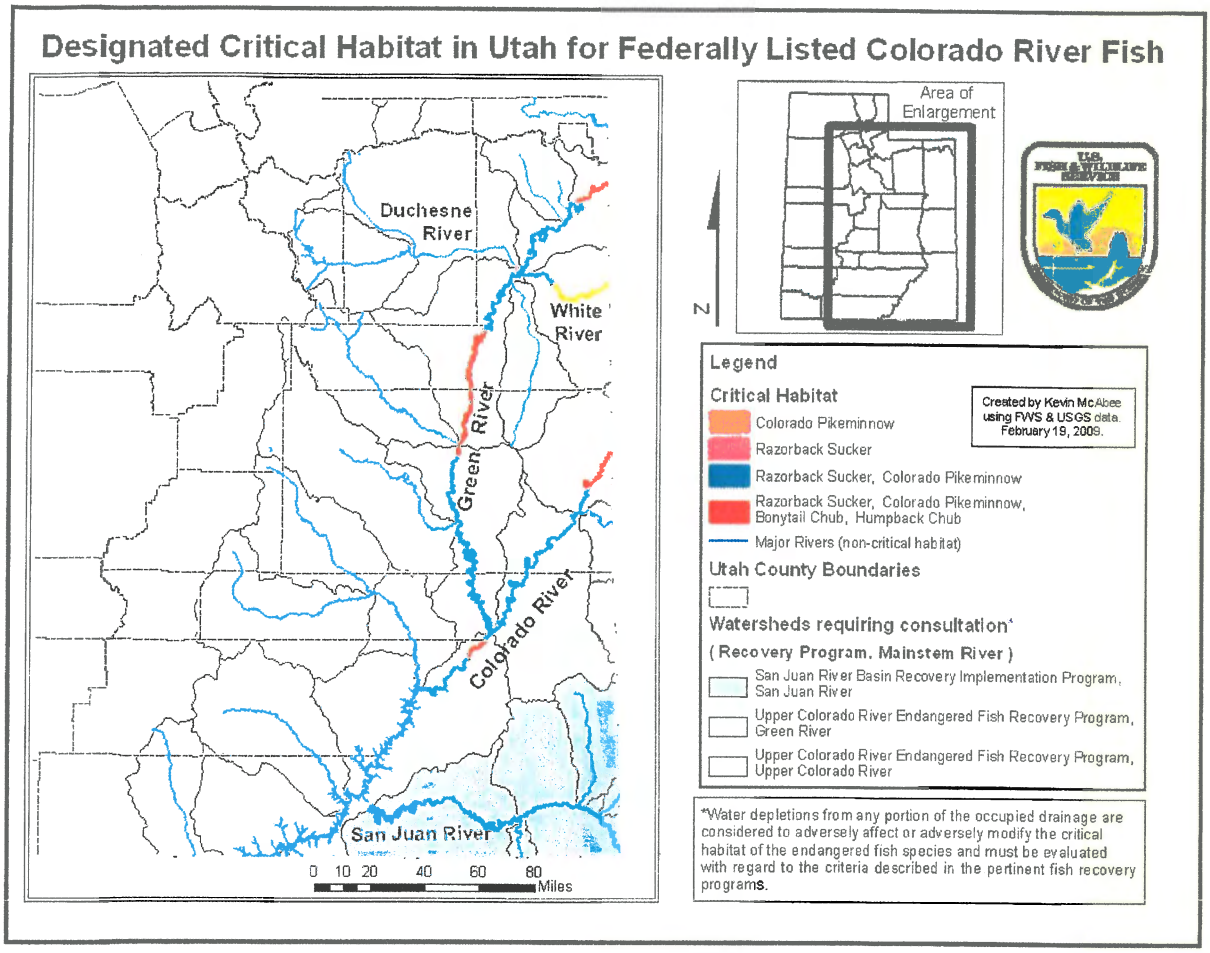
Appendix A


Designated Critical Habitat in Utah for Federally Listed Colorado River Fish
Duchesne River
White River
Green River
Colorado River
San Juan River
0 10 20 40 60 80 Miles
Area of Enlargement
N
Legend
Critical Habitat
Colorado Pikeminnow
Razorback Sucker
Razorback Sucker, Colorado Pikeminnow
Razorback Sucker, Colorado Pikeminnow, Bonytail Chub, Humpback Chub
Major Rivers (non-critical habitat)
Utah County Boundaries
Watersheds requiring consultation*
(Recovery Program, Mainstem River)
San Juan River Basin Recovery Implementation Program, San Juan River
Upper Colorado River Endangered Fish Recovery Program, Green River
Upper Colorado River Endangered Fish Recovery Program, Upper Colorado River
Created by Kevin McAbee using FWS & USGS data. February 19, 2009.
*Water depletions from any portion of the occupied drainage are considered to adversely affect or adversely modify the critical habitat of the endangered fish species and must be evaluated with regard to the criteria described in the pertinent fish recovery programs.

NRCS, Utah

Green River Dam Rehabilitation Project

Concept Design Report

Final

Dan Axness, PE
Project Manager

McMILLEN, LLC

May 2014

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SECTION 1
INTRODUCTION

1.0 Introduction

The Natural Resources Conservation Service (NRCS) - Utah contracted McMillen, LLC (McMillen) to provide engineering services to plan and prepare a concept design for the rehabilitation of the Green River Diversion Dam located in Emery and Grand Counties, Utah. The following report consists of project alternative descriptions and a detailed analysis of the existing physical site resources. The report also describes the hydraulic evaluations conducted in order to compare the performance of each of the project alternatives against existing conditions. Finally, the report includes an economic evaluation of the various alternatives and offers a Proposed Alternative for the project. The purpose of the report is to present information that supports the formulation, evaluation, and conclusions of the concept design project.

1.1 Background

The Green River Diversion Dam is located approximately six miles upstream of the town of Green River, Utah. The dam[1] was originally constructed in 1906 and consisted of a wood cribbing filled with rock, but was later capped in 1936 with cast-in-place concrete to form a broad-crested weir, lending the dam its present form (Cavalli 2000). The existing structure spans the width of the river, approximately 755 feet, and diverts approximately 819 cfs to irrigators on either side of the river. Water is also diverted into a powerhouse raceway for use in a downstream hydropower facility before being discharged back into the river. The original diversion structure was constructed in the early 1900s and has been modified over the years to maintain the integrity of the structure. During the 2010/2011 flood events, however, flows in the Green River caused severe damage to the diversion structure, compromising its structural integrity. If the dam were to fail, water service to two irrigation canals, a historic irrigation water delivery system, and a hydropower plant would be eliminated. Rehabilitating the dam would result in these resources remaining open and usable.

The purpose of the current project is to rehabilitate the existing diversion dam. The need for the project is to maintain existing functions of the diversion dam for water delivery to the irrigation canals and the hydropower plant's powerhouse.

NRCS and the Utah Department of Agriculture and Food (UDAF), as the project sponsors, are analyzing alternatives to repair damage to the Green River Diversion Dam from the 2010/2011 flood events. The Proposed Alternative for this rehabilitation is designed to divert water to irrigation and hydropower while maintaining and improving upstream and downstream fish passage. The overall design of the Proposed Alternative includes the following detailed objectives:

1. Replace existing diversion structure with similar structure that has equivalent weir length.
2. Level structure crest to elevation 4086.7' to ensure water delivery to both east and west canals.
3. Provide upstream fish passage past diversion structure.
4. Provide downstream fish passage past diversion structure.
5. Provide passive integrated transponder (PIT) tags to sense and record fish movement over and around the diversion.
6. Provide means to sluice sediment and to provide added floodwater conveyance.
7. Provide both dry and wet downstream boat passage.

[1] *Dam* and *diversion structure* will be used interchangeably in this report to refer to the Green River Diversion Dam.

8. Replace raceway water control gates with new radial gates.

1.2 Scope

McMillen was contracted to provide the following scope of services for the project:

- Prepare an Environmental Impact Statement (EIS) to include the completion of the necessary environmental and economic impact analyses per requirements of the National Environmental Policy Act (NEPA).
- Develop the following Green River Diversion Dam Rehabilitation alternatives in accordance with the Emergency Watershed Protection (EWP) Program requirements:
    - No Action
    - Structural Rehabilitation of the existing dam
    - Additional alternatives developed from the scoping meeting
- Provide concept design plans for each of the alternatives.

1.3 Site Information

Table 1-1 lists pertinent information regarding the diversion dam location.

Table 1-1. Site Information

Item	Information
Existing Diversion Dam Crest Centerline	Total length of 755 ft
Legal Description	Section 17, Township 20 South, Range 16 East, SL Base & Meridian
Counties	Emery/Grand Counties
Nearest City	Green River, UT

1.4 Alternative Descriptions

The following section includes descriptions of the four alternatives selected for detailed study, components common to each of these alternatives, and those alternatives that were considered, but eventually eliminated from consideration for further study. Figure 1-1 below depicts the orientation of each of the four alternatives overlain over an aerial image of the project area. More complete descriptions of each alternative are given in the Concept Design Drawings (Appendix A).

1.4.1 Alternative 1—Replace Diversion Dam Downstream

Alternative 1 replaces the diversion dam at a downstream location. The weir length will remain the same as the existing dam. This alternative may be comparatively easy to construct due to the relative location of the existing diversion dam and its potential for use as a diversion berm during construction. It should be noted, however, that the construction means and methods represented here, and depicted in the design drawings, are conceptual in nature, and do not necessarily represent the construction means and methods selected by the engineer and/or construction contractor during final design. The downstream alternative will maintain the existing east side tie-in location to the bank and is designed with an equivalent weir

length to the existing weir. Thus, due to the flatter alignment of the dam, the diversion structure will connect on the west side farther down the bank of the Green River Canal than does the existing structure.

1.4.2 Alternative 2—Replace Diversion Dam Upstream

Alternative 2 has a more curved horizontal alignment than either Alternative 1 or the existing alignment. This alignment will help to focus flow velocities toward the center of the channel, protecting the banks from erosion and providing the potential to more efficiently remove mid-channel sediment deposition from Tusher Wash. However, this alternative will be more difficult and costly to construct due to the longer length of weir and the construction of an additional diversion berm for dewatering. It should be noted, however, that the construction means and methods represented here, and depicted in the design drawings, are conceptual in nature, and do not necessarily represent the construction means and methods selected by the engineer and/or construction contractor during final design. Furthermore, due to the more pronounced curvature of the structure, the diversion may cause shifts in scour and deposition patterns immediately downstream of the structure under this alternative.

1.4.3 Alternative 3—Replace Existing Diversion Dam

Alternative 3 replaces the existing diversion dam along the current alignment. It should be noted that the construction means and methods represented here, and depicted in the design drawings, are conceptual in nature, and do not necessarily represent the construction means and methods selected by the engineer and/or construction contractor during final design. Replacing the existing diversion dam will maintain the historic visual appearance of the project site more than either of the previous two alternatives. Thus, this alternative has an inherent cultural and historical value greater than Alternatives 1 and 2.

1.4.4 Alternative 4—Repair Existing Diversion Dam

Alternative 4 would repair the existing diversion dam in order to provide the required water allocations, and upstream fish passage and boat passage; however the lifetime of a repaired structure is uncertain due to the unknown structural stability of the existing structure. The existing structure causes a large amount of seepage through and under the weir and is not considered to be structurally sound. Repairing the existing diversion dam will maintain the historic visual appearance of the project site more than Alternatives 1 and 2. Thus, this alternative has an inherent cultural and historical value greater than Alternatives 1 and 2.

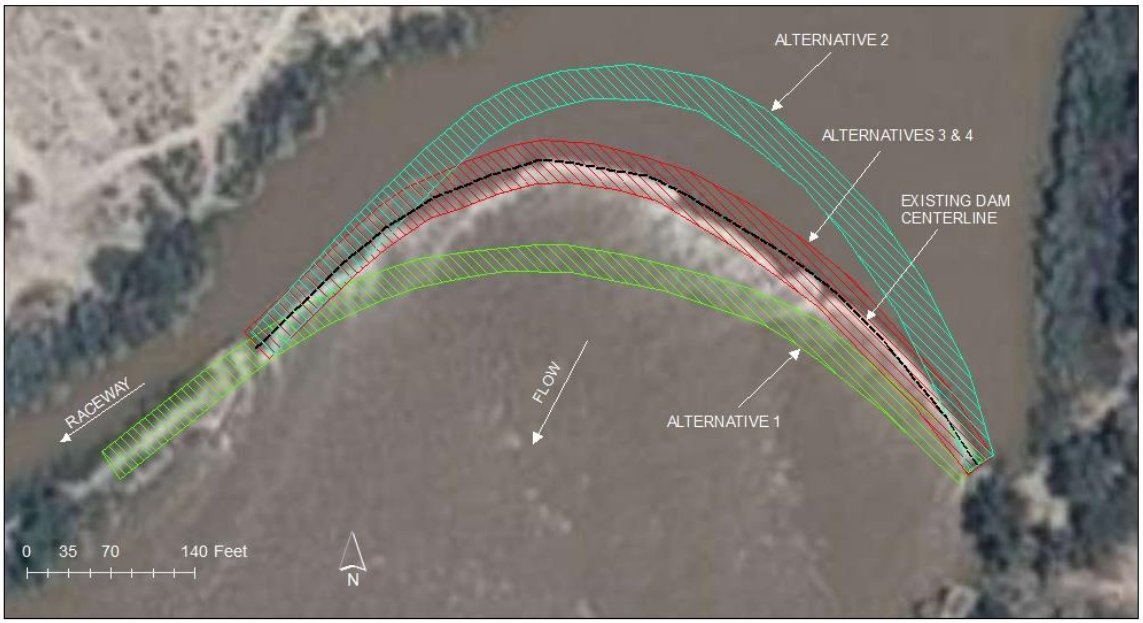

Figure 1-1. Project Alternative Alignments

1.4.5 Project Components Common to All Alternatives

Upstream Fish Passageway — The upstream fish passageway would be located on river left and would start conveying water at elevation 4085.7' (i.e. flows above 849 cfs). The passageway is 10 feet wide and approximately 180 feet long and bounded on the sides and bottom with cast-in-place concrete. The bottom of the passageway would be lined with cobble- and boulder-sized riprap.

Downstream Fish Passage Notches — There would be three 10-foot wide fish passage notches along the crest of the dam. The notches would be separated by approximately 140 feet, with the middle notch near the center of the dam crest. Each notch would be outfitted with Passive Integrated Transponder (PIT) tag readers in order to collect data on the movement of fish species of interest. The notch inverts would be at elevation 4085.7'; however, the notches would have stop-logs capable of ensuring that flow through the notches was not triggered until upstream fish passage was provided sufficient flow.

Dam Crest Sluice Gates — Sluice gates would be placed on either side of the dam in order to provide periodic sediment maintenance to the project and to protect flood capacity through the dam during high-flow events in order to limit the amount of upstream flooding on such occasions. The gates could be operated manually or electronically, and could require local access or could be operated remotely. The gate inverts would be set to 4082'; the gates for each side of the river would have a total width of approximately 50 feet.

Boat Ramp — A boat passageway would be constructed for the safe passage of recreational boats. The ramp would be 20 feet wide and would be lined with riprap cobbles and boulders down its length of approximately 50 feet. The slope of the passageway would be fixed at 10%, such that dry portage of boats over the boat passageway during low-flow periods could be performed with relative ease. The invert of the ramp, and the lowest elevation at which the bladder weir could be set, would be 4085.7'. The ramp would be approximately 50 feet long and would be contained by concrete walls and slab. The interior of the ramp (between the slab and existing ground) would contain compacted structural fill. Boat passage would not be triggered until the flow rate was above 939 cfs.

Raceway Gate Rehabilitation — The "8-Gate" structure currently regulating flow into the west side raceway would be rehabilitated in order to provide motor vehicle access to the rehabilitated dam and to improve the operations of the diversion.

East Side Canal Sluiceway and Fish Bypass — A bottom-outlet sluicing and fish bypass structure would be constructed along the east side canal near the bend in the Green River about 2,500 feet downstream of the existing dam.

1.4.6 Alternatives Considered but Eliminated from Further Study

The alternatives provided in the following table were considered but not chosen for additional study and development because of the disadvantages listed.

Table 1-2. Alternatives Considered but Eliminated from Further Study

Alternative	Description	Advantages	Disadvantages
Stoplog Dam	Using approximately the same orientation as the existing dam, a cross-channel stoplog dam would be installed at the existing location, or slightly upstream or downstream. The stoplogs would be inserted into concrete piers and the length of the diversion would be protected both upstream and downstream with sheet pile.	A stoplog dam would be relatively cheap to design and build.	Operation and maintenance of a stoplog dam would be more demanding than the existing conditions.
Dam at Canyon Outlet	Construct an earthen or concrete dam from 5 to 10 miles upstream of the existing structure within the Green River Canyon and up to 30 feet high. Construct a canal along the eastside road and provide an aqueduct across the river to service the westside. Decommission the existing dam, buy out Thayn Hydropower, and provide hydropower from the dam to the community of Green River, UT.	The hydropower production potential of the project would be much greater.	Although this concept would meet the purpose and need of the project, it would be prohibitively expensive. Also, excess hydropower production is outside the scope of the project.
Bladder Weir	Using approximately the same orientation as the existing dam, a cross-channel bladder weir would be installed at the existing location, or slightly upstream or downstream. The bladder weir would be installed on a concrete foundation and would come in sections that connect to concrete walls. The weir would be protected both upstream and downstream with sheet pile.	Fish and boat passage would be fairly straightforward. Also, sediment sluicing could be realized.	This concept may be prohibitively expensive to operate and maintain. Also, vandalism could potentially shut down the entire project.
Straight Concrete Diversion	Construct a dam straight across the channel but otherwise containing the same features as Alternatives 1 through 4.	This design would provide fish and boat passage and would divert water to the canals. Also, O&M would be fairly straightforward.	Extra bank protection would be needed downstream due to the scouring effect of flows over the dam near the connection with the banks. Also, erosion of the mid-channel would likely occur, contributing to loss of vegetation and increases in transported sediment downstream.

Alternative	Description	Advantages	Disadvantages
Downstream Arcing Diversion	Construct a dam across the channel with the apex of the arc downstream rather than upstream and otherwise containing the same features as Alternatives 1 through 4.	This design would provide fish and boat passage and would divert water to the canals. Also, O&M would be fairly straightforward.	Extra bank protection would be needed downstream due to the scouring effect of flows over the dam near the connection with the banks. Because of the orientation of the dam, this effect may be seen far downstream. Therefore, this alternative may be prohibitively expensive. Also, bank erosion would contribute to losses in vegetation and increases in transported sediment downstream.
Riprap Ramp	Take out the existing dam and construct a riprap ramp that begins at the diversion location and extends downstream at a steeper slope. Construct fish depressions and a navigation chute in order to provide fish and boat passage, respectively.	Cost sharing may be available for riprap. O&M would be simple. Boat passage would be provided.	Sediment would accumulate behind the ramp and could clog the raceway entrance. The stability of the structure during a high-flow event is less certain than with other alternatives. Also, the ability of the structure to provide hydraulics amenable to fish passage is questionable. Flooding may occur upstream that is greater than existing conditions.
Rock Weir Series	Take out the existing dam and construct a series of rock weirs upstream of the diversion at grade in order to provide a sequence of roughness elements that act to deepen and divert the water at lower flows.	Cost sharing may be available for riprap. Fish passage could be provided. O&M would be simple.	Boat passage would not be provided. Sediment would accumulate behind the weirs. The expected life of each of the weirs would be uncertain. It may be expensive to design the hydraulics of the structures. Flooding may occur upstream that is greater than existing conditions.
Riprap Ramp Series	Take out the existing dam and construct a series of riprap ramps upstream of the diversion at grade in order to provide a series of roughness elements that act to deepen and divert the water at lower flows.	Cost sharing may be available for riprap. Fish passage could be provided. O&M would be simple.	Sediment would accumulate behind the ramps. The stability of the structures during a high-flow event is less certain than with other alternatives. Also, the ability of the structures to provide hydraulics amenable to fish passage is questionable. Flooding may occur upstream that is greater than existing conditions.
Far Upstream Diversion	Construct a low diversion dam further upstream and provide canals that connect to the existing eastside and Green River canals.	The diversion dam would be lower and would not accumulate as much sediment behind it. Fish and boat passage would be provided.	Connecting the diversion to the existing canals would require canal connections which, depending on the structure's distance upstream, could be prohibitively

Alternative	Description	Advantages	Disadvantages
			expensive. The project footprint would be larger, potentially impacting environmental resources.
Decommissioning, Pumping and Buyout	Decommission the dam, buy out Thayn Hydropower, and provide pumping for the irrigators. Offset energy requirements during irrigation season with solar arrays; sell back excess power in the off-season. Establish an endowment to fund the remaining O&M costs of the project for its lifetime.	Fish and boat passage would be provided. The river would be restored to a natural condition.	Pumping could be unreliable and costly. Costs to buy out Thayn Hydropower could be prohibitive. O&M could be complicated and costly.
Low Diversion and Buyout	Reconstruct a lower diversion dam at the existing location, or slightly upstream or downstream, and buy out Thayn Hydropower.	Fish and boat passage would be provided more readily. The river would be restored to a more natural condition.	Costs to buy out Thayn Hydropower could be prohibitive.
Water Park Style Diversion	Back up water starting far upstream by introducing a series of roughness elements scattered across the river that could double as a whitewater park.	Cost sharing may be available for riprap. Fish passage could be provided. O&M would be simple. Boat passage would be provided and recreation would be enhanced.	The expected life of each of the project components would be uncertain. It may be expensive to design the hydraulics of the structures. Flooding may occur upstream that is greater than existing conditions.
Alts 1-3 with Hasting Berm Improvement	Raise the berm on the east side of the river adjacent to Hastings Ranch and provide a rock or tile drain system parallel to the berm to reroute seepage water back into the river and away from Hastings Ranch; additionally, implement one of the four alternatives.	Provides extra protection to Hastings Ranch from flooding.	Alternatives 1-3 already provide protection from flooding that surpasses the existing structure. Funding for this addition to Alts 1-3 may be problematic.
Alts 1-3 with Hastings Field Drain Outlet	Regrade Hasting Ranch as needed and provide a stable outlet for any seepage or overtopping water that enters the field; additionally, implement one of the four alternatives.	Provides extra protection to Hastings Ranch from flooding.	Alternatives 1-3 already provide protection from flooding that surpasses the existing structure. Funding for this addition to Alts 1-3 may be problematic.

SECTION 2
SITE ANALYSIS

2.0 Introduction

The following section provides an analysis of the existing physical resources located within the project area that would be affected by the project alternatives. The resources analyzed include:

- Surface Water
- Ground Water
- Geology

2.1 Surface Water

The Green River Diversion Dam is approximately 8 feet above grade, 20 feet long in the direction of flow, and spans the Green River along a 755-foot-long arc. The dam is designed to back up and divert water into canals on either side of the river. On the west side of the river, diverted water travels through a headgate and down the canal (raceway) approximately 0.4 miles, where a portion of it is pumped into the Thayn and Green River Canals. The rest of it passes through a small hydroelectric powerhouse. On the east side of the river, portions of water are allocated to a water wheel, the East Side Canal, and a fish ladder. At normal flow and above, the remainder of the Green River water passes over the dam and continues downstream.

This section describes the surface water resource in the project area, and includes a hydrologic analysis of the watershed, and discussions of surface water quality, the existing water rights in the project area, and sedimentation. For a more detailed discussion of hydrology—especially how it relates to the recent Record of Decision on the Final Environmental Impact Statement proposing operational changes to Flaming Gorge Dam—see Appendix B.

2.1.1 Surface Water Flow

The Green River Watershed is nested within the Colorado River Watershed, which serves about 27 million people and irrigates nearly 4 million acres of land across several states of the Western United States (Gerner et al. 2006). Table 2-1 gives important basin characteristics of the Green River Watershed above the Green River Diversion Dam. Surface waters of the Green River originate across a 40,500 mi^2 basin which includes parts of Wyoming, Utah, and Colorado. USGS Gaging Station 09315000, located approximately 8 river miles downstream of the diversion dam near Green River, UT, has a 111-year record of discharge that indicates an average daily flow rate of 6,085 cfs. However, flow in the Green River is partially regulated by Flaming Gorge Dam, located about 290 miles upstream of the diversion dam. Flaming Gorge Dam was completed in 1964, so that only including flow data from 1964 and later would account for the attenuating effect the dam has on Green River flows. This leads to an average daily flow of approximately 5,537 cfs.

Table 2-1. Basin Characteristics of the Green River Watershed above the Green River Diversion Dam

Basin Parameter	Value
Area (sq. mi.)	40,500
Mean Basin Elevation (ft)	7,230

Mean Annual Precipitation (in.)	15.9
Average Basin Slope (%)	12.9

The average peak annual flow rate for the Green River near the diversion dam is 28,249 cfs, based on a 110-year period of record. However, since the completion of Flaming Gorge Dam in 1964, this peak annual flow has dropped to 23,012 cfs, as indicated in Figure 2-1. The figure also shows several large events since the completion of Flaming Gorge Dam; specifically, 48,300 cfs in 1984, 44,800 cfs in 1983, and 44,000 cfs in 2011, all of which reached flood stage. The latest flooding event, in 2010/11, flooded some areas of farmland, pasture, and parts of a nearby golf course, and required riprap and sandbag protection of some homes. Of the 110 years of peak annual flows available, 97% occurred in either May or June.

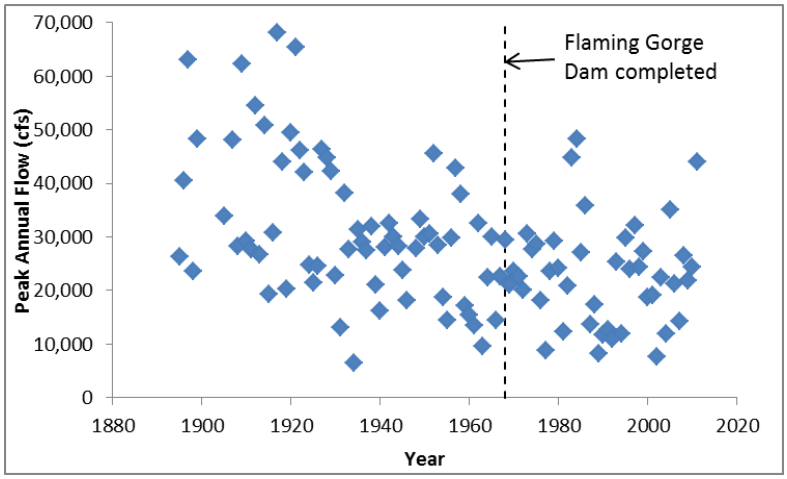

Figure 2-1. Peak Annual Stream Flow at USGS Gage 09315000 at Green River, UT

The mean basin elevation of the Green River Watershed is 7,230 feet, suggesting that the basin develops a snowpack during the winter months, which then contributes to surface water as snowmelt in the spring and summer. An investigation of six snow telemetry (SNOTEL) sites throughout the basin indicates a mean maximum average monthly snow water equivalent (SWE) of 15.4 inches. SWE is an estimate of the equivalent depth of water that a given depth of snow would produce if melted. Because snow accumulates, the maximum average monthly SWE is indicative of the total volume of snow accumulated throughout a water year. SWE data are given in Table 2-2 for the six sites. From the table, the average elevation of the sites is 8,430 feet, which is appreciably higher than the basin average. The area of the basin above 8,430 feet is approximately 6,200 mi^2, which, at 15.4 inches of depth, leads to an average yearly flow rate of 7,026 cfs. This is higher than the average flow rate calculated using gage data. However, it does not account for losses due to evaporation, transpiration, infiltration, impoundments, or irrigation diversion. What it does indicate, though, is that snowmelt factors largely in the hydrology of the basin, and that snowmelt is responsible for both the peak of the hydrograph occurring in late spring, and the possibility of large-scale flooding due to rain-on-snow events (Kenney et al. 2007).

Table 2-2. Average Snow Water Equivalent (SWE) Data for 6 Sites in the Green River Basin above the Green River Diversion Dam

SNOTEL Site Number (State)	Max. Avg. Monthly SWE (in.)	Site Elevation (feet)
460 (WY)	13.3	7,930
317 (WY)	11.0	7,440
457 (CO)	22.7	8,400
378 (CO)	19.3	9,400

SNOTEL Site Number (State)	Max. Avg. Monthly SWE (in.)	Site Elevation (feet)
1097 (UT)	14.9	8,684
559 (UT)	11.3	8,724
Average	**15.4**	**8,430**

NOTE: Data obtained from NRCS SNOTEL sites, available at http://www.wcc.nrcs.usda.gov/snow/. Data accessed 1/8/2013.

Peak discharges above the Green River Diversion Dam were estimated using the HEC-SSP program (USACE 2010) for the years 1965 through 2009. This program applies the methods outlined in Bulletin #17B (USGS 1982) to a time series of flow data in order to calculate the discharge for various annual return periods. Results are given in Table 2-3 for the 2-, 25-, 50-, and 100-yr events. Results in the table are similar to results published elsewhere (cf. Gerner et al. 2006).

Peak discharges above the Green River Diversion Dam were also estimated using the StreamStats program (Kenney et al. 2007), which delineates the watershed area above a point, and uses regional regression equations and regional parameter values to calculate the discharge for various annual return periods. These results are also given in Table 2-3. The applicability of the StreamStats program to the Green River is questionable, given that neither the mean basin elevation nor the drainage area falls within the recommended range encompassed by the regression equations. Nevertheless, the results do offer insight into the natural flow rates that might be observed at the diversion dam, were there no regulating structures upstream. From the table, as the return period increases, the estimated natural flow in the Green River grows significantly over the regulated flows calculated with HEC-SSP. This is indicative of the natural hydrology within the basin, compared with the attenuated flows due to water storage in the Flaming Gorge Reservoir.

Table 2-3. Peak Discharges for Various Return Periods, Estimated Using StreamStats and HEC-SSP

	Discharge (cfs)	
Statistic	**StreamStats**	**HEC-SSP**
2-Yr	22,300	21,386
25-Yr	54,400	40,726
50-Yr	62,800	44,603
100-Yr	75,400	48,170

Instantaneous flood frequencies were also calculated for each month using flow data obtained from USGS gaging station 09315000. Results are given in Table 2-4 below. From the table, the hydrograph in the Green River basin appears to have two peaks (bimodal). One peak occurs in the late Fall (October, November) when the area experiences frequent rainfall events, while the other, larger peak occurs in the Spring and Summer (February through July), when snowpack begins to melt. Results also show that the lowest flows occur in August, when 1% of flows will be less than 764 cfs. Alternatively, the largest flows occur in June, when 1% of flows will be greater than 41,530 cfs. Similar information is provided in Table 2-5, but for those months during which boating and fish spawning are common.

Table 2-4. Instantaneous Flood Frequencies by Month for the Green River at USGS Gaging Station 09315000

		% of Flows Less Than					
	Month	**1**	**5**	**10**	**50**	**95**	**99**
Discharge (cfs)	**January**	916	1,312	1,633	2,924	5,189	6,162
	February	1,253	1,648	1,853	3,094	6,058	8,144
	March	2,000	2,243	2,485	4,052	8,361	10,905
	April	2,352	2,719	2,985	5,272	12,585	16,030
	May	3,340	4,055	5,032	11,505	24,903	34,562
	June	1,703	3,038	4,020	13,907	32,475	41,530
	July	907	1,363	1,619	4,205	16,315	32,681
	August	764	1,139	1,327	2,884	6,938	9,983
	September	1,022	1,228	1,395	2,628	5,068	6,743
	October	1,307	1,479	1,703	3,023	7,068	7,976
	November	1,532	1,729	1,866	3,228	6,367	7,087
	December	939	1,260	1,441	2,810	5,824	6,452

Table 2-5. Instantaneous Flood Frequencies for Boating and Spawning Months

		% of Flows Less Than					
	Month	**0.5**	**1**	**2**	**3**	**4**	**90**
Discharge (cfs)	**April**	2,224	2,352	2,507	2,581	2,654	10,380
	May	3,030	3,340	3,604	3,764	3,907	21,468
	June	1,384	1,703	2,275	2,538	2,753	25,688
	July	804	907	1,072	1,202	1,313	12,730
	August	716	764	893	1,018	1,098	5,249

2.1.2 Surface Water Quality

In 2004-2005, USGS conducted an investigation of water quality in the Green River within the reach just upstream of the Green River Diversion Dam down to Green River, UT. The study looked at specific dissolved solids concentrations, which were observed in wide ranges within the reach. Waters diverted for irrigation typically had much lower concentrations, while drainage water from agricultural runoff returning to the river had much higher concentrations (Gerner et al. 2006). Despite the local high concentrations of suspended sediment, no Total Maximum Daily Load (TMDL) rules exist for the reach, neither with respect to suspended sediment nor any other constituent of concern. Furthermore, the reach below the Green River Diversion Dam is not classified as an impaired water body, according to the most recent 303(d) listing for Utah (UDEQ 2012). Finally, a uranium mill tailings disposal site is located approximately 8 miles downstream of the project site. The most recent evaluation of the disposal facility concluded that no constituents of concern (arsenic, nitrate + nitrite, selenium, sulfate, or uranium) had exceeded their respective proposed alternate concentration limits at sampling locations within the Green River (DOE 2012).

Water temperature in the Green River near Green River, UT was periodically recorded between 1952 and 1981. The data, totaling 473 measurements, are plotted in Figure 2.2 against the month in which they were recorded. From the figure, there is a large seasonal variation in water temperature, ranging from just above freezing in the Winter (0 °C), to about 25 °C in the late Summer (77 °F). Also depicted in the figure are the yearly average water temperatures for the period of record. Although there is variation

throughout, the completion of Flaming Gorge Dam in the late 1960s has dampened this variation, leading to a more uniform inter-annual average temperature. Overall, the average annual temperature in the Green River is about 13.9 °C (57.0 °F). Also, the presence of the dam appears to have led to an overall drop in average water temperature, most likely due to the thermal stratification in the reservoir and the initial bottom release of water, despite the fact that water is now released at multiple levels from within the reservoir.

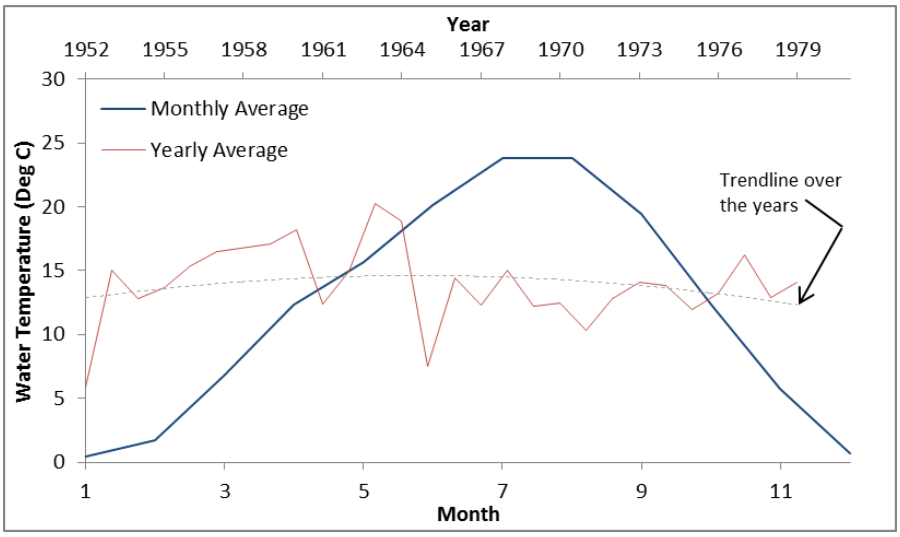

Figure 2-2. Surface Water Temperature in the Green River at Green River, UT by Monthly and Yearly Average

2.1.3 Surface Water Rights

Several water rights exist on the Green River near the project location. Some of these rights are approved, while others have been perfected. A perfected water right is a right that has been both approved and consummated, i.e. the water right has actually been put to beneficial use. A list of the larger perfected water rights near the Green River Diversion Dam is provided in Table 2.6.

Table 2-6. Surface Water Rights on the Green River near the Project Location

Water Right	License No.	Priority Date	CFS	Use
Chris Dunham, Howard Hastings, Clark Ross	92-74	1/1/1879	5	Irrigation
East Side Irrigation Company	92-4	2/8/1906	6	Irrigation
Chris Dunham, Howard Hastings, Clark Ross	92-43	7/29/1912	60	Hydropower Plant
Bruce and Dorothy Nelson	92-21	5/16/1932	2	Irrigation
Lee Thayn	91-113	12375	35	Irrigation
Green River Canal Company	91-294	6/18/1952	60	Irrigation, Stockwater and Domestic
Eastside High Ditch Irrigation Company	92-622	8/7/1958	5	Irrigation
Eastside High Ditch Irrigation Company	92-633	8/7/1958	7	Irrigation
Gunnison Butte Mutual Irrigation Company	91-5075	8/7/1958	4	Irrigation

Water Right	License No.	Priority Date	CFS	Use
Gunnison Butte Mutual Irrigation Company	92-638	8/7/1958	11	Irrigation
Lee Thayn	91-4130	11/25/1974	600	Hydropower Plant
Lee Thayn	91-5161	8/7/1985	4	Irrigation
Green River Canal Company	91-5043	11/3/2000	20	Sluice Canal and Raceway
Total			**819**	

NOTE: Data obtained from Utah Division of Water Rights, available at http://www.waterrights.utah.gov/. Data accessed 1/7/2013.

2.1.4 Sedimentation

Since 1930, the mean annual suspended-sediment load in the Green River near Green River, Utah has been about 15,630,000 tons/year (Thompson 1984). After completion of Flaming Gorge Dam, however, this amount was reduced by about 35%. Also, the annual loads vary greatly from year to year due to the variation in geology and climate throughout the vast watershed. Suspended sediment concentrations are plotted against year in Figure 2-3, which shows concentrations at Green River, UT (9315000), at Jensen, UT roughly 187 mile upstream of the diversion (9261000), and at Green River, WY (9217000) roughly 355 miles upstream of the diversion. Interestingly, the gages below Flaming Gorge Dam have recorded consistently higher average annual suspended sediment concentrations than has the gage upstream of the dam. This is due primarily to the inflow of the Yampa River a little upstream of Jensen, which is a free-flowing river with a relatively high average suspended sediment load. Also from the figure, a clear trend is visible at the gages below Flaming Gorge Dam that indicates a decline in sediment concentration since the dam was completed. However, even the gage upstream of Flaming Gorge Dam shows a decline in suspended sediment concentration, possibly indicating changes in land use, forest practices, or climate.

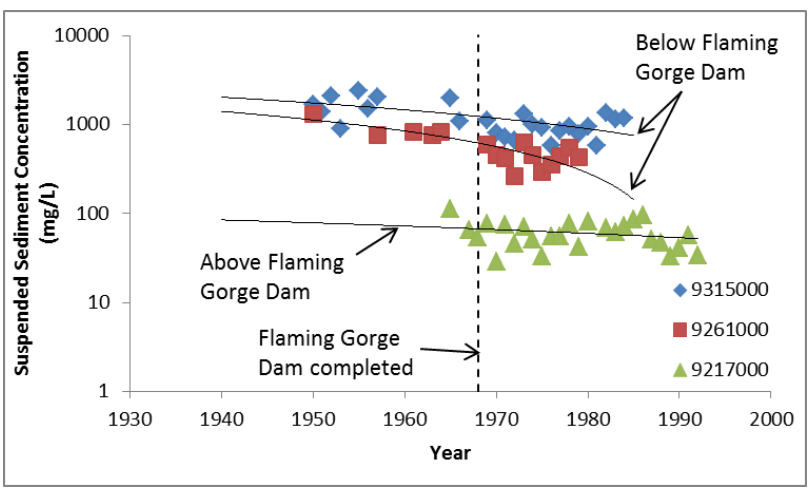

Figure 2-3. Suspended Sediment Concentration versus Year for the Green River near Green River, UT.

Suspended sediment concentrations in the Green River at Green River, UT also show seasonal variation, as indicated in Figure 2-4, which shows data points for average daily sediment concentrations for a 35-year period of record. From the figure, suspended sediment concentration appears to have two peaks throughout the year (bimodal): a smaller peak in the late Winter/early Spring, and a larger peak in the early Fall. Also, suspended sediment concentrations appear to lag behind Green River flows by about 3 to

4 months, due to the fact that the river is not always transporting sediment, but is often depositing in locations.

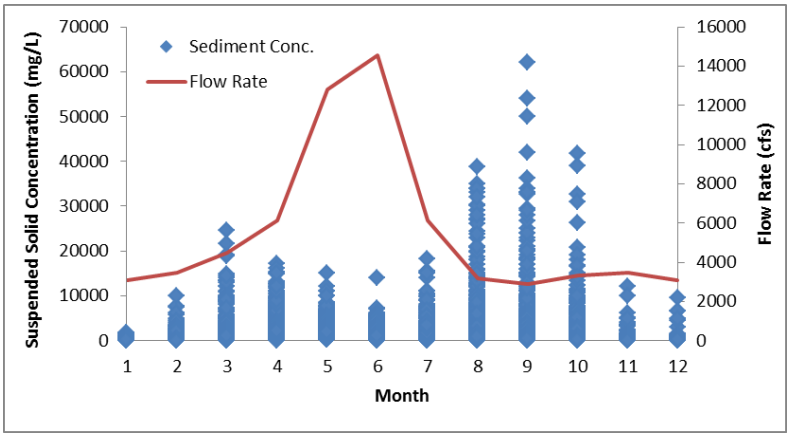

Figure 2-4. Suspended Solid Concentration and Flow Rate versus Month

Downstream of the Green River Diversion Dam, Tusher Wash enters the reach from the east bank as an ephemeral stream. Tusher Wash has introduced a large amount of sediment into the Green River in the form of sediment pulses due to high-intensity thunderstorms and flash flooding typical of semi-arid environments. Due to the high magnitude and turbulent energy of flash floods, bed and bank erosion occurs, contributing sediment to the flood flow. This contribution of sediment is highly noticeable at the junction of Tusher Wash and the Green River, taking the form of a large island bar in the Green River downstream of the diversion structure. Deposition at this location is most likely due to a change in channel slope. The discharge through the downstream reach of Tusher Wash is at a slope of 1.1%, whereas the reach downstream of the junction with the Green River is at a slope of 0.11%. This ten-fold reduction in stream power results in a significant decrease in sediment transport capacity, leading to the area of deposition below the dam.

AEC and RB&G (2010) note that the three irrigation canals fed by the diversion dam carry sediment from the Green River, which can cause operational problems due to losses of storage and conveyance, and mechanical issues at headworks, gates, intakes and turbines. In a study conducted by Gerner et al. (2006), water quality monitors were installed throughout the reach below the Green River Diversion Dam to test for dissolved solids and their constituents. Results indicate that the mean total dissolved solids concentrations in the Thayn, Green River, and East Side Canals are only slightly less than that observed in the Green River itself. Furthermore, the relative composition of these solids is also notably similar.

2.1.5 Design Decisions—Surface Water

Due to the comparatively large variations in flows observed at the Green River Diversion Dam, it is important that the project alternatives satisfy a range of water demands over as broad a range of flows as possible. In particular, project stakeholders have decided that the competing water demands for fish passage, boat passage, and water rights holders should have equal priority.

Based on the water rights detailed above, the final concept design should divert approximately 819 cfs for water rights holders at as large a range of flows as possible. From the hydrologic analysis given above, these rights will not be met in full all the time. However, this is a consequence of the flow rates coming into the project area, rather than of the diversion structure itself.

The safe passage of fish both upstream and downstream of the dam will require suitable hydraulic conditions as well as sufficient flow allocation. For example, there should be sufficient flow through the west-side raceway in order to allow fish to bypass downstream irrigation systems. Although the fish barrier and bypass planned for the hydropower raceway are not part of this project, the final design of this project would affect the ability of these structures to safely convey fish back into the river. For this reason, an additional 50 cfs should be allocated for diversion to the Green River Canal at the widest range of flows possible. For similar reasons, a flow of 20 cfs should be allocated for diversion to the East Side Canal. Upstream passage of fish will also require water allocation. Finally, downstream passage of fish will also require water allocation.

Boater interest in an unobstructed, navigable Green River has been expressed. Thus, boat passage will be introduced into the final concept design and will be operational at flows similar to those at which water is diverted for irrigation and hydropower and at which the fish passageway is functional.

Project stakeholders have expressed concern that the project design will exacerbate upstream flooding. For this reason, the 100-year discharge (48,170 cfs) will be used in hydraulic simulations of the alternatives in order to ensure that the final concept design does not increase upstream flooding.

Design decisions regarding surface water flow are further investigated in Section 3—Hydraulic Simulations.

2.2 Ground Water

Although the Green River Diversion Dam affects primarily surface water of the Green River, because the river is hydraulically connected to the underlying water table, changes to surface water initiated by the diversion dam will effect changes in the ground water below.

The area surrounding the Green River Diversion Dam, located in the Uinta basin, is underlain by the Dakota-Glen aquifer system, which is itself part of the greater Colorado Plateau system. In the project area, the Dakota and Glen Canyon aquifers are typically 300 feet thick. The Dakota aquifer is less than 2,000 feet below the surface, while depth to the Glen Canyon aquifer is typically greater than 2,000 feet. The Uinta basin is immediately underlain by Mancos Shale, which forms a confining unit, and Dakota Sandstone, followed by the Cedar Mountain Formation.

2.2.1 Ground Water Flow

Water table levels in the area surrounding the Green River Diversion Dam are dictated by vegetative consumption of ground water, deep percolation of irrigation water, baseflow to the river, and consumptive use by people pumping in the area. In a recent study (Gerner et al. 2006), ground water levels in 13 wells in the area ranged from 1.3 to 15.5 feet below the surface, with an average of 7.6 feet. However, ground water levels at each well also varied over the period of several months during which the study was conducted. These temporal variations are due to 1) changing irrigation practices, 2) seepage from the canals, 3) discharge to seeps and drains, 4) evapotranspiration, 5) consumptive use by vegetation, and 6) pumping for stockwater, irrigation, and domestic use.

2.2.2 Ground Water Quality

Ground water at the project location is presumed to be of good quality, due to the fact that there are no sites either in Emery or Grand County found on the National Priorities List (NPL). Nor are there any Corrective Action Superfund Sites nearby. Also, dissolved solids are typically found in concentrations between 1,000 and 3,000 mg/L in the project area. However, there is a uranium mill tailings disposal site

approximately 8 miles downstream of the project location. The most recent evaluation of the disposal facility concluded that no constituents of concern (arsenic, nitrate + nitrite, selenium, sulfate, or uranium) had exceeded their respective proposed alternate concentration limits (ACLs) at ground water sampling locations distributed about the facility (DOE 2012). ACLs are established at levels that do not pose a threat to human health or the environment. However, ground water in the Browns Wash alluvium and middle sandstone unit of the Cedar Mountain Formation beneath the former processing site has been contaminated to some degree by past ore-processing activities.

2.2.3 Ground Water Rights

Several ground water rights exist within a mile or so of the Green River Diversion Dam. These rights are consummated by pumping wells for domestic, irrigation, and stockwater uses. A list of the existing rights within about a mile of the diversion dam is provided in Table 2-6.

Table 2-6. Ground Water Rights on the Green River near the Project Location

Name of Water Right Owner	Flow (cfs)	Flow (ac-ft/yr)	Use
Harold W. Nelson Family Trust		0.45	Domestic
Sam and Mark Wilson		5.73	Irrigation, stockwater and domestic
Sequoiadendron, LLC		0.45	Domestic
T.J. Hastings		0.45	Domestic
Chris Dunham		0.73	Stockwater
Chris Dunham	0.015		Domestic
Tim Vetere		5.73	Irrigation, stockwater and domestic
Wilkey Holdings, LLC		2.77	Irrigation, stockwater and domestic
Steven L. and Katherine Pappas		5.73	Irrigation, stockwater and domestic
Mark W. Williams		6.73	Irrigation and domestic
Mark W. and JoAnn L. Williams		5.73	Irrigation, stockwater and domestic

NOTE: Data obtained from Utah Division of Water Rights, available at http://www.waterrights.utah.gov/. Data accessed 1/11/2013.

2.2.4 Seeps and Springs

The existing diversion dam loses an estimated 10 cfs at low flow through seepage. This is most likely due to the dilapidated state of the structure and the absence of any cutoff walls.

Seepage losses through the Thayn, Green River and East Side canals were estimated by Gerner et al. (2006) for the period between May 2 and October 4. These estimates indicate losses due to seepage of 5 cfs, 15.3 cfs, and 4.7 cfs, respectively.

Seepage is also known to occur upstream of the existing diversion dam along the left (east) bank of the river near Hastings Ranch. A levee exists at that location which, according to anecdotal evidence, has experienced seepage during high flow events. This has impacted agricultural operations in that area during high flows.

2.2.5 Design Decisions—Ground Water

Because of the existing ground water rights in the project area, the final concept design should not measurably affect ground water recharge in the area. Rather, the project design should make every effort to maintain the underlying aquifer in the project area.
The design should incorporate elements to reduce the amount of seepage through the dam. This will ensure that surface water rights are met at low-flow conditions. Example elements that would reduce seepage through the dam include a newly cast concrete face and sheet pile cutoff walls.

Seepage through the upstream, east side levee should be minimized or mitigated. For example, upstream seepage through the levee could be minimized by ensuring that the 100-year water surface elevation is no greater under the proposed conditions than it is under existing conditions.

Every effort should be made to ensure that ground water quality in the project area is not hindered. Because no toxic materials are anticipated as part of the concept design, protection of ground water quality would likely be accomplished through the application of Best Management Practices during construction.

2.3 Geology

This section describes the geologic resource in the project area, and includes a description of the general geologic setting and of bank erosion.

2.3.1 General Geologic Setting

The Green River Diversion Dam is located within the Castle Valley physiographic region, which itself is located within the Colorado Plateau physiographic province. The dam is surrounded to the east by the Book Cliffs and to the west by the San Rafael Swell. The geology of the area is comprised of Quaternary alluvium and colluvium, with areas of older alluvium, and Mancos Shale (Hintze et al. 2000). The Green River floodplain is largely comprised of Quaternary alluvium deposits of sands and gravels, while the Mancos Shale dominates the area immediately surrounding the diversion dam. Due to the geologic history of the area, alkali salts have accumulated in the area, resulting in moderate to high concentrations of dissolved minerals and salts in local groundwater.

Moderate landslide potential does occur upstream and downstream of the diversion dam west of the river in particular areas. However, these are located outside the project area. Furthermore, no evidence of landslides exists in the study area (Alpha Engineering Company 2010).

No evidence of active faults has been observed in the study area (Alpha Engineering Company 2010). Seismic hazards are considered relatively low.

No bedrock outcroppings are known in the area.

2.3.3 Bank Erosion

Runoff from intense summer rainfall events over barren slopes can produce flash floods in the dry washes and canyon bottoms of this region, particularly in areas where soils are derived from highly erodible Mancos Shale. Banks are even more susceptible to erosion do to the force of gravity acting on soil particles resting on slopes. Bank erosion can be minimized through a number of means, including reduction of the erosional force of water (e.g. slowing the water down, or redirecting the water away from tangent to the banks), lessening the bank slopes, and revegetating barren banks.

2.3.5 Design Decisions—Geology

The dam rehabilitation alternatives will incorporate features to minimize bank erosion downstream of the structure. This will include revegetation of disturbed areas, ensuring that the planform shape of the structure concentrates flow away from the banks (e.g. with an upstream-arcing shape), and providing abutments that dissipate turbulent eddies in the tailwater.

Although no seismic hazards are known in the area, the final design crest height will be low enough not to trigger a moderate or high hazard classification.

Provided that the depth to bedrock is deep enough, sheet pile cutoff walls will be driven. In the case that the depth to bedrock is shallow, however, sheet pile will be anchored to the bedrock

SECTION 3
HYDRAULIC SIMULATIONS

3.0 Introduction

The following section discusses the hydraulics at and around the Green River Diversion Dam, both under existing conditions and under the conditions of the four alternatives investigated for this project. In the case of Alternatives 3 and 4, the hydraulic response of the system to the project is assumed to be the same, so that the descriptions contained herein apply to both equally.

This section outlines the model approach adopted to analyze the hydraulics at and around the dam, and discusses several areas of concern, including:

- upstream flooding
- structural stability
- sediment sluicing
- upstream fish passage

3.1 Modeling Approach

The following section describes the modeling approach undertaken to simulate the hydraulic response of the system under both existing and design conditions. Specifically, the section discusses the choice of the model, and the efforts undertaken to simulate both existing conditions, and conditions representative of the four alternatives under investigation. The section also discusses the use of the model as a design tool in order to meet the competing demands of the project.

3.1.1 Model Choice

Due to the arc-like shape of the diversion dam, and the flow split between the raceway and the main channel of the Green River, the hydraulics at and around the diversion dam lends themselves to a 2-dimensional analysis. For this reason, the 2-dimensional finite element hydrodynamic model RiverFLO-2D was chosen to simulate various flow scenarios passing through the existing structure and through the various alternatives.

3.1.2 Modeling Existing Conditions

Existing conditions at the diversion dam were simulated by integrating LiDAR data provided by NRCS with survey data collected in 2013. Although the existing diversion dam crest is not constant, and generally slopes downward from west to east, as a conservative approach the crest elevation was set to the minimum elevation of the dam (4086’), because setting mesh elements to the same elevation is much more economical and, at higher flows, produces the same results. For lower flows, the backwater would transition to nonuniform flow at a slightly higher elevation. However, this discrepancy was considered acceptable.

The raceway to the Green River Canal and Thayn Hydropower was only included from the flow split to the existing “8 gate” structure. At low flows, a sink was inserted near the “8 gate” structure in order to simulate the demand along the west side of the river. Similarly, a sink was inserted near the siphon inlet to the east side canal and water wheel raceway in order to simulate the demand on the east side. At high flows, these sinks made model convergence difficult. They were therefore taken out, with the rationale

that at high flows these small sinks would have a negligible impact on upstream flooding and sediment transport.

Boundary conditions for the model included an inflow boundary several channel widths upstream of the existing dam in order to allow the program to achieve quasi-uniform flow conditions by the time water reached the dam. A variety of inflow conditions were investigated, including both steady-state inflows and an unsteady hydrograph with a peak equal to the 100-year flood (see Section 2.1.1 for flow exceedances). The downstream boundary condition was set to the slope of the energy grade line under uniform flow conditions, which was approximated by using the bed slope of 0.12%. This slope value was calculated by performing a linear regression of bed elevation onto stationing along the channel centerline using the supplied LiDAR data. The downstream boundary was established near the tailwater of the hydropower facility.

3.1.3 Modeling the Alternatives

The alternatives were modeled by using the CAD surfaces of each alternative as the model topography. Breaklines were introduced along the dam crest and elements representing the sluice gates, downstream fish notches, upstream fish passageway and boat ramp were modified manually. For the investigations of potential upstream flooding and sediment sluicing the sluice gates were considered open, and set to an elevation of 4082 feet. As mentioned, Alternatives 3 and 4 were simulated with the same model, due to the fact that the resolution of the model was not capable of discerning the differences between these two designs.

3.1.3.1 Boundary Conditions

Each of the four alternatives considered includes a radial gate structure across the hydropower raceway that is in the same location, i.e. upstream of the existing “8-gate” structure. For this reason, the domain boundary in the raceway was moved upstream for all four alternatives. The topography at the proposed gate location was modified in order to constrict the channel, and thereby better represent the gate abutments connecting to the banks of the raceway, as well as to reflect the piers separating each of the gates. Also, for low flows a single sink was placed in the middle of the raceway at this location and assigned a value of 773 cfs in order to represent the water demand passing through the gates. The assumption here was that the gates will be manually or automatically operated in such a way that 773 cfs passes through the raceway, but no more and no less. Although the resulting water surface just upstream of the radial gate will be slightly different than that produced by the model, this was deemed acceptable for two reasons: 1) the difference between actual water surface elevations and model results is expected to be small at this location; 2) this is a local phenomenon, and should have a negligible effect on water surface elevations further upstream at the dam crest and elsewhere.

The model was run beginning with the low-flow condition of 849 cfs and was gradually assigned higher and higher inflows until the total flow rate equaled the 100-year flow (48,170 cfs). After each incremental addition of flow, the model was allowed to run at a steady inflow in order to achieve steady state conditions. This ensured that the tailwater rating curve was as accurate as possible. The downstream boundary condition was assigned the slope at normal flow (0.0012), and was calculated as above (see Section 3.1.2).

3.1.3.2 Determining Invert Elevations

The RiverFLO-2D model was used as a design tool to determine the invert elevation of the dam notches and passageways that would be activated after the irrigation and hydropower water rights and fish bypass water requirements were met. Water rights in the area demand 819 cfs total, while a conservative estimate

of the water demands for the fish bypass is 70 cfs (50 cfs to the Green River Canal and 20 cfs to the East Side Canal). To find this invert elevation, the crest of the dam was set arbitrarily high in order to force the 889 cfs inflow (819 + 70 = 889 cfs) to be routed through the east-side canal (116 cfs) and the raceway (773 cfs). Boundary conditions were established upstream of the dam several hundred feet and in the raceway upstream of the existing "8 gate" structure. It was assumed that uniform flow conditions were met in the canal, such that a bed slope boundary condition could be established in the raceway. The east-side canal diversion was represented by a single "sink" with an associated demand of 116 cfs. The inflow boundary condition was simply the 889 cfs discharge through the reach. See Section 2.1.3 for a discussion of surface water rights.

Results of the design model indicated a maximum water surface elevation (WSE) adjacent to the crest of the dam of 4085.7 ft. This is close to what was expected for this condition. Velocity vectors, water depths, mass balance, and the raceway boundary condition were verified using engineering judgment. Therefore, as a first pass, the invert elevation of the dam notches was set to 4085.7 ft. This would ensure that, at a flow of 889 cfs, all water would be allocated to the raceway and the east-side canal in order to meet the water rights in the area, which have been assigned the highest priority for the project. Furthermore, the second highest priority of fish bypass through the canal would be met at this flow rate, in order to minimize the possibility of fish injury or mortality once the water rights have been met.

Another priority for water allocation is upstream fish passage. Specifically, passage of the following four endangered fish species is of interest: Humpback Chub, Bonytail, Razorback Sucker, and Colorado Pikeminnow. Flow depths for upstream passage of these fish are based on the largest of the four, the Colorado Pikeminnow, for which it has been suggested that 1 foot of water depth be allocated for safe passage (USBR 2005). Pertinent information regarding these fish species is given in Table 3-1. Assuming a trapezoidal fishway with channel width of 10 feet, a 40:1 channel slope (2.5%), and a Manning's roughness coefficient of 0.07, the water allocation required to allow upstream fish passage would be 30 cfs. The invert of the fish passage channel would thus begin at 4085.7 ft.

Table 3-1. Pertinent Information for Sensitive Fish in the Green River

Common Name	Scientific Name	Spawning Period	Required Water Velocity (fps)	Required Water Depth (ft)
Humpback Chub	Gila cypha	April through July	4	1
Bonytail	Gila elegans	June through early July	4	1
Razorback Sucker	Xyrachen texanus	mid-April to mid-June	4	1
Colorado Pikeminnow	Ptychocheilus lucius	July to September	4	1

Another priority for water allocation in the project—and a competing one to upstream fish passage—is downstream fish passage, again for the four species mentioned above. Constraints for downstream passage are generally less strict. For instance, velocities can be higher and depths can be shallower. For downstream passage, weir flow over the crest of the dam is assumed, and the minimum depth of flow is set to 0.6 ft. Assuming a weir coefficient of 2.67 over the crest, the required flow rate for three 10-foot wide notches spread out across the dam is 40 cfs. The invert of the downstream fish passage notches would likewise begin at 4085.7 ft.

The final water allocation priority is given to downstream boat passage, and it, too, competes with fish passage. The boat passageway can be modeled with Manning's equation, using a channel width of 20 feet, a slope of 10%, and a roughness coefficient of 0.06. With these values, the required flow to pass

boats through one foot of water is 147 cfs. Like the other notches, the boat ramp crest would sit at elevation 4085.7 feet.

3.2 Model Results

The following section provides results of the model related to upstream flooding, the structural stability of the dam, and sediment sluicing.

3.2.1 Upstream Flooding

Water surface elevations upstream of the diversion dam were compared between existing conditions and what has become the Proposed Alternative—Alternative 3, Replace Existing Diversion Dam—using a HEC-RAS model running the 100-year flow. Results are depicted in Figure 3-1 below. From the figure, the differences in water surface elevation upstream of the diversion dam are indistinguishable between existing conditions and the proposed rehabilitation alternative. Although the proposed crest elevation is on average higher than the existing crest (4086.7' versus approximately 4086.0'), the difference in water surface elevations at the 100-year flow is nearly zero for the following reasons: 1) the rehabilitation alternative provides flows through 100 feet of radial gates with invert elevations at 4082.0', and 2) the rehabilitation alternative provides flows through the dam via the downstream fish passage notches, the upstream fish passageway, and the boat passageway at elevation 4085.7', which is a few inches lower than the existing crest. Because of these extra components, the moderately higher crest elevation of the rehabilitation design *does not lead to higher water surface elevations at the 100-year flow*.

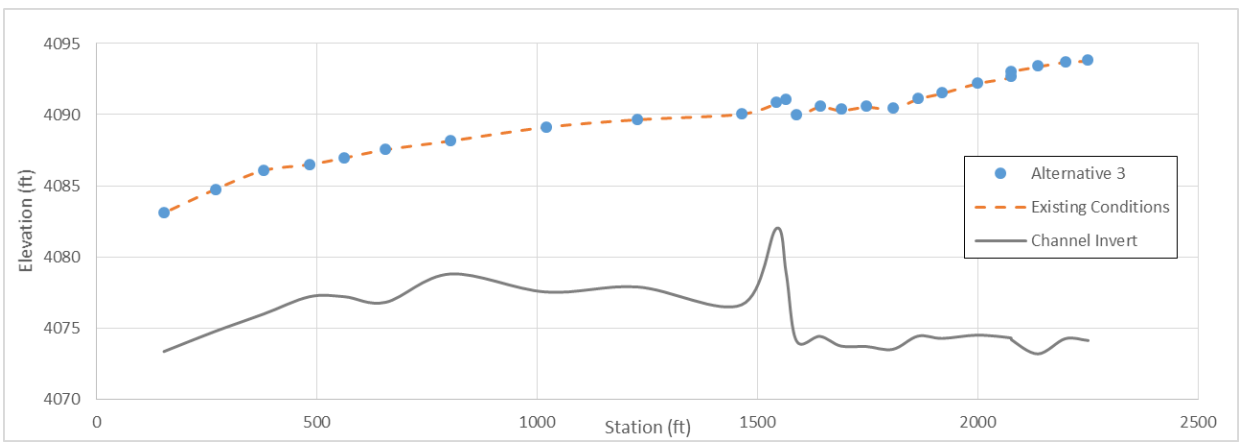

Figure 3-1. HEC-RAS Water Surface Elevations for Existing vs. Proposed Conditions

An older comparison similar to the one provided above was performed for a proposed crest elevation of 4088.0'. Due to concerns from the public during the Public Comment Period of the Environmental Impact Statement (EIS) about the potential upstream flooding from this higher crest elevation, the crest was lowered to 4086.7' and the above comparison was made. Results from the older comparison are provided in Appendix C for reference.

3.2.2 Structural Stability

The cross-sectional design of the dam is the same for Alternatives 1 through 3, and consists of two large sheet pile cutoff walls embedded upstream and downstream of a concrete cap. The cap is secured to the top of the walls and slopes downward at an approximate slope 4:1. The interior of the dam cross section is filled with structural fill material, which itself rests on a compacted bed. For Alternative 4, the cross-sectional design consists of a concrete cap surrounding the existing dam structure, with an upstream sheet pile cutoff wall adjacent to the new concrete cap wall, and another cutoff wall at the downstream end of a concrete slab that extends out from the downstream cap wall.

The stability of the diversion dam is secured by ensuring that the reaction force in the longitudinal direction is greater than the sliding force acting upon the dam, with a factor of safety (i.e. $R_D \geq 1.5F_S$). The calculations for this stability analysis are provided in the following section. For the alternatives considered for this project, buoyancy is not a factor because the water displaced by the volume of the structure is displaced by material denser than water.

The sliding force acting on the dam is given by the following equation:

$$F_S = \frac{\gamma_A H_U^2}{2} \qquad (1)$$

where F_S = is the sliding force (lb/ft)
H_U = upstream height of the soil/water column above the base of the dam (ft)
γ_A = specific weight of the active, moist soil upstream of the dam = approximately 35 lb/ft^3

Similarly, the reaction force in the longitudinal directional is given by:

$$R_D = \frac{\gamma_P H_D^2}{2} \qquad (2)$$

where R_D = is the reaction force (lb/ft)
H_D = downstream height of the soil/water column above the base of the dam (ft)
γ_P = specific weight of the passive, moist soil downstream of the dam = approximately 200 lb/ft3

With H_U equal to approximately 6 feet, and H_D equal to 13 feet, $R_D \geq 1.5F_S = 2.7F_S$. Therefore, no sliding will occur.

3.2.3 Sediment Sluicing

In order to test the efficacy of the radial gate sluicing structures, the model was run at a steady-state inflow of 5,537 cfs, which is the average daily flow rate based on a period of record dating back to the completion of Flaming Gorge Dam. This flow rate was tested in order to determine whether the alternatives could adequately sluice sediment at the average daily discharge. Due to the very minor differences in depth across the four alternatives, shear stress calculations were made only for Alternative 1, under the assumption that bed shears are a linear function of water depth. Additionally, due to the plan-form symmetry of the alternatives, only the east-side radial gates were investigated.

Results for the sediment sluicing simulation are provided in Figure 3-8 below. The figure was created by taking sections parallel with the dam crest successively further away from the crest (i.e. further away from the radial gate). Thus, sections that are close to the crest should indicate higher shear stresses because

water is accelerating through the gate. Sections taken further away from the crest, on the other hand, should indicate lower shear stresses. From the figure, this is exactly the trend depicted.

Figure 3-9 shows the conversion of bed shear stress to the D_{50} particle size that would just be in motion at the average daily flow rate. This conversion was performed according to the following equation:

$$D_{50} = C\frac{\tau_0}{1.25\tau_c^*(\gamma_s-\gamma)} \qquad (3)$$

where D_{50} = median particle diameter in motion (in)
C = conversion constant = 12 (in/ft)
τ_0 = bed shear stress (psf)
τ_c^* = dimensionless critical shear stress = 0.047
γ_s = specific weight of sediment = 165.4 lbf/ft^3
γ = specific weight of water = 62.4 lbf/ft^3

Figure 3-9 indicates that particles between 5 and 7 inches in diameter will pass through the radial gates at the gate structure. This corresponds to large-sized cobbles on the Wentworth scale. Particles with approximately a one-inch diameter will move through the structure from 40 feet away. This corresponds to medium-sized pebbles on the Wentworth scale. Most of the fine material deposited upstream of the existing structure and in the raceway is classified as silt and sand. The shear stresses needed to move these size classes are significantly smaller than those provided by the gate structures at the average daily flow.

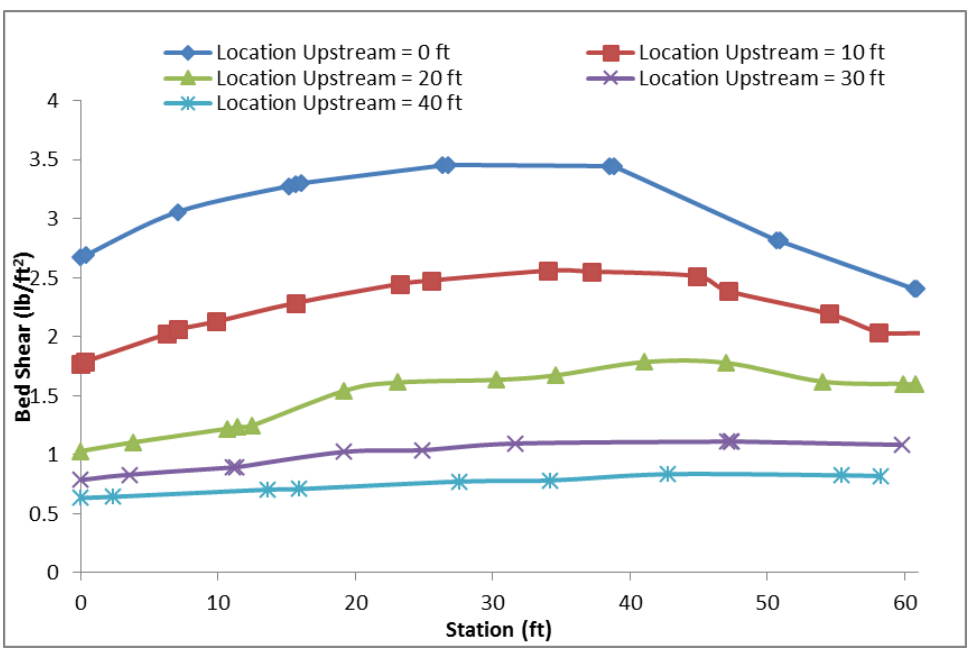

Figure 3-8. Bed Shear Stress for Alternative 1 as a Function of Distance Away from the Radial Gates

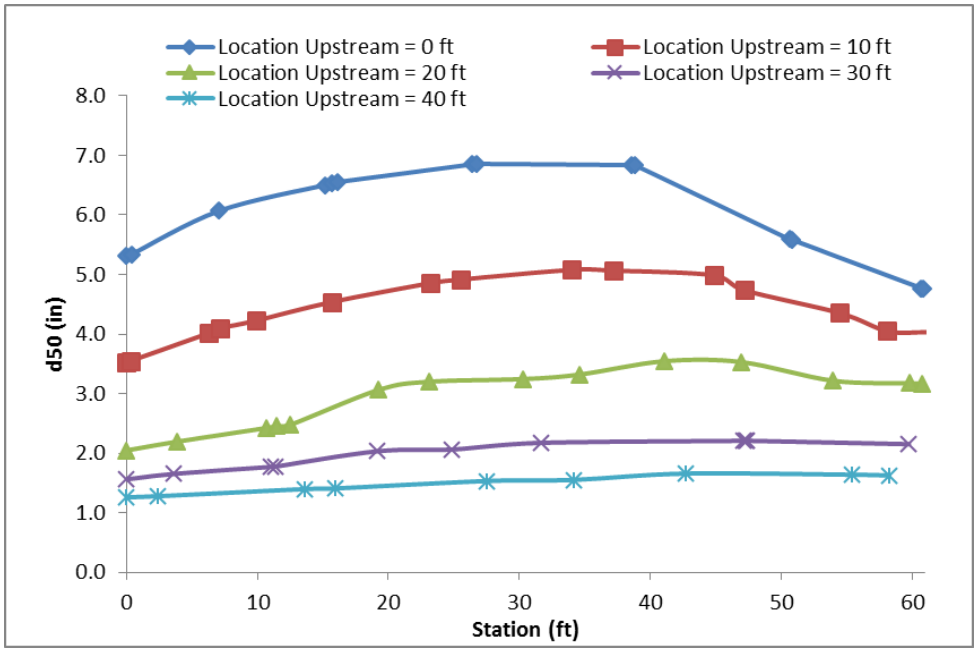

Figure 3-9. D_{50} 0f Mobile Particles for Alternative 1 as a Function of Distance Away from the Radial Gates

3.2.4 Upstream Fish Passage

RiverFLO2D model results indicate that the average daily flow rate of 5,537 cfs will result in a water surface elevation of approximately 4087.7' at the exit to the upstream fish passageway (at the dam crest). According to a HEC-RAS model developed in order to analyze fish passage, the maximum velocity in the fishway associated with this head is 3.9 fps. Therefore, fish passage through the fishway is operational at or below the average daily flow rate. The spawning months for fish species of concern span from April through August. Referring to the exceedance flows by month presented in Table 2-4, the average daily flow rate corresponds approximately to the 52% flow in April, the 13% flow in May, the 16% flow in June, the 55% flow in July, and the 79% flow in August. However, due to the difficulty in modeling boulder refuge structures, these estimates are likely conservative, and do not fully reflect the complex hydraulics in the fishway. Thus, it is probably safe to assume that fish will be able to pass the diversion structure on their way upstream at flow rates higher than the average daily discharge of 5,537 cfs.

Figure 3-10 below depicts the resultant velocities in the river within the project area during the average daily discharge (5,537 cfs). The figure only shows locations where velocities are less than 4 fps, i.e. only areas that are passable to fish are depicted. From the figure, it is clear that two routes exist to the entrance to the fishway: one is in the main stem of the river, off to the east side, while the other is in the east-bank side channel. It should be noted that, in order to keeps these routes viable, maintenance of the Tusher Wash depositional area may be periodically necessary. Also, although the route on the west side of the river does not appear viable because it does not connect to the fishway entrance without being interrupted by high velocity flows coming over the dam, this may not be the case in reality. The 2D model does not represent the riprap apron and energy dissipation in the tailwater of the dam. Therefore, it is possible that in practice the west side of the river offers a viable route for migrating fish.

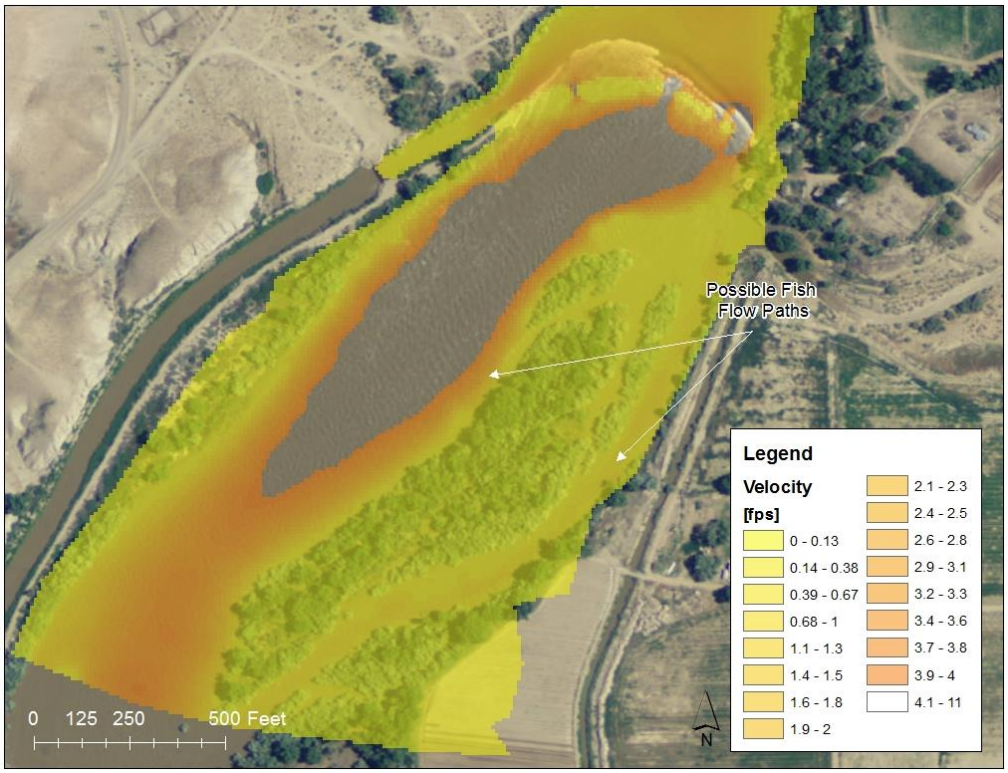

Figure 3-10. Velocity Results for the Average Daily Flow through the Green River

SECTION 4
ECONOMIC EVALUATION

4.0 Introduction

The following section discusses the economic analysis conducted in order to compare the costs and benefits associated with the four alternatives under investigation. Although an effort has been made to be thorough, and to include all conceivable project costs and benefits, some costs and benefits may have been left out of the analysis.

4.1 Methods

A cost-benefit analysis of the various alternatives incorporates the capital costs, operation and maintenance (O&M) costs, and costs and benefits associated with resources affected by the project. Because all four alternatives under investigation provide the same quality and quantity of water to stakeholders in the area, socioeconomic benefits of the alternatives have been left out of the analysis. Also, due to the similarity in the designs, O&M costs are considered to be the same for all four alternatives. Therefore, O&M costs have been left out of the analysis as well. Also, project components that have costs that are the same across all four alternatives have been left out of the analysis. Finally, although monetary costs and benefits associated with other environmental resources in the project area exist (e.g. cultural resources), assigning values to them has been left out of this analysis. Therefore, this economic analysis is restricted to the capital costs (construction, materials, labor, etc.) associated with each alternative. It should be noted that the construction means and methods represented here, and depicted in the design drawings, are conceptual in nature, and do not necessarily represent the construction means and methods selected by the engineer and/or construction contractor during final design. The cost-benefit analysis presented below is therefore an estimate based on concept-level design only, and may change during final design.

4.2 Results

Table 5-1 presents the results of the economic analysis. From the table, Alternative 1 has the lowest associated cost among the four alternatives. However, Alternative 3 is within 1% of the total project cost of Alternative 1, which is considered within the margin of error of the cost-benefit analysis (±30%). Again, the cost represented here is not a total project cost, but is rather the relative cost of each alternative as compared with the others.

Table 5-1. Engineer's Cost Estimate

Component	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Cofferdam Phase I	$93,196	$105,514	$104,774	$107,354
Cofferdam Phase II	$69,089	$82,556	$62,240	$63,840
Diversion Structure Phase I	$1,084,615	$1,278,219	$1,097,221	$1,266,088
Diversion Structure Phase II	$1,077,247	$1,278,219	$1,097,221	$1,266,088
Riprap Phase I	$186,437	$219,034	$183,271	$182,279
Riprap Phase II	$186,437	$219,034	$183,271	$182,279
Demolish Existing Structure	$242,037	$241,979	$241,979	$0
Deflection Log Boom	$14,230	$14,227	$14,232	$14,229
Diversion Dam Excavation Extension	$8,808	$8,806	$6,754	$6,752
PIT Tag Detectors	$356,500	$356,500	$356,515	$475,231
Subtotal	**$3,318,597**	**$3,804,087**	**$3,347,479**	**$3,564,139**
General Conditions (15% of Total Cost)	$497,790	$570,613	$502,122	$534,621
Mobilization (8% of Total Cost)	$265,488	$304,327	$267,798	$285,131
Total	**$4,081,875**	**$4,679,027**	**$4,117,399**	**$4,383,891**

SECTION 5
PROPOSED ALTERNATIVE

5.0 Introduction

The Proposed Alternative for the Green River Diversion Dam Rehabilitation Project is to replace the existing dam at its current location (Alternative 3). This design will be cost-effective and provide all of the functionality of the other alternatives. In addition, this alternative would preserve much of the cultural and historical value of the existing structure by maintaining the location and orientation of the structure. The new dam will have the same length as the existing dam, but will be approximately 0.6 feet higher along the crest and will be designed to greatly reduce seepage below and around the diversion dam. Additionally, the Proposed Alternative will include fish, boat, and debris passage structures, sediment sluicing gates, a radial gate manifold to the raceway, a new raceway to the water wheel, an east-side canal fish and sediment bypass structure, and downstream fish passage notches outfitted with PIT tag detectors.

5.1 Cost Estimate

The following cost estimate is from an earlier version of the Concept Design Report. Components and cost estimates of the Proposed Alternative have since changed. Please refer to the EIS for the most up-to-date estimate of project costs for the Proposed Alternative.

The Proposed Alternative The engineer's cost estimate for materials, quantities, and labor required to complete the construction for the project is presented in Table 5-1. This estimate includes construction management, labor, materials, equipment, and incidental items necessary to complete the work per the Contract Drawings. The costs presented in the table are based on NRCS selecting a third party construction company for the project. It should be noted that the construction means and methods represented here, and depicted in the design drawings, are conceptual in nature, and do not necessarily represent the construction means and methods selected by the engineer and/or construction contractor during final design. The cost estimate presented below is therefore an estimate based on concept-level design only, and may change during final design.

Table 5-1. Cost Estimate for the Proposed Alternative (Alternative 3)

	Component	Cost
Diversion Dam	Cofferdam Phase I	$104,774
	Cofferdam Phase II	$69,240
	Diversion Structure Phase I	$1,097,221
	Diversion Structure Phase II	$1,097,221
	Riprap Phase I	$183,271
	Riprap Phase II	$183,271
	Demolish Existing Structure	$241,979
	Deflection Log Boom	$14,232
	Diversion Dam Excavation Extension	$6,754
	PIT Tag Detectors	$356,515
Raceway Gate	Earth Dam	$2,859
	Raceway Structure	$266,158
	Raceway Gates	$1,482,087
Sluice Structure	Sluice Structure	$304,037
Fish Passageway	Fish Passage Structure	$239,368
	4 Radial Gates	$2,379,026
	Retaining Wall	$96,587
	Riprap	$140,125
Boat Passage Structure	Boat Passage Structure	$374,046
	Subtotal	**$8,638,771**
	General Conditions (15% of Total Cost)	$1,295,816
	Mobilization (8% of Total Cost)	$691,102
	Total	**$10,625,689**

SECTION 6
CONCLUSION

6.0 Conclusion

The Proposed Alternative for the Green River Diversion Dam Rehabilitation Project is Alternative 3, which consists of a new dam structure at the current location of the existing dam with the same crest length as the original. Other components of the project include gate structures, a fish passageway, a boat ramp, and features to route sediment and debris past the dam.

SECTION 7
REFERENCES

7.0 References

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APPENDIX A

CONCEPT DESIGN DRAWINGS

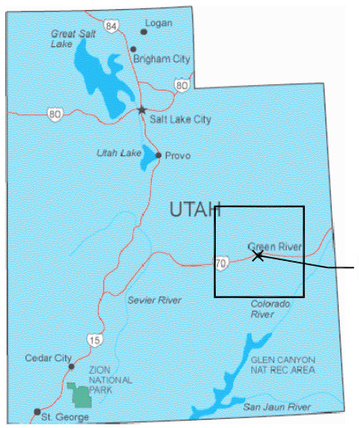
McMILLEN, LLC

NRCS - UTAH
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
SPONSOR - UTAH DEPARTMENT OF
AGRICULTURE AND FOOD

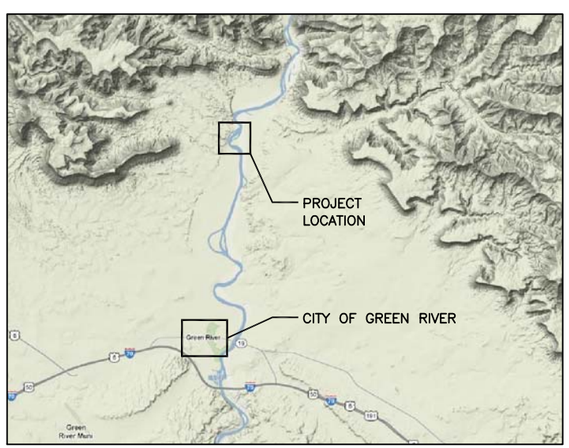
CONCEPT DESIGN
MAY 28, 2014

NATURAL RESOURCES CONSERVATION SERVICE

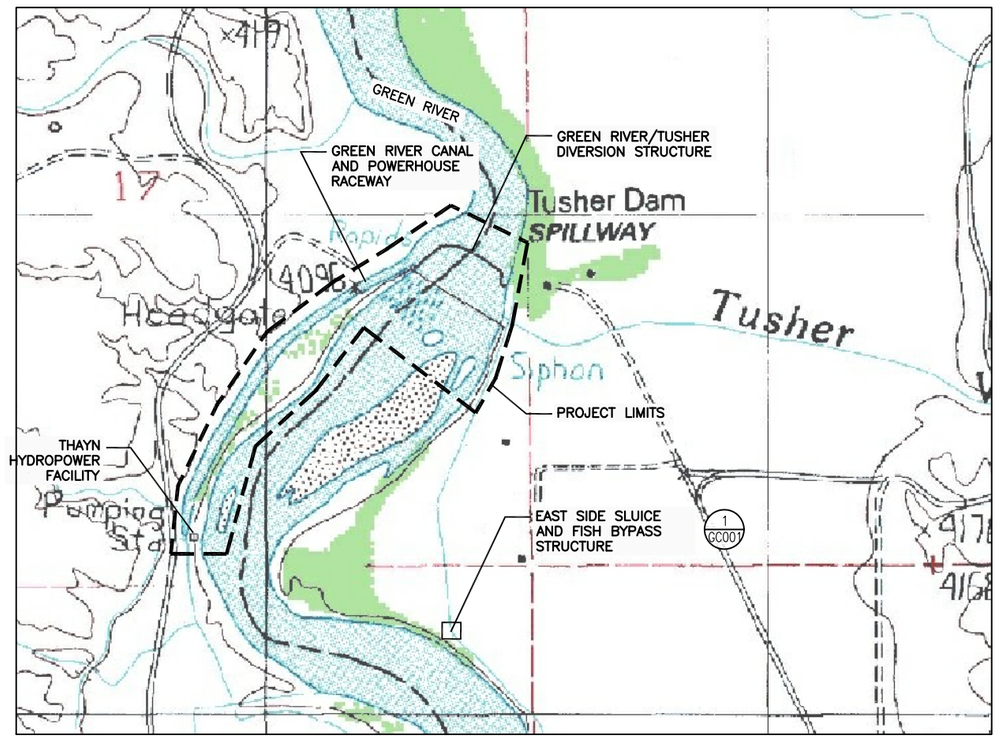
GREEN RIVER
DIVERSION REHABILITATION
DRAFT CONCEPT DESIGN
GRAND AND EMERY COUNTIES



LOCATION MAP
NTS



VICINITY MAP
NTS



PROJECT LIMITS
SECTION 17, TOWNSHIP 20S, RANGE 16E
GRAND AND EMERY COUNTIES, UTAH
LATITUDE - 39°04'43.97" N
LONGITUDE - 110°08'24.56" W

GENERAL NOTES:

1. ELEVATIONS ARE ASSUMED AND SHOWN IN FEET.
2. NO REPRESENTATION IS MADE AS TO THE EXISTENCE OR NON-EXISTENCE OF ANY UTILITIES, PUBLIC OR PRIVATE. WHERE BURIED UTILITIES ARE SHOWN ON THE DRAWINGS, THE LOCATION AND DEPTH MUST BE DETERMINED BY THE UTILITY COMPANY PRIOR TO ANY EXCAVATION IN THE VICINITY OF THE UTILITY. NO WORK SHALL BE DONE WITHIN TEN FEET OF ANY POWER LINES OR POLES WITHOUT THE POWER COMPANY BEING NOTIFIED. EXCAVATION OPERATIONS SHALL COMPLY WITH UTAH STANDARDS.
3. JURISDICTIONAL BOUNDARIES ARE APPROXIMATE AND DISPLAYED AS DOWNLOADED FROM UTAH GIS PORTAL (2012).

DRAWING INDEX

DWG	TITLE
	GENERAL
	COVER
G001	LOCATION MAP, VICINITY MAP, USGS QUADRANGLE AND DRAWING INDEX
G002	STANDARD ABBREVIATIONS
G003	STANDARD SYMBOLS
G004	EXISTING SITE PLAN
G005	EXISTING DIVERSION STRUCTURE – ENLARGED PLAN
G006	HYDRAULIC PROFILE AND DESIGN CRITERIA
	CIVIL
GC001	KEY PLAN
GC002	CIVIL DETAILS 1
GC003	CONSTRUCTION PHASING AND DEWATERING PLAN – ALT 1 DOWNSTREAM DIVERSION DAM
GC004	CONSTRUCTION PHASING AND DEWATERING PLAN – ALT 2 UPSTREAM DIVERSION DAM
GC005	CONSTRUCTION PHASING AND DEWATERING PLAN – ALT 3 AND 4 REPLACE/REPAIR DIVERSION DAM
C100	ALT 1 – DOWNSTREAM DIVERSION DAM – SITE PLAN
C101	ALT 1 – DOWNSTREAM DIVERSION DAM – PROFILE
C102	ALT 1 – DOWNSTREAM DIVERSION DAM – SECTION
C200	ALT 2 – UPSTREAM DIVERSION DAM – SITE PLAN
C201	ALT 2 – UPSTREAM DIVERSION DAM – PROFILE
C202	ALT 2 – UPSTREAM DIVERSION DAM – SECTION
C300	ALT 3 – REPLACE EXISTING DIVERSION DAM – SITE PLAN
C301	ALT 3 – REPLACE EXISTING DIVERSION DAM – PROFILE
C302	ALT 3 – REPLACE EXISTING DIVERSION DAM – SECTION
C400	ALT 4 – REPAIR EXISTING DIVERSION DAM – SITE PLAN
C401	ALT 4 – REPAIR EXISTING DIVERSION DAM – PROFILE
C402	ALT 4 – REPAIR EXISTING DIVERSION DAM – SECTION
C500	RACEWAY GATE AND STRUCTURE – SITE PLAN
C501	RACEWAY GATE AND STRUCTURE – SECTIONS AND DETAILS
C502	RACEWAY GATE AND STRUCTURE – SECTIONS
C600	EAST END PLAN
C610	FISH PASSAGE STRUCTURE PLAN AND SECTIONS
C700	BOAT PASSAGE STRUCTURE PLAN AND SECTIONS
C800	EAST SIDE SLUICE AND FISH BYPASS STRUCTURE

FINAL CONCEPT DESIGN
NOT FOR CONSTRUCTION

DATE: 28 MAY 2014
CAD FILENAME: _G001.DWG
CONTRACT NUMBER: AG-8943-C-12-0020

DESIGNED BY: K. JENSEN
DRAWN BY: J. LAHMON
CHECKED BY: D. AXNESS
SUBMITTED BY: D. AXNESS

NATURAL RESOURCES CONSERVATION SERVICE
1234 SOUTH STATE STREET, ROOM 340
SALT LAKE CITY, UT 84108-1100

McMILLEN, LLC
1401 SHORELINE DR.
BOISE, ID 83702
OFFICE: 208.342.4214
FAX: 208.342.4216

NRCS AND UDAF
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER
LOCATION MAP, VICINITY MAP, USGS QUADRANGLE AND DRAWING INDEX

SHEET
G001

ABBREVIATIONS

A	AIR
A	ALARM
A	ANALOG
A, AMP	AMPERE
AB	ANCHOR BOLT
ABBR	ABBREVIATION
ABAN	ABANDON
ABC	AGGREGATE BASE COURSE
AC	ALTERNATING CURRENT
AC	ASPHALT CONCRETE
ACH	AIR CHANGES PER HOUR
ACI	AMERICAN CONCRETE INTERNATIONAL
ACOUS	ACOUSTIC, ACOUSTICAL
ACP	ASPHALTIC CONCRETE PAVEMENT
ACU	AIR CONDITIONING UNIT
ADDL	ADDITIONAL
ADH	ADHESIVE
ADJ	ADJUSTABLE, ADJACENT
AE	AIR EVACUATION
AF	AMP FRAME, AMP FUSE
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AGGR	AGGREGATE
AHU	AIR HANDLING UNIT
AI	AREA INLET
AIC	AMPERES INTERRUPTING CURRENT
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ALIG	ALIGNMENT
ALM	ALARM
ALT	ALTERNATE
ALUM	ALUMINUM
AMB	AMBIENT
ANC	ANCHOR
ANCB	ANCHOR BOLT
ANG	ANGLE
AP	ACCESS PANEL
APPROX	APPROXIMATE
ARCH	ARCHITECTURE
ARV	VALVE, AIR RELIEF
AS	AIR SUPPLY
ASD	ALLOWABLE STRESS DESIGN
ASSY	ASSEMBLY
AT	AMP TRIP
AT	ACOUSTICAL TILE
ATM	ATMOSPHERE
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AUX	AUXILIARY
AV	VALVE, AIR
AVE	AVENUE
AVG	AVERAGE
B/W	BACK OF WALL
BD	BOARD
BDRY	BOUNDARY
BE	BOTH ENDS, BELL END
BF	BOTH FACES, BOTTOM FACE, BLIND FLANGE, BOARD FEET
BFP	BACK FLOW PREVENTER
BIT	BITUMINOUS
BKG	BACKING
BKR	BREAKER
BL	BASELINE
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BENCHMARK, BEAM
BMP	BEST MANAGEMENT PRACTICE
BOC	BACK OF CURB
BOF	BOTTOM OF FOOTING
BOP	BOTTOM/BEGINNING OF PIPE
BOT	BOTTOM
BP	BASE PLATE
BRG	BEARING
BRGP	BEARING PLATE
BRKT	BRACKET
BS	BOTH SIDES
BTU	BRITISH THERMAL UNIT
BTW	BETWEEN
BTWLD	BUTT WELD
BU	BELL UP, BUILT UP
BUR	BUILT-UP ROOF
BW	BOTH WAYS
C	CENTIGRADE
C	CONDUIT
CA	COMPRESSED AIR
CAB	CABINET
CAV	CONTINUOUS ACTING AIR VALVE
CB	CATCH BASIN
CB	CIRCUIT BREAKER
CBL	CABLE
CC	CENTER TO CENTER
CCB	CONCRETE BLOCK
CCOM	CABLE, COMMUNICATION
CCP	CONCRETE CYLINDER PIPE
CCW	COUNTER CLOCKWISE
CDR	CONDUCTOR
CDU	CONDENSER UNIT
CE	CONCRETE EDGE
CF	CUBIC FEET (FOOT)
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CFP	PUMP, CHEMICAL FEED
CFS	CUBIC FEET PER SECOND
CHD	CHORD
CHEM	CHEMICAL
CHFR	CHAMFER
CHH	COMMUNICATION HANDHOLE
CHNL	CHANNEL
CHR	CHILLER
CIP	CAST IN PLACE
CJ	CONSTRUCTION JOINT
CKT	CIRCUIT
CL	CENTERLINE, CLASS, CLOSE
CL	CHLORINE
CLF	CHAIN LINK FENCE
CLF	CLARIFIER
CLR	CLEAR
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CNTL	CONTROL
CO	CLEAN OUT, CONCRETE OPENING
COL	COLUMN
COM	COMMON
COMB	COMBINATION
COMP	COMPOSITION, COMPRESSIBLE, COMPOSITE
COMP	COMPRESSOR
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONTD	CONTINUED
COORD	COORDINATE
CORR	CORRUGATED
CP	CONTROL POINT
CPEP	CORRUGATED POLYETHYLENE PIPE
CPLG	COUPLING
CPVC	CHLORINATED POLYVINYL CHLORIDE
CR	CONTROL RELAY
CRL	CORROSION RESISTANT LINING
CRNH	CRANES AND HOIST SYSTEMS
CSC	COMPRESSION SLEEVE COUPLING
CSK	COUNTERSINK
CT	CURRENT TRANSFORMER
CT	CERAMIC TILE
CTR	CENTER
CTRL	CONTROL
CU	CUBIC
CULV	CULVERT
CV	VALVE, CONTROL
CW	CLOCKWISE
CW	CHILLED WATER
CWO	CHAIN WHEEL OPORATED
CY	CUBIC YARD
D	DEEP, DIFFUSER
DB	DUCT BANK, DECIBEL, DRY BULB
DBA	DEFORMED BAR ANCHOR
DBL	DOUBLE
DC	DIRECT CURRENT
DEG	DEGREE
DEG C	DEGREE CENTIGRADE
DEG F	DEGREE FAHRENHEIT
DEMO	DEMOLITION
DET	DETAIL
DF	DRINKING FOUNTAIN
DI	DUCTILE IRON
DIA	DIAMETER
DIAG	DIAGONAL, DIAGRAM
DIFF	DIFFERENTIAL, DIFFERENCE
DIM	DIMENSION
DIP	PIPE, DUCTILE IRON
DISC	DISCONNECT
DISCH	DISCHARGE
DIST	DISTANCE, DISTRIBUTION
DIV	DIVISION
DL	DEAD LOAD
DMJ	DOUBLE MECHANICAL JOINT
DO	DISSOLVED OXYGEN
DP	DEPTH
DR	DRAIN
DUP	DUPLICATE
DWG(S)	DRAWING(S)
DWN	DOWN
E	EAST, ELECTRICAL (DWG DISCIPLINE)
EA	EACH
EC	EPOXY COATED REINFORCING
EDB	ELECTRICAL DUCT BANK
EE	EACH END
EEW	EMERGENCY EYE WASH STATION
EF	EACH FACE
EFF	EFFLUENT, EFFICIENCY
EGEN	EMERGENCY GENERATOR SYSTEM
EGL	ENERGY GRADE LINE
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATION
EMBD	EMBEDDED
EMER	EMERGENCY
ENCL	ENCLOSURE
ENGR	ENGINEER
EOP	END OF PIPE, EDGE OF PAVEMENT
EPR	ETHYLENE PROPYLENE RUBBER
EQ	EQUAL
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
ES	EACH SIDE, EQUAL SPACE
ESEW	EMERGENCY SHOWER AND EYE WASH
EST	ESTIMATE
ETM	ELAPSED TIME METER
EW	EACH WAY
EX	EXISTING
EXH	EXHAUST
EXA	EXPANSION ANCHOR
EXB	EXPANSION BOLT
EXC	EXCAVATION
EXP	EXPANSION, EXPOSED
EXPS	EXPANSION
EXIST	EXISTING
EXT	EXTERIOR, EXTERNAL, EXTENSION
EXTR	EXTRUDED
F	FEMALE
FAB	FABRICATE
FB	FLAT BAR
FBO	FURNISHED BY OWNER
FC	FLUSHING CONNECTION
FCA	FLANGED COUPLING ADAPTER
FD	FLOOR DRAIN
FDC	FLEXIBLE DUCT CONNECTION
FDN	FOUNDATION
FDR	FEEDER
FE	FLANGED END
FE	FIRE EXTINGUISHER
FEM	FEMALE (PIPE THREAD)
FENC	FENCE
FES	FIRE EXTINGUISHER CABINET
FF	FINISHED FLOOR
FG	FINISHED GRADE
FH	FIRE HYDRANT
FH	FLAT HEAD
FIG	FIGURE
FL	FLOW, FLOW LINE
FL	SEDIMENT FLUSH
FLEX	FLEXIBLE
FLG	FLANGE, FLANGED
FLR	FLOOR
FM	FORCE MAIN
FO	FINISHED OPENING, FIBER OPTIC
FOC	FACE OF CONCRETE
FOM	FACE OF MASONRY
FOS	FACE OF STUDS
FOT	FLAT ON TOP
FOW	FACE OF WALL
FP	FIRE PROTECTION
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FPT	FEMALE PIPE THREAD
FR	FRAME
FRP	FIBERGLASS REINFORCED PLASTIC
FS	FLOOR SINK
FS	FINISHED SURFACE
FS	SINK, FLOOR
FS	FIRE SYSTEM
FT	FOOT/FEET
FTG	FOOTING, FITTING
FUR	FURRING
FUT	FUTURE
FV	FRONT VIEW
FW	FIELD WELD
FWD	FORWARD
FWE	FURNISHED WITH EQUIPMENT
G	GAS
GA	GAGE (METAL THICKNESS)
GA	GAGE, GAUGE
GAL	GALLON
GALV	GALVANIZED
GB	GRADE BREAK
GC	GROOVED COUPLING
GEN	GENERAL, GENERATOR
GENR	GENERATOR SYSTEM
GFCI	GROUND-FAULT CIRCUIT INTERRUPTING
GFI	GROUND-FAULT INTERRUPTION
GFP	GROUND-FAULT PROTECTION
GIP	PIPE, GALVANIZED IRON
GND	GROUND
GP	GUY POLE
GPD	GALLONS PER DAY
GPM	GALLONS PER MINUTE
GR	GRADE
GRP	GLASS REINFORCED PLASTIC
GRS	GALVANIZED RIGID STEEL
GRTG	GRATING
GSP	PIPE, GALVANIZED STEEL
GT	GREASE TRAP
GVL	GRAVEL
GYP	GYPSUM
H	HEIGHT
HA	HYDRAULIC ACTUATOR
HB	HOSE BIB
HC	HOSE CONNECTION
HCAB	CABINET, FIRE HOSE
HDPE	HIGH DENSITY POLYETHYLENE
HDR	HEADER
HDW	HARDWARE
HEX	HEXAGONAL
HGL	HYDRAULIC GRADE LINE
HGR	HANGER
HH	HANDHOLE
HLOA	HIGH-LOW-OFF-AUTO
HM	HOLLOW METAL
HM	METAL
HO	HAND OFF
HOA	HAND OFF-AUTO
HOAL	HAND OFF-AUTO LOCAL
HOR	HAND OFF-REMOTE
HORZ	HORIZONTAL
HP	HIGH POINT
HP	HORSEPOWER
HPC	HORIZONTAL POINT OF CURVATURE
HPT	HORIZONTAL POINT OF TANGENCY
HR	HANDRAIL
HR	HOSE REEL
HR	HOUR
HS	HYDRAULIC SUPPLY
HSS	HOLLOW STRUCTURAL SHAPE
HST	HIGH STRENGTH
HST	TANK, HOT WATER
HT	HEIGHT
HTP	PUMP, HEAT
HTR	HEATER
HVAC	HEATING, VENTILATION, & AIR CONDITIONING
HWL	HIGH WATER LEVEL
HWO	HAND WHEEL OPERATED
HWR	WATER HEATER RETURN
HWS	WATER HEATER SUPPLY
HYD	HYDRAULIC
HYD	HYDRANT
HZ	HERTZ (CYCLES PER SECOND)
I&C	INSTRUMENTATION AND CONTROL
I/O	INPUT/OUTPUT
IA	INSTRUMENT AIR
IAIR	INSTRUMENT AIR SYSTEM
IAS	INSTRUMENT AIR SUPPLY
IBC	INTERNATIONAL BUILDING CODE
IC	INSULATION CONTACTOR
ID	INSIDE (OR INTERNAL) DIAMETER
IE	INVERT ELEVATION
IF	INSIDE FACE
IG	ISOLATED GROUND
IKS	INTAKE STRUCTURE
IN	INCH/INCHES
INCL	INCLUDE, INCLUDING
INF	INFLUENT
INST	INSTANTANEOUS
INSTR	INSTRUMENTATION
INT	INTERSECTION
INTLK	INTERLOCK
INTR	INTERMEDIATE
INV	INVERT
IP	PIPE, IRON
IPB	ILLUMINATED PUSH BUTTON
IPS	IRON PIPE SIZE
IPT	INTERNAL PIPE THREAD
IR	INSIDE RADIUS
IRR	IRRIGATION
ISL	INSULATION
ISO	ISOMETRIC
IT	INDICATING TRANSMITTER
JB	JUNCTION BOX (J-BOX)
JCT	JUNCTION
JF	JOINT FILLER
JSTS	JOISTS
JT	JOINT
K	KILO, KELVIN
KIP	KIP (1000 POUNDS)
KO	KNOCK OUT
KV	KILOVOLTS
KVA	KILOVOLT AMPERES (APPARENT POWER)
KVAR	KILOVARS (REACTIVE POWER)
KW	KILOWATTS (REAL POWER)
KWH	KILOWATT HOUR
L	LENGTH, LITER
LADR	LADDER
LATL	LATERAL
LAV	LAVATORY
LB	LAG BOLT, POUND
LE	LIFTING EYE
LF	LINEAR FOOT
LG	LONG
LIN	LINEAR
LIQ	LIQUID
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LOC	LOCATION
LONG	LONGITUDINAL
LP	LOW POINT
LP	LOW PRESSURE
LR	LOCAL-REMOTE
LS	LIFT STATION
LT	LEFT
LTD	LIMITED
LTFMC	LIQUID TIGHT FLEXIBLE METAL CONDUIT
LTG	LIGHTING
LV	LOW VOLTAGE
LV	LOUVER
LW	LIGHTWEIGHT
LWC	LIGHTWEIGHT CONCRETE
LWL	LOW WATER LEVEL
M	METER, MALE
MA	MILLIAMPERES
MA	ACTUATOR, MOTOR
MAINT	MAINTENANCE
MAN	MACHINED
MAN	MANUAL
MAS	MASONRY
MAT	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MC	MECHANICAL COUPLING
MECH	MECHANICAL
MCC	MOTOR CONTROL CENTER
MCP	MAIN CONTROL PANEL
MED	MEDIUM
MFR	MANUFACTURER
MH	MANHOLE
MI	MILE
MIN	MINIMUM
MIR	MIRROR
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MO	MASONRY OPENING
MOD	MODIFY
MON	MONUMENT
MPT	MALE PIPE THREAD
MS	SINK,MOP
MSL	MEAN SEA LEVEL
MT	MOUNT
MTC	MECHANICAL-TYPE COUPLING
MTS	MANUAL TRANSFER SWITCH
MU	MASONRY UNIT
Mv	MILLIVOLTS
N	NORTH, NEUTRAL
N/A	NOT APPLICABLE
NAT	NATURAL
NC	NORMALLY CLOSED
NEG	NEGATIVE
NF	NON-FUSED
NF	NEAR FACE
NIC	NOT IN CONTRACT
NO	NUMBER, NORMALLY OPEN
NOM	NOMINAL
NP	NAMEPLATE
NPS	NOMINAL PIPE SIZE
NPSH	NET POSITIVE SUCTION HEAD
NPT	NATIONAL PIPE THREAD
NRS	NON-RISING STEM
NS	NATURAL SUPPLY
NS	NEAR SIDE
NT	NORMALLY THROTTLED
NTS	NOT TO SCALE
NWL	NORMAL WATER LEVEL
O TO O	OUT-TO-OUT
O&M	OPERATIONS AND MAINTENANCE
OAC	OPEN-AUTOMATIC-CLOSED
OC	ON CENTER
OD	OUTSIDE DIAMETER
OED	OPEN END DUCT
OF	OUTSIDE FACE
OF	OVERFLOW
OFF	OFFICE
OG	ORIGINAL GROUND
OH	OVERHEAD
OL	OVERLOAD
OPNG	OPENING
OPP	OPPOSITE
OPT	OPTIONAL
OR	OUTSIDE RADIUS
ORIG	ORIGINAL
OUT	OUTLET
OVFL	OVERFLOW
OVHG	OVERHANG
OZ	OUNCE
P	PRESSURE, PUMP
PA	PLANT AIR
PA	ACTUATOR, PNEUMATIC
PAR	PARALLEL
PB	PULL BOX
PBD	PANEL BOARD
PC	POINT OF CURVE, PRECAST
PCC	POINT OF COMPOUND CURVATURE
PCC	PORTLAND CEMENT CONCRETE
PCF	POUNDS PER CUBIC FOOT
PCT	PERCENT
PED	PEDESTAL
PEN	PENETRATION
PERF	PERFORATED
PERM	PERMANENT
PERP	PERPENDICULAR
PH	PHASE
PI	POINT OF INTERSECTION
PL	PLATE, PROPERTY LINE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PLWD	PLYWOOD
PMR	POWER MONITOR
PN	PNEUMATIC
PNL	PANEL
POB	POINT OF BEGINGING
POE	POINT OF END
POS	POSITIVE, POSITION
PP	POWER POLE
PP	POLYPROPYLENE
PR	SHIELDED PAIR
PRC	POINT OF REVERSE CURVATURE
PRCP	POWER RECEPTACLE
PRCT	PRECAST
PREFAB	PREFABRICATED
PRELIM	PRELIMINARY
PREP	PREPARE
PRES	PRESSURE
PRI	PRIMARY
PROF	PROFILE
PROP	PROPERTY
PROT	PROTECTION
PRP	PROPANE
PRV	VALVE, PRESSURE RELIEF OR REDUCING
PS	PIPE SUPPORT
PS	PUMP STATION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
PSIG	POUNDS PER SQUARE INCH GAUGE
PT	POINT, POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
PW	POTABLE WATER
PZ	PIEZOMETER
Q	RATE OF FLOW
QTR	QUARTER
QTY	QUANTITY
QUAL	QUALITY
R	RADIUS
R&R	REMOVE AND REPLACE
R&S	REMOVE AND SALVAGE
RA	AIR, RETURN
RC	REINFORCED CONCRETE
RCCP	REINFORCED CONCRETE CYLINDER PIPE
RCP	RECEPTICLE
RCP	PIPE, REINFORCED CONCRETE
RD	ROUND
REC	RECESS
RECD	RECEIVED
RECT	RECTANGULAR
RED	REDUCER
REF	REFERENCE
REINF	REINFORCE/REINFORCED
REM	REMOVE
REQD	REQUIRED
RESIL	RESILIENT
RET	RETAINING
RET	RETURN
REV	REVISION
RFG	ROOFING
RGH	ROUGH
RGS	RIGID GALVANIZED STEEL
RGS-PVC	PVC COATED RGS
RLY	RELAY
RM	ROOM
RND	ROUND
ROW	RIGHT OF WAY
RP	RADIUS POINT
RPM	REVOLUTIONS PER MINUTE
RR	RAILROAD
RS	RISING STEM
RT	RIGHT
RTD	RESISTANCE TEMPERATURE DETECTOR
RTH	RIGHT HAND
RW	WATER, RAW
S	SOUTH, SLOPE
SA	AIR, SUPPLY
SAN	SANITARY
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
SCH	SCHEDULE
SCHEM	SCHEMATIC
SCL	SCALE
SCN	SCREEN
SD	STORM DRAIN
SEC	SECONDARY, SECONDS
SECT	SECTION
SEL	SELECTOR
SEP	SEPARATE
SEPS	SANITARY SEPTIC SYSTEM
SF	SQUARE FOOT/FEET
SHELV	SHELVING
SHR	SHOWER
SHT	SHEET
SHTG	SHEATHING
SL	SLOPE
SLTD	SLOTTED
SLV	SLEEVE
SOG	SLAB ON GRADE
SP	PIPE STEEL
SP	PUMP, SUMP
SPA	SPACING
SPEC	SPECIFICATION
SPLY	SUPPLY
SQ	SQUARE
SS	SANITARY SEWER
SS	STAINLESS STEEL
STA	STATION, STAIR
STC	SLEEVE-TYPE COUPLING
STD	STANDARD
STIFF	STIFFENER
STIR	STIRRUP
STL	STEEL
STLG	STOPLOG
STOR	STORAGE
STR	STRAIGHT
SUB	SUBSTITUTE
SUC	SUCTION
SUMP	SUMP
SUSP	SUSPENDED
SV	VALVE, SOLENOID
SW	SWITCH
SW	WATER, SERVICE
SWGR	SWITCH GEAR
SWLK	SIDEWALK
SWPPP	STORMWATER POLLUTION PREVENTION PLAN
SY	SQUARE YARD
SYM	SYMBOL
SYMM	SYMMETRICAL
SYN	SYNTHETIC
SYS	SYSTEM
T	TEMPERATURE
T&B	TOP AND BOTTOM
TAN	TANGENT
TB	TERMINAL BLOCK
TBM	TEMPORARY BENCHMARK
TDH	TOTAL DYNAMIC HEAD
TEL	TELEPHONE
TEMP	TEMPERATURE
TEMP	TEMPORARY
THD	THREAD
TK	TANK
TMTR	THERMOMETER
TO OPNG	TOP OF OPENING
TOA	TEST-OFF-AUTO
TOB	TOP OF BANK
TOC	TOP OF CONCRETE
TOCMU	TOP OF CMU
TOCOL	TOP OF COLUMN
TOD	TOP OF DUCT
TOF	TOP OF FOOTING
TOG	TOP OF GRATING
TOL	TOLERANCE
TOM	TOP OF MASONRY
TOP	TOP OF PLATE/PIPE
TOPO	TOPOGRAPHIC
TOS	TOP OF SLAB/STEEL
TOW	TOP OF WALL
TP	TELEPHONE POLE
TRANS	TRANSITION
TRD	TRENCH DRAIN
TRT	TREAT, TREATMENT
TSP	TWISTED SHIELDED PAIR
TSS	TOTAL SUSPENDED SOLIDS
TST	TWISTED SHIELDED TRIAD
TYP	TYPICAL
UBC	UNIFORM BUILDING CODE
UFC	UNIFORM FIRE CODE
UG	UNDERGROUND
UHMWULTA	HIGH MOLECULAR WEIGHT
ULT	ULTIMATE
UNO	UNLESS NOTED OTHERWISE
UP	UTILITY POWER, UTILITY POLE
UPC	UNIFORM PLUMBING CODE
UPS	UNINTERRUPTED POWER SUPPLY
URN	URINAL
UTIL	UTILITY
V	VALVE, VAULT, VENT, VOLT(S)
VA	VOLT AMPERE
VAC	VACUUM, VOLTS ALTERNATING CURRENT
VAR	VARIES, VARIABLE
VB	VALVE BOX
VC	VERTICAL CURVE
VCP	PIPE, VITRIFIED CLAY
VCT	VERTICAL CENTERLINE
VDC	VOLTS DIRECT CURRENT
VEL	VELOCITY
VENT	VENTILATION
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VIN	VINYL
VOL	VOLUME
VPC	VERTICAL POINT OF CURVATURE
VPI	VERTICAL POINT OF INTERSECTION
VPT	VERTICAL POINT OF TANGENCY
VSD	VARIABLE SPEED DRIVE
VTC	VENT TO CEILING
VTR	VENT THROUGH ROOF
VTR	VENT TO ROOF
W	WEST, WIRE, WASTE, WIDE
W/	WITH
W/O	WITHOUT
WC	WATER COLUMN
WD	WIDTH, WOOD
WDW	WINDOW
WFLG	WIDE FLANGE
WG	WATER GAGE
WL	WATER LEVEL
WLD	WELDED
WM	WIRE MESH
WP	WATERPROOF
WP	PRESSURE, WORKING
WP	WATERPROOFING
WS	WATER SURFACE, WATER SUPPLY
WSP	PIPE, WELDED STEEL
WSTP	WATERSTOP
WT	WEIGHT, WATERTIGHT
WTHP	WEATHERPROOF
WW	WASTEWATER
WWF	WELDED WIRE FABRIC
XA	AIR, EXHAUST
XLPE	CROSS LINKED POLYETHYLENE
XMFR	TRANSFORMER
XP	EXPLOSION PROOF
XSEC	CROSS SECTION
YD	YARD
YR	YEAR
&	AND
@	AT
ø	DIAMETER
#, NO.	NUMBER

GENERAL NOTES:

1. THESE ABBREVIATIONS APPLY TO THE ENTIRE SET OF DRAWINGS.
2. LISTING OF ABBREVIATIONS DOES NOT IMPLY ALL ABBREVIATIONS ARE USED IN THE CONTRACT DRAWINGS.
3. ABBREVIATIONS SHOWN ON THIS SHEET INCLUDE VARIATIONS OF THE WORD. FOR EXAMPLE, "MOD" MAY MEAN MODIFY OR MODIFICATION; "INC" MAY MEAN INCLUDED OR INCLUDING; "REINF" MAY MEAN EITHER REINFORCE OR REINFORCING.

FINAL CONCEPT DESIGN
NOT FOR CONSTRUCTION

DATE: 28 MAY 2014
CAD FILENAME: _G002.DWG
CONTRACT NUMBER: AG-8943-D-12-0020

DESIGNED BY: K. JENSEN
DRAWN BY: J. LAMMON
CHECKED BY: D. AXNESS
SUBMITTED BY: D. AXNESS

NATURAL RESOURCES CONSERVATION SERVICE
125 SOUTH STATE STREET, ROOM 4010
SALT LAKE CITY, UT 84138-1100

MCMILLEN, LLC
1401 SHORELINE DR. BOISE, ID 83702
OFFICE: 208.342.4214
FAX: 208.342.4216

NRCS AND UDAF
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER

STANDARD ABBREVIATIONS

SHEET
G002

SHEET SYMBOLS

ARROW INDICATES DIRECTION OF PLAN NORTH

N

PLAN

SCALE: 1/2"= 1'-0"

SECTION IDENTIFICATION

(1) SECTION CUT ON DRAWING C102:

SECTION NUMBER

A
C103

DRAWING WHERE SECTION IS DRAWN

(2) ON DRAWING C103 THIS SECTION IS IDENTIFIED AS:

SECTION LETTER

SECTION VIEW

SCALE: 1/2"= 1'-0"

A
C102

DRAWING WHERE DETAIL OCCURS*

DETAIL IDENTIFICATION

(1) DETAIL CALL-OUT ON DRAWING C102:

DETAIL NUMBER

1
C103

DRAWING WHERE DETAIL IS SHOWN

(2) ON DRAWING C103 THIS SECTION IS IDENTIFIED AS:

DETAIL NUMBER

DETAIL

SCALE: 1/2"= 1'-0"

1
C102

DRAWING WHERE DETAIL OCCURS*

*NOTE: IF PLAN AND SECTION (OR DETAIL CALL-OUT AND DETAIL) ARE SHOWN ON SAME DRAWING. DRAWING NUMBER IS REPLACED BY A LINE.

STANDARD DETAIL IDENTIFICATION

(1) DETAIL CALL-OUT ON PLAN OR SECTION:

STANDARD DETAIL NUMBER

M101

(2) ON DETAIL DRAWINGS, IDENTIFIED AS:

STANDARD DETAIL NUMBER

DETAIL

M101

SITE PLAN LINE TYPES

X X	FENCE LINE
P P	OVERHEAD POWER
455	MAJOR CONTOUR
456	MINOR CONTOUR
	EDGE OF WATERLINE
TOE	TOE OF SLOPE
TOB	TOP OF BANK
SS SS	SANITARY SEWER
SD SD	STORM DRAIN
EP EP	EDGE OF PAVEMENT
EG EG	EDGE OF GRAVEL
W	WATTLE
SF SF	SILT FENCE
CF CF	CONSTRUCTION FENCE
GAS	GAS LINE

SITE PLAN SYMBOLS

	CONIFER TREE: FIR, SPRUCE, LARCH OR PINE, 8" DIAMETER OR LARGER.
	DECIDUOUS TREE: COTTONWOOD, HAWTHORN, ASPEN, 8" DIAMETER OR LARGER.
MH	MANHOLE
EB	ELECTRIC BOX
	STORM DRAIN MANHOLE
FH	FIRE HYDRANT
YH-X	YARD HYDRANT
	SURVEY CONTROL POINT, AS NOTED.
	POLE ANCHOR
	POWER POLE
	LIGHT POLE
	SIGN
WS	EDGE OF WATER
P/L	PROPERTY LINE
IRR	UNDERGROUND IRRIGATION PIPELINE

HATCH SYMBOLS

	ROCK, TYPE AS NOTED (PLAN/SECTION)
	BED ROCK
	EXISTING GRADE (SECTION)
	NEW SOIL (SECTION)
	CONCRETE (SECTION/PLAN)
	COMPACTED STRUCTURAL FILL
	STEEL (SECTION)
	GRATING (PLAN)
	MASONRY (PLAN)
	WOOD, SIZE/TYPE AS NOTED (PLAN)
	WOOD, SIZE/TYPE AS NOTED (SECTION)
	RIP RAP (PLAN/SECTION)
	DAMAGED CONCRETE
	DEMOLISH STRUCTURE

GENERAL NOTES:

1. NOT ALL SYMBOLS ARE NECESSARILY USED. THIS IS A STANDARD DRAWING SHOWING COMMON SYMBOLS ON THIS PROJECT.
2. SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DE-EMPHASIZE PROPOSED IMPROVEMENTS TO HIGHLIGHT SELECTED TRADE WORK. REFER TO CONTEXT OF EACH DRAWING FOR USAGE.

FINAL CONCEPT DESIGN
NOT FOR CONSTRUCTION

USDA

UDAF

DATE: 28 MAY 2014
CAD FILENAME: _0003.DWG
CONTRACT NUMBER: AG-8943-C-12-0020

DESIGNED BY: K. JENSEN
DRAWN BY: J. LAHMON
CHECKED BY: D. AXNESS
SUBMITTED BY: D. AXNESS

NATURAL RESOURCES CONSERVATION SERVICE
125 SOUTH STATE STREET, ROOM 4010
SALT LAKE CITY, UT 84138-1100

McMILLEN, LLC
1401 SHOREline DR.
BOISE, ID 83702
OFFICE: 208.342.4214
FAX: 208.342.4216

NRCS AND UDAF
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER
STANDARD SYMBOLS

SHEET
G003

LEGEND

WS	EDGE OF WATER
P/L	PROPERTY LINE
IRR	UNDERGROUND IRRIGATION PIPELINE

NOTES:
1. PROPERTY BOUNDARY DATA OBTAINED FROM UTAH STATE LAND BOUNDARY GIS.
2. EDGE OF WATER APPROXIMATED BASED ON EXTENTS SHOWN ON AERIAL PHOTOGRAPH.

EXISTING SITE PLAN

SCALE: 1"= 150'

0" 150' 300'

N

FINAL CONCEPT DESIGN
NOT FOR CONSTRUCTION

USDA

UDAF

DATE: 28 MAY 2014
CAD FILENAME: _G004.DWG
CONTRACT NUMBER: AG-8943-C-12-0020

DESIGNED BY: K. JENSEN
DRAWN BY: J. LAHMON
CHECKED BY: D. AXNESS
SUBMITTED BY: D. AXNESS

NATURAL RESOURCES CONSERVATION SERVICE
125 SOUTH STATE STREET, ROOM 4010
SALT LAKE CITY, UT 84138-1100

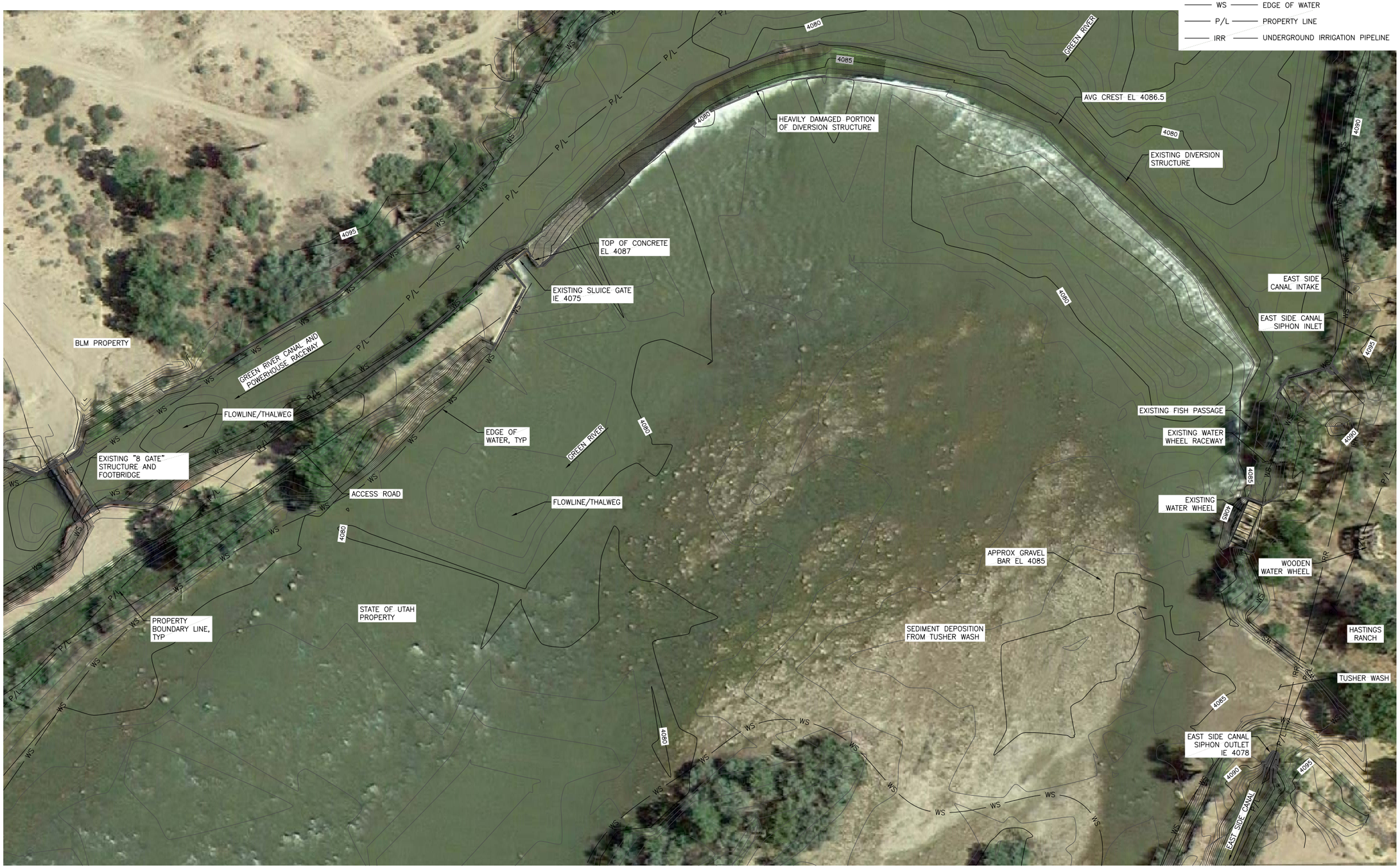
McMILLEN, LLC
1401 SHORELINE DR.
BOISE, ID 83702
OFFICE: 208.342.4214
FAX: 208.342.4216

NRCS AND UDAF
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER
EXISTING SITE PLAN

SHEET
G004

LEGEND

WS	EDGE OF WATER
P/L	PROPERTY LINE
IRR	UNDERGROUND IRRIGATION PIPELINE



NOTES:
1. PROPERTY BOUNDARY DATA OBTAINED FROM UTAH STATE LAND BOUNDARY GIS.
2. EDGE OF WATER APPROXIMATED BASED ON EXTENTS SHOWN ON AERIAL PHOTOGRAPH.
3. UNDERGROUND EAST SIDE CANAL PIPE/SIPHON LOCATION IS APPROXIMATED.

EXISTING DIVERSION STRUCTURE – ENLARGED PLAN

SCALE: 1"= 40'

0" 40' 80'

1 G004

N

FINAL CONCEPT DESIGN
NOT FOR CONSTRUCTION

USDA

UDAF

DATE: 28 MAY 2014
CAD FILENAME: _G005.DWG
CONTRACT NUMBER: AG-8943-C-12-0020

DESIGNED BY: K. JENSEN
DRAWN BY: J. LAHMON
CHECKED BY: D. AXNESS
SUBMITTED BY: D. AXNESS

NATURAL RESOURCES CONSERVATION SERVICE
1234 SOUTH STATE STREET, ROOM 4010
SALT LAKE CITY, UT 84138-1100

MCMILLEN, LLC
1401 SHORELINE DR.
BOISE, ID 83702
OFFICE: 208.342.4214
FAX: 208.342.4216

NRCS AND UDAF
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER
EXISTING DIVERSION STRUCTURE
ENLARGED PLAN

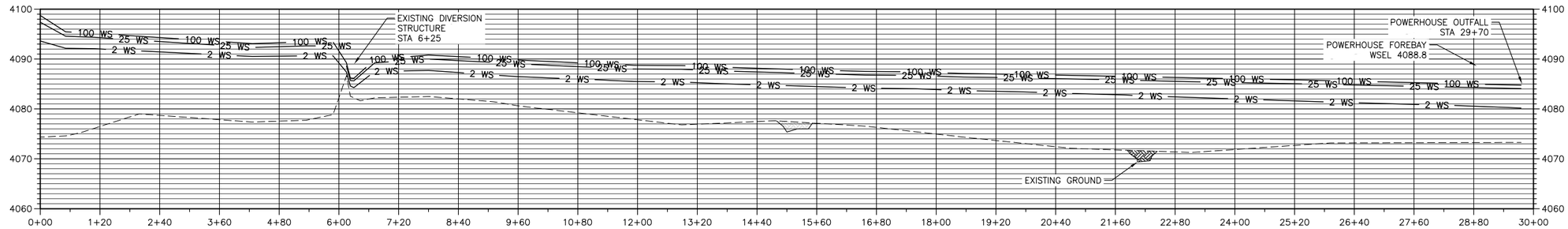
SHEET
G005

NOTE:

1. POWERHOUSE RACEWAY WSEL BASED ON AVERAGE VALUES OBTAINED BY USBR (2005).
2. DIVERSION STRUCTURE SHOWN AT INTERSECTION WITH GREEN RIVER CENTERLINE. PROFILE OF RACEWAY BEGINS AT WEST END OF DAM CETNERLINE, WHICH IS DOWNSTREAM OF THE INTERSECTION OF THE GREEN RIVER CENTERLINE AND THE DAM CENTERLINE
3. WATER SURFACE ELEVATIONS DEPICTED ON PROPOSED DIVERSION HYDRAULIC SECTION ARE DERIVED FROM HYDRAULIC SIMULATIONS WITH THE RADIAL GATES OPENED ON BOTH SIDES OF THE DIVERSION DAM.
4. WATER SURFACE ELEVATIONS DEPICTED ON THE HYDRAULIC PROFILE DRAWINGS REPRESENT EXISTING SITE CONDITIONS; WATER SURFACE ELEVATIONS DEPICTED ON THE PROPOSED DIVERSION HYDRAULIC SECTION REPRESENT PROPOSED CONDITIONS.

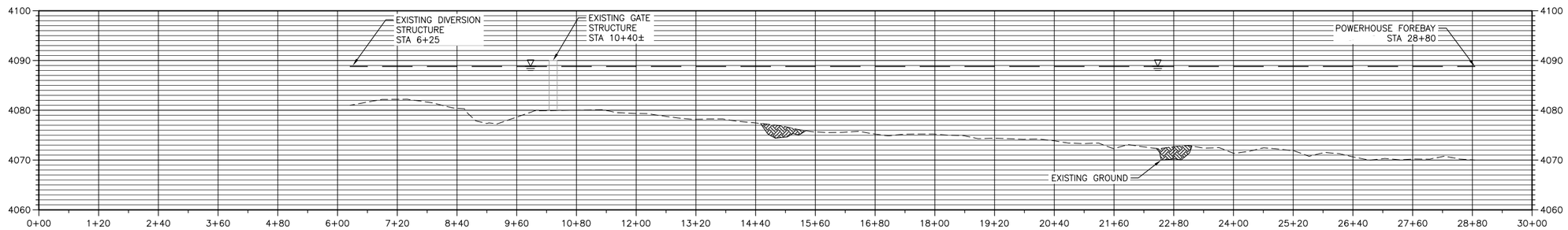
LEGEND:

- EXIST GROUND SURFACE
- 2 WS — 2YR RUNOFF WATER SURFACE ELEV
- 25 WS — 25YR RUNOFF WATER SURFACE ELEV
- 100 WS — 100YR RUNOFF WATER SURFACE ELEV.
- POWERHOUSE RACEWAY WATER SURFACE ELEV.



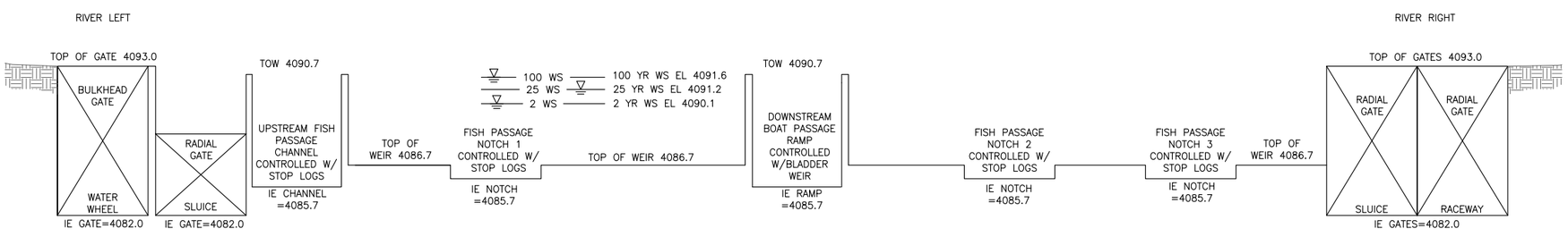
HYDRAULIC PROFILE – GREEN RIVER

SCALE: 1"=120' HORIZ
1"=10' VERT



HYDRAULIC PROFILE – POWERHOUSE RACEWAY

SCALE: 1"=120' HORIZ
1"=10' VERT



PROPOSED DIVERSION HYDRAULIC SECTION

NTS

DESIGN CRITERIA	
CRITERIA	VALUE
DRAINAGE BASIN	
DRAINAGE AREA	40,500 SQUARE MILES
MEAN ANNUAL PRECIPITATION	15.9 INCHES
MEAN BASIN ELEVATION	7,230 FT
AVERAGE BASIN SLOPE	12.9%
UNCONTROLLED DRAINAGE AREA	15,700 SQUARE MILES
CONTROLLED DRAINAGE AREA	24,500 SQUARE MILES
HYDROLOGY	
LOW RECURRENCE FLOWS	869
2–YEAR RETURN INTERVAL FLOW	21,386 CFS
25–YEAR RETURN INTERVAL FLOW	40,726 CFS
100–YEAR RETURN INTERVAL FLOW	48,170 CFS
DESIGN CRITERIA	
IRRIGATION AND HYDROPOWER FLOWS	819 CFS
FISH BYPASS FLOW	70 CFS
UPSTREAM FISH PASSAGE FLOW	30 CFS
DOWNSTREAM FISH PASSAGE FLOW	40 CFS
DOWNSTREAM BOAT PASSAGE FLOW	147 CFS
TOTAL MINIMUM FLOW REQUIREMENT	1,106 CFS

FINAL CONCEPT DESIGN
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DATE: 28 MAY 2014
CAD FILENAME: _G006.DWG
CONTRACT NUMBER: AG-8943-D-12-0020

DESIGNED BY: K. JENSEN
DRAWN BY: J. LAHMON
CHECKED BY: M. NELSON
SUBMITTED BY: D. AYRESS

NATURAL RESOURCES CONSERVATION SERVICE
125 SOUTH STATE STREET, ROOM 4010
SALT LAKE CITY, UT 84138-1100

McMILLEN, LLC
1401 SHORELINE DR.
BOISE, ID 83702
OFFICE: 208.342.4214
FAX: 208.342.4216

NRCS AND UDAF
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER
HYDRAULIC PROFILE
AND DESIGN CRITERIA

SHEET
G006

KEY PLAN
SCALE: 1"= 150'
0" 150' 300'

EAST SIDE SLUICE STRUCTURE AND FISH BYPASS INSET
1 G001
SCALE: 1"= 100'
0" 100' 200'

FINAL CONCEPT DESIGN
NOT FOR CONSTRUCTION

USDA
UDAF

DATE: 28 MAY 2014
CAD FILENAME: _GC001.DWG
CONTRACT NUMBER: AG-8243-D-12-0020

DESIGNED BY: K. JENSEN
DRAWN BY: J. LAHMON
CHECKED BY: D. AXNESS
SUBMITTED BY: D. AXNESS

NATURAL RESOURCES CONSERVATION SERVICE
1234 SOUTH STATE STREET, ROOM 4010
SALT LAKE CITY, UT 84138-1100

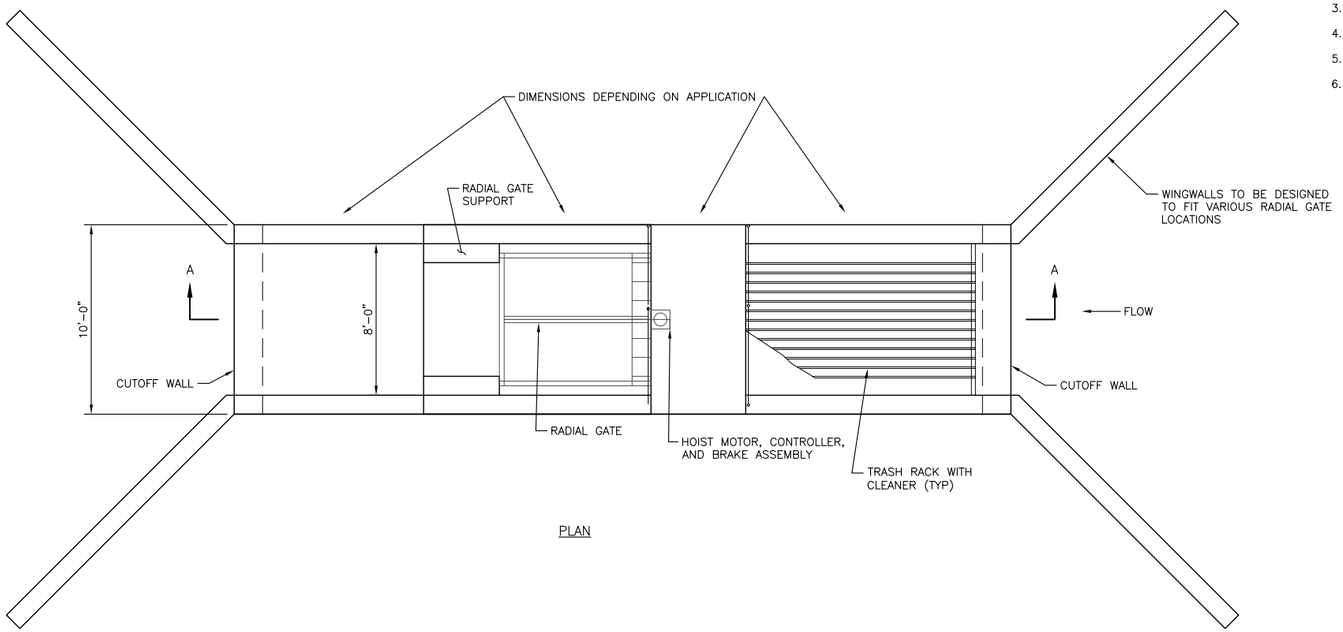
McMILLEN, LLC
1401 SHORELINE DR.
BOISE, ID 83702
OFFICE: 208.342.4214
FAX: 208.342.4216

NRCS AND UDAF
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER
KEY PLAN

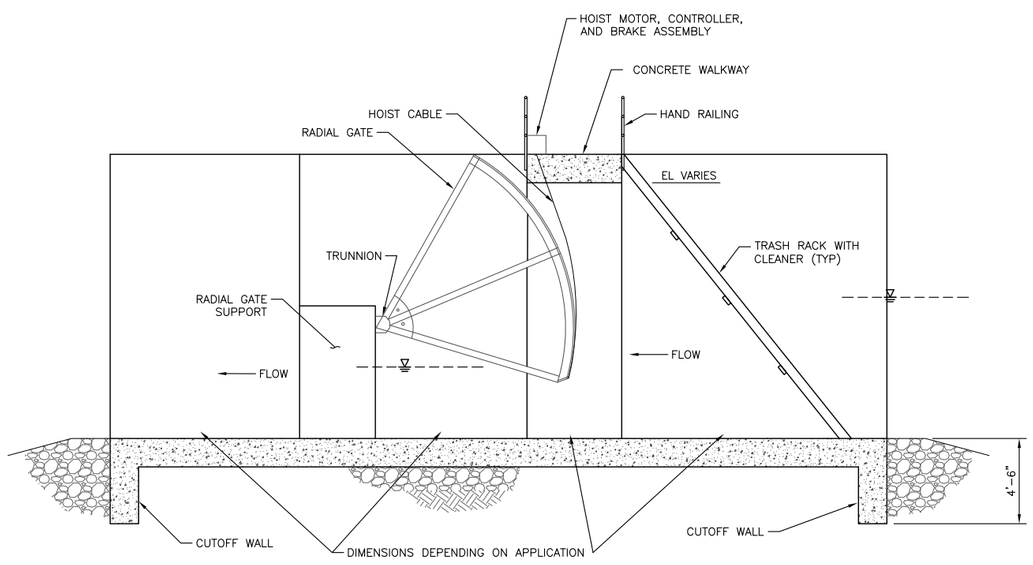
SHEET
GC001

GENERAL NOTES:

1. THESE DRAWINGS ARE CONCEPTUAL IN NATURE AND HAVE BEEN USED TO DEVELOP INITIAL COST ESTIMATES.
2. THE SHAPES, DIMENSIONS AND QUANTITIES ARE BASED ON PREVIOUS PROJECT EXPERIENCE WITH SIMILAR TREATMENTS AND STRUCTURES. EACH OF THE TREATMENTS WILL REQUIRE A FINAL DESIGN SEALED BY A PROFESSIONAL ENGINEER PRIOR TO PRODUCTION OF CONSTRUCTION DRAWINGS.
3. THE DESIGN DETAILS PRESENTED ON THIS SHEET ARE CONCEPTUAL DETAILS AND WILL REQUIRE ADDITIONAL ANALYSIS AND INFORMATION TO COMPLETE THE FINAL DESIGN.
4. SOME DETAILS HAVE BEEN INCLUDED AS ALTERNATIVES TO A SPECIFIC PROBLEM AND NOT ALL THE DETAILS PROVIDED ON THIS SHEET WILL BE INCLUDED AS PART OF THE FINAL DESIGN.
5. FINAL DESIGN SHALL ADDRESS THE EFFECTS OF INSTALLING PROPOSED GRADE CONTROLS ON REGULATORY FLOODS FOR FEMA AND GRAND AND EMORY COUNTIES.
6. ACTUAL DIMENSIONS WILL VARY DEPENDING ON RADIAL GATE LOCATION.



PLAN



SECTION A–A

TYPICAL RADIAL GATE

SCALE: NTS

1 / –

FINAL CONCEPT DESIGN
NOT FOR CONSTRUCTION

DATE: 28 MAY 2014
CAD FILENAME: _GC002.DWG
CONTRACT NUMBER: AG-8943-D-12-0020

DESIGNED BY: K. JENSEN
DRAWN BY: J. LAHMON
CHECKED BY: D. AXNESS
SUBMITTED BY: D. AXNESS

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125 SOUTH STATE STREET, ROOM 4010
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McMILLEN, LLC
1401 SHORELINE DR.
BOISE, ID 83702
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NRCS AND UDAF
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER
CIVIL DETAILS 1

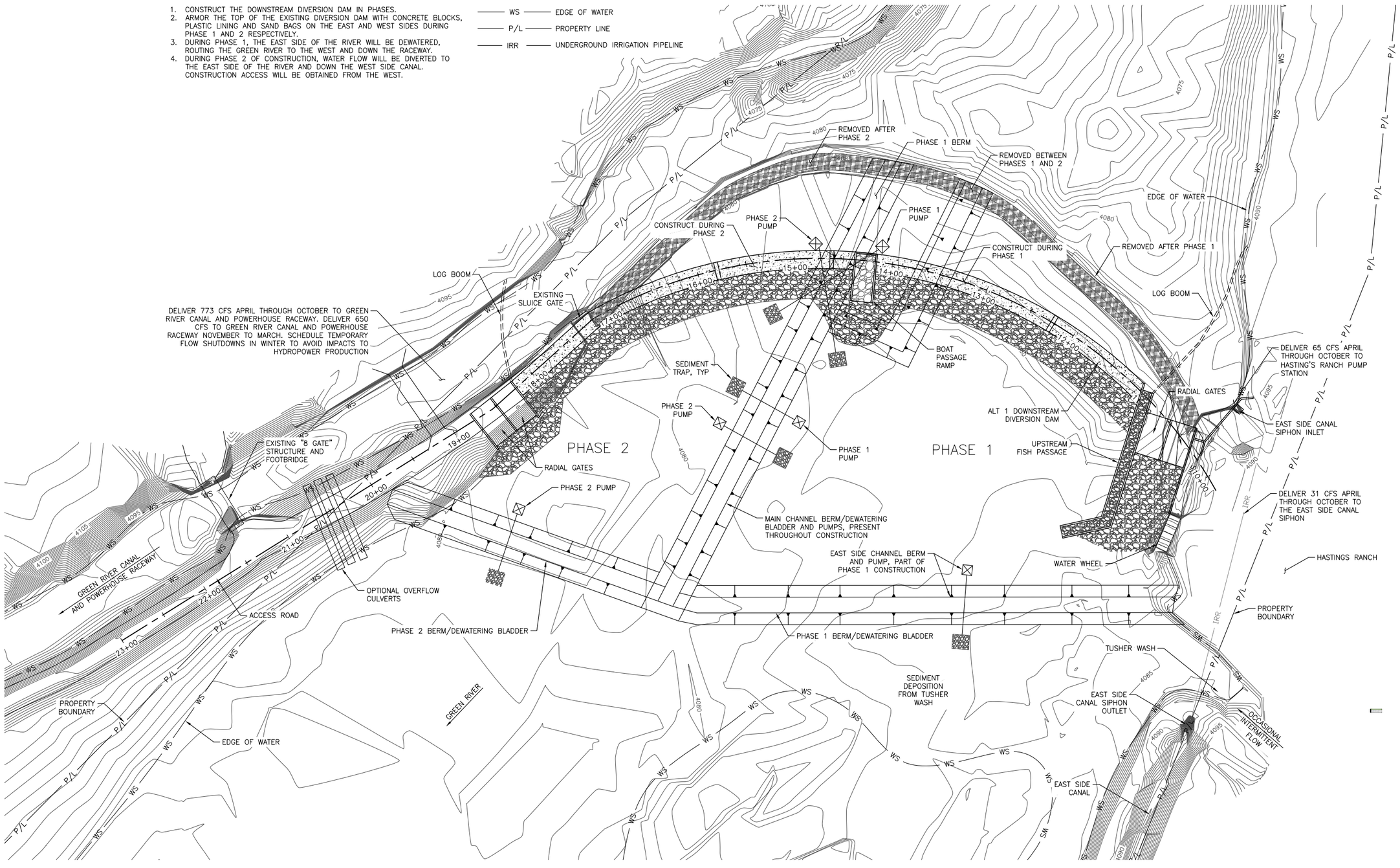
SHEET
GC002

SHEET NOTES:

1. CONSTRUCT THE DOWNSTREAM DIVERSION DAM IN PHASES.
2. ARMOR THE TOP OF THE EXISTING DIVERSION DAM WITH CONCRETE BLOCKS, PLASTIC LINING AND SAND BAGS ON THE EAST AND WEST SIDES DURING PHASE 1 AND 2 RESPECTIVELY.
3. DURING PHASE 1, THE EAST SIDE OF THE RIVER WILL BE DEWATERED, ROUTING THE GREEN RIVER TO THE WEST AND DOWN THE RACEWAY.
4. DURING PHASE 2 OF CONSTRUCTION, WATER FLOW WILL BE DIVERTED TO THE EAST SIDE OF THE RIVER AND DOWN THE WEST SIDE CANAL. CONSTRUCTION ACCESS WILL BE OBTAINED FROM THE WEST.

LEGEND

WS — EDGE OF WATER
P/L — PROPERTY LINE
IRR — UNDERGROUND IRRIGATION PIPELINE



CONSTRUCTION PHASING AND DEWATERING PLAN – ALT 1 DOWNSTREAM DIVERSION DAM

SCALE: 1"= 50'

0' 50' 100'

N

FINAL CONCEPT DESIGN
NOT FOR CONSTRUCTION

USDA
UDAF

DATE: 28 MAY 2014
CAD FILENAME: _GC003.DWG
CONTRACT NUMBER: AG-8243-C-12-0020

DESIGNED BY: K. JENSEN
DRAWN BY: J. LAHMON
CHECKED BY: D. AXNESS
SUBMITTED BY: D. AXNESS

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125 S. STATE STREET, ROOM 4010
SALT LAKE CITY, UT 84138-1100

McMILLEN, LLC
1401 SHORELINE DR.
BOISE, ID 83702
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NRCS AND UDAF
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER
CONSTRUCTION PHASING AND DEWATERING
PLAN - ALT 1 DOWNSTREAM DIVERSION DAM

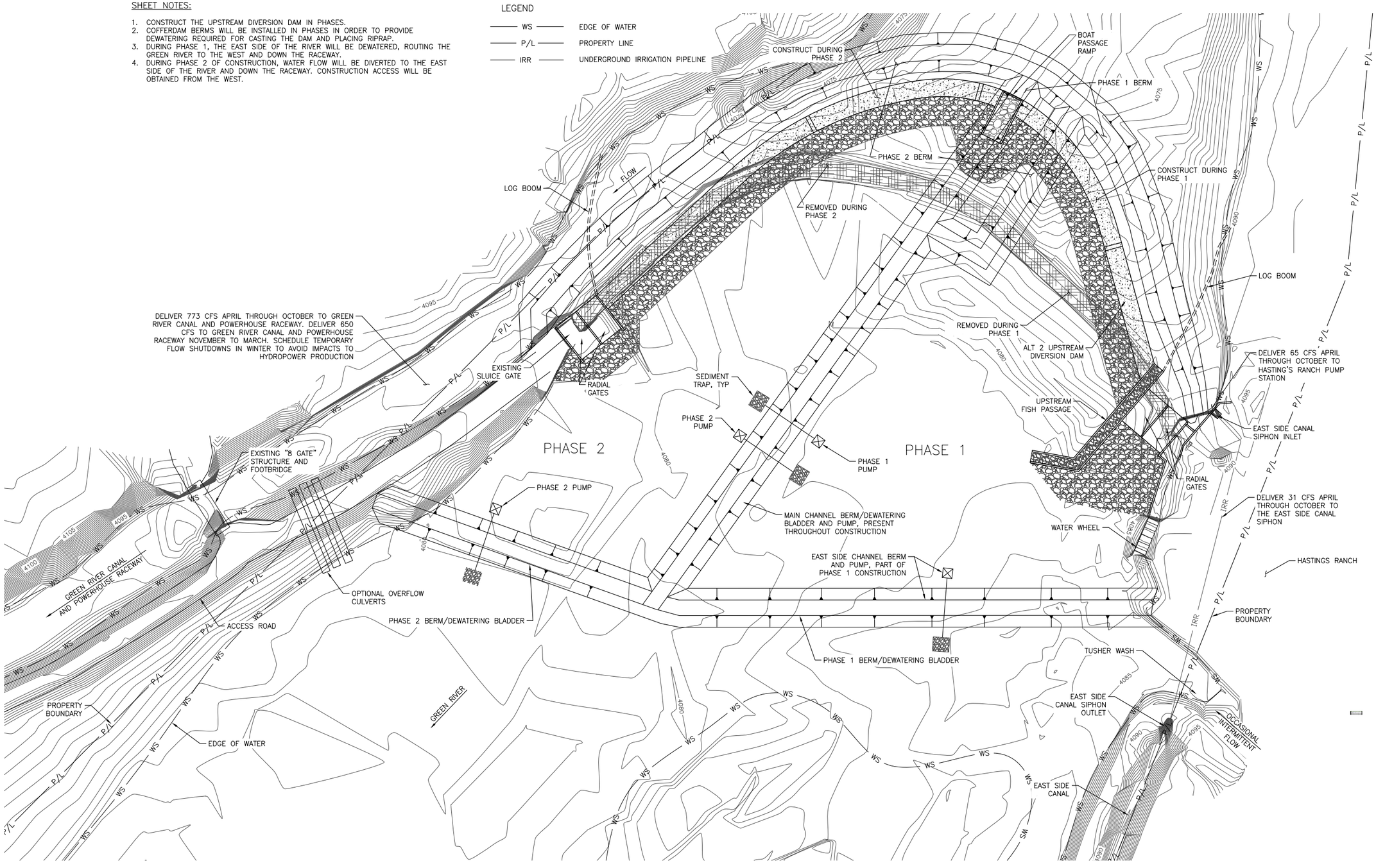
SHEET
GC003

SHEET NOTES:

1. CONSTRUCT THE UPSTREAM DIVERSION DAM IN PHASES.
2. COFFERDAM BERMS WILL BE INSTALLED IN PHASES IN ORDER TO PROVIDE DEWATERING REQUIRED FOR CASTING THE DAM AND PLACING RIPRAP.
3. DURING PHASE 1, THE EAST SIDE OF THE RIVER WILL BE DEWATERED, ROUTING THE GREEN RIVER TO THE WEST AND DOWN THE RACEWAY.
4. DURING PHASE 2 OF CONSTRUCTION, WATER FLOW WILL BE DIVERTED TO THE EAST SIDE OF THE RIVER AND DOWN THE RACEWAY. CONSTRUCTION ACCESS WILL BE OBTAINED FROM THE WEST.

LEGEND

WS	EDGE OF WATER
P/L	PROPERTY LINE
IRR	UNDERGROUND IRRIGATION PIPELINE



CONSTRUCTION PHASING AND DEWATERING PLAN – ALT 2 UPSTREAM DIVERSION DAM

SCALE: 1"= 50'

0" 50' 100'

FINAL CONCEPT DESIGN
NOT FOR CONSTRUCTION

DATE: 28 MAY 2014
CAD FILENAME: _GC004.DWG
CONTRACT NUMBER: AG-8243-C-12-0020

DESIGNED BY: K. JENSEN
DRAWN BY: J. LAHMON
CHECKED BY: D. AXNESS
SUBMITTED BY: D. AXNESS

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125 SOUTH STATE STREET, ROOM 4010
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1401 SHORELINE DR.
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NRCS AND UDAF
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER
CONSTRUCTION PHASING AND DEWATERING PLAN - ALT 2 UPSTREAM DIVERSION DAM

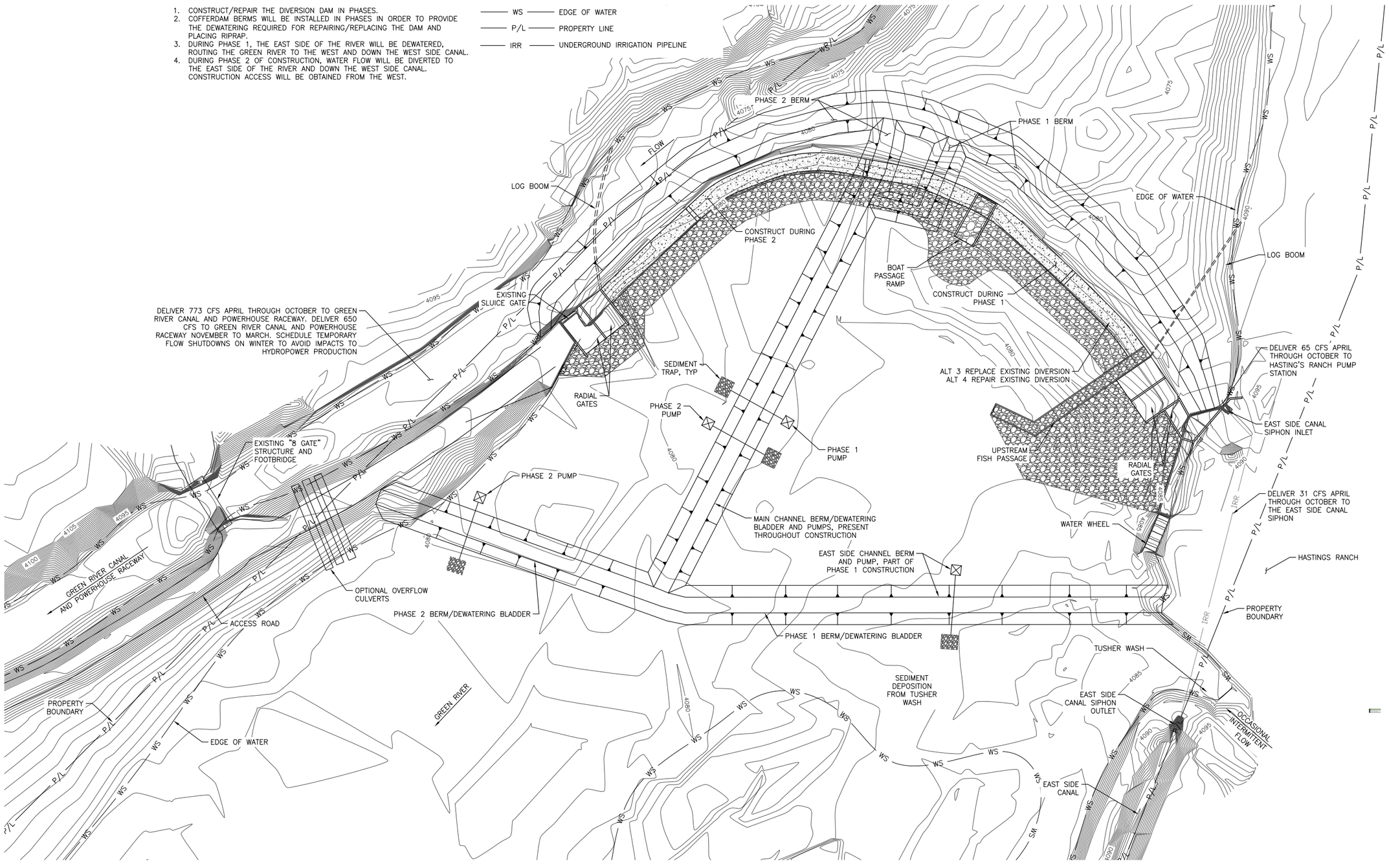
SHEET
GC004

SHEET NOTES:

1. CONSTRUCT/REPAIR THE DIVERSION DAM IN PHASES.
2. COFFERDAM BERMS WILL BE INSTALLED IN PHASES IN ORDER TO PROVIDE THE DEWATERING REQUIRED FOR REPAIRING/REPLACING THE DAM AND PLACING RIPRAP.
3. DURING PHASE 1, THE EAST SIDE OF THE RIVER WILL BE DEWATERED, ROUTING THE GREEN RIVER TO THE WEST AND DOWN THE WEST SIDE CANAL.
4. DURING PHASE 2 OF CONSTRUCTION, WATER FLOW WILL BE DIVERTED TO THE EAST SIDE OF THE RIVER AND DOWN THE WEST SIDE CANAL. CONSTRUCTION ACCESS WILL BE OBTAINED FROM THE WEST.

LEGEND

WS	EDGE OF WATER
P/L	PROPERTY LINE
IRR	UNDERGROUND IRRIGATION PIPELINE



CONSTRUCTION PHASING AND DEWATERING PLAN – ALT 3 AND 4 REPLACE/REPAIR DIVERSION DAM

SCALE: 1"= 50'

0' 50' 100'

N

FINAL CONCEPT DESIGN
NOT FOR CONSTRUCTION

USDA

UDAF

DATE: 28 MAY 2014
CAD FILENAME: _GC005.DWG
CONTRACT NUMBER: AG-8943-C-12-0020

DESIGNED BY: K. JENSEN
DRAWN BY: J. LAHMON
CHECKED BY: D. AXNESS
SUBMITTED BY: D. AXNESS

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125 SOUTH STATE STREET, ROOM 4010
SALT LAKE CITY, UT 84138-1100

MCMILLEN, LLC
1401 SHORELINE DR.
BOISE, ID 83702
OFFICE: 208.342.4214
FAX: 208.342.4216

NRCS AND UDAF
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER
CONSTRUCTION PHASING AND DEWATERING PLAN - ALTS 3 AND 4 REPLACE/REPAIR DAM

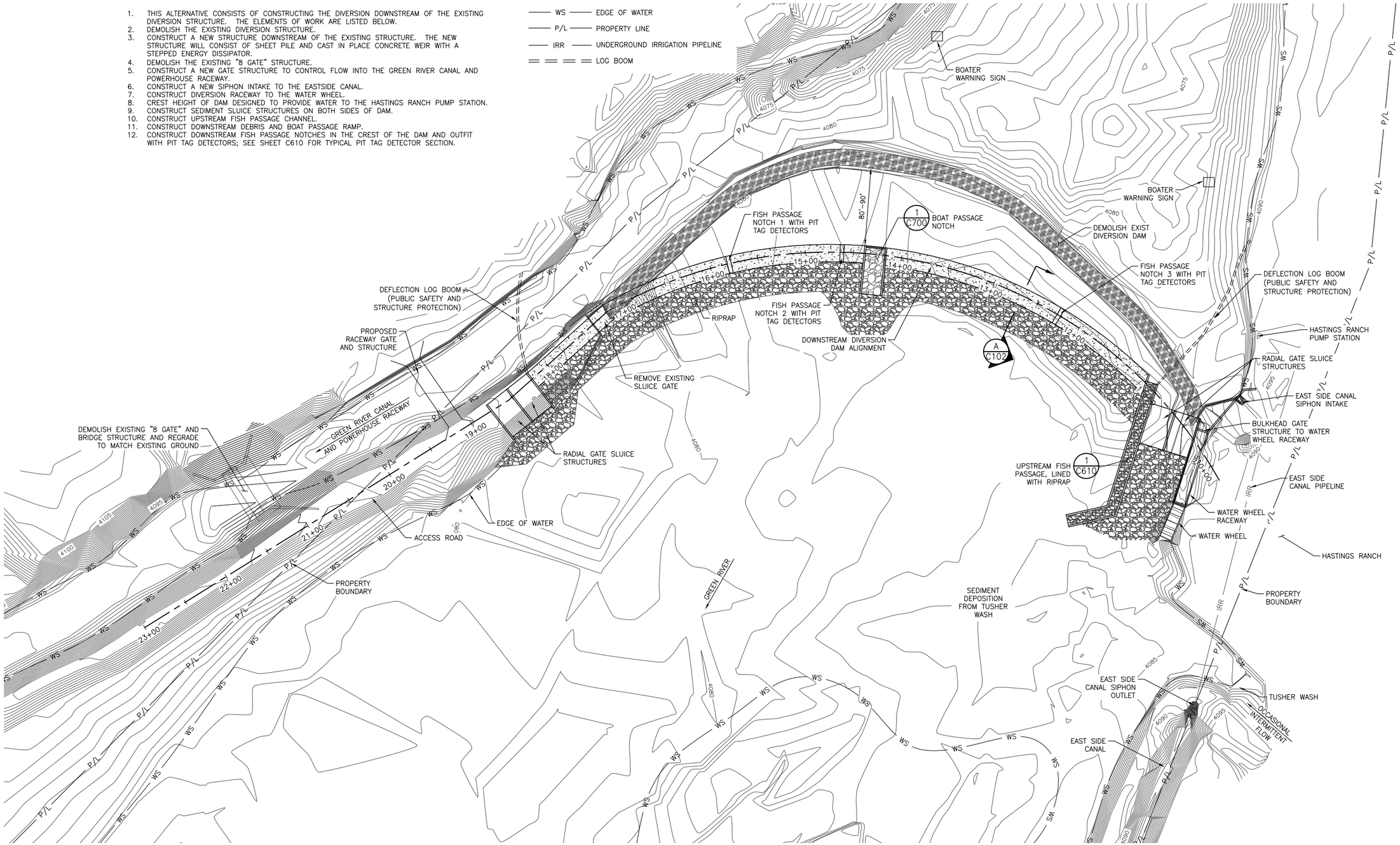
SHEET
GC005

SHEET NOTES:

1. THIS ALTERNATIVE CONSISTS OF CONSTRUCTING THE DIVERSION DOWNSTREAM OF THE EXISTING DIVERSION STRUCTURE. THE ELEMENTS OF WORK ARE LISTED BELOW.
2. DEMOLISH THE EXISTING DIVERSION STRUCTURE.
3. CONSTRUCT A NEW STRUCTURE DOWNSTREAM OF THE EXISTING STRUCTURE. THE NEW STRUCTURE WILL CONSIST OF SHEET PILE AND CAST IN PLACE CONCRETE WEIR WITH A STEPPED ENERGY DISSIPATOR.
4. DEMOLISH THE EXISTING "8 GATE" STRUCTURE.
5. CONSTRUCT A NEW GATE STRUCTURE TO CONTROL FLOW INTO THE GREEN RIVER CANAL AND POWERHOUSE RACEWAY.
6. CONSTRUCT A NEW SIPHON INTAKE TO THE EASTSIDE CANAL.
7. CONSTRUCT DIVERSION RACEWAY TO THE WATER WHEEL.
8. CREST HEIGHT OF DAM DESIGNED TO PROVIDE WATER TO THE HASTINGS RANCH PUMP STATION.
9. CONSTRUCT SEDIMENT SLUICE STRUCTURES ON BOTH SIDES OF DAM.
10. CONSTRUCT UPSTREAM FISH PASSAGE CHANNEL.
11. CONSTRUCT DOWNSTREAM DEBRIS AND BOAT PASSAGE RAMP.
12. CONSTRUCT DOWNSTREAM FISH PASSAGE NOTCHES IN THE CREST OF THE DAM AND OUTFIT WITH PIT TAG DETECTORS; SEE SHEET C610 FOR TYPICAL PIT TAG DETECTOR SECTION.

LEGEND

- WS — EDGE OF WATER
- P/L — PROPERTY LINE
- IRR — UNDERGROUND IRRIGATION PIPELINE
- LOG BOOM



ALT 1 – DOWNSTREAM DIVERSION DAM – SITE PLAN (1 / –)

SCALE: 1"= 50'

0" 50' 100'

FINAL CONCEPT DESIGN
NOT FOR CONSTRUCTION

USDA UDAF

DATE: 28 MAY 2014
CAD FILENAME: _C100.DWG
CONTRACT NUMBER: AG-8943-C-12-0020

DESIGNED BY: K. JENSEN
DRAWN BY: J. LAHMON
CHECKED BY: D. AXNESS
SUBMITTED BY: D. AXNESS

NATURAL RESOURCES CONSERVATION SERVICE
125 SOUTH STATE STREET, RM 4010
SALT LAKE CITY, UT 84138-1100

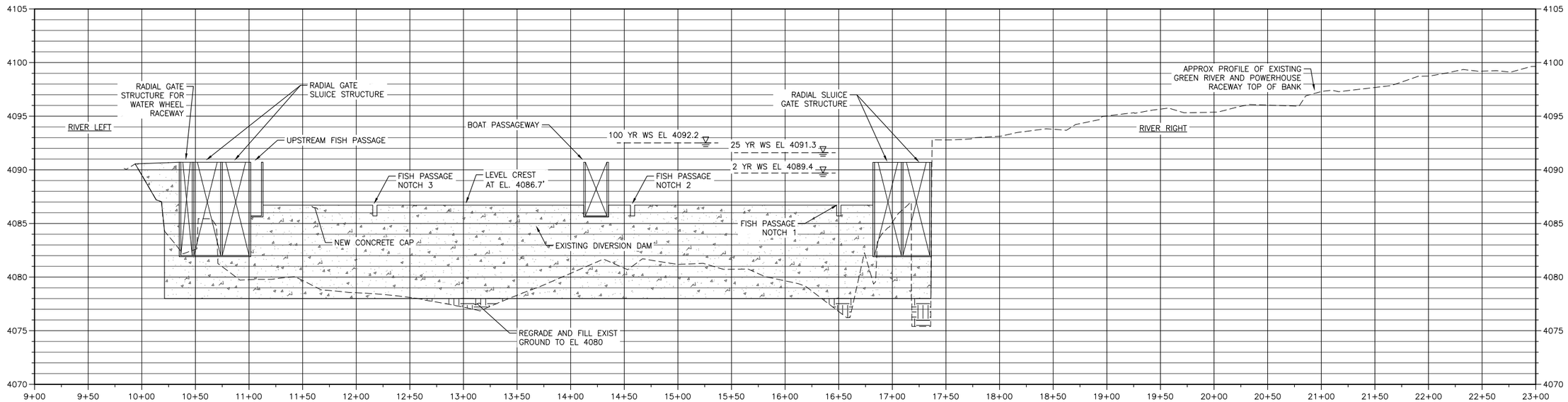
McMILLEN, LLC
1401 SHORELINE DR. BOISE, ID 83702
OFFICE: 208.342.4214
FAX: 208.342.4216

NRCS AND UDAF
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER
ALT 1 - DOWNSTREAM DIVERSION DAM
SITE PLAN

SHEET
C100

SHEET NOTES:

1. FOR FISH PASSAGE NOTCH AND PIT TAG DETAILS, SEE SHEET C610.
2. FOR BOAT PASSAGE DETAILS, SEE SHEET C700.



ALT 1 – DOWNSTREAM DIVERSION DAM PROFILE

SCALE: 1"= 50'H

1"= 5'V

0" 50' 100'

0" 5' 10'

FINAL CONCEPT DESIGN
NOT FOR CONSTRUCTION

USDA

UDAF

DATE: 28 MAY 2014
CAD FILENAME: _C101.DWG
CONTRACT NUMBER: AG-8943-D-12-0020

DESIGNED BY: K. JENSEN
DRAWN BY: J. LAHMON
CHECKED BY: D. AXNESS
SUBMITTED BY: D. AXNESS

NATURAL RESOURCES CONSERVATION SERVICE
125 SOUTH STATE STREET, ROOM 4010
SALT LAKE CITY, UT 84138-1100

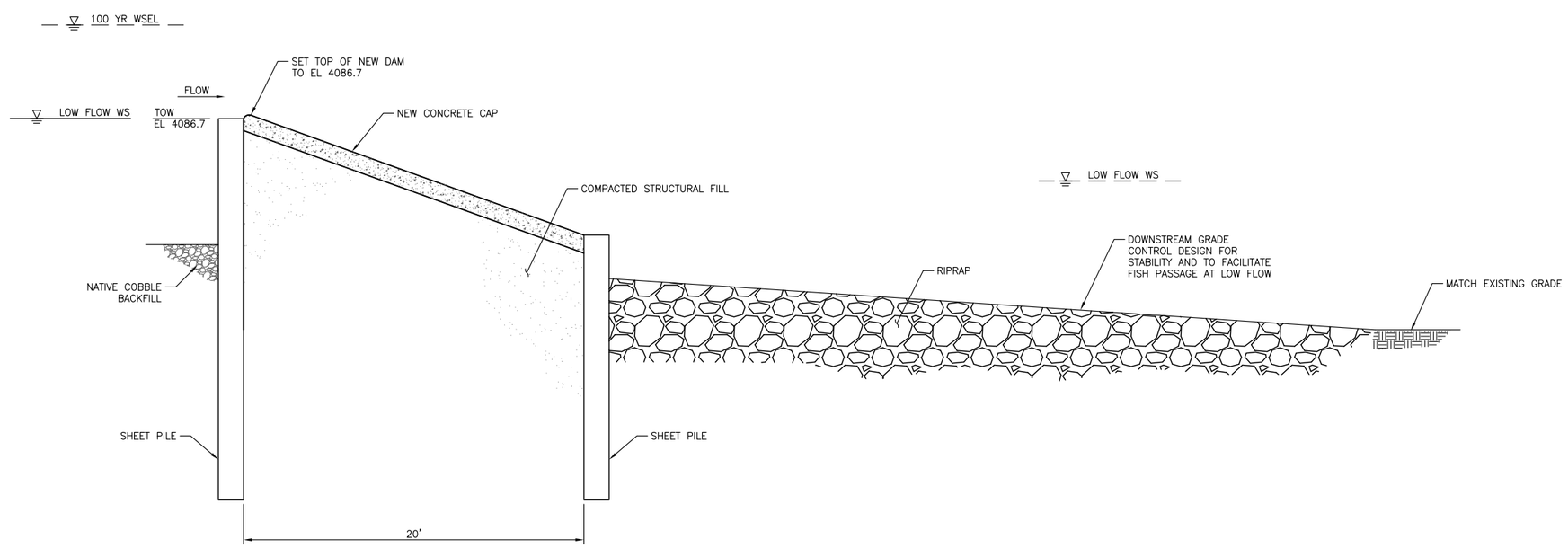
McMILLEN, LLC
1401 SHORELINE DR.
BOISE, ID 83702
OFFICE: 208.342.4214
FAX: 208.342.4216

NRCS AND UDAF
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER
ALT 1 - DOWNSTREAM DIVERSION DAM PROFILE

SHEET
C101

SHEET NOTES:

1. NEW CONCRETE DIVERSION DAM TO BE CAST IN PLACE.
2. RIPRAP TO BE INSTALLED DOWNSTREAM OF DAM AND TO BE SIZED TO 18" TO 24".
3. RIPRAP APRON TO INCLUDE ROCK FILTER LAYERS AS NEEDED.
4. SHEET PILE SPECIFICATIONS DETERMINED IN ORDER TO MEET STABILITY CRITERIA.



ALT 1 – DOWNSTREAM DIVERSION DAM SECTION (A / C100)

SCALE: 1/4"= 1'-0" 0' 4' 8'

FINAL CONCEPT DESIGN
NOT FOR CONSTRUCTION

DATE: 28 MAY 2014
CAD FILENAME: _C102.DWG
CONTRACT NUMBER: AG-8943-C-12-0020

DESIGNED BY: K. JENSEN
DRAWN BY: J. LAHMON
CHECKED BY: D. AXNESS
SUBMITTED BY: D. AXNESS

NATURAL RESOURCES CONSERVATION SERVICE
125 SOUTH STATE STREET, ROOM 4010
SALT LAKE CITY, UT 84138-1100

McMILLEN, LLC
1401 SHORELINE DR.
BOISE, ID 83702
OFFICE: 208.342.4214
FAX: 208.342.4216

NRCS AND UDAF
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER
ALT 1 - DOWNSTREAM DIVERSION DAM SECTION

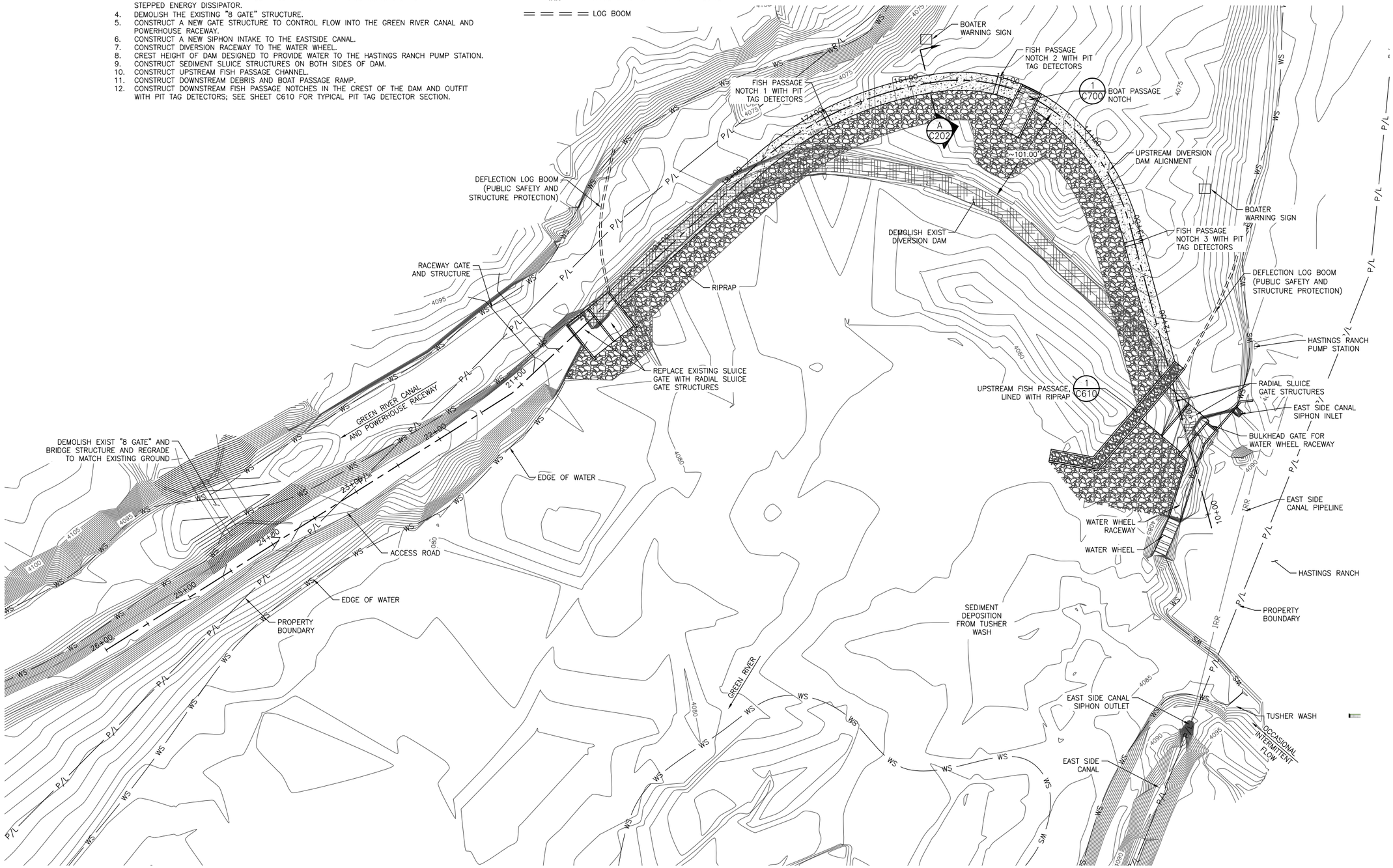
SHEET
C102

SHEET NOTES:

1. THIS ALTERNATIVE CONSISTS OF CONSTRUCTING THE DIVERSION DOWNSTREAM OF THE EXISTING DIVERSION STRUCTURE. THE ELEMENTS OF WORK ARE LISTED BELOW.
2. DEMOLISH THE EXISTING DIVERSION STRUCTURE.
3. CONSTRUCT A NEW STRUCTURE DOWNSTREAM OF THE EXISTING STRUCTURE. THE NEW STRUCTURE WILL CONSIST OF SHEET PILE AND CAST IN PLACE CONCRETE WEIR WITH A STEPPED ENERGY DISSIPATOR.
4. DEMOLISH THE EXISTING "8 GATE" STRUCTURE.
5. CONSTRUCT A NEW GATE STRUCTURE TO CONTROL FLOW INTO THE GREEN RIVER CANAL AND POWERHOUSE RACEWAY.
6. CONSTRUCT A NEW SIPHON INTAKE TO THE EASTSIDE CANAL.
7. CONSTRUCT DIVERSION RACEWAY TO THE WATER WHEEL.
8. CREST HEIGHT OF DAM DESIGNED TO PROVIDE WATER TO THE HASTINGS RANCH PUMP STATION.
9. CONSTRUCT SEDIMENT SLUICE STRUCTURES ON BOTH SIDES OF DAM.
10. CONSTRUCT UPSTREAM FISH PASSAGE CHANNEL.
11. CONSTRUCT DOWNSTREAM DEBRIS AND BOAT PASSAGE RAMP.
12. CONSTRUCT DOWNSTREAM FISH PASSAGE NOTCHES IN THE CREST OF THE DAM AND OUTFIT WITH PIT TAG DETECTORS; SEE SHEET C610 FOR TYPICAL PIT TAG DETECTOR SECTION.

LEGEND

- WS — EDGE OF WATER
- P/L — PROPERTY LINE
- IRR — UNDERGROUND IRRIGATION PIPELINE
- LOG BOOM



ALT 2 – UPSTREAM DIVERSION DAM – SITE PLAN

SCALE: 1"= 50'

0" 50' 100'

1 –

FINAL CONCEPT DESIGN
NOT FOR CONSTRUCTION

USDA UDAF

DATE: 28 MAY 2014
CAD FILENAME: _C200.DWG
CONTRACT NUMBER: AG-8943-D-12-0020

DESIGNED BY: K. JENSEN
DRAWN BY: J. LAWMON
CHECKED BY: D. AXNESS
SUBMITTED BY: D. AXNESS

NATURAL RESOURCES CONSERVATION SERVICE
125 SOUTH STATE STREET, ROOM 4010
SALT LAKE CITY, UT 84138-1100

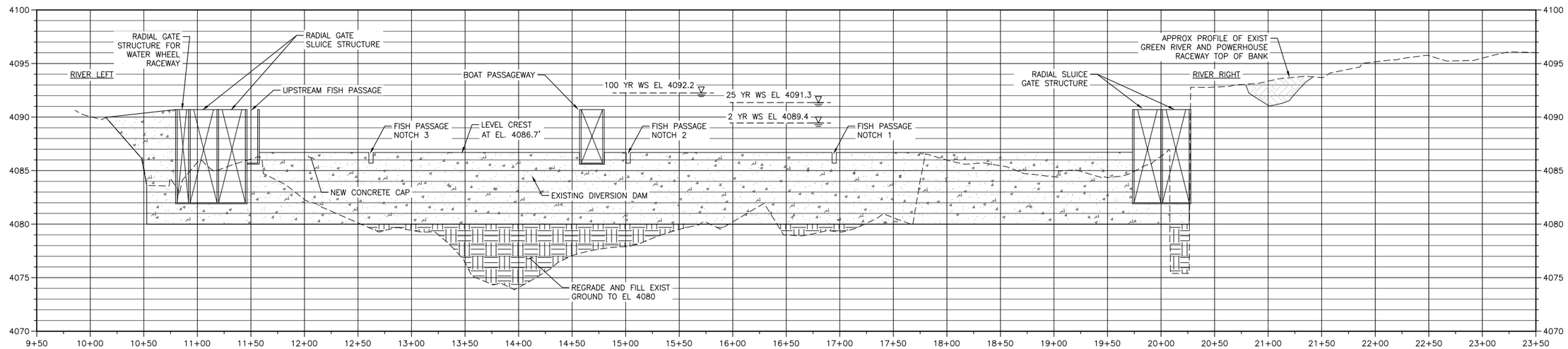
McMILLEN, LLC
1401 SHORELINE DR.
BOISE, ID 83702
OFFICE: 208.342.4214
FAX: 208.342.4216

NRCS AND UDAF
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER
ALT 2 - UPSTREAM DIVERSION DAM
SITE PLAN

SHEET
C200

SHEET NOTES:

1. FOR FISH PASSAGE NOTCH AND PIT TAG DETAILS, SEE SHEET C610.
2. FOR BOAT PASSAGE DETAILS, SEE SHEET C700.
3. WATER SURFACE ELEVATIONS SHOWN ON THIS SHEET ARE APPROXIMATE AND ARE BASED ON HYDRAULIC MODEL RESULTS FOR ALTERNATIVE 1 – DOWNSTREAM DIVERSION DAM



ALT 2 – UPSTREAM DIVERSION DAM PROFILE

SCALE: 1"= 50'H (0" – 50' – 100')

1"= 5'V (0" – 5' – 10')

FINAL CONCEPT DESIGN
NOT FOR CONSTRUCTION

DATE: 28 MAY 2014
CAD FILENAME: _C201.DWG
CONTRACT NUMBER: AG-8943-D-12-0020

DESIGNED BY: K. JENSEN
DRAWN BY: J. LAHMON
CHECKED BY: D. AXNESS
SUBMITTED BY: D. AXNESS

NATURAL RESOURCES CONSERVATION SERVICE
125 SOUTH STATE STREET, ROOM 4010
SALT LAKE CITY, UT 84138-1100

McMILLEN, LLC
1401 SHORELINE DR.
BOISE, ID 83702
OFFICE: 208.342.4214
FAX: 208.342.4216

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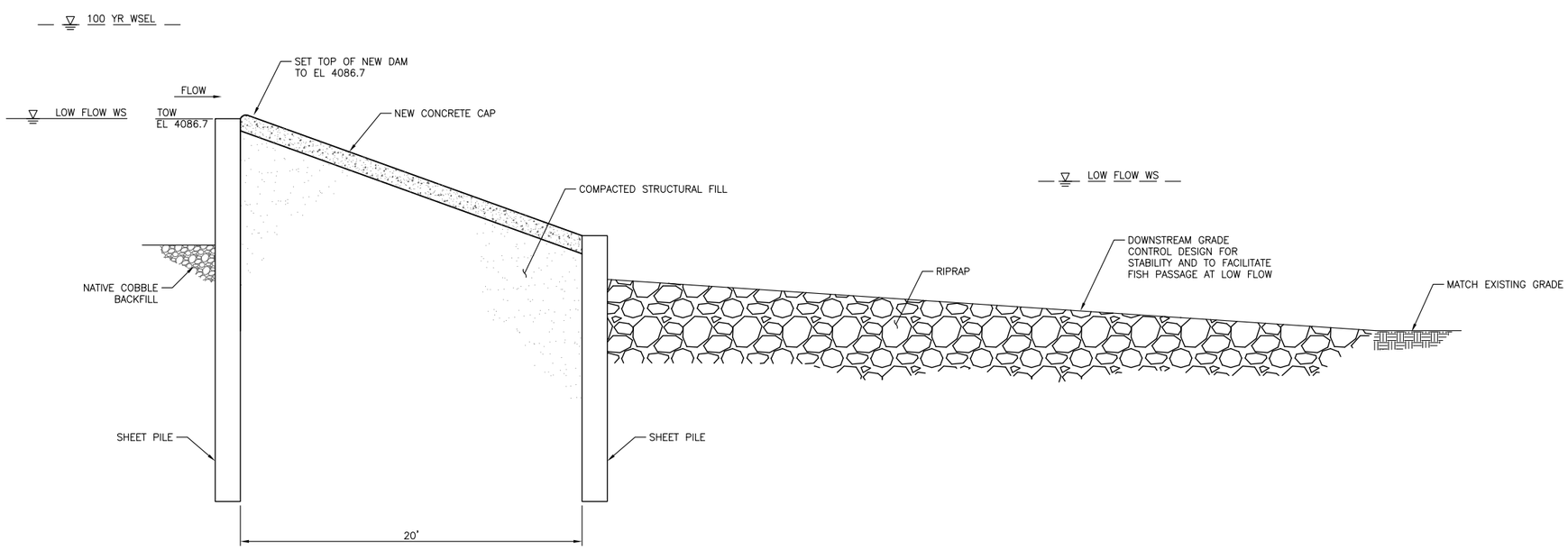
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER
ALT 2 - UPSTREAM DIVERSION DAM PROFILE

SHEET
C201

SHEET NOTES:

1. NEW CONCRETE DIVERSION DAM TO BE CAST IN PLACE.
2. RIPRAP TO BE INSTALLED DOWNSTREAM OF DAM AND TO BE SIZED TO 18" TO 24".
3. RIPRAP APRON TO INCLUDE ROCK FILTER LAYERS AS NEEDED.
4. SHEET PILE SPECIFICATIONS DETERMINED IN ORDER TO MEET STABILITY CRITERIA.



ALT 2 – UPSTREAM DIVERSION DAM SECTION

SCALE: 1/4"= 1'-0"

0' 4' 8'

A C200

FINAL CONCEPT DESIGN
NOT FOR CONSTRUCTION

DATE: 28 MAY 2014
CAD FILENAME: _C202.DWG
CONTRACT NUMBER: AG-8943-D-12-0020

DESIGNED BY: K. JENSEN
DRAWN BY: J. LAHMON
CHECKED BY: D. AXNESS
SUBMITTED BY: D. AXNESS

NATURAL RESOURCES CONSERVATION SERVICE
125 SOUTH STATE STREET, ROOM 4010
SALT LAKE CITY, UT 84138-1100
OFFICE: 208.342.4214
FAX: 208.342.4216
McMILLEN, LLC
1401 SHORELINE DR.
BOISE, ID 83702

NRCS AND UDAF
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER
ALT 2 - UPSTREAM DIVERSION DAM
SECTION

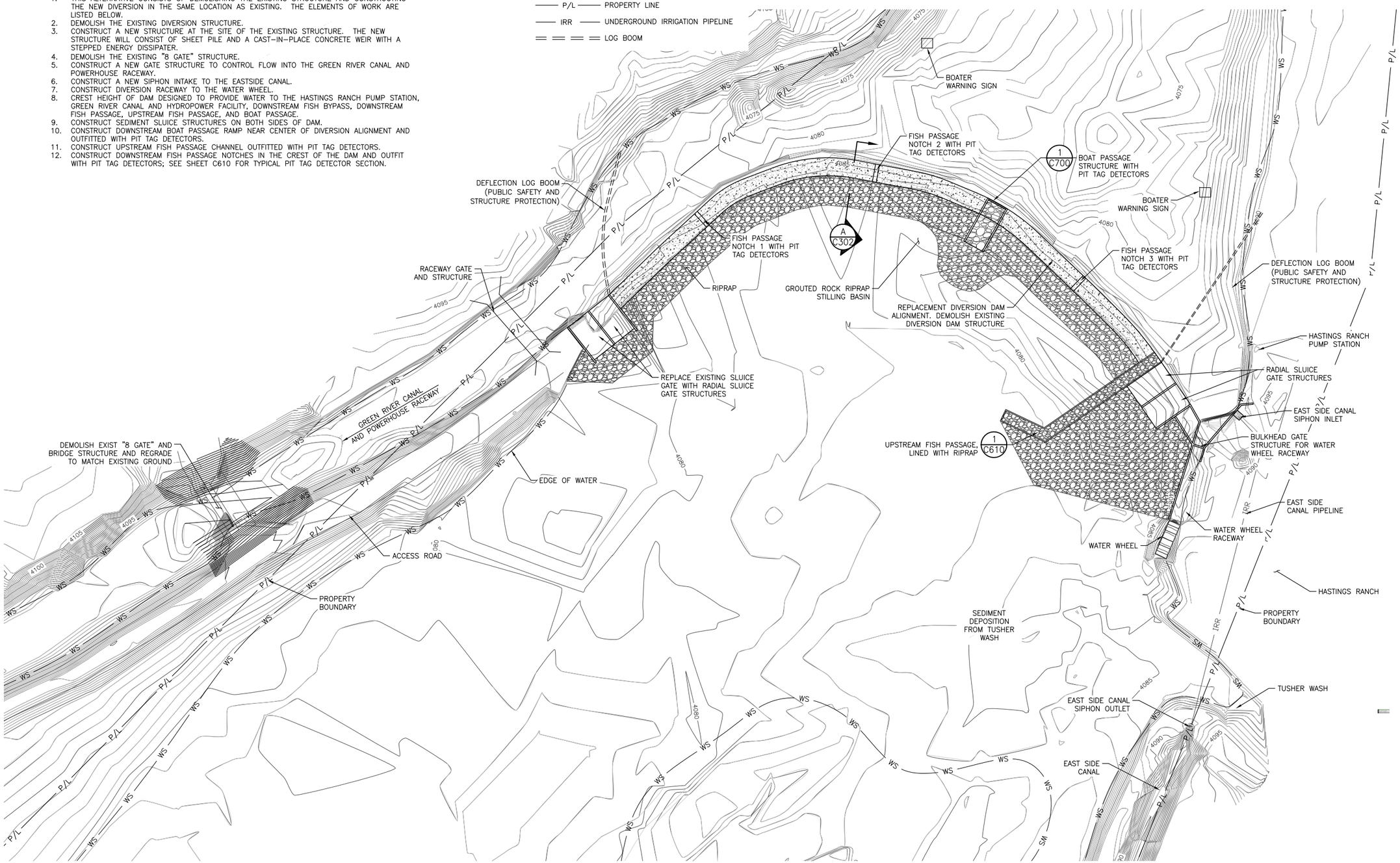
SHEET
C202

SHEET NOTES:

1. THIS ALTERNATIVE CONSISTS OF DEMOLISHING THE EXISTING STRUCTURE AND CONSTRUCTING THE NEW DIVERSION IN THE SAME LOCATION AS EXISTING. THE ELEMENTS OF WORK ARE LISTED BELOW.
2. DEMOLISH THE EXISTING DIVERSION STRUCTURE.
3. CONSTRUCT A NEW STRUCTURE AT THE SITE OF THE EXISTING STRUCTURE. THE NEW STRUCTURE WILL CONSIST OF SHEET PILE AND A CAST-IN-PLACE CONCRETE WEIR WITH A STEPPED ENERGY DISSIPATER.
4. DEMOLISH THE EXISTING "8 GATE" STRUCTURE.
5. CONSTRUCT A NEW GATE STRUCTURE TO CONTROL FLOW INTO THE GREEN RIVER CANAL AND POWERHOUSE RACEWAY.
6. CONSTRUCT A NEW SIPHON INTAKE TO THE EASTSIDE CANAL.
7. CONSTRUCT DIVERSION RACEWAY TO THE WATER WHEEL.
8. CREST HEIGHT OF DAM DESIGNED TO PROVIDE WATER TO THE HASTINGS RANCH PUMP STATION, GREEN RIVER CANAL AND HYDROPOWER FACILITY, DOWNSTREAM FISH BYPASS, DOWNSTREAM FISH PASSAGE, UPSTREAM FISH PASSAGE, AND BOAT PASSAGE.
9. CONSTRUCT SEDIMENT SLUICE STRUCTURES ON BOTH SIDES OF DAM.
10. CONSTRUCT DOWNSTREAM BOAT PASSAGE RAMP NEAR CENTER OF DIVERSION ALIGNMENT AND OUTFITTED WITH PIT TAG DETECTORS.
11. CONSTRUCT UPSTREAM FISH PASSAGE CHANNEL OUTFITTED WITH PIT TAG DETECTORS.
12. CONSTRUCT DOWNSTREAM FISH PASSAGE NOTCHES IN THE CREST OF THE DAM AND OUTFIT WITH PIT TAG DETECTORS; SEE SHEET C610 FOR TYPICAL PIT TAG DETECTOR SECTION.

LEGEND

- WS — EDGE OF WATER
- P/L — PROPERTY LINE
- IRR — UNDERGROUND IRRIGATION PIPELINE
- LOG BOOM



ALT 3 – REPLACE EXISTING DIVERSION DAM – SITE PLAN (1 / –)

SCALE: 1"= 50'

0" 50' 100'

FINAL CONCEPT DESIGN
NOT FOR CONSTRUCTION

DATE: 28 MAY 2014
CAD FILENAME: _C300.DWG
CONTRACT NUMBER: AG-8943-D-12-0020

DESIGNED BY: K. JENSEN
DRAWN BY: J. LAHMON
CHECKED BY: D. AXNESS
SUBMITTED BY: D. AXNESS

NATURAL RESOURCES CONSERVATION SERVICE
125 SOUTH STATE STREET, ROOM 4010
SALT LAKE CITY, UT 84138-1100

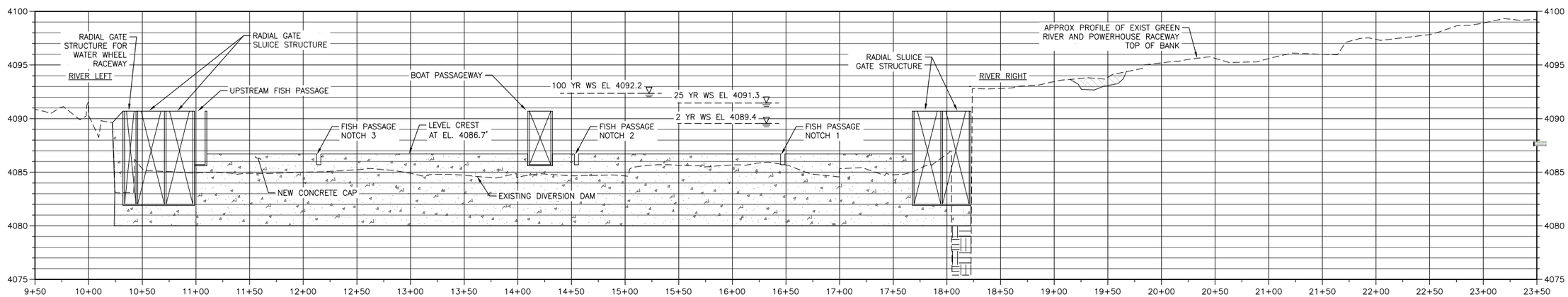
McMILLEN, LLC
1401 SHORELINE DR.
BOISE, ID 83702
OFFICE: 208.342.4214
FAX: 208.342.4216

NRCS AND UDAF
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER
ALT 3 - REPLACE EXISTING DIVERSION DAM
SITE PLAN

SHEET
C300

SHEET NOTES:

1. FOR FISH PASSAGE NOTCH AND PIT TAG DETAILS, SEE SHEET C610.
2. FOR BOAT PASSAGE DETAILS, SEE SHEET C700.
3. WATER SURFACE ELEVATIONS SHOWN ON THIS SHEET ARE APPROXIMATE AND ARE BASED ON HYDRAULIC MODEL RESULTS FOR ALTERNATIVE 1 – DOWNSTREAM DIVERSION DAM



ALT 3 – REPLACE EXISTING DIVERSION DAM PROFILE

SCALE: 1"= 50'H (0" – 50' – 100')

1"= 5'V (0" – 5' – 10')

FINAL CONCEPT DESIGN
NOT FOR CONSTRUCTION

USDA
UDAF

DATE: 28 MAY 2014
CAD FILENAME: _C301.DWG
CONTRACT NUMBER: AG-8943-D-12-0020

DESIGNED BY: K. JENSEN
DRAWN BY: J. LAHMON
CHECKED BY: D. AXNESS
SUBMITTED BY: D. AXNESS

NATURAL RESOURCES CONSERVATION SERVICE
125 SOUTH STATE STREET, ROOM 4010
SALT LAKE CITY, UT 84138-1100

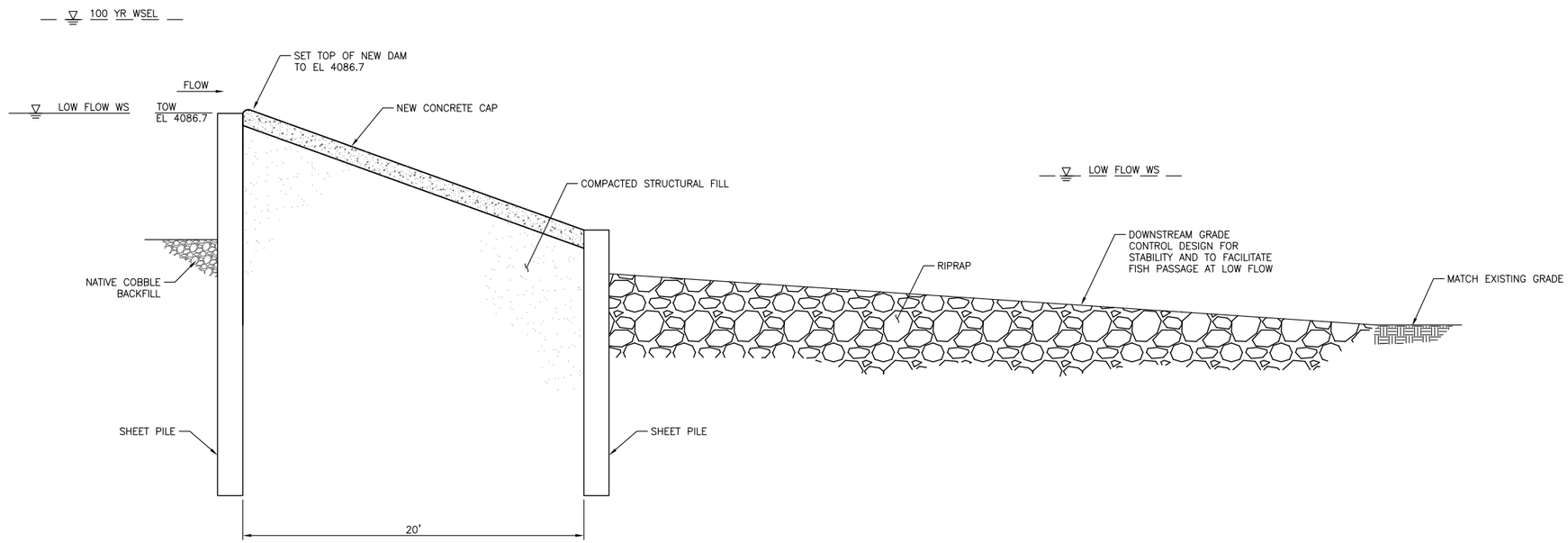
McMILLEN, LLC
1401 SHORELINE DR.
BOISE, ID 83702
OFFICE: 208.342.4214
FAX: 208.342.4216

NRCS AND UDAF
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER
ALT 3 - REPLACE EXISTING DIVERSION DAM PROFILE

SHEET
C301

SHEET NOTES:

1. NEW CONCRETE DIVERSION DAM TO BE CAST IN PLACE.
2. RIPRAP TO BE INSTALLED DOWNSTREAM OF DAM AND TO BE SIZED TO 18" TO 24".
3. RIPRAP APRON TO INCLUDE ROCK FILTER LAYERS AS NEEDED.
4. SHEET PILE SPECIFICATIONS DETERMINED IN ORDER TO MEET STABILITY CRITERIA.



ALT 3 – REPLACE EXISTING DIVERSION DAM – SECTION (A / C300)

SCALE: 1/4"= 1'-0" 0' 4' 8'

FINAL CONCEPT DESIGN
NOT FOR CONSTRUCTION

DATE: 28 MAY 2014
CAD FILENAME: _C302.DWG
CONTRACT NUMBER: AG-8943-D-12-0020

DESIGNED BY: K. JENSEN
DRAWN BY: J. LAHMON
CHECKED BY: D. AXNESS
SUBMITTED BY: D. AXNESS

NATURAL RESOURCES CONSERVATION SERVICE
1234 SOUTH 800 WEST, ROOM 4010
SALT LAKE CITY, UT 84138-1100

McMILLEN, LLC
1401 SHORELINE DR. BOISE, ID 83702
OFFICE: 208.342.4214
FAX: 208.342.4216

NRCS AND UDAF
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER
ALT 3 - REPLACE EXISTING DIVERSION DAM SECTION

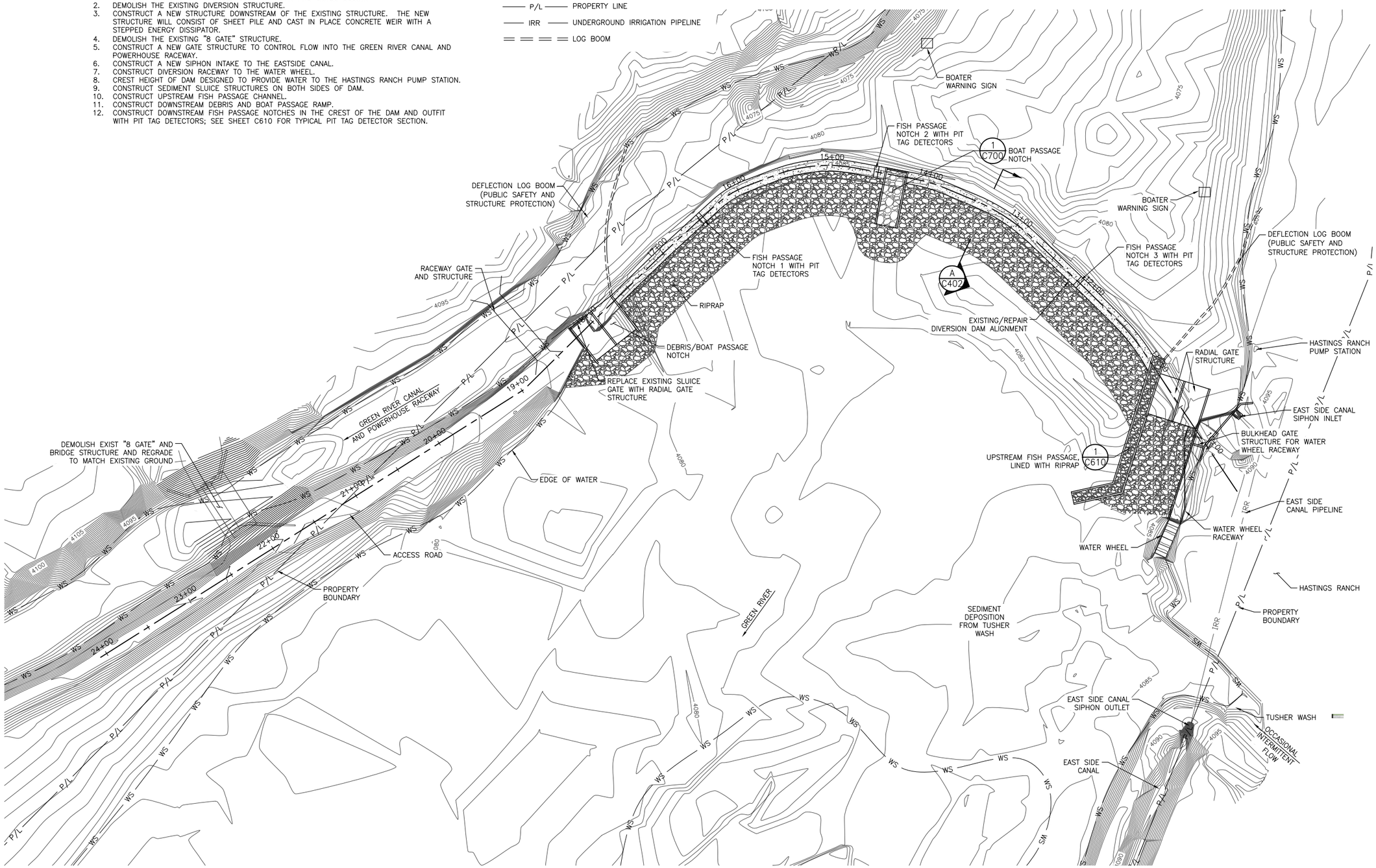
SHEET
C302

SHEET NOTES:

1. THIS ALTERNATIVE CONSISTS OF CONSTRUCTING THE DIVERSION DOWNSTREAM OF THE EXISTING DIVERSION STRUCTURE. THE ELEMENTS OF WORK ARE LISTED BELOW.
2. DEMOLISH THE EXISTING DIVERSION STRUCTURE.
3. CONSTRUCT A NEW STRUCTURE DOWNSTREAM OF THE EXISTING STRUCTURE. THE NEW STRUCTURE WILL CONSIST OF SHEET PILE AND CAST IN PLACE CONCRETE WEIR WITH A STEPPED ENERGY DISSIPATOR.
4. DEMOLISH THE EXISTING "8 GATE" STRUCTURE.
5. CONSTRUCT A NEW GATE STRUCTURE TO CONTROL FLOW INTO THE GREEN RIVER CANAL AND POWERHOUSE RACEWAY.
6. CONSTRUCT A NEW SIPHON INTAKE TO THE EASTSIDE CANAL.
7. CONSTRUCT DIVERSION RACEWAY TO THE WATER WHEEL.
8. CREST HEIGHT OF DAM DESIGNED TO PROVIDE WATER TO THE HASTINGS RANCH PUMP STATION.
9. CONSTRUCT SEDIMENT SLUICE STRUCTURES ON BOTH SIDES OF DAM.
10. CONSTRUCT UPSTREAM FISH PASSAGE CHANNEL.
11. CONSTRUCT DOWNSTREAM DEBRIS AND BOAT PASSAGE RAMP.
12. CONSTRUCT DOWNSTREAM FISH PASSAGE NOTCHES IN THE CREST OF THE DAM AND OUTFIT WITH PIT TAG DETECTORS; SEE SHEET C610 FOR TYPICAL PIT TAG DETECTOR SECTION.

LEGEND

- WS — EDGE OF WATER
- P/L — PROPERTY LINE
- IRR — UNDERGROUND IRRIGATION PIPELINE
- LOG BOOM



ALT 4 – REPAIR EXISTING DIVERSION DAM – SITE PLAN

SCALE: 1"= 40'

0" 40' 80'

1 –

FINAL CONCEPT DESIGN
NOT FOR CONSTRUCTION

DATE: 28 MAY 2014
CAD FILENAME: _C400.DWG
CONTRACT NUMBER: AG-8943-D-12-0020

DESIGNED BY: K. JENSEN
DRAWN BY: J. LAHMON
CHECKED BY: D. AXNESS
SUBMITTED BY: D. AXNESS

NATURAL RESOURCES CONSERVATION SERVICE
125 SOUTH STATE STREET, ROOM 4010
SALT LAKE CITY, UT 84138-1100

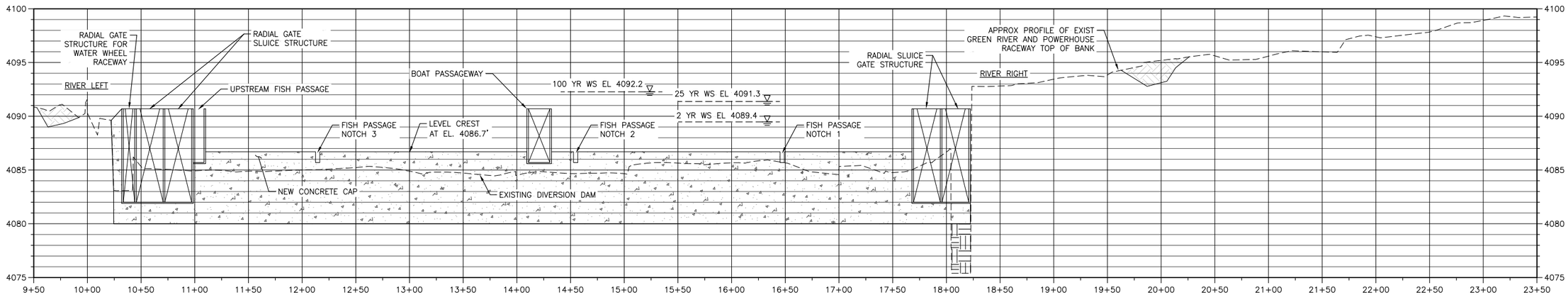
McMILLEN, LLC
1401 SHORELINE DR.
BOISE, ID 83702
OFFICE: 208.342.4214
FAX: 208.342.4216

NRCS AND UDAF
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER
ALT 4 - REPAIR EXISTING DIVERSION DAM
SITE PLAN

SHEET
C400

SHEET NOTES:

1. FOR FISH PASSAGE NOTCH AND PIT TAG DETAILS, SEE SHEET C610.
2. FOR BOAT PASSAGE DETAILS, SEE SHEET C700.
3. WATER SURFACE ELEVATIONS SHOWN ON THIS SHEET ARE APPROXIMATE AND ARE BASED ON HYDRAULIC MODEL RESULTS FOR ALTERNATIVE 1 – DOWNSTREAM DIVERSION DAM



ALT 4 – REPAIR EXISTING DIVERSION DAM PROFILE

SCALE: 1"= 50'H (0" – 50' – 100')

1"= 5'V (0" – 5' – 10')

FINAL CONCEPT DESIGN
NOT FOR CONSTRUCTION

DATE: 28 MAY 2014
CAD FILENAME: _CA01.DWG
CONTRACT NUMBER: AG-8943-D-12-0020

DESIGNED BY: K. JENSEN
DRAWN BY: J. LAHMON
CHECKED BY: D. AXNESS
SUBMITTED BY: D. AXNESS

NATURAL RESOURCES CONSERVATION SERVICE
125 SOUTH STATE STREET, ROOM 4010
SALT LAKE CITY, UT 84138-1100

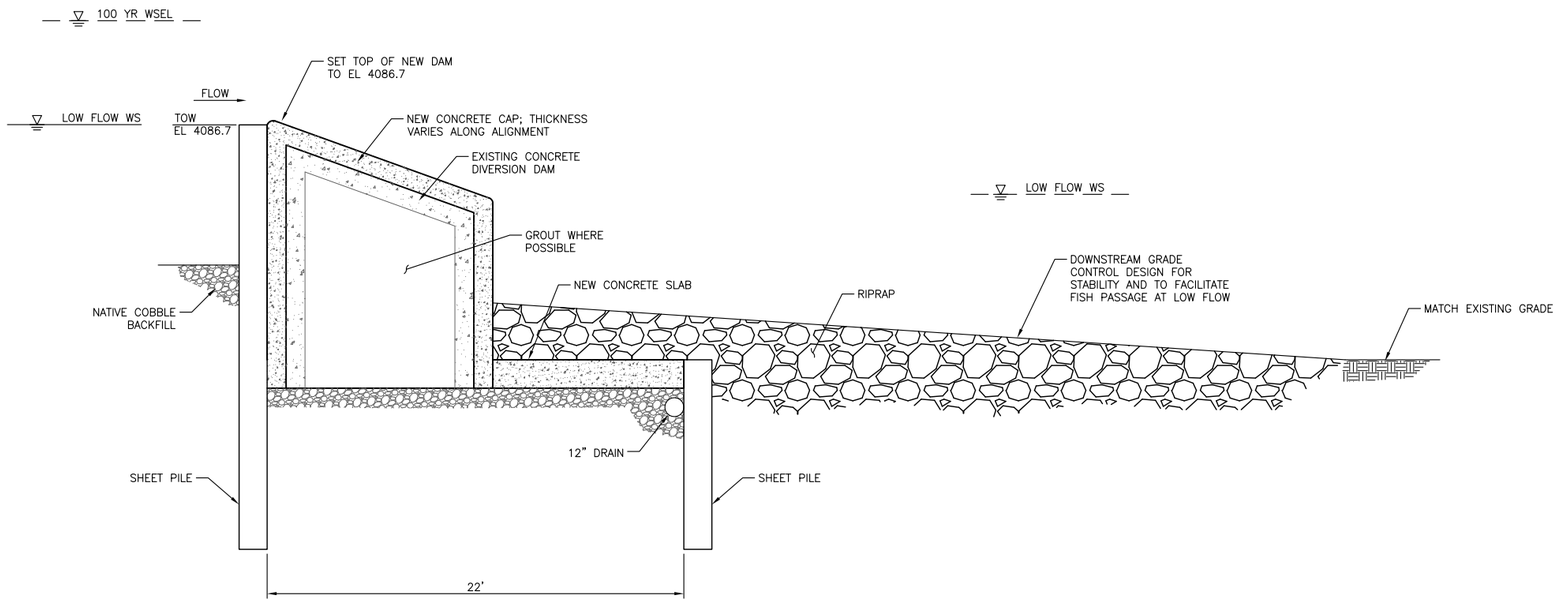
McMILLEN, LLC
1401 SHORELINE DR. BOISE, ID 83702
OFFICE: 208.342.4214
FAX: 208.342.4216

NRCS AND UDAF
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER
ALT 4 - REPAIR EXISTING DIVERSION PROFILE

SHEET
C401

SHEET NOTES:

1. NEW CONCRETE DIVERSION DAM TO BE CAST IN PLACE.
2. RIPRAP TO BE INSTALLED DOWNSTREAM OF DAM AND TO BE SIZED TO 18" TO 24".
3. RIPRAP APRON TO INCLUDE ROCK FILTER LAYERS AS NEEDED.
4. SHEET PILE SPECIFICATIONS DETERMINED IN ORDER TO MEET STABILITY CRITERIA.



ALT 4 – REPAIR EXISTING DIVERSION DAM– SECTION (A / C400)

SCALE: 1/4"= 1'-0" 0' 4' 8'

FINAL CONCEPT DESIGN
NOT FOR CONSTRUCTION

DATE: 28 MAY 2014
CAD FILENAME: _C402.DWG
CONTRACT NUMBER: AG-8943-D-12-0020

DESIGNED BY: K. JENSEN
DRAWN BY: J. LAHMON
CHECKED BY: D. AXNESS
SUBMITTED BY: D. AXNESS

NATURAL RESOURCES CONSERVATION SERVICE
125 SOUTH STATE STREET, ROOM 4010
SALT LAKE CITY, UT 84138-1100

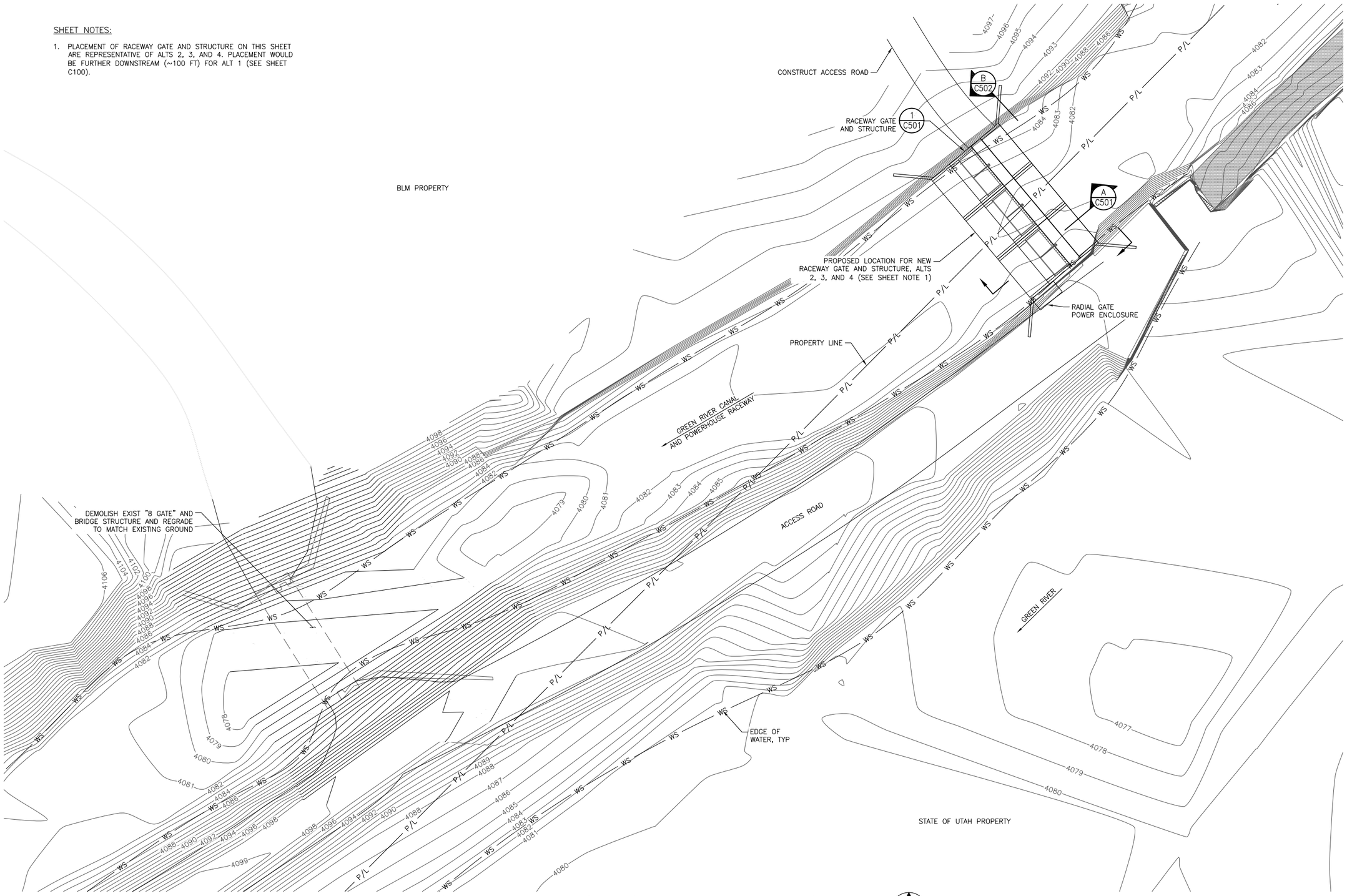
McMILLEN, LLC
1401 SHORELINE DR.
BOISE, ID 83702
OFFICE: 208.342.4214
FAX: 208.342.4216

NRCS AND UDAF
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER
ALT 4 - REPAIR EXISTING DIVERSION DAM
SECTION

SHEET
C402

SHEET NOTES:

1. PLACEMENT OF RACEWAY GATE AND STRUCTURE ON THIS SHEET ARE REPRESENTATIVE OF ALTS 2, 3, AND 4. PLACEMENT WOULD BE FURTHER DOWNSTREAM (~100 FT) FOR ALT 1 (SEE SHEET C100).



RACEWAY GATE AND STRUCTURE SITE PLAN

SCALE: 1"= 20'

0" 20' 40'

1 / –

N

FINAL CONCEPT DESIGN
NOT FOR CONSTRUCTION

USDA

UDAF

DATE: 28 MAY 2014
CAD FILENAME: _C500.DWG
CONTRACT NUMBER: AG-8943-D-12-0020

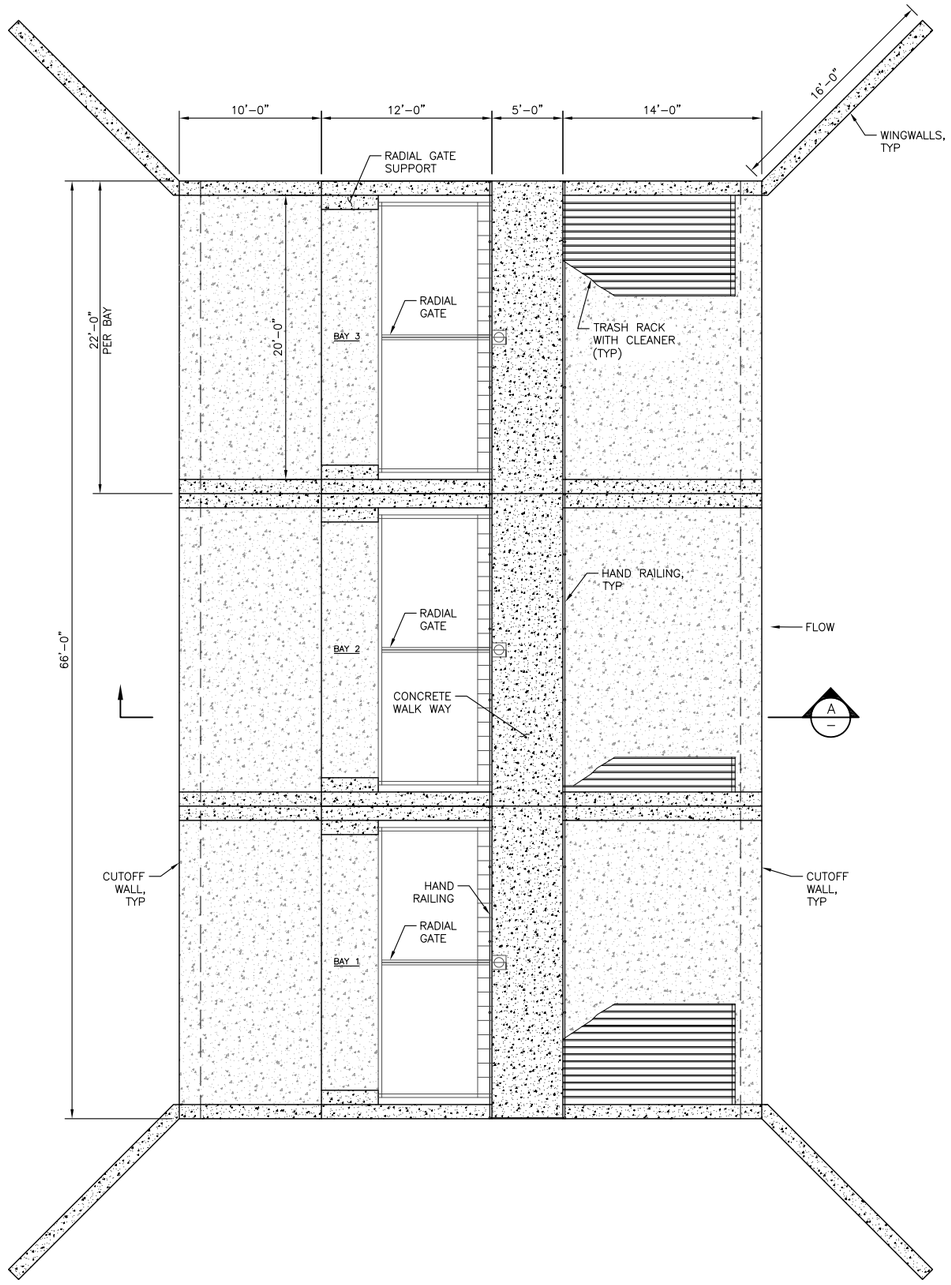
DESIGNED BY: K. JENSEN
DRAWN BY: J. LAHMON
CHECKED BY: D. AXNESS
SUBMITTED BY: D. AXNESS

NATURAL RESOURCES CONSERVATION SERVICE
1234 SOUTH 975 WEST, PO BOX 4410
SALT LAKE CITY, UT 84139-1100

McMILLEN, LLC
1401 SHORELINE DR.
BOISE, ID 83702
OFFICE: 208.342.4214
FAX: 208.342.4216

NRCS AND UDAF
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER
RACEWAY GATE AND STRUCTURE
SITE PLAN

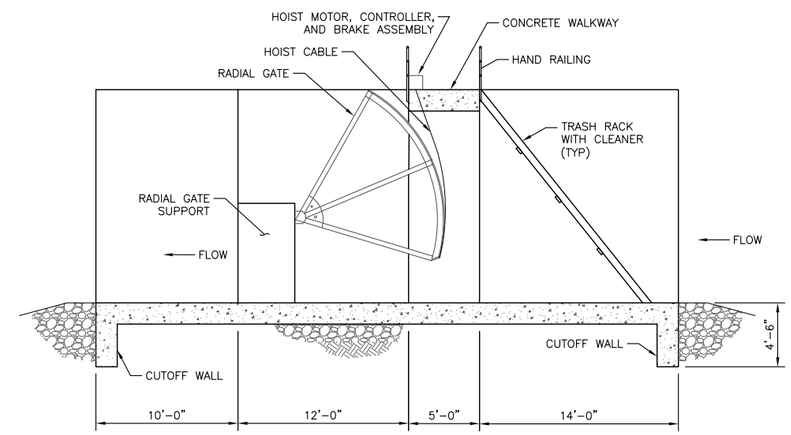
SHEET
C500



OUTLET STRUCTURE WITH RADIAL GATE

SCALE: NTS

1 C500



SECTION

SCALE: NTS

A C500

FINAL CONCEPT DESIGN
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DATE: 28 MAY 2014
CAD FILENAME: _C501.DWG
CONTRACT NUMBER: AG-8943-D-12-0020

DESIGNED BY: K. JENSEN
DRAWN BY: J. LAHMON
CHECKED BY: D. AXNESS
SUBMITTED BY: D. AXNESS

NATURAL RESOURCES CONSERVATION SERVICE
125 SOUTH STATE STREET, ROOM 4010
SALT LAKE CITY, UT 84138-1100

McMILLEN, LLC
1401 SHOREline DR.
BOISE, ID 83702
OFFICE: 208.342.4214
FAX: 208.342.4216

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GREEN RIVER DIVERSION REHABILITATION
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GREEN RIVER
RACEWAY GATE AND STRUCTURE
SECTIONS AND DETAILS

SHEET
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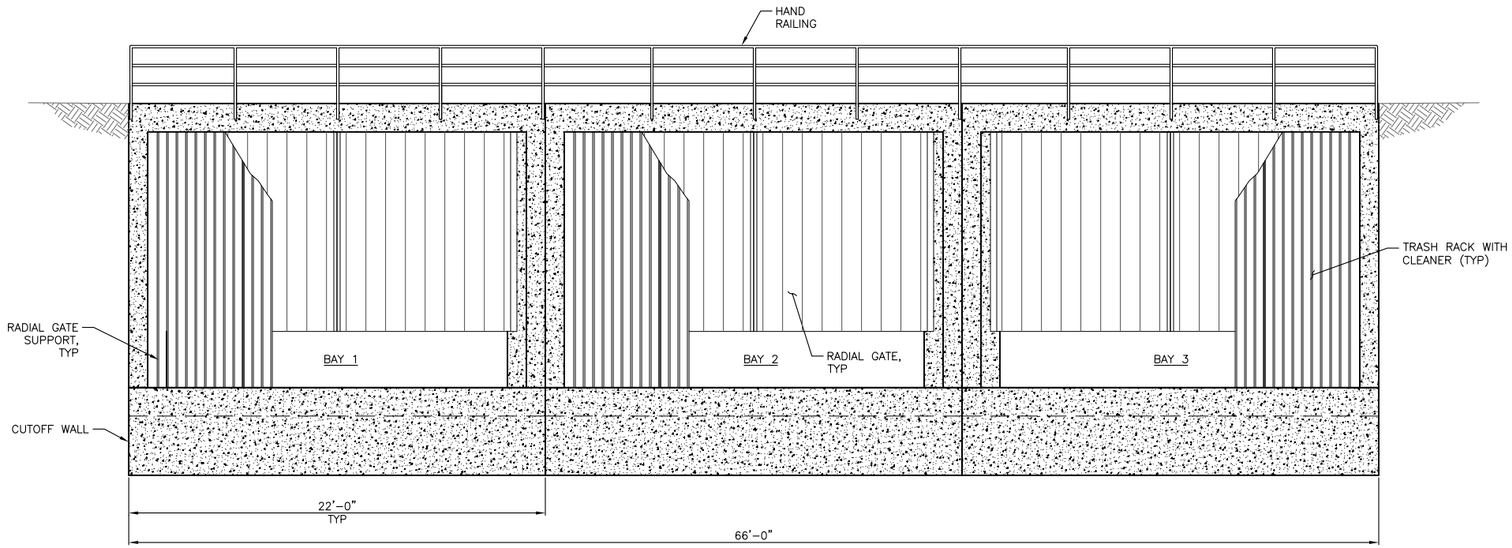

SECTION

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FINAL CONCEPT DESIGN
NOT FOR CONSTRUCTION

DATE: 28 MAY 2014
CAD FILENAME: _C502.DWG
CONTRACT NUMBER: AG-8943-D-12-0020

DESIGNED BY: K. JENSEN
DRAWN BY: J. LAHMON
CHECKED BY: D. AXNESS
SUBMITTED BY: D. AXNESS

NATURAL RESOURCES CONSERVATION SERVICE
125 SOUTH STATE STREET, ROOM 4010
SALT LAKE CITY, UT 84138-1100

McMILLEN, LLC
1401 SHORELINE DR.
BOISE, ID 83702
OFFICE: 208.342.4214
FAX: 208.342.4216

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GREEN RIVER DIVERSION REHABILITATION
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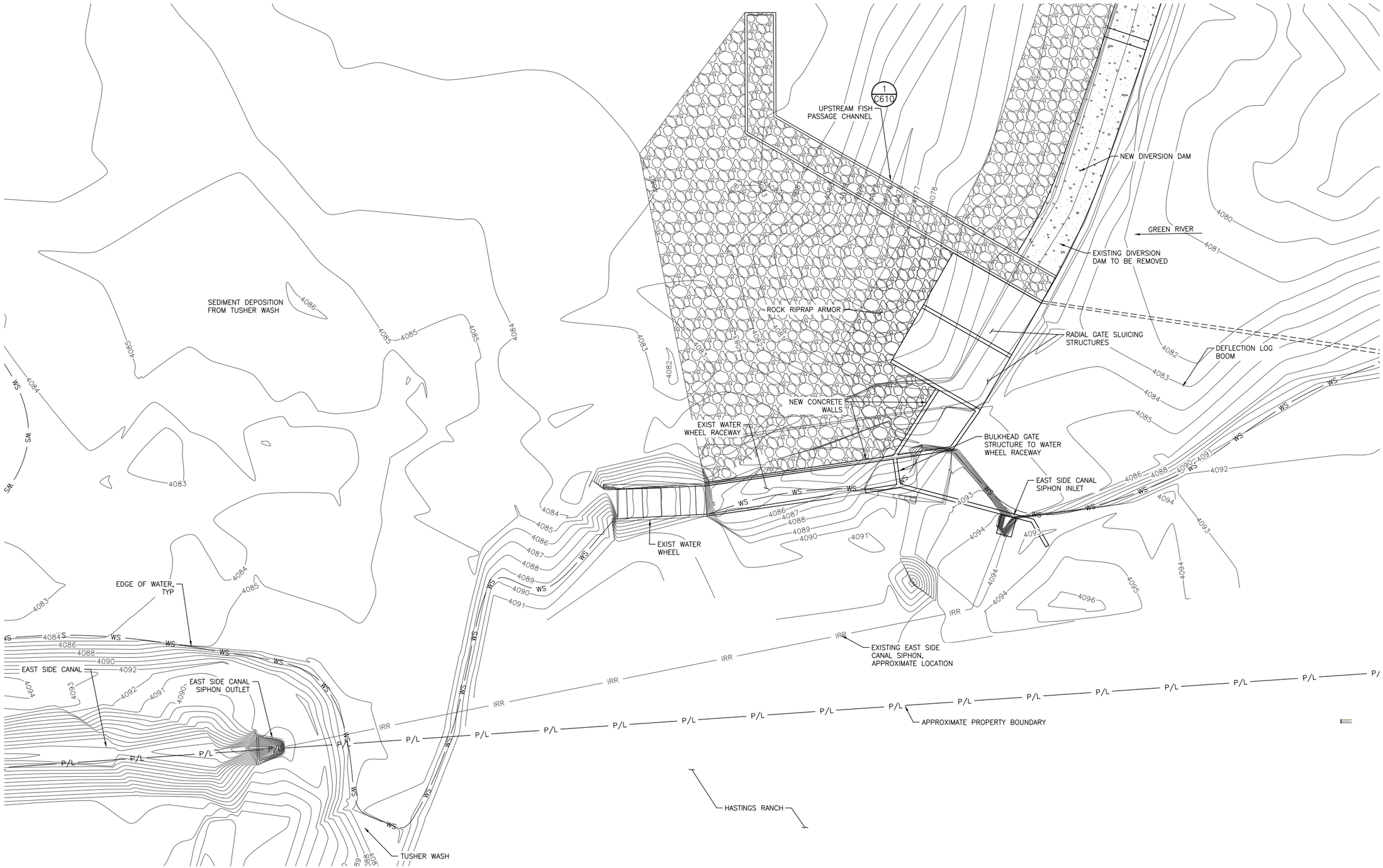
GREEN RIVER
RACEWAY GATE AND STRUCTURE
SECTIONS

SHEET
C502



EAST END PLAN

SCALE: 1"= 20'

0' 20' 40'

1
–

FINAL CONCEPT DESIGN
NOT FOR CONSTRUCTION

DATE: 28 MAY 2014
CAD FILENAME: _C600.DWG
CONTRACT NUMBER: AG-8243-C-12-0020

DESIGNED BY: K. JENSEN
DRAWN BY: J. LAHMON
CHECKED BY: D. AXNESS
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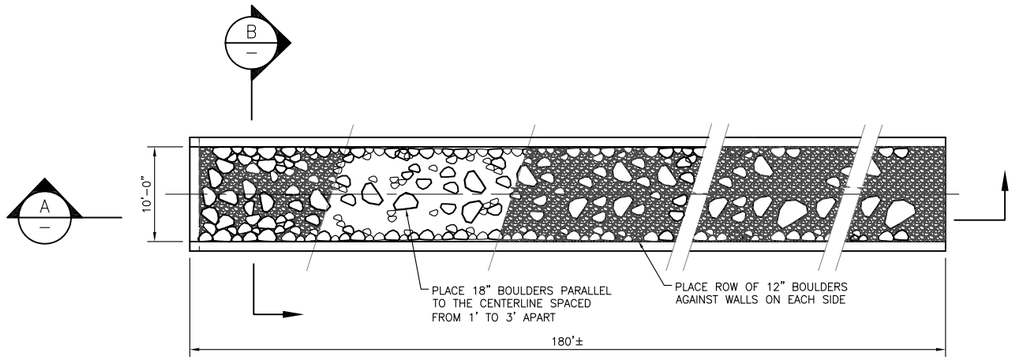
NATURAL RESOURCES CONSERVATION SERVICE
125 SOUTH STATE STREET, ROOM 4010
SALT LAKE CITY, UT 84138-1100

McMILLEN, LLC
1401 SHORELINE DR.
BOISE, ID 83702
OFFICE: 208.342.4214
FAX: 208.342.4216

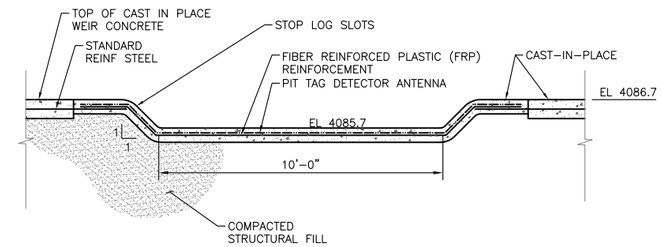
NRCS AND UDAF
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER
EAST END PLAN

SHEET
C600



UPSTREAM FISH PASSAGE PLAN (1 / C100)

0' 8' 16'



TYPICAL DOWNSTREAM FISH PASSAGE SECTION (2 / C100)

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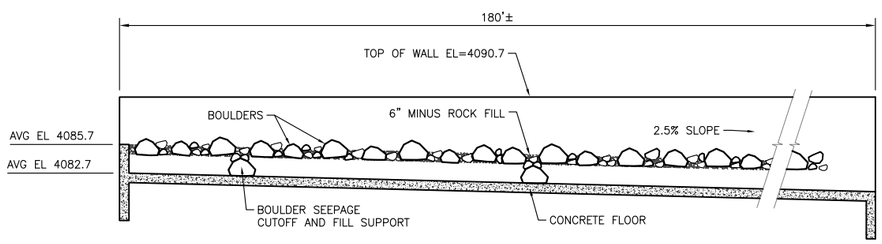

SECTION (A / –)

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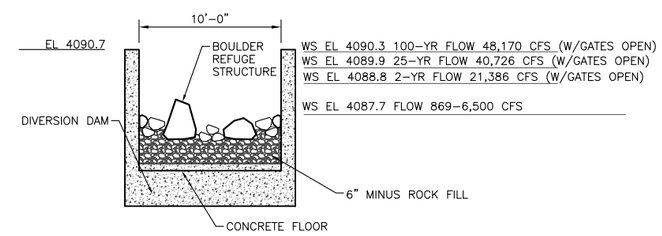

SECTION (B / –)

0' 4' 8'

FINAL CONCEPT DESIGN
NOT FOR CONSTRUCTION

USDA UDAF

DATE: 28 MAY 2014
CAD FILENAME: _C610.DWG
CONTRACT NUMBER: AG-8943-D-12-0020

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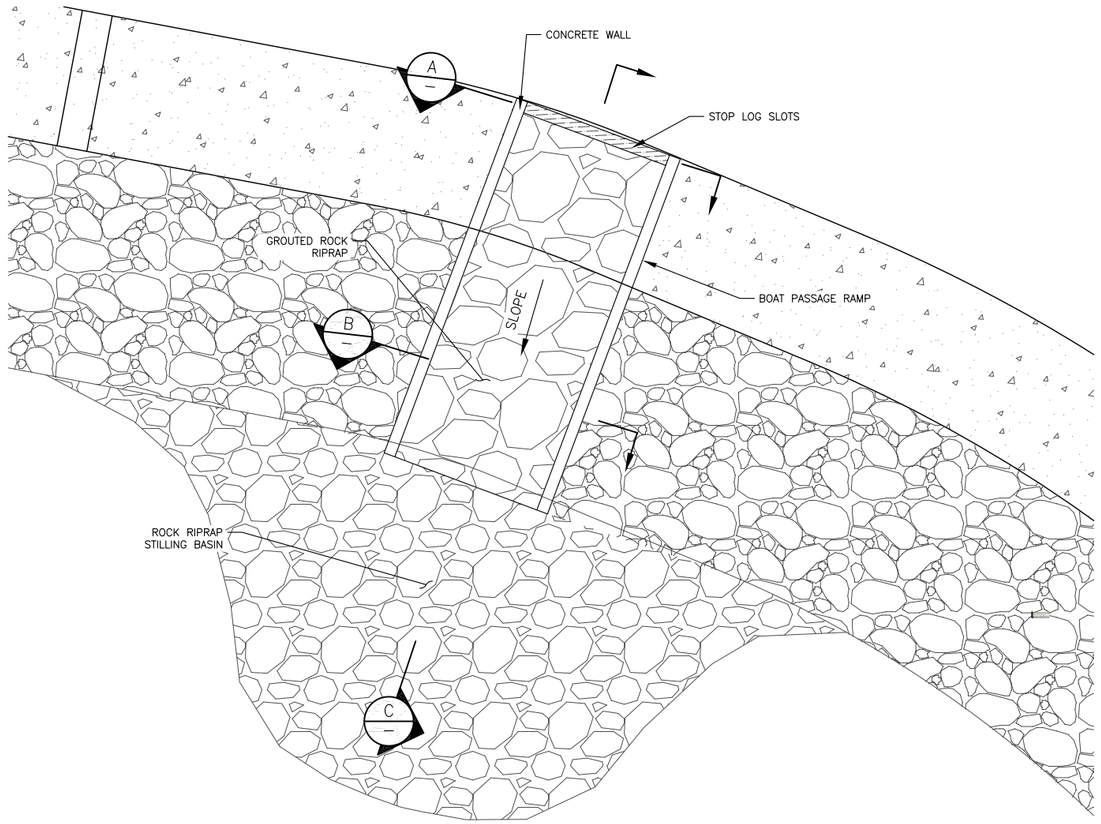
DRAWN BY: J. LAHMON
CHECKED BY: D. AXNESS
SUBMITTED BY: D. AXNESS

NATURAL RESOURCES CONSERVATION SERVICE
125 SOUTH STATE STREET, ROOM 4010
SALT LAKE CITY, UT 84138-1100

McMILLEN, LLC
1401 SHORELINE DR.
BOISE, ID 83702
OFFICE: 208.342.4214
FAX: 208.342.4216

NRCS AND UDAF
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER
FISH PASSAGE STRUCTURE
PLAN AND SECTIONS

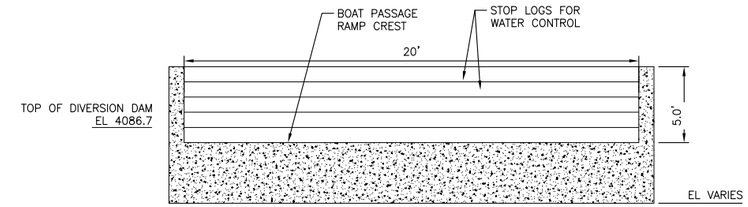
SHEET
C610



BOAT PASSAGE PLAN

0' 10' 20'

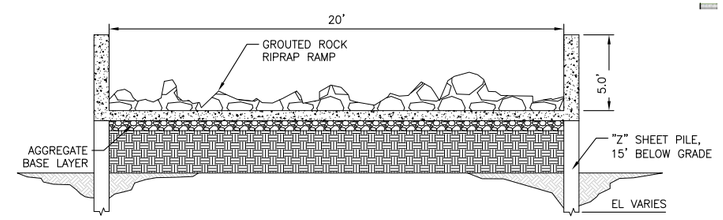
1 / CC100



BOAT PASSAGE SECTION

NTS

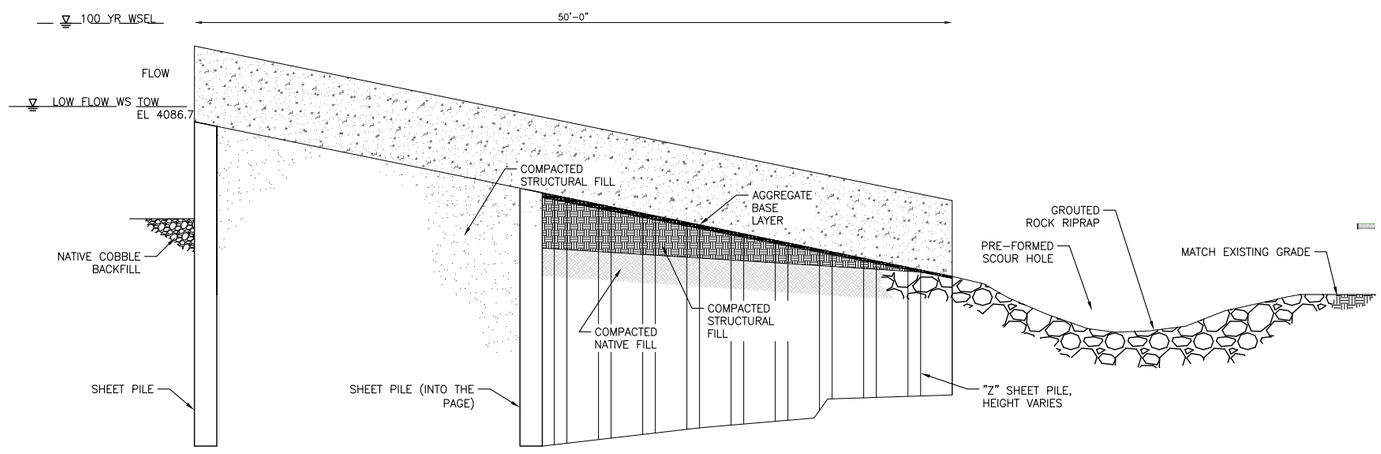
A / –



BOAT PASSAGE SECTION

NTS

B / –



BOAT PASSAGE SECTION

0' 5' 10'

C / –

FINAL CONCEPT DESIGN
NOT FOR CONSTRUCTION

DATE: 28 MAY 2014
CAD FILENAME: _C700.DWG
CONTRACT NUMBER: AG-8943-D-12-0020

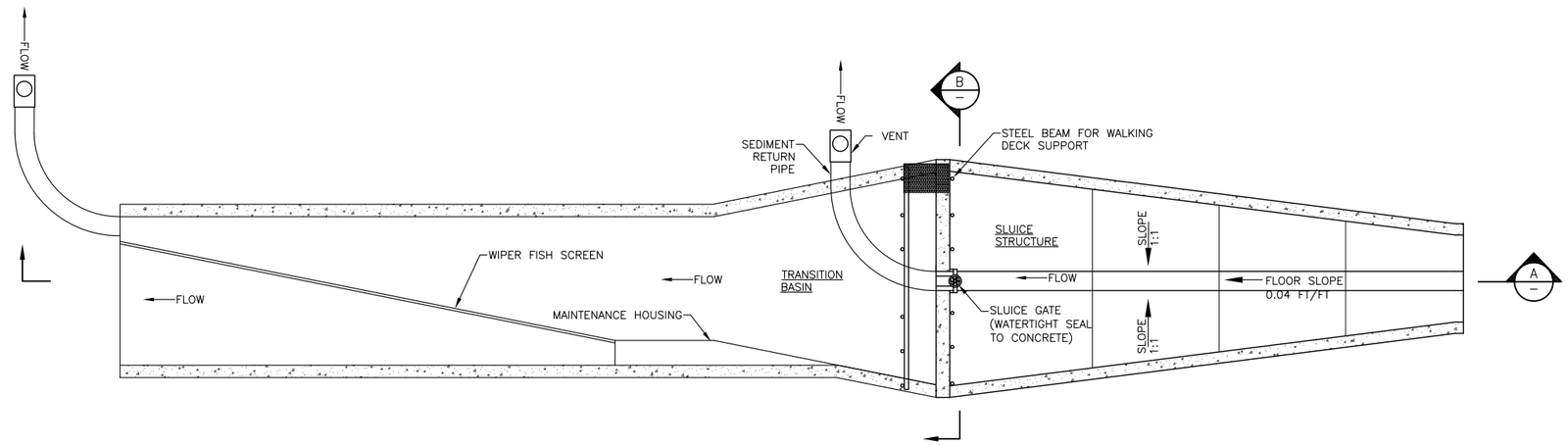
DESIGNED BY: K. JENSEN
DRAWN BY: J. LAYMON
CHECKED BY: D. AXNESS
SUBMITTED BY: D. AXNESS

NATURAL RESOURCES CONSERVATION SERVICE
125 SOUTH STATE STREET, ROOM 4010
SALT LAKE CITY, UT 84138-1100

McMILLEN, LLC
1401 SHORELINE DR.
BOISE, ID 83702
OFFICE: 208.342.4214
FAX: 208.342.4216

NRCS AND UDAF
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER
BOAT PASSAGE STRUCTURE
PLAN AND SECTIONS

SHEET
C700



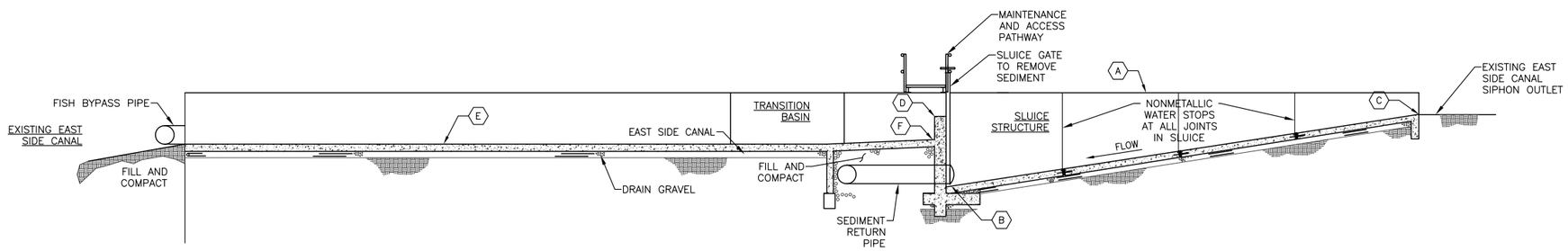
SHEET KEY NOTES:

A TOP OF WALLS
B TOP OF FLOOR
C TOP OF FLOOR
D CREST OF WEIR
E BASIN FLOOR
F BASIN FLOOR

BOAT PASSAGE PLAN

SCALE: NTS

1 / SC107



SECTION

SCALE: NTS

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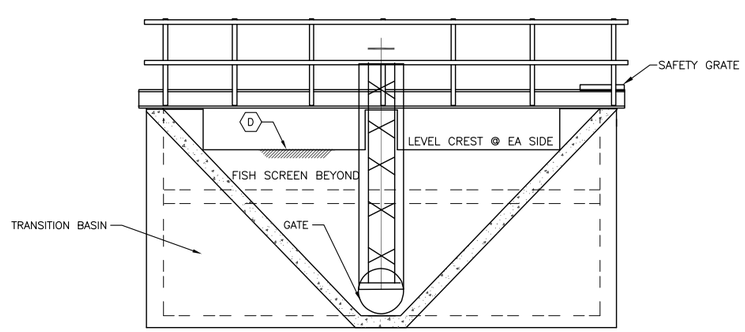

SECTION

SCALE: NTS

B

FINAL CONCEPT DESIGN
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DATE: 28 MAY 2014
CAD FILENAME: _C800.DWG
CONTRACT NUMBER: AG-8543-D-12-0020

DESIGNED BY: K. JENSEN
DRAWN BY: J. LAHMON
CHECKED BY: D. ANNESS
SUBMITTED BY: D. ANNESS

NATURAL RESOURCES CONSERVATION SERVICE
125 SOUTH STATE STREET, ROOM 4010
SALT LAKE CITY, UT 84138-1100

McMILLEN, LLC
1401 SHORELINE DR.
BOISE, ID 83702
OFFICE: 208.342.4214
FAX: 208.342.4216

NRCS AND UDAF
GREEN RIVER DIVERSION REHABILITATION
GRAND AND EMERY COUNTIES, UTAH
GREEN RIVER
EAST SIDE SLUICE / FISH BARRIER STRUCTURE

SHEET
C800

APPENDIX B

HYDROLOGY MEMO

MCMILLEN, LLC

To:		Project:	NRCS Green River EWP, Grand and Emory Counties, Utah
From:	Dan Axness	Cc:	File
Date:	May 28, 2014	Contract No:	AG-8D43-D-12-0020
Subject:	NRCS Green River Diversion Dam Rehabilitation Hydrology Technical Memo		

1.0 INTRODUCTION

The following technical memo is intended to present the hydrological analyses conducted for the Natural Resources Conservation Service (NRCS) Green River Diversion Dam Rehabilitation Concept Design Project. The memo discusses the regulated and unregulated hydrology observed at the Green River Diversion Structure, the competing water demands associated with the project, and the likelihood of the project meeting these competing demands.

2.0 GREEN RIVER HYDROLOGY

Flaming Gorge Dam was completed in 1965, after which flows in the Green River were regulated due to water storage in Flaming Gorge Reservoir. Peak discharges above the Green River Diversion Dam were therefore estimated using the HEC-SSP program (USACE 2010) for the years 1965 through 2009. HEC-SSP applies the methods outlined in Bulletin #17B (USGS 1982) to a time series of flow data in order to calculate the discharge for various annual return periods. Results are given in Table 1 for the 2-, 25-, 50-, and 100-yr events. Results in the table are similar to results published elsewhere (cf. Gerner et al. 2006).

Table 1. Green River Peak Discharges for Various Return Periods, Estimated Using StreamStats and HEC-SSP

Return Period	Discharge
2-Yr	21,386
25-Yr	40,726
50-Yr	44,603
100-Yr	48,170

Instantaneous flood frequencies were also calculated for each month using flow data obtained from USGS gaging station 09315000 at Green River, UT. Results are given in Table 2 below. From the table, the hydrograph in the Green River basin appears to have two peaks (bimodal). One peak occurs in the late Fall when the area experiences frequent rainfall events, while the other, larger peak occurs in the Spring, when snowpack begins to melt. Results also show that the largest flows occur in June, when 1% of flows will be greater than 41,530 cfs.

Table 2. Instantaneous Flood Frequencies by Month for the Green River at USGS Gaging Station 09315000

		% of Flows Less Than					
	Month	**1**	**5**	**10**	**50**	**95**	**99**
Discharge (cfs)	**January**	916	1,312	1,633	2,924	5,189	6,162
	February	1,253	1,648	1,853	3,094	6,058	8,144
	March	2,000	2,243	2,485	4,052	8,361	10,905
	April	2,352	2,719	2,985	5,272	12,585	16,030
	May	3,340	4,055	5,032	11,505	24,903	34,562
	June	1,703	3,038	4,020	13,907	32,475	41,530
	July	907	1,363	1,619	4,205	16,315	32,681
	August	764	1,139	1,327	2,884	6,938	9,983
	September	1,022	1,228	1,395	2,628	5,068	6,743
	October	1,307	1,479	1,703	3,023	7,068	7,976
	November	1,532	1,729	1,866	3,228	6,367	7,087
	December	939	1,260	1,441	2,810	5,824	6,452

The flood frequencies presented in Table 2 are reported for the years 1964-2012 and are indicative of the flood frequencies seen at the project site for medium to high flows. However, they are not representative of the frequency of low flows. In April of 2006, a Record of Decision (ROD) was filed for a Final Environmental Impact Statement (FEIS) that proposed operational changes to Flaming Gorge Dam that would, among other things, regulate the amount of water flowing through "Reach 3" of the Green River, which includes the Green River Diversion (USBR 2006). Specifically, the FEIS recommends a minimum flow through "Reach 3" of 1,300 cfs in dry years (±40%), with successively higher minimum thresholds in wetter years. Because the implementation of the FEIS is assumed to dictate flows in the Green River, flow data analyzed here are restricted to the past eight years, after the ROD was filed in 2006.

The overall demand to be met at the Green River Diversion includes water allocation for water rights holders, fish bypass in the hydropower raceway or Green River Canal, sediment sluicing, boat passage, upstream fish passage, and downstream fish passage. The estimated demand from perfected water rights at the Green River Diversion is 819 cfs, as detailed in Table 3 below.

Table 3. Perfected Water Rights at the Green River Diversion

Water Right	License No.	Priority Date	CFS	Use
Chris Dunham, Howard Hastings, Clark Ross	92-74	1/1/1879	5	Irrigation
East Side Irrigation Company	92-4	2/8/1906	6	Irrigation
Chris Dunham, Howard Hastings, Clark Ross	92-43	7/29/1912	60	Hydropower Plant
Bruce and Dorothy Nelson	92-21	5/16/1932	2	Irrigation
Lee Thayn	91-113	12375	35	Irrigation
Green River Canal Company	91-294	6/18/1952	60	Irrigation, Stockwater and Domestic
Eastside High Ditch Irrigation Company	92-622	8/7/1958	5	Irrigation
Eastside High Ditch Irrigation Company	92-633	8/7/1958	7	Irrigation
Gunnison Butte Mutual Irrigation Company	91-5075	8/7/1958	4	Irrigation
Gunnison Butte Mutual Irrigation Company	92-638	8/7/1958	11	Irrigation
Lee Thayn	91-4130	11/25/1974	600	Hydropower Plant
Lee Thayn	91-5161	8/7/1985	4	Irrigation
Green River Canal Company	91-5043	11/3/2000	20	Sluice Canal and Raceway
Total			**819**	

A conservative estimate of the water demands for fish bypass in the hydropower raceway or the Green River Canal is 50 cfs and in the East Side Canal is 20 cfs. Assuming that a boat passageway only requires 1 foot of depth for safe passage, and that the ramp can be as long as 80 feet, the allocation required for the boat passage structure is 147 cfs. Assuming a trapezoidal fishway with channel width of 10 feet, a 40:1 channel slope (2.5%), and a Manning's roughness coefficient of 0.07, the water allocation required to allow upstream fish passage would be 30 cfs. Assuming a weir coefficient of 2.67 over the crest of the diversion structure, the required flow rate for three 10-foot wide notches spread out across the dam is 40 cfs. The total water demand at the diversion structure is therefore 1,106 cfs (see Table 4 below).

Table 4. Water Demands at the Green River Diversion Structure

Use	Demand (cfs)
Water Rights Holders	819
Fish Bypass – Green River Canal	50
Fish Bypass – East Side Canal	20
Boat Passage	147
Upstream Fish Passage	30
Downstream Fish Passage	40
TOTAL	**1,106**

Flow rates during the growing season from April 1 through October 31 at USGS Gage 09315000 at Green River, UT and at USGS Gage 09261000 near Jensen, UT are depicted in Figure 1 below. Only flows during the growing season are shown because the growing season represents the time period during which irrigation, fish migration and boat passage all take place. The figure also shows the base flow recommended in "Reach 3" by the FEIS during dry years (1,300 cfs), along with the combined demand at the diversion structure (1,106 cfs) for comparison. From the figure, the recommended base flow of 1,300 cfs was not met on a total of fifteen days since April, 2006. However, the flows at the diversion structure required to meet the demands associated with this project (1,106 cfs) have been met every day since the ROD went into effect in 2006.

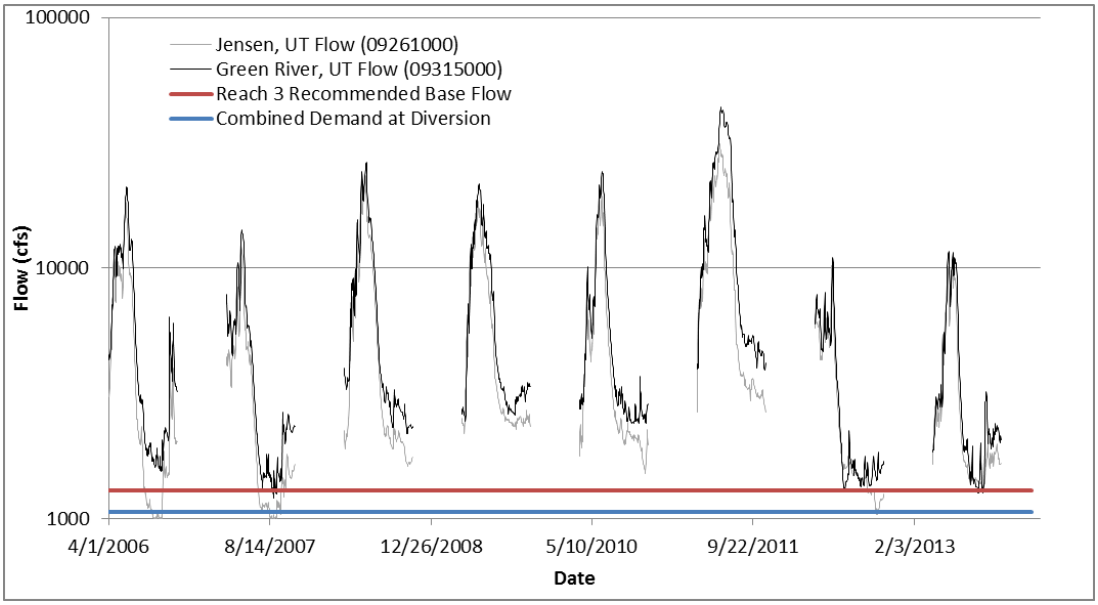

Figure 1. Flow Rates at USGS Gage 09315000 at Green River, UT since the Record of Decision

Figure 1 also indicates a relationship between flows near Jensen, UT and flows at Green River, UT, such that peaks and troughs in the hydrograph of each gage correspond fairly well. This is further evidenced by Figure 2 below, which shows the flow at Green River, UT as a function of the flow near Jensen, UT during the growing season since 2006. This relationship is important because the flows in "Reach 2" (i.e. near Jensen, UT) are the first priority laid out in the FEIS. Additionally, baseflows in "Reach 2" are allowed to fluctuate by ±40%. Thus, the 900 cfs minimum threshold in "Reach 2" in dry years could translate to an actual minimum flow of 540 cfs near Jensen, UT. It is therefore of interest what this effective low flow near Jensen would translate to at the diversion structure. From the regression equation given in Figure 2, 540 cfs corresponds to a flow rate of 1,132 cfs at the Green River Diversion Structure. This flow rate is still larger than the 1,106 cfs demand of the present project. However, it should be stressed that, although the regression relationship given in the figure is strong (R2=0.93), the possibility exists that flows at the diversion structure could fall below the demand of 1,106 cfs, should flows in "Reach 2" reach -40% of their baseflow target in dry years. However, such a possibility does seem unlikely, given the record of flows since the ROD was implemented in 2006 and the large fraction of regulated flow evident at low flows.

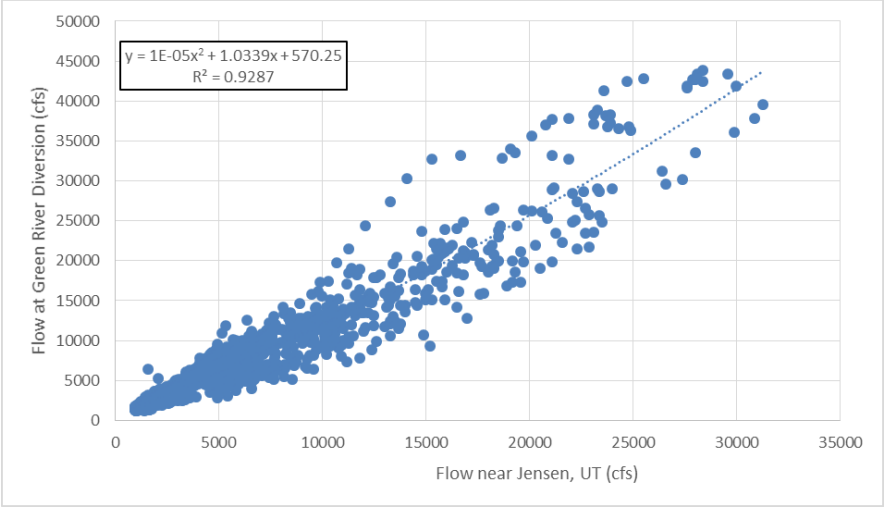

Figure 2. Green River Flow Rates at Green River, UT as a Function of Flows near Jensen, UT

3.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the analyses described in this memo, the minimum flow expected at the Green River Diversion structure is 1,132 cfs, assuming flows near Jensen, UT are 40% below the minimum target baseflow in dry years and the functional relationship between flows near Jensen and flows at Green River during the growing season is valid. The present design of the rehabilitation project requires 1,106 cfs to meet the competing demands of the project, and includes flows for boat passage, upstream and downstream fish passage, irrigation, hydropower and sediment sluicing.

Therefore, it appears very likely that all water demands associated with this project will be met, provided that changes in hydrology due to land use change and/or climate change are negligible, and that operation of Flaming Gorge Dam continues to adequately meet the minimum baseflows outlined in the FEIS of 2006.

4.0 REFERENCES

Gerner, S.J., Spangler, L.E., Kimball, B.A., Wilberg, D.D., and Naftz, D.L., 2006. "Hydrology and Water Quality in the Green River and Surrounding Agricultural Areas near Green River in Emery and Grand Counties, Utah, 2004-05", U.S. Geological Survey Scientific Investigations Report 2006-5186.

U.S. Bureau of Reclamation (USBR), 2006. "Record of Decision, Operation of Flaming Gorge Dam, Final Environmental Impact Statement", USBR Upper Colorado Region, February, 2006.

U.S. Geologic Survey (USGS), 1982. "Guidelines for Determining Flood Flow Frequency", Bulletin #17B of the Hydrology Subcommittee, Interagency Advisory Committee on Water Data.

APPENDIX C

2D INUNDATION RESULTS FOR HIGHER CREST

The following figures are taken from an earlier draft of the main body of this report. In that earlier draft, the assumed dam crest elevation for all of the rehabilitation alternatives was 4088.0 feet. The current and proposed rehabilitation alternative calls for a crest elevation of 4086.7 feet in order to ensure that additional upstream flooding does not occur due to the presence of the project. Additionally, the following paragraph accompanied the figures in the earlier draft of the report:

Water surface elevations upstream of the diversion dam were compared between existing conditions and the four alternatives investigated in this report. These comparisons were conducted in order to evaluate the potential flooding impact the rehabilitation might have on agricultural operations in the project area. Figure C-1, Figure C-2, and Figure C-3 provide visual comparisons of water depth during the 100-year event between the four alternatives and existing conditions. The figures also depict the sections shown in Figure C-4 through Figure C-7. These latter figures depict the differences between the 100-year depths associated with existing conditions and the 100-year depths associated with the four alternatives. Note that negative values indicate alternative depths that are greater than existing condition depths and that the sections are taken looking upstream. From Figures C-1 through C-3, there is no obvious difference between existing conditions and the alternatives downstream of the dam. Upstream, however, there are differences, but they are slight. Figures C-4 through C-7 offer a better look at these differences. The important areas of note in these figures are near the banks (the extreme ends of Figure C-5 through Figure C-7), where flooding and/or seepage through levees would occur. From the figures, each alternative does a reasonably good job of minimizing the differences in depth at the banks against existing conditions. It should be noted that at the banks, Alternative 1 is generally the best alternative because, for each of the three cross sections shown (Figure C-5 through Figure C-7), the difference in water depth between existing conditions and Alternative 1 is very nearly zero. The one possible exception is with Section 4 (Figure C-7), which shows a depth greater than 1 foot along the right bank. However, this is due to the fact that the location of Section 4 is taken very close to the existing dam, such that uniform flow conditions are no longer applicable, but rather the water surface is gradually varying. Model results therefore indicate that Alternative 1 is preferable over the other three alternatives in terms of upstream flooding. However, the differences between the alternatives are considered so minor, that the extent of upstream flooding does not serve as a deciding factor in determining the Proposed Alternative.

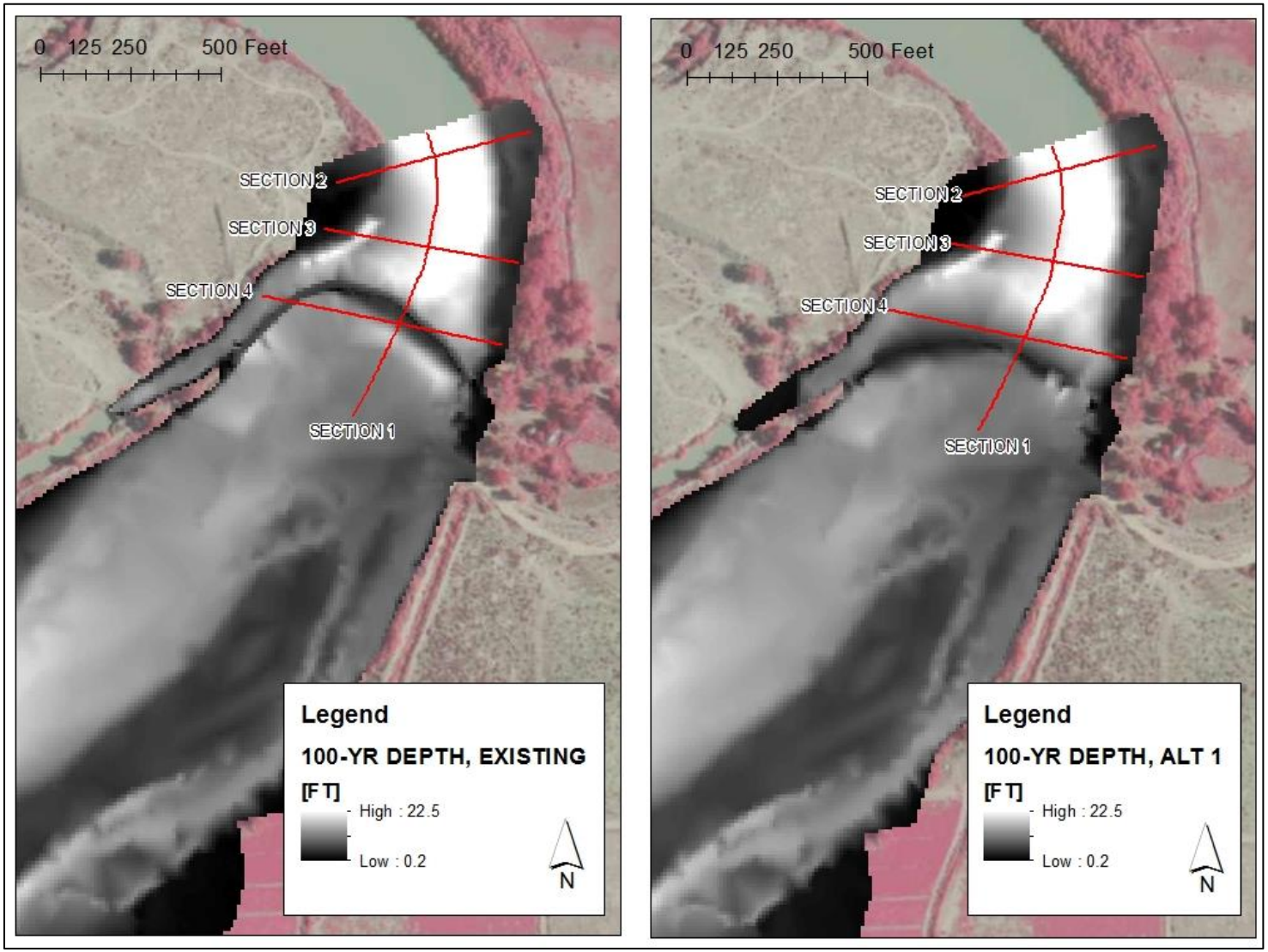

Figure C-1. 100-Year Water Depth, Alternative 1 and Existing Conditions

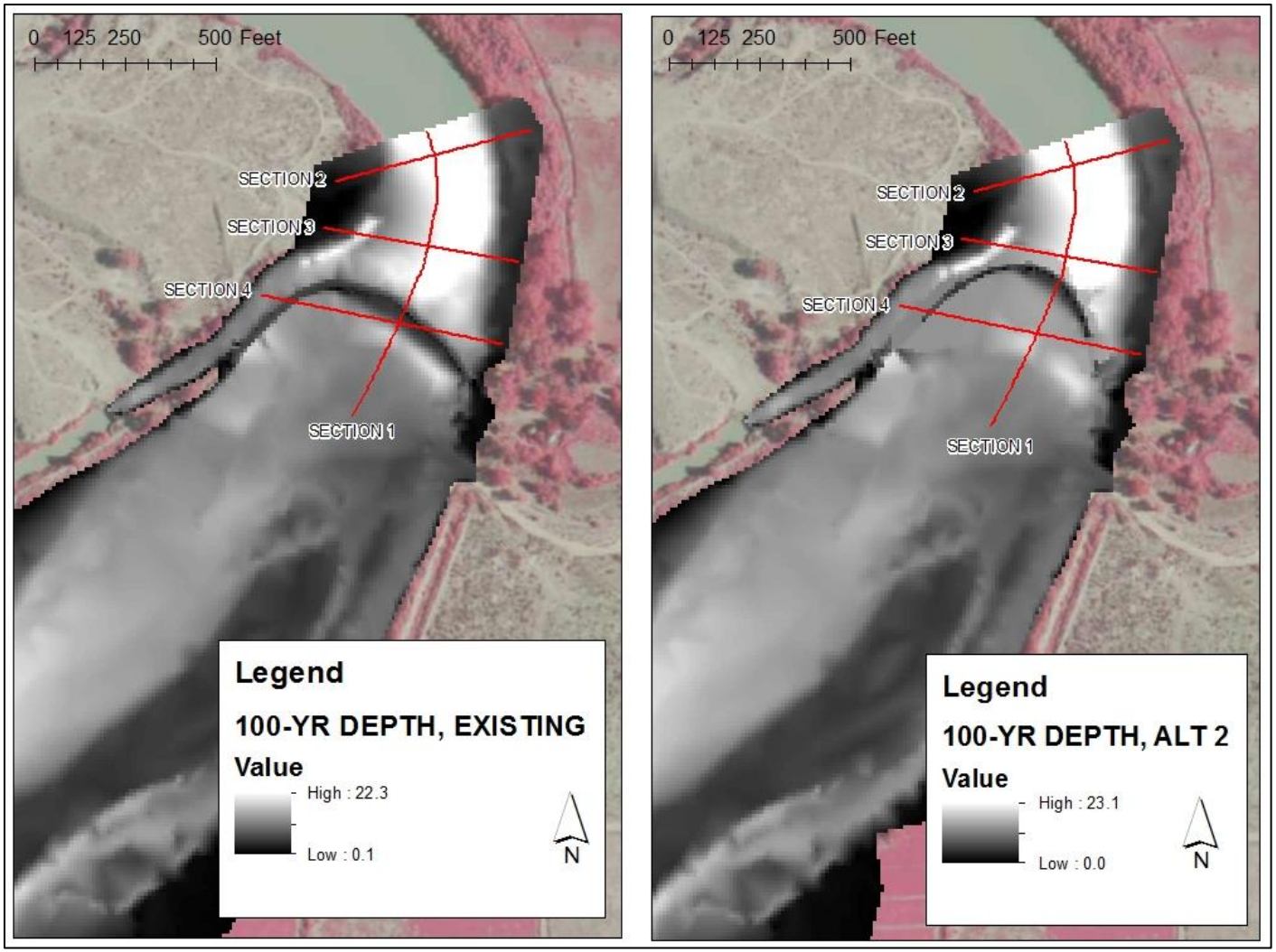

Figure C-2. 100-Year Water Depth, Alternative 2 and Existing Conditions

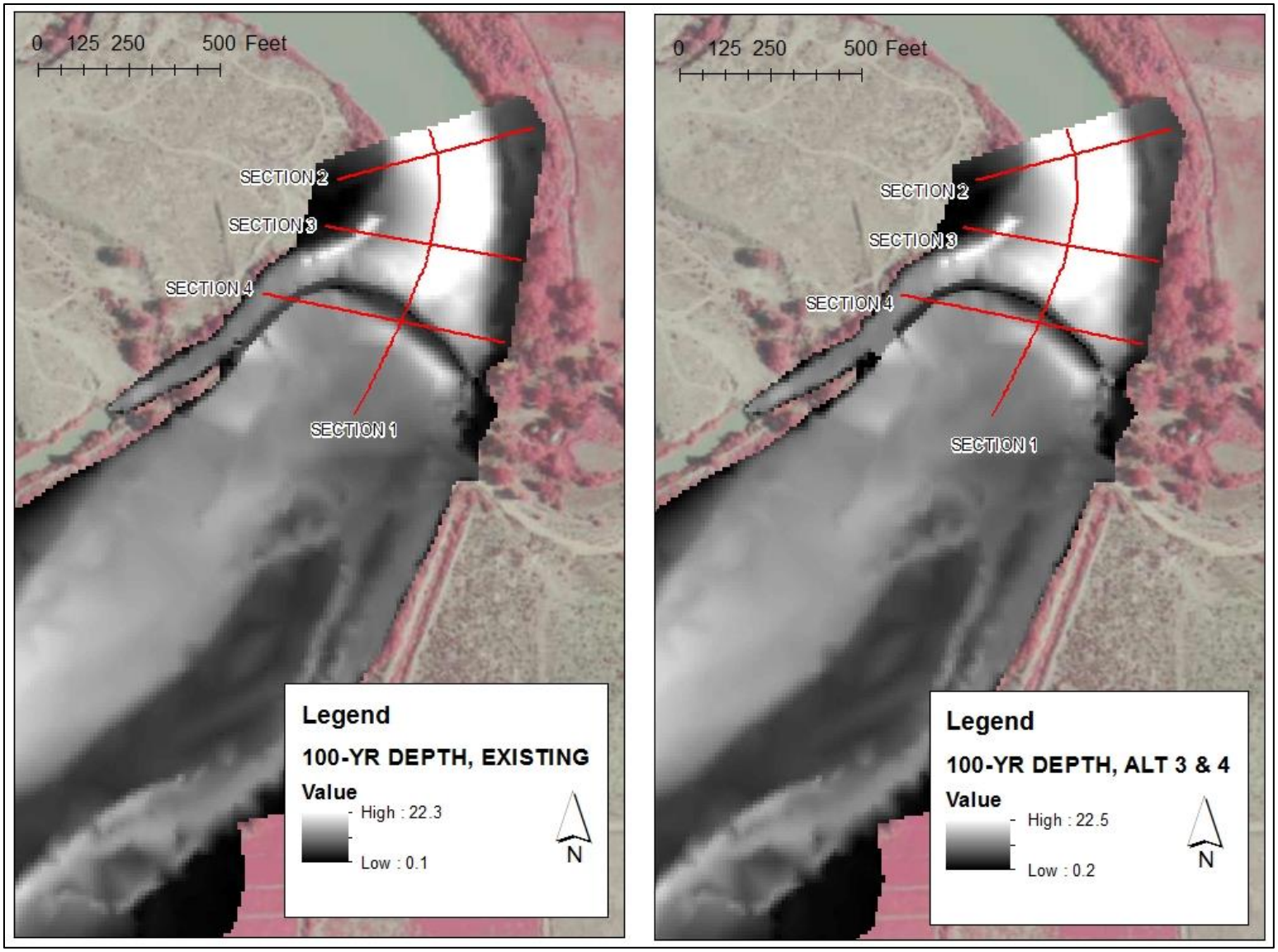

Figure C-3. 100-Year Water Depth, Alternatives 3 and 4 and Existing Conditions

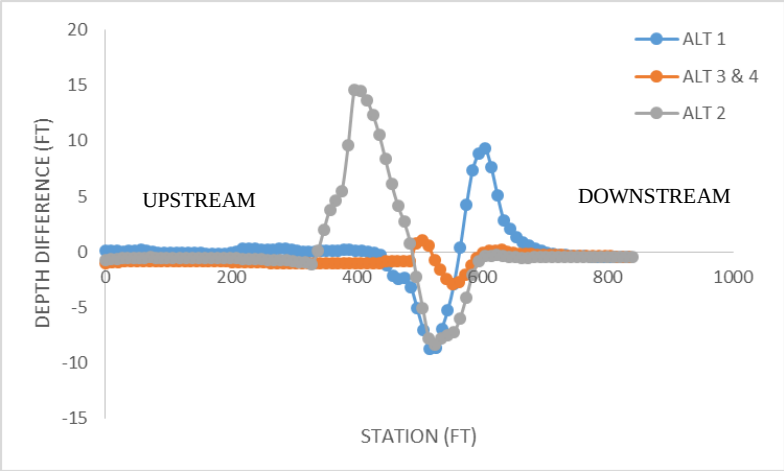

Figure C-4. Existing Depth Minus Alternative Depths, Section 1, 100-Year Flow

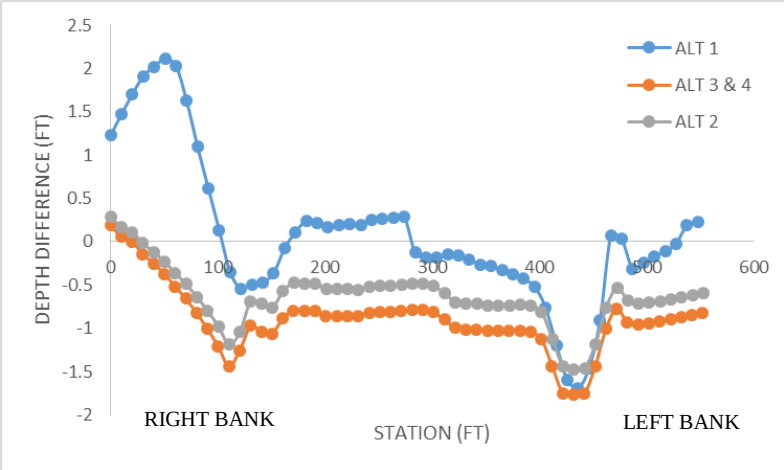

Figure C-5. Existing Depth Minus Alternative Depths, Section 2, 100-Year Flow

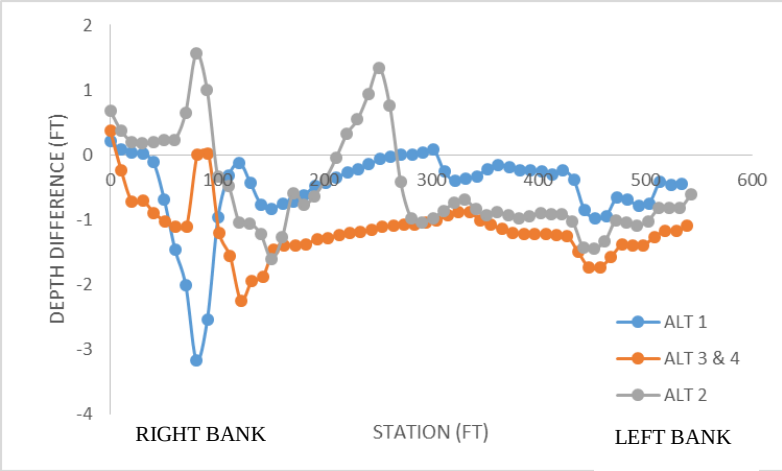

Figure C-6. Existing Depth Minus Alternative Depths, Section 3, 100-Year Flow

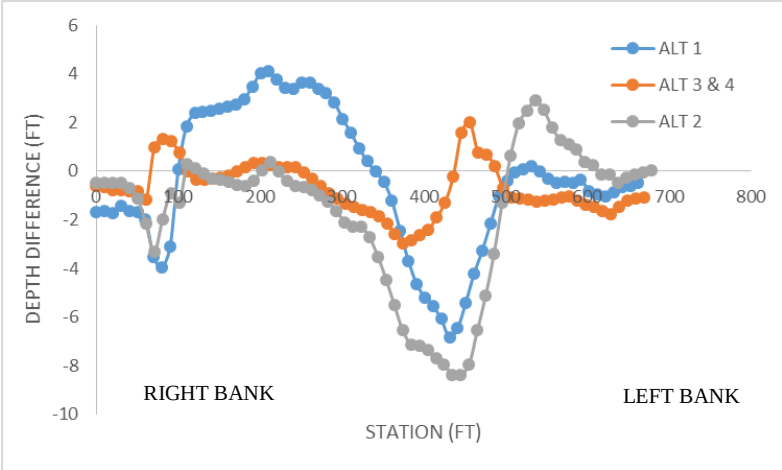

Figure C-7. Existing Depth Minus Alternative Depths, Section 4, 100-Year Flow

Note: Negative values indicate that the alternative depths are greater than the existing condition depths.