

# River Restoration Activities in the Rio Grande Canalization Flood Control Project in the Lower Rio Grande, NM

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Thank you Hillary. This is baby Maya, and she is going to prevent me from getting to the podium so I will just stand to the side. I am going to talk about a really exciting project that the International Boundary and Water Commission (IBWC) agency is undertaking. This project, like the Minute 319 project that Tanya Trujillo talked about yesterday, is one of the most exciting projects that the agency has done in a long time.

The Rio Grande Canalization Flood Control Project was authorized in 1935 by Congress and was constructed in the 1940s. It runs 105 miles from Percha Dam just below Elephant Butte and Caballo all the way down to American Dam in El Paso. It consists of a rectified river channel with a leved floodway. The purpose of the Project was to facilitate deliveries in the U.S. and Mexico under the 1906 Convention as well as to maintain flood capacity (Fig. 1).

In Figure 2, the top left picture was taken in 1938 at the Las Cruces/Picacho area looking upstream, before the levees were constructed and before the channel was stabilized. The top right was taken in October of 1942 at the same location after the levees were constructed along the side, but bank stabilization had still not occurred. The bottom picture is basically what it looks like today even though the photo was taken in 1956. There are levees on both sides and the channel is stabilized throughout. The agency has basically maintained it this way since the 1950s. We mow the floodway and dredge the channel to maintain its full flood capacity and to make sure that the project is meeting its intended purposes.

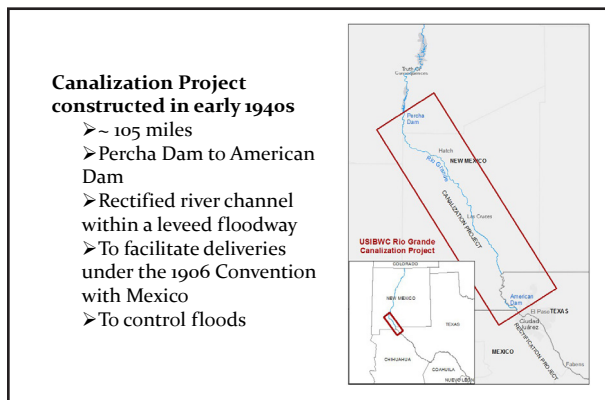


Figure 1. Rio Grande Canalization Flood Control Project

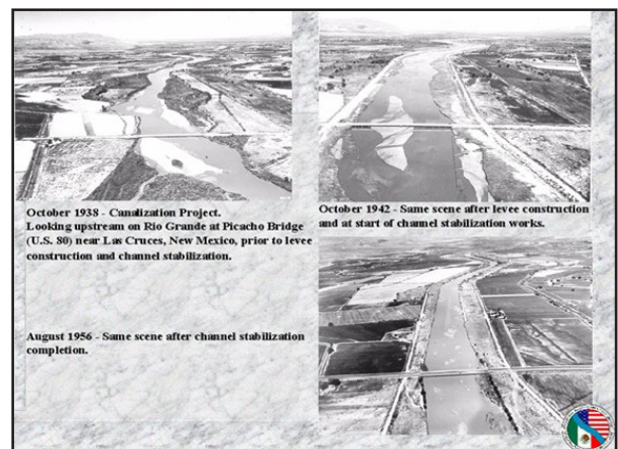


Figure 2. Las Cruces/Picacho area before and after levees were constructed and the channel was stabilized

In the 1990s, environmentalists' voices became a little louder with concerns that this was not the most ecological way of managing the river. So the agency embarked on an environmental impact statement process, and it took about ten years for that project to be negotiated. The IBWC signed a Record of Decision, and my job is to implement this decision. In 2009, Commissioner Ruth decided that we would go with the Integrated Land Management Alternative. An important part of this plan is that it maintains much of our operations and maintenance procedures that we need to ensure that the project goals are met, such as water delivery, flood control, and channel maintenance. It allows us to increase the capacity of the levees. It also called for the implementation of several environmental restoration measures (Fig. 3).

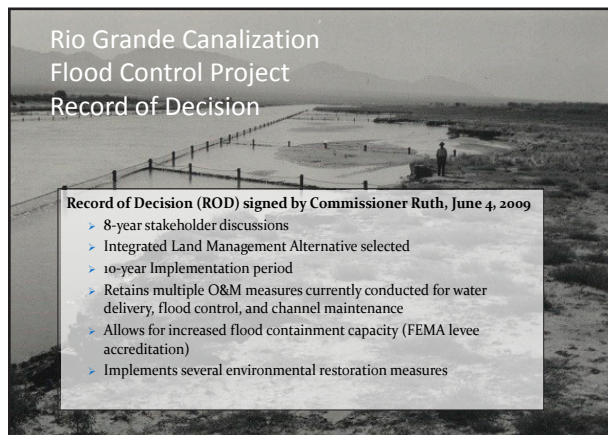


Figure 3. Rio Grande Canalization Flood Control Project: Record of Decision

For example, we are eliminating grazing leases. One method of maintaining the floodway is mowing and another is to issue grazing leases to private land owners for cattle grazing. As leases come up for renewal, they are being discontinued. We also have thirty restoration sites totally 550 acres that we are implementing, targeting a dozen different types of riparian habitat including riparian woodland, savannah, grassland, and more. We also want to make sure that we are meeting our requirements for the Endangered Species Act. The little guy pictured on Figure 4 is the endangered southwestern willow flycatcher. We are also changing floodway management. Now there are about 2,000 acres designated as no-mow zones; they are going to be managed grasslands where we will treat exotic species in that area. We are also establishing an Environmental Water Rights Program. If we are restoring sites along the

river where we previously mowed and see that no vegetation is growing, we now plant vegetation, and that means we are using water that belongs to somebody. We are dealing with a fully allocated system, and we manage every drop in the river. That was our argument before the Record of Decision was signed. Where was the water going to come from for these trees? Because of this, we will be purchasing some water rights. We are also evaluating channel maintenance and looking at alternatives to dredging and for maintenance.

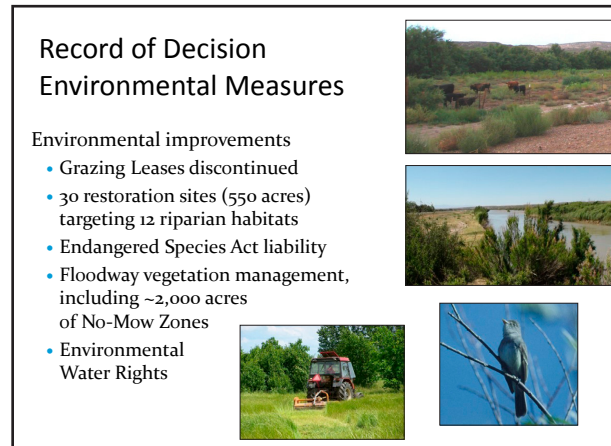


Figure 4. Record of Decision Environmental Measures

A lot of planning was involved before we could break ground at any of these restoration sites. We have soil surveys, a conceptual restoration plan, surveys for endangered species such as the southwestern willow flycatcher and the yellow-billed cuckoo, cultural resources and Section 106 compliance, site implementation plans, and hydrological monitoring. All of these studies had to be completed before we could break ground on the restoration sites (Fig. 5).

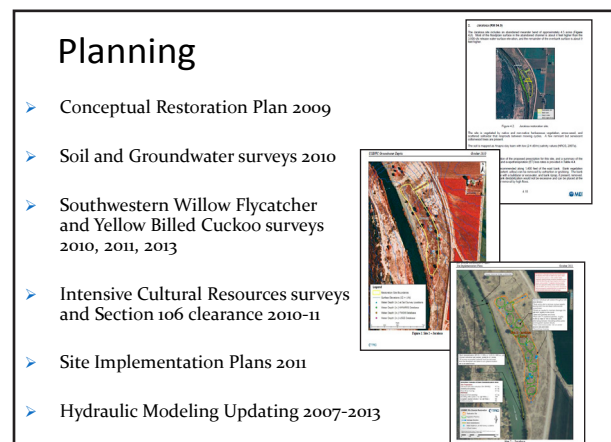


Figure 5. Rio Grande Canalization Flood Control Project Planning



In addition, we have substantial contact with the stakeholders who were involved in the original negotiation process for this Record of Decision. We have regular meetings to make sure that stakeholder input is heard. Some of the key stakeholders are the irrigation districts, which is mainly the Elephant Butte Irrigation District, and local elected officials such as Senator Udall, Senator Heinrich, and former Senator Bingaman. We also meet with environmental groups such as the Audubon Society of New Mexico, the Southwest Environmental Center, and the Paso Del Norte Environmental Council. The Bureau of Reclamation and various divisions within our agency also participate on a regular basis.

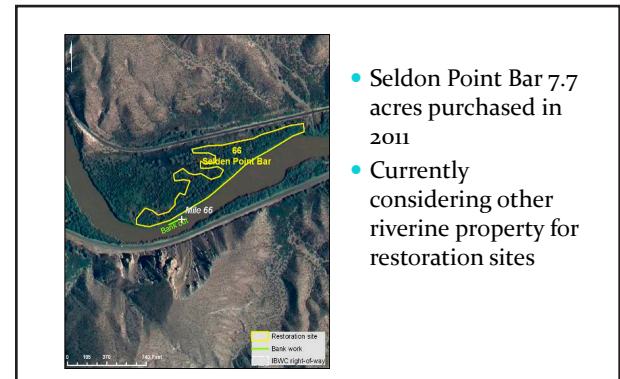
In order to meet requirements under the Endangered Species Act, from 2011 to 2012 we conducted Section 7 Consultation for the southwestern willow flycatchers. That process normally does not take long, but we involved the stakeholders to make sure that their concerns were met. We have a water rights system to use water for these restoration sites. What happens in drought years when there is a shortage, will the flycatcher trump the farmers' rights to use the water? We wanted to make sure that we are sharing shortages in times of drought so that the farmers' water isn't confiscated for endangered species. That was something that had to be negotiated. We also requested that critical habitat be excluded. We now have a Biological Opinion that requires us to maintain a minimum acreage of flycatcher habitat. We are required to conduct annual flycatcher surveys. The Bureau of Reclamation did surveys last year, and we are collaborating with them. It is great to note that territories are increasing and we have met the Recovery Goal for two years.

Another part of this Record of Decision was to update our river management plan. We are outlining all the procedures for managing vegetation along the flood banks, what type of channel maintenance we are doing, how we are protecting the flycatcher, how we are implementing these restoration sites, what areas we aren't mowing, and so on.

We have also installed shallow water monitoring wells. We had 53 wells constructed at 20 sites in 2013, all of them along the floodway. These are providing valuable data, particularly before and after irrigation season and for looking at the effects of the drought. The data are already revealing that

we need to plant our trees at greater depths to make sure they have water during drought years.

We also have many properties along the river we are trying to acquire for potential restoration sites. Figure 6 shows one that we acquired in 2011, and we are looking at others. A couple of these already have flycatcher habitat established on the sites.



- Seldon Point Bar 7.7 acres purchased in 2011
- Currently considering other riverine property for restoration sites

Figure 6. Property Acquisition along the Rio Grande

Here is the fun part: implementing restoration sites (Fig. 7). The picture in the background is one of our sites in the Las Cruces area, with native trees that we planted. We have an Interagency Agreement with the U.S. Fish and Wildlife Service (USFWS) because the IBWC does not have the staff or expertise to implement this program on its own. The USFWS has helped implement the first five sites. Over the last two-and-a-half years, we have treated over 300 acres of salt cedar and we have planted nearly 3,300 trees. Although that is a significant number of trees, it isn't nearly enough to meet our restoration goals. We have four additional sites that we are implementing with the USFWS and the goal is to plant over 20,000 trees in the next three years across four new sites as well as those first five. All sites have signs indicating that these are designated habitats under construction.

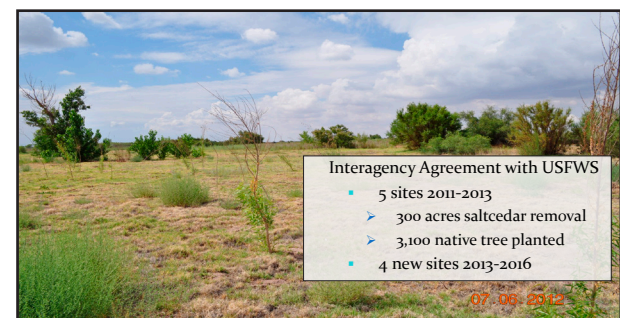


Figure 7. Implementation of restoration sites

Figure 8 shows the Crow Canyon site in the Hatch area. The top photo shows some native willows lining the bank and in the background are a lot of large mature salt cedar blooming. This was an area that was mowed. One of the first things we did was to stop mowing on the restoration sites, which is allowing some native vegetation to come back. The bottom picture shows salt cedar that was treated along the bank as well as large patches throughout the flood plain. Around 200 acres of salt cedar was treated. At this site in Hatch, we planted 187 black willows and about 40 cottonwoods.

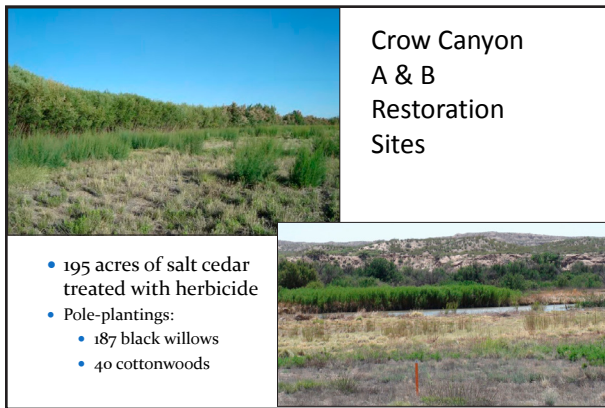


Figure 8. Crow Canyon site in the Hatch area

What is interesting about stopping the mowing was that at the Crow Canyon site it allowed native vegetation to come up on its own, like the willows in. Figure 9. We did not plant them; they just came up after we stopped mowing. On the right is a picture of a cottonwood we planted in 2012. It is blooming here, but now you can't even see it through all of the native willows surrounding it from the bank. It is a very nice restoration site. The bottom photo is a picture of the salt cedar that was treated. It is cut with a type of machinery and then sprayed. Overall, the salt cedar is not coming back.

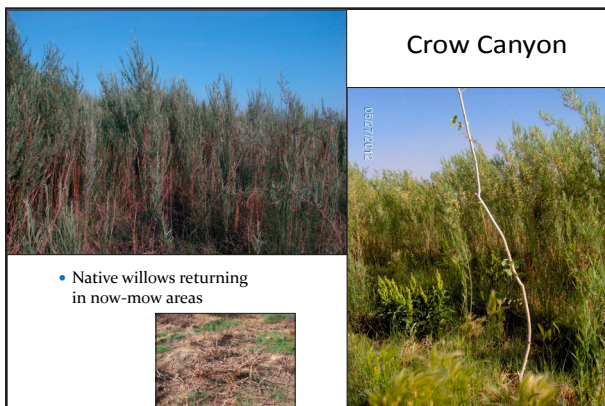


Figure 9. Crow Canyon site when mowing has stopped

Figure 10 is one of my favorite pictures, which provides an overview. You can see the river bank and the floodway. You can see many of the native grasses coming in and we have several layers of willows from different years. We do have some patches of exotic weeds, but it appears that they are being out-competed by the native grasses—a really nice grassland mosaic of the different habitats here.



Figure 10. Crow Canyon B August 2013

Figure 11 shows the same site but a bit closer to the river. We do have low spots with wetland areas. You can see some native brush and three layers of willows along the bank with the treated salt cedar.



Figure 11. Crow Canyon B, August 2013

Figure 12 is a picture of our Broad Canyon Arroyo site. The top left photo shows the area near Broad Canyon Arroyo around 1940; there wasn't much of anything around the area. Site conditions have changed since: a sediment dam has been constructed on Broad Canyon Arroyo. In 2011 you can see a dense monotypic salt cedar stand. Twenty acres of salt cedar were removed by an excavator in 2012 (Fig. 13). A patch was left where the yellow-billed cuckoo had been observed.





Figure 12. Broad Canyon Arroyo site

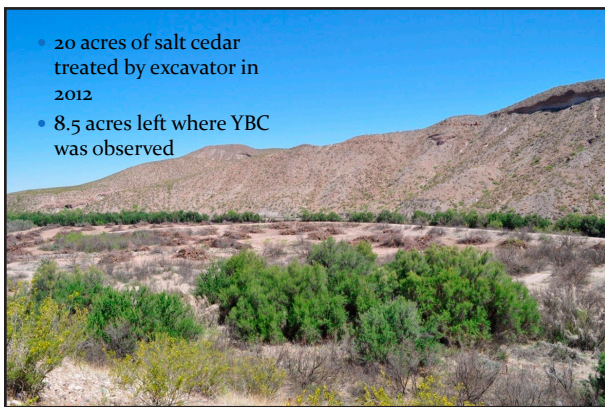


Figure 13. Broad Canyon Arroyo Site with twenty acres salt cedar removed

Figure 14 shows piles of salt cedar debris that were allowed to dry, and then the USFWS conducted controlled burns. When the piles burned down they look something like the photo on the right. Piles were allowed to cool, and then we planted willow poles.



Figure 14. USFWS controlled burns at Broad Canyon Arroyo Site

Figure 15 shows the lower terraces that are targeted for flycatcher habitat, which consists of dense shrubs planted very close together using a deep auger. This one is actually eight feet long. Willow poles are harvested from mature willow stands and put into water for a couple of weeks. Then they are planted in eight-foot auger holes where, technically, their toes are in water year-round, grow roots, and then hopefully they take off and sprout. Figure 16 shows trees that are coming up along with native vegetation. Wolfberry and native grasses are in the foreground. At this site, we planted nearly 1,400 willow trees and 105 cottonwoods.



Figure 15. Lower terraces at the Broad Canyon Arroyo site ready for habitat restoration

Leasburg Extension Lateral site near Las Cruces is show in Figure 16. You can see cottonwoods and some of the native poles that we planted. Native vegetation is coming up because we aren't mowing. At this 30-acre site, salt cedar was treated on twenty-six acres. We planted 400 black willows, 99 cottonwoods, and 420 coyote willows.

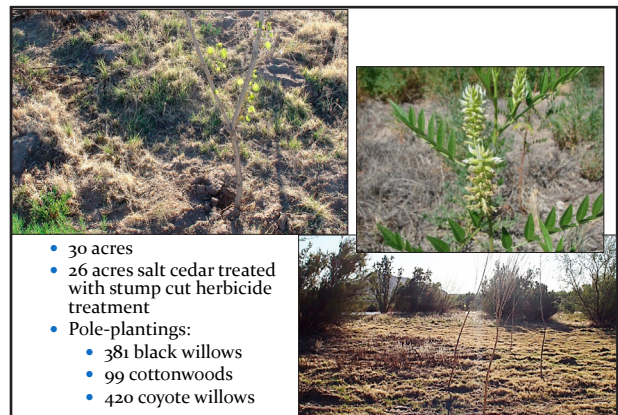


Figure 16. Leasburg Extension Lateral

The Mesilla East site is very close to Leasburg site (Fig 17). The top left photo can be considered a “before” picture and you can see the treated salt cedar piles. On the top right is a recent picture. Look at all of the willows that are coming up on their own from the riparian zones.



Figure 17. The Mesilla East site

Lastly, I wanted to talk about what is probably the most interesting to you, our Environmental Water Rights Transaction Program. The program was established to obtain water rights for three different purposes: to offset depletions caused by increased vegetation; for supplemental irrigation as some sites will not have growth under current conditions if left unirrigated; and for conceptual environmental peak flow, which doesn't look likely in the drought, so we might purchase water rights to simulate over-bank flow conditions.

The Environmental Water Rights Transaction Program is a public-private partnership that is a very unique and interesting program. We have an interagency agreement with the USFWS, and they have in turn contracted with the National Fish and Wildlife Foundation, which does a lot of work with water rights in the western states. They are contracted with the New Mexico Audubon Society, which has been instrumental in getting this program off the ground especially considering all of the rules and procedures that go along with water rights acquisition. I would also like to thank the Elephant Butte Irrigation District, which has been working with us collaboratively. We have a very good working relationship with EBID as well as with the Bureau of Reclamation.

Our plan is to acquire a minimum of 457 acres of water rights that will cover all of our depletions. Then we might buy or lease more rights if we want to supplement irrigation. We want to buy these rights from willing sellers and we are currently pursuing this. We also intend to pay a fair market value, so we are trying to establish a value for these water rights, focusing primarily on surface water.

Our future plans include finalizing our river management plan; incorporating all of the stakeholders' concerns; and quickly moving on purchasing water rights because we have five years left of our ten-year restoration process. Then lastly, we want to prioritize our next restoration sites.

Please look at our website at [http://www.ibwc.gov/EMD/canalization\\_eis.html](http://www.ibwc.gov/EMD/canalization_eis.html) for documents and more information and feel free to contact me at 915-832-4701 or [elizabeth.verdecchia@ibwc.gov](mailto:elizabeth.verdecchia@ibwc.gov).

Thank you.