

**Hereford
Natural
Resource
Conservation
District**



CONSERVING - PROTECTING - PRACTICING WISE USE

Horseshoe Draw

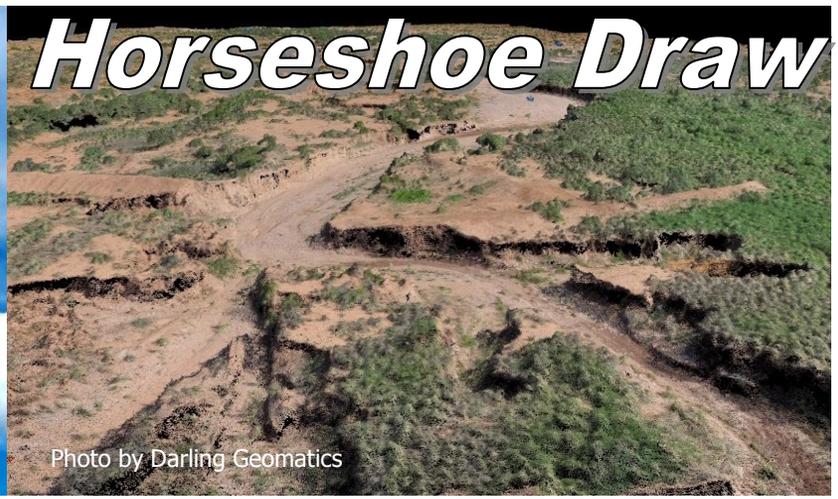


Photo by Darling Geomatics

March, 2017 Newsletter

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WOW, What an adventure it has been from December of 2010 when Jack Ladd mentioned he could use some help in reducing erosion and stopping the head cut from advancing upstream on the Horseshoe Draw.

Always on the radar but with not much activity for some time till 2014 when the Hereford District was awarded a Water Protection Fund grant for the study and design to fix the Horseshoe Draw problem. That started the Indiana Jones ball rolling. At times we were pushing that giant ball up hill and at times we thought it was going to run us over. With perseverance we would be able to control the speed and direction of the ball.

Construction will have begun when this newsletter comes out. The whole newsletter will be on the Horseshoe Draw project, as well it should. What an accomplishment for the conservation of our resources.

There were many people involved with the accomplishment of the project to this point and we THANK them for their help. I want to first THANK our Hereford Board, clerk and Advisors for the many hours and meetings to make it happen. Board members: Rachel Thomas, Lucinda Earven, John Ladd and John Lohse and board clerk Kathy Morris, "GREAT JOB". Throughout the newsletter and coming events about the project you will hear of the many other people that helped us.

**Working Together to Enhance
Our Natural Resources**

Horseshoe Draw Project

The Horseshoe Draw Flood and Erosion Control to Reduce Sediment and E. coli Transport to the San Pedro River with the added benefit of water recharge to the San Pedro River is now on fast track for completion this summer. The contract with Granite Construction Company was signed February 14, 2017 with work starting almost immediately. The water line installation was scheduled to begin around March 9th. A preconstruction aerial survey is scheduled to take place the week of March 13th to establish existing ground elevations and verify the earthwork quantity. Preliminary earthwork operations are scheduled to begin the week of March 20th (clearing/OG prep). The overall schedule developed by Granite has all work completed by June 30, 2017 before the summer rains.

Jack Ladd brought the problem to the attention of the Hereford Natural Resource Conservation District (HNRCD) in November 2010. The HNRCD recognized major erosion and sediment issues caused by flooding in the Horseshoe Draw area. Growing concern by the HNRCD and the local community prompted the need for an engineer from both Cochise County and a private, Phoenix-based firm to visit the area and provide recommendations. Based on those recommendations, the HNRCD submitted a grant proposal to the Arizona Water Protection Fund (WPF) in August 2013, to fund a concept and feasibility study. A little over a year later, the HNRCD was awarded a \$198,625 WPF grant. The Phoenix-based firm that assisted the HNRCD in 2010, HilgartWilson, LLC, was chosen to perform the work.

The Horseshoe Draw watershed extends from the Sierra San Jose Mountains in Sonora, Mexico, to the San Pedro River in southern Arizona. The watershed is divided into 21 sub basins, based on "points of interest" within the entire watershed, such as junctions where washes branch off of the watershed. The feasibility study determined that a detention basin is an effective means of slowing the discharge rate to downstream waters. The new detention basin will be made up of an embankment 24 feet above the upstream basin, with a storage capacity of 49 million gallons and three 36" culverts leading from the bottom of the basin downstream, enabling the water to drain from the basin within 24 hours.

During the final design phases of the study, in early February 2016, the Arizona Department of Environmental Quality (ADEQ) announced acceptance of applications for their Water Quality Improvement Grant Program (WQIG). The HNRCD applied for the grant in order to secure funding to carry out the plan conceived by HilgartWilson. In May 2016, the HNRCD was awarded a WQIG grant of \$993,880, or 58.5% of the cost of the project. HNRCD submitted an application for a grant to the Howard G. Buffett Foundation and was awarded the remaining funds.

Through these watershed enhancements, the area will see a multitude of improvements including: the reduction of erosion and soil loss, and the healing of such loss; downstream, flood peaks will be reduced to prevent further road damage and property loss; sediment and pathogen transport, like E-Coli, to the San Pedro river will be lessened; and finally, there will be an increase in groundwater recharge to the Upper San Pedro River Basin aquifer. The benefits of this plan will resonate throughout the HNRCD area, the San Pedro River, and Cochise County, making for a better environment for the community, wildlife, and the natural environment as a whole. Without the improvements, we would see a steady decline in the health of the watershed, and be unable to reverse the damage done.

The project will be given to Cochise County by HNRCD when completed, along with the Ladd Ranch giving a permanent easement of the site to the county. The County will then maintain the site.

This project is made possible by an Arizona Department of Environmental Quality Water Quality Improvement Grant, Howard G. Buffett Foundation Grant, Ladd Ranch, and Hereford NRCD contributions.

Granite Construction

The Horseshoe Draw project will be built by Granite Construction with the onsite general superintendent Jacob Buckley.

Granite Construction is consistently ranked one of the top 25 largest construction companies in the U.S., specializing in complex infrastructure for transportation, industrial, power, and federal markets.

Granite Construction has received many awards for the work they do, one of the most recent being the "2016 Arizona Transportation Partnering Excellence Award" presented by ADOT.



Photo by Darling Geomatics

Darling Geomatics

Surveying just became faster and more affordable for Hereford Natural Resource Conservation District, with the use of drones to collect topographic data for the Horseshoe Draw Project.

Darling Geomatics will slash the time and improve the documentation needed for baseline topographic surveys prior to and after construction of the erosion control structure on Horseshoe Draw. Conventional land surveying tools used to get the job done, yet they required extensive time to set up and move around as the surveyor walked through the site. Darling will use drones — or UAVs (unmanned aerial vehicles) as they are often called—as a more efficient method to rapidly collect large quantities of precise survey data.

UAV Pilot and Registered Land Surveyor, Richard Darling says that "once the UAV is launched and airborne—armed with a built-in camera and a map of the site to be surveyed — millions of measurable survey data points will be collected in several short flights. "When the UAV lands, land surveyors from Darling Geomatics will download collected images and combine the images with the surveyed ground control points and the UAV's Real Time Kinematics (RTK) data into a photogrammetric software package. This process produces a high-resolution ortho photo (aerial photo geometrically corrected) of the site, along with a dense pointcloud, which can then be imported into CAD software for further analysis.

Darling Geomatics will capture the watershed before construction, then again at a future date, after the structure has a measurable impact on erosion within Horseshoe Draw. Photogrammetry will be employed with the UAV to create a surface model, and then make volume calculations. Change detection software will be used to display and measure changes in the geomorphology of the wash and any reductions in sediment entering the San Pedro River from Horseshoe Draw.



John Ladd improved a road to the site and burned the area so construction could begin.

Granite Construction brought in pipe to transport necessary water to the site.

Photos by John Ladd



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BOARD MEETINGS
 Third Wednesday of every month
 9:30 AM
 Sierra Vista Cochise County
 Complex Conference Room
 Hwy 92 and Foothills Drive, Sierra Vista

Note: Date, location and time is subject to change.
 We invite District Cooperators and the general public's attendance and participation.

Hereford NRC D
 is on the World Wide Web!
www.herefordnrcd.com

Classified Ads: \$5.00 per item per issue
Advertisement: \$60 for 4 issues.
Email: hereford_nrcd@juno.com

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All programs of the Hereford NRC D are offered on a non-discriminatory basis, without regard to race, national origin, age, sex, religion, political belief, marital or familial status or handicap.