Vegetation Monitoring Report – Pre-treatment

Greater Rio Grande Watershed Alliance

East Rio Arriba SWCD Project Site

Acequia de Alcalde North Diversion

June 2012

Background:

Vegetation monitoring was conducted at this site on December 1, 2011 as part of a restoration project targeting non-native phreatophytes scheduled for winter 2011 – 2012. The project is located within Rio Arriba County, NM, north and east of the city of Española (see Figure 1 below). The project was sponsored by the East Rio Arriba Soil and Water Conservation District. Restoration goals are to restore the area for wildlife with a mix of native species, to restore the area to a more natural condition with a more open canopy, and to remove exotic high water consumption plants to increase water presence in low-lying areas and drainages. (Stropki et al., 2010).

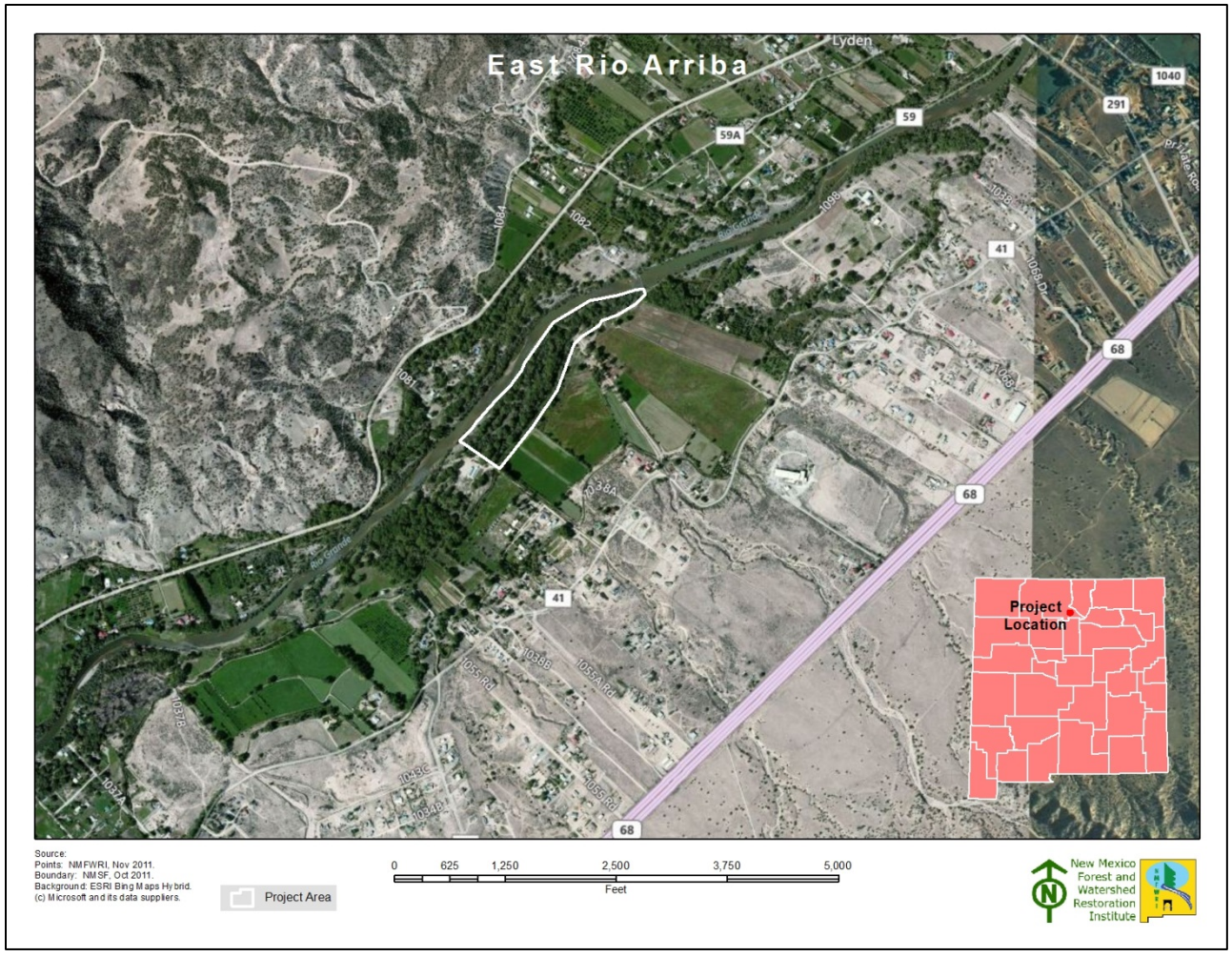

Figure 1. Project Location

Persons contacted:

Ross Garcia	East Rio Arriba SWCD
Marcos Valdez	East Rio Arriba SWCD

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Monitoring team:

Joe Zebrowski	New Mexico Forest and Watershed Restoration Institute
Jill Wick	New Mexico Department of Game and Fish
Marcos Valdez	East Rio Arriba SWCD

Procedures:

Due to the short timeframe between project selection and implementation, only a narrow window was available to perform monitoring and that window was outside the optimum season for performing vegetation monitoring in this type of landscape. For that reason, a hasty monitoring protocol was developed. This protocol was based on placing photo point plots at locations distributed across the project area and representative of the diversity of the project area. In addition, an estimate of ground and canopy cover by percent within a 1/10 acre circular plot centered at the photo point was determined using ocular estimates. Overstory canopy was determined for a 1/10 acre circular area, also centered at the photo point. Finally, a Hink & Ohmart style vegetation structure assessment was performed. Vegetation species that were observed at each plot and in the project area were recorded. The plot size and density of observations limit the utility of this monitoring for describing overall site conditions or for generating any meaningful statistics.

Cover (%)										
Tree canopy	**Seedlings/saplings <5'/5 – 15'**		**Shrubs**		**Gramanoid**	**Forbs**	**Litter**	**Bare Soil**	**Rock**	**Gravel**	**Water or wet soil**

Figure 2. Categories used for percent cover estimates.

A base map of the project location was constructed using project boundary data provided by New Mexico State Forestry. Planned photo points were selected by visual inspection of May 2011 true-color digital orthorectified aerial photography obtained from the United States Department of Agriculture (http://datagateway.nrcs.usda.gov/). A GIS file for the photo point plots was created using ArcGIS software. Coordinates were derived from the GIS file and loaded into a Garmin GPS 60 CSx Global Positioning System and a Trimble 2005 GeoXM Global Positioning System. The Garmin GPS was used to navigate to the general location of the planned photo point. The actual location of the photo point was determined by visual inspection of the area and selection was based on the ability to physically occupy a position at or near the planned point. The coordinates of the photo point were then collected using the more precise Trimble GeoXM GPS.

Once the plot location was determined, a 1/100 acre radius plot was established by placing pin-flags at 11' 9" from plot center in each cardinal direction. Photos were taken from plot center in each cardinal direction and from a distance north of plot center (66', where possible) toward plot center. Ocular estimates were made of understory canopy and ground cover within the 1/100 plot. Overstory canopy cover was estimated using a concave spherical densitometer, with measurements made in four cardinal directions, approximately mid-way between plot center and the edge of the 1/100 acre plot. This method provides an estimate of canopy cover for a 1/10 acre area centered on the plot. A Hink & Ohmart structure class determination was made using a worksheet developed by SWCA Environmental Consultants (see Figure 3 below). Finally, plant species observed within the 1/10 area around the plot were recorded, as were other comments document conditions at the plot.

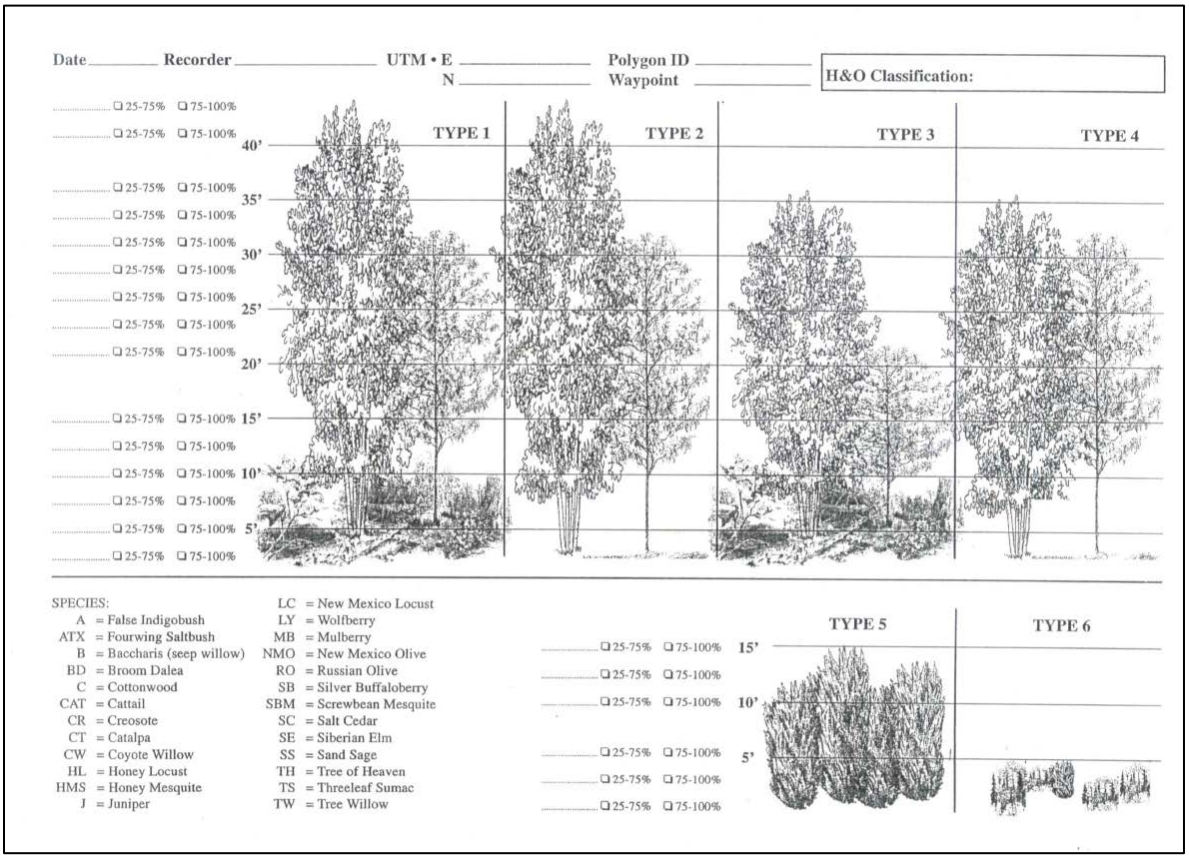

Figure 3. Hink & Ohmart Structural Class Worksheet (courtesy SWCA)

Observations:

Most of the project area is densely wooded, with a thick, multi-tiered understory. A few grassy opening with scattered shrubs exist. Plots ERA_1 through ERA_3 are in wooded areas characterized by nearly 100% canopy cover and a surface covered by leaves, litter, and downed woody material. Grass and forb coverage was sparse, possibly due to heavy shading and litter cover. Since monitoring was done so late in the fall, sparse forb and grasses cover may also be attributed to seasonal dormancy. These plots were assessed to fall in Hink & Ohmart Structure Class 3.Plot ERA_5 was in an open area, with a clump of Coyote Willow nearby, but off the plot. It was assigned a Hink & Ohmart Structure Class 6, adjacent to Structure Class 1. Identification of forb, grass and some shrub species was impacted by the limited plant identification skills of the monitoring team and by the season.

Figure 4. Close up view (pre-treatment) of project area showing plot locations.

PT_ID	Horz_Prec (meters)	Std_Dev	Northing	Easting	Longitude	Latitude
ERA_1	6	0.006378	3999703	408799	106.0136586	36.13775319
ERA_2	1.9	0.000831	3999669	408686	106.0149042	36.13743591
ERA_3	2.8	0.001049	3999554	408562	106.0162749	36.13639042
ERA_4	2.1	0.000436	3999429	408495	106.0170049	36.13525323
ERA_5	1.9	0.001449	3999268	408377	106.0182957	36.13379047
Northing and easting; NAD 1983 UTM Zone 13 Longitude and Latitude: World Geodetic System 1984 (WGS 84) Data collected with Trimble GeoExplorer 2005 GeoXM, post-processed with Trimble Pathfinder Office software.						

Figure 5. Plot coordinates.

Species observed:

Grasses		**Forbs**	
Scientific name	**Common name**	***Scientific name***	**Common name**
Agropyron cristatum (L.) Gaertn.	Crested wheat grass	*Opuntia spp.*	Prickly pear
		Cylindropuntia spp.	Cholla
		Machaeranthera tanacetifolia	Purple Aster
		Centaura spp.	Knapweed
		Xanthium spinosum	Spiny Cocklebur
		Salsola kali L. ?	Russian Thistle ?
		Bassia scoparia (L.) A.J. Scott ?	Kochia ?
		Moss	

Shrubs		**Trees**	
Scientific name	**Common name**	***Scientific name***	**Common name**
Fallugia paradoxa	Apache Plume	*Populus deltoides*	Cottonwood
Gutierrezia sarathrae	Broom Snakeweed	*Elaeagnus angustifolia*	Russian Olive
Ericameria nauseosa	Rubber Rabbitbush (Chamisa)	*Juniperus monosperma*	One-seed Juniper
Forestiera pubescens Nutt.	New Mexico Olive	*Tamarix Chinensis*	Salt Cedar
Salix exigua Nutt.	Coyote Willow	*Ulmus pumila*	Siberian Elm

Figure 6. Species observed.

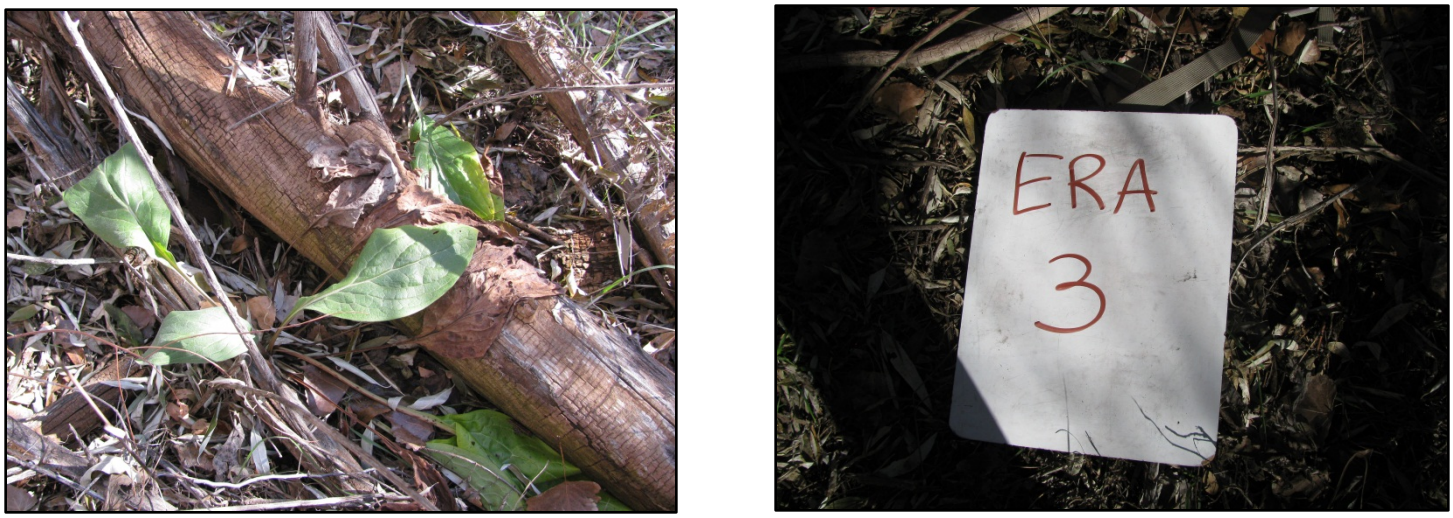

Figure 7. Typical ground cover in densely wooded sites.

Conclusions and Recommendations:

Monitoring of this and other Greater Rio Grande Watershed Alliance project sites was constrained by time and resource availability. Due to these constraints, it was determined that the hasty method described in the Procedures section above would provide the minimum information necessary to determine the effectiveness of these treatments. Plot photos, in particular, will provide a good reference for assessing post treatment conditions. Monitoring crew members had limited skills in plant identification and Hink & Ohmart Structure Class determination. Vegetation identification was further complicated by the fact that most of the grasses and forbs were dormant. Despite these limitations, the monitoring adequately described the tree species variety and the overall site characteristics. Supplemental pre- and post- treatment photos are included in Horizon Environmental Services, Inc. East Rio Arriba Site Final Report, attached. This report also includes a description of the work accomplished and the methods used. Reports such as this should be required for all projects.

New, more robust monitoring protocols are being developed by the New Mexico Forest and Watershed Restoration Institute. These new protocols will be used for post-treatment monitoring and on future Greater Rio Grande Watershed Alliance projects. Monitoring crews will be provided training in the use of these new protocols. Future crews should also be provided with training in riparian plant identification and Hink & Ohmart structure class determination.

References:

Cartron, J.-L., D.C. Lightfoot, J.E. Mygatt, S.L. Brantley, and T.K. Lowrey. 2008. *A Field Guide to the Plants and Animals of the Middle Rio Grande Bosque.* University of New Mexico Press, Albuquerque.

Horizon Environmental Services, Inc. 2012. *East Rio Arriba Site Final Report*.

Stropki, C., V. Williams, and M. Pease. 2010. *East Rio Arriba Soil and Water Conservation District Riparian Restoration Conservation Plan*. SWCA Environmental Consultants. Albuquerque.

United States Department of Agriculture, Natural Resources Conservation Service. 2012. *Plants Database* (http://plants.usda.gov)

Project: East Rio Arriba
Project Unit: n/a
Plot: ERA_1

Date:	12/1/2011
Time:	1050
Plot size:	1/100

Cover (%)										
Tree canopy	**Seedlings/saplings <5'/5 – 15'**		**Shrubs**		**Gramanoid**	**Forbs**	**Litter**	**Bare Soil**	**Rock**	**Gravel**	**Water or wet soil**
100	0	15	0	10	2	0	90	3	0	0	0

Hink & Ohmart Class: 3

Species observed:

Grasses	**Forbs**	**Shrubs**	**Trees**
		Forestiera pubescens Nutt.	*Populus deltoides*
			Ulmus pumila
			Elaeagnus angustifolia

Comments:

None.

ERA _1 Plot Photos

May 2011 Aerial View, Circle = 1/10 acre


Plot Center from North


Looking East from Plot Center


Looking South from Plot Center


Looking West from Plot Center


Looking North from Plot Center

Project: East Rio Arriba
Project Unit: n/a
Plot: ERA_2

Date:	12/1/2011
Time:	1110
Plot size:	1/100

Cover (%)										
Tree canopy	**Seedlings/saplings <5'/5 – 15'**		**Shrubs**		**Gramanoid**	**Forbs**	**Litter**	**Bare Soil**	**Rock**	**Gravel**	**Water or wet soil**
91	0	25	3	8	0	1	98	1	0	0	0

Hink & Ohmart Class: 3

Species observed:

Grasses	**Forbs**	**Shrubs**	**Trees**
		Forestiera pubescens Nutt.	*Populus deltoides*
		Ericameria nauseosa	*Ulmus pumila*
			Elaeagnus angustifolia
			Juniperus monosperma

Comments:

Lots of downed woody debris.

ERA _2 Plot Photos

May 2011 Aerial View, Circle = 1/10 acre


Plot Center from North


Looking East from Plot Center


Looking South from Plot Center


Looking West from Plot Center


Looking North from Plot Center

Project: East Rio Arriba
Project Unit: n/a
Plot: ERA_3

Date:	12/1/2011
Time:	1143
Plot size:	1/100

Cover (%)										
Tree canopy	**Seedlings/saplings <5'/5 – 15'**		**Shrubs**		**Gramanoid**	**Forbs**	**Litter**	**Bare Soil**	**Rock**	**Gravel**	**Water or wet soil**
99	5	25	1	0	36	2	60	2	0	0	0

Hink & Ohmart Class: 3

Species observed:

Grasses	**Forbs**	**Shrubs**	**Trees**
	Centaura spp.	*Unknown*	*Elaeagnus angustifolia*
	Xanthium spinosum		

Comments:

None.

ERA _3 Plot Photos

May 2011 Aerial View, Circle = 1/10 acre


Plot Center from North

Looking East from Plot Center

Looking South from Plot Center

Looking West from Plot Center


Looking North from Plot Center

Project: East Rio Arriba
Project Unit: n/a
Plot: ERA_4

Date:	12/1/2011
Time:	1210
Plot size:	1/100

Cover (%)										
Tree canopy	**Seedlings/saplings <5'/5 – 15'**		**Shrubs**		**Gramanoid**	**Forbs**	**Litter**	**Bare Soil**	**Rock**	**Gravel**	**Water or wet soil**
94	0	8	0	1	15	1	84	0	0	0	0

Hink & Ohmart Class: 3

Species observed:

Grasses	**Forbs**	**Shrubs**	**Trees**
			Populus deltoides
			Ulmus pumila
			Elaeagnus angustifolia
			Juniperus monoosperma

Comments:

None.

ERA _4 Plot Photos

May 2011 Aerial View, Circle = 1/10 acre


Plot Center from North

Looking East from Plot Center

Looking South from Plot Center

Looking West from Plot Center


Looking North from Plot Center

Project: East Rio Arriba
Project Unit: n/a
Plot: ERA_5

Date:	12/1/2011
Time:	1210
Plot size:	1/100

Cover (%)										
Tree canopy	**Seedlings/saplings <5'/5 – 15'**		**Shrubs**		**Gramanoid**	**Forbs**	**Litter**	**Bare Soil**	**Rock**	**Gravel**	**Water or wet soil**
11	0	0	20	0	15	15	44	1	0	25	0

Hink & Ohmart Class: 6/1

Species observed:

Grasses	**Forbs**	**Shrubs**	**Trees**
	Opuntia spp.	*Fallugia paradoxa*	*Populus deltoides*
	Cylindropuntia spp.	*Gutierrezia sarathrae*	*Elaeagnus angustifolia*
	Machaeranthera tanacetifolia	*Ericameria nauseosa*	*Juniperus monoosperma*
			Tamarix Chinensis

Comments:

None.

ERA _5 Plot Photos

May 2011 Aerial View, Circle = 1/10 acre


Plot Center from North


Looking East from Plot Center


Looking South from Plot Center


Looking West from Plot Center


Looking North from Plot Center