Vegetation Monitoring Report – Pre-treatment

Greater Rio Grande Watershed Alliance

Santa Fe - Pojoaque SWCD Project Site 1

Puerta del Cañon

June 2012

Background:

Vegetation monitoring was conducted at this site on November 17, 2011 as part of a restoration project targeting non-native phreatophytes scheduled for winter 2011 – 2012. The project is a five acre site located within Santa Fe County, NM, south of the city of Santa Fe (see Figure 1 below). The project was sponsored by the Santa Fe - Pojoaque 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).

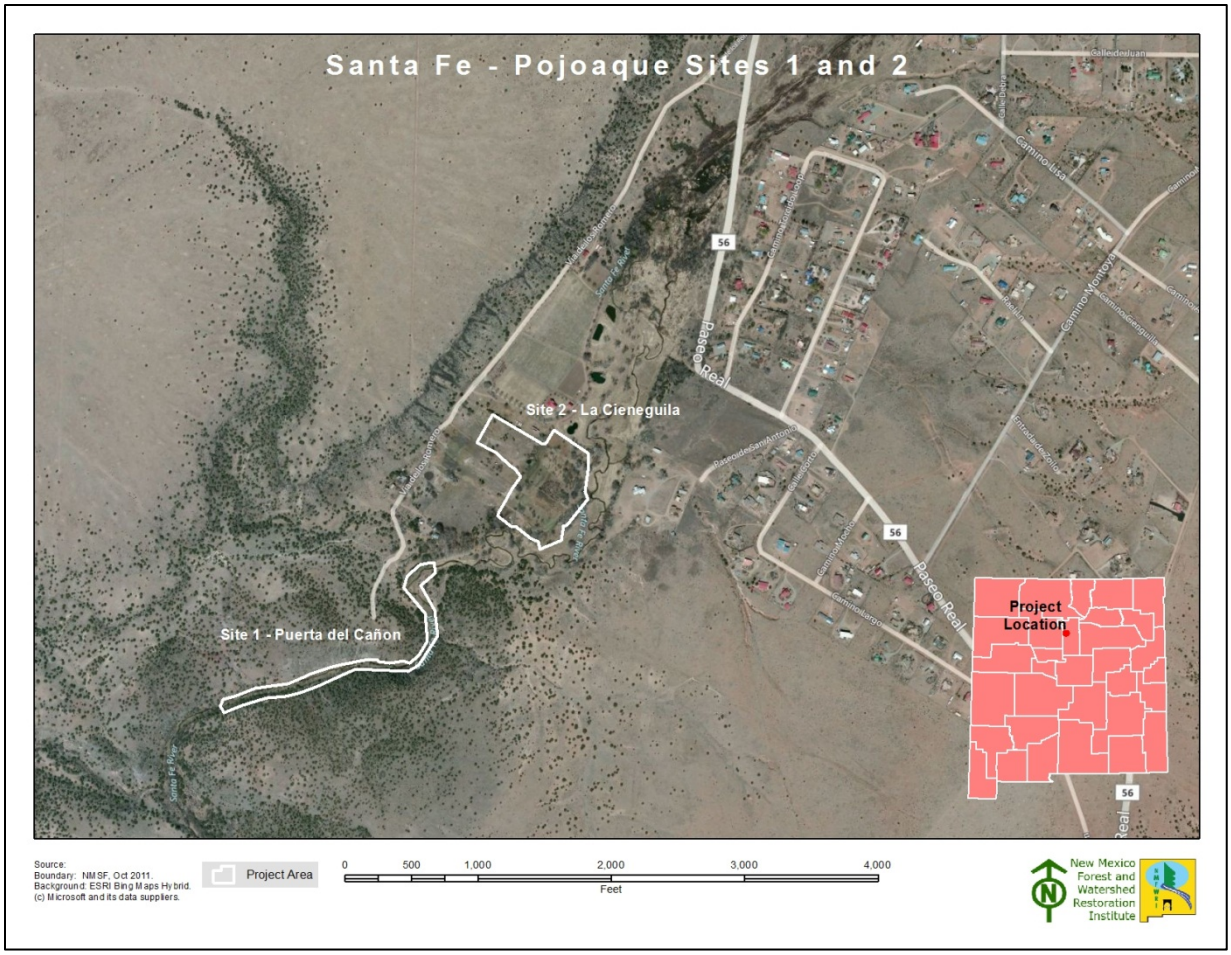

Figure 1. Project Location

The specific treatment prescription is as follows (NMSF, 2011):

> Remove all invasive trees (including juniper) in river bottom (fence line to rock ledge (drivable section) or acequia to rock ledge (non-drivable section)) Use appropriate herbicide on any cut stumps to prevent re-sprouting.
>
> Where vehicle access is available, chip all material less than 3" diameter, leave larger woody material (>3" diameter) in 4' lengths, out of high water mark. Chip depth to be <2" and not on grassy area.
>
> In non-accessible areas, slash is to be limbed, piled above high water mark so that it can be safely burned later. Piles to be no more than 4' x 4' x 4'. Logs larger than 3" diameter should be piled separately, placed above high water mark.

Persons contacted:

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Monitoring team:

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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 GPSMAP 62sc 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.

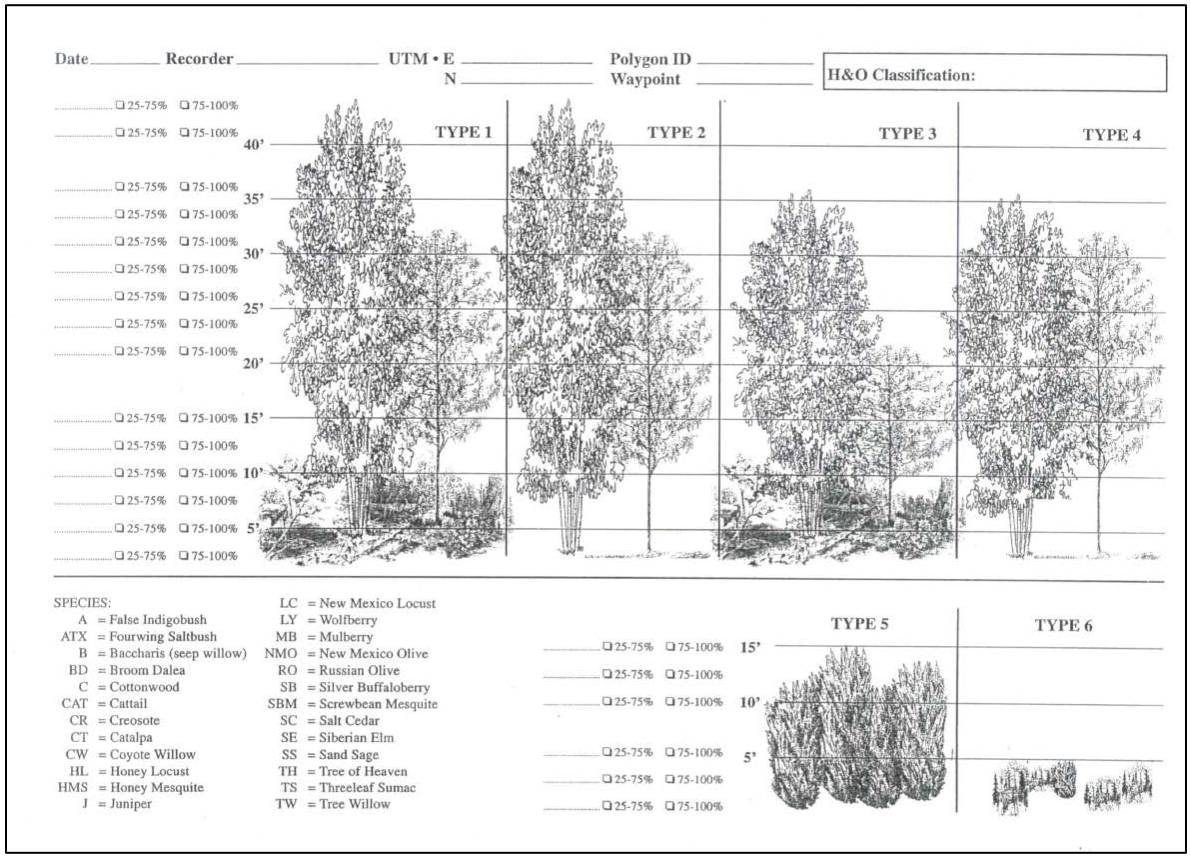


Figure 3. Hink & Ohmart Structural Class Worksheet (courtesy SWCA)

Observations:

The project area follows a portion of the Santa Fe River. The project area begins in a relatively open area and then descends into a narrow canyon. An acequia runs parallel to the river through the canyon. Vegetation consists of a patchy mosaic of shrubs and trees, with a few dense stands of Russian Olive and a few grassy areas. Plots SFP1_1 is in a relatively open area near the river bank. Plot SFP_1_2 is a rocky site, with a mix of shrubs, grasses, and a few nearby Russian Olive. Plot SFP_1_3 is in a thick stand of Russian Olive and salt Cedar. SFP_1_4 is a relatively grassy area, with Russian Olive, Salt Cedar, and One-seed Juniper in the area. Since monitoring was done so late in the fall, relatively sparse forb and grasses cover may be attributed to seasonal dormancy. These plots were assessed to fall in Hink & Ohmart Structure Clases 1, 3, 4, and 6. 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 of Project Area 1 (pre-treatment) showing plot locations.

PT_ID	Horz_Prec (meters)	Std_Dev	Northing	Easting	Longitude	Latitude
SFP1_1	1.5	0.000538	3939382	397620	-106.1299263	35.5931894
SFP1_2	1.4	0.000552	3939250	397660	-106.1295719	35.5917925
SFP1_3	1.4	0.000377	3939224	397549	-106.1312567	35.5913335
SFP1_4	1.2	0.000743	3939160	397342	-106.1331084	35.5908399
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. Project Area 1 Plot coordinates.

Species observed:

Grasses		**Forbs**	
Scientific name	**Common name**	***Scientific name***	**Common name**
Agropyron cristatum (L.) Gaertn.	Crested wheat grass	*Cylindropuntia spp.*	Cholla
Bothriochloa laguroides	Silver Bluestem		Thistle ?
Bouteloua curtipendula	Sideoats Gramma	Mullein	Verbascum thapus

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 monoosperma*	One-seed Juniper
Salix exigua Nutt.	Coyote Willow	*Tamarix Chinensis*	Salt Cedar
Ribes spp.	Gooseberry	*Ulmus pumila*	Siberian Elm
Ephedra viridis	Green Ephedra	*Pinus edulis*	Piñon

Figure 8. Species observed.

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.

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. *Claunch-Pinto Soil and Water Conservation District Greater Rio Grande Watershed Alliance Riparian Restoration Projects Final Report*.

New Mexico Energy Mineral and Natural Resources Department, Forestry Division (NMSF). 2011. *Description and Scope of Work for Santa Fe – Pojoaque SWCD Projects 1, 2, 4, 5, 10*. New Mexico State Forestry.

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

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

Project: Puerta del Cañon
Project Unit: n/a
Plot: SFP_1_1

Date:	11/17/2011
Time:	0940
Plot size:	1/100

Cover (%)										
Tree canopy	**Seedlings/saplings <5'/5 – 15'**		**Shrubs**		**Gramanoid**	**Forbs**	**Litter**	**Bare Soil**	**Rock**	**Gravel**	**Water or wet soil**
13	0	0	0	0	60	1	1	5	1	1	31

Hink & Ohmart Class: 4/6

Species observed:

Grasses	**Forbs**	**Shrubs**	**Trees**
	Cylindropuntia spp.	*Gutierrezia sarathrae*	*Juniperus monoosperma*
		Ephedra viridis	*Pinus edulis*
		Salix exigua Nutt.	*Elaeagnus angustifolia*

Comments:

None.

SFP _1_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
(note: whiteboard is mislabeled in "South" photo)


Looking West from Plot Center


Looking North from Plot Center

Project: Puerta del Cañon
Project Unit: n/a
Plot: SFP_1_2

Date:	11/17/2011
Time:	1008
Plot size:	1/100

Cover (%)										
Tree canopy	**Seedlings/saplings <5'/5 – 15'**		**Shrubs**		**Gramanoid**	**Forbs**	**Litter**	**Bare Soil**	**Rock**	**Gravel**	**Water or wet soil**
3	0	0	3	8	7	1	1	3	65	8	15

Hink & Ohmart Class: 3

Species observed:

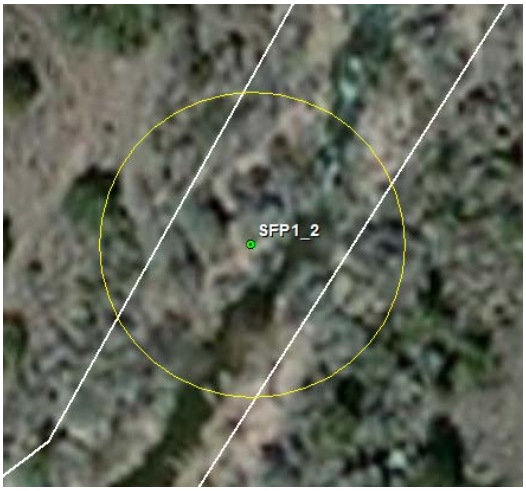
Grasses	**Forbs**	**Shrubs**	**Trees**
Bothriochloa laguroides		*Fallugia paradoxa*	*Elaeagnus angustifolia*
Bouteloua curtipendula		*Salix exigua Nutt.*	

Comments:

None.

SFP _1_2 Plot Photos

Note: whiteboard is mislabeled in the following photos.

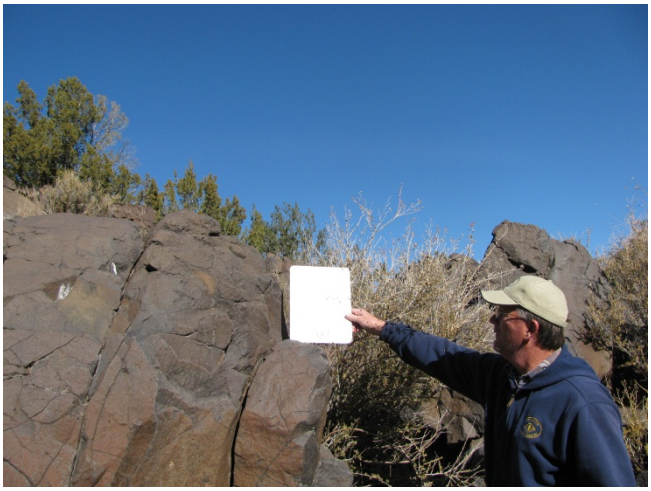


May 2011 Aerial View, Circle = 1/10 acre

Plot Center from North

Looking South from Plot Center

Looking West from Plot Center



Looking North from Plot Center

Looking East from Plot Center

Project: Puerta del Cañon
Project Unit: n/a
Plot: SFP_1_3

Date:	11/17/2011
Time:	1040
Plot size:	1/100

Cover (%)											
Tree canopy	**Seedlings/saplings <5'/5 – 15'**		**Shrubs**		**Gramanoid**	**Forbs**	**Litter**	**Bare Soil**	**Rock**	**Gravel**	**Water or wet soil**
97	1	0	0	0	22	0	75	2	1	0	0

Hink & Ohmart Class: 4

Species observed:

Grasses	**Forbs**	**Shrubs**	**Trees**
		Salix exigua Nutt.	*Elaeagnus angustifolia*
			Tamarix Chinensis

Comments:

None.

SFP _1_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: Puerta del Cañon
Project Unit: n/a
Plot: SPP_1_4

Date:	11/17/2011
Time:	1100
Plot size:	1/100

Cover (%)										
Tree canopy	**Seedlings/saplings <5'/5 – 15'**		**Shrubs**		**Gramanoid**	**Forbs**	**Litter**	**Bare Soil**	**Rock**	**Gravel**	**Water or wet soil**
18	0	0	15	0	50	6	17	25	2	0	0

Hink & Ohmart Class: 4

Species observed:

Grasses	**Forbs**	**Shrubs**	**Trees**
	Cylindropuntia spp.	*Fallugia paradoxa*	*Elaeagnus angustifolia*
	Thistle?	*Ribes spp*	*Juniperus monoosperma*
	Verbascum thapus	*Ericameria nauseosa*	*Tamarix Chinensis*

Comments:

None.

SFP _1_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