Summary of PZP Effects over Eight Years on a Population at Return to Freedom's Hub Facility in Lompoc, CA (January 2012)

Celeste Carlisle
Jay Kirkpatrick
Neda DeMayo

Sanctuaries can serve a valuable educational role regarding the biology of wild horses as well as the management issues surrounding this public resource. Population growth must be managed because of obvious limitations, such as limited space and financial resources. Return to Freedom (RTF) selected fertility control as the preferred management option largely because it limited growth and it allowed for normal behavioral and social interactions of the horses. Over an 8-year period (2004 – 2011), 81 foals were born (10.1 foals/year), while 232 foals (29 foals/year) would have been possible without the use of PZP fertility control. Further, a closed system (known horses and ancestry, facilities that enable blood collection, etc.) allows Return to Freedom to easily analyze outcomes of application of fertility control, and to provide data to ongoing, long term research studies about PZP use, including blood titer levels, abscess presence or absence, and long term effects of PZP use on the ovaries and uterus. More importantly, results and lessons derived and learned on-site allow RTF to extrapolate experiences out towards small, partnered projects on range, as well as larger policy work progressing towards humane, sustainable management techniques for wild horses on our public lands.

Wild horse populations continue to be managed primarily through removal programs (i.e., Fish and Wildlife Service [FWS] and Bureau of Land Management [BLM] round ups and adoption programs). While these programs do indeed lower populations of wild horses on public lands on a temporary basis, they are not solution-based in their approach for two reasons; first, although horses are removed from the range, the populations continue to expand, often at faster rates than before the removals through the phenomenon of compensatory reproduction (Kirkpatrick and Turner 1991). Secondly, the problem is simply transferred elsewhere, to either short- or long-term government holding facilities where the horses are not guaranteed permanent placement in homes through adoption programs.

By using PZP, population growth in wild horses can be slowed, stopped completely, or the population can even be reduced.

Most mares with stallions at Return to Freedom (RTF) receive an intramuscular injection, via dart gun, of the immunocontraceptive vaccine Porcine Zona Pellucida (PZP) (ZonaSta-H) once every nine months.

In this summary, we analyzed data from 2004 to 2011, as this was comparable and consistent management in one location and with one population control mechanism implemented (PZP). (After that time, the sanctuary expanded to several satellite facilities, PZP is used in some

bands, and some stallions receive vasectomies. A summary of these results will be made separately.)

A table comparing the numbers of foals actually born at RTF while using PZP versus number of foals expected *without* contraception (using a 55% fertility rate) can be seen below:

Year	**% Mares Foaling**	**% Mares PWI**	**% Mares NR**	**Number of Foals**	**Number of Foals assuming a 55% fertility rate**
2004	25%	10.4%	14.6%	12	26.4
2005	31.24%	12.5%	18.75%	15	26.4
2006	14.29%	4.09%	10.2%	7	26.9
2007	17.31%	1.93%	15.38%	9	28.6
2008	13.46%	1.92%	11.54%	7	31.9
2009	16.7%	0	100%	10	33.0
2010	24.1%	11.2%	12.9%	13	29.7
2011	15.1%	3.8%	11.3%	8	29.2
				81 TOTAL FOALS BORN AT RTF	**232.1 POTENTIAL FOALS BORN AT RTF**

PWI = Pregnant when inoculated **NR** = Non-response

Through the use of the non-hormonal contraceptive PZP (now registered by EPA for horses as ZonaStat-H), Return to Freedom has been able to slow population growth at the sanctuary from 2004 through 2011 to 81 foals, where the possibility for 232 foals existed.