November 2015

LAS CIENEGAS NATIONAL CONSERVATION AREA

TECH TALK
Fall 2015
News for Biological Planning

Riparian

Upland

Heritage

Landscape

Linda Kennedy Photo

Biological Planning

Facilitate
information sharing, education and learning among stakeholder

Update
participants on recent decisions and plan ahead for future ones

Gather - Document
stakeholder/partner feedback on specific management treatments, proposals, and other issues

Meeting Location:
Empire Ranch Headquarters—Stone Corral 8:30 am

Check the web link for materials and information http://sites.google.com/site/lcncaadaptivemanagement/reference-

Fall 2015 Emphasis:

Meeting Objectives and Upcoming Decisions
Maternity Well: multiple objectives
Grassland conditions

Follow-Up on Spring Issues and Questions

November 13, 2015

Please review the agenda and articles ahead of time.

Las Cienegas National Conservation Area
Fall 2015 Biological Planning Meeting
November 13, 2015 9 AM – 4 PM
Themes: Landscape, Uplands, Riparian

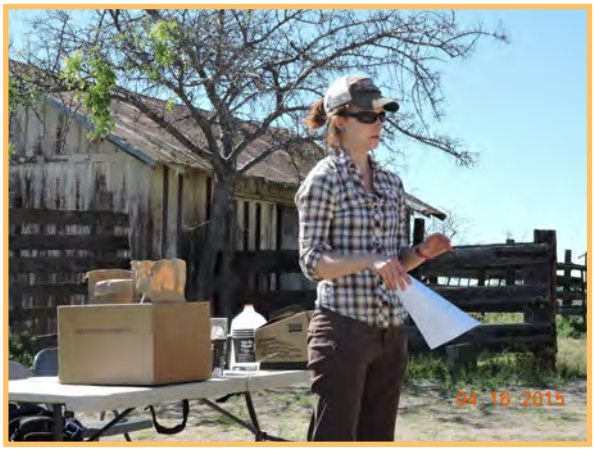
DRAFT AGENDA

Morning Session – Empire Ranch Headquarters (8:30 – 10:00am)

8:30am	**Bagels, Coffee and Networking**
9:00	**Welcome, Introductions, and Agenda Review –** *Karen Simms, BLM*
9:10	**BLM and Coordinating Team Updates** **<u>BLM Updates</u> –** *Karen Simms, BLM* **<u>Landscape Tech Team</u>** **1. BLM Landscape initiatives updates** BLM Healthy Lands Focal Areas - *Dan Quintana/Amy Markstein* RMP Evaluation and Implementation Plan status – *Amy Markstein* **2. Cross-cutting initiatives, adjacent lands, and partner updates** Coordinated Resource Management Plan (CRMP) – *Emilio Carrillo, NRCS, and Ian Tomlinson, Vera Earl Ranch* Cienega Watershed Partnership State of the Watershed – *Larry Fisher, UofA SNRE and CWP* Science on Sonoita Plain – Larry Fisher, *CWP* Engaging stakeholders in the Cienega Watershed – *Shela McFarlin, CWP* Pima County Watershed Level Assessment Coronado National Forest Updates – *James Heitholt, CNF* Sustainable Recreation – *Tahnee Robertson, SDR* Broad scale monitoring strategy Appleton-Whittell Research Ranch – *Linda Kennedy* AZ Game and Fish Department - *Robert Fink* AZ Antelope Foundation - *John Millican* Desert LCC, Climate-smart Landscape Conservation Planning and Design – *Tahnee Robertson* 2015 LIDAR Imagery for Las Cienegas – *Gita Bodner, TNC* **<u>Heritage Tech Team</u>** – *Shela McFarlin, CWP* Cienega Watershed Timeline Project: Update and next meeting Back Then Internship Project Hummel House Charrette and Cultural Resource Management Plan **<u>Youth</u>** YES! 2015/16 Youth Engaged Stewardship – *Shela McFarlin, CWP* Southeast AZ youth engagement – *Tahnee Robertson, SDR* **<u>Riparian Tech Team</u> –** *Dennis Caldwell, FROG and Cat Crawford, USFWS* Well monitoring - *Dave Murray, BLM* FROG project - *Dennis Caldwell, FROG* **<u>Uplands Tech Team</u>** – Topics covered in field visit

Field Tour (10:00am – 4:00pm)

10:00	**Stop 1: Johnson Pasture (Key Area 10)** – *Ian Tomlinson, Vera Earl Ranch, and Dan Robinett, Robinett Rangeland Resources* ***Purpose:*** Discussion on drought recovery and rest rotation system. ***Management objectives*** Ecological site: Loamy Swale Bare ground <30% (<50% immediately after severe disturbance like fire or drought) Perennial grass basal cover ≥10% (≥8% after disturbance) ***Discussion/Feedback*** Follow-up on last year's discussion here. Is the grass coming back? What did we do right? What did we do wrong? How was this pasture grazed last year? Thoughts on use in Bellota pasture and planned rest for Bellota and Johnson pastures. Overall thoughts on this rest rotation system and how it has been working, and how continuing Lehmann lovegrass expansion affects decisions
11:30	**Stop 2: Prairie Dogs (Orchard Pasture)** - *Tim Snow, AGFD* ***Purpose:*** Inform on dispersal and expansion of Cieneguita black-tailed prairie dog colony; discuss upcoming Sands Ranch colony; report on fall capture results. ***Management objectives:*** Achieve a self-sustaining population of black-tailed prairie dogs, a keystone grassland species, on LCNCA on up to 1000 acres. Open grasslands with trees limited to drainages ***Discussion/Feedback:*** What have people seen? When there is a sighting Tim Snow is the contact (520-388-4449)
12:15p	**Lunch**



1:30

Stop 3: Maternity Well - *Karen Simms, BLM*

Purpose: Inform and coordinate management

Management topics:

- Planning for water development
- Maintenance of site
- Monitoring Update - *Kristen Duarte, BLM*
- FROG project - *Dennis Caldwell, FROG Project*
- Antelope suitability - *John Millican, AZ Antelope Foundation*

Management objectives

Ecological sites: Pasture has Sandy Loam Upland (no KA), Loamy upland (KA41)

- Bare ground <30% (<60% after major disturbance)
- Perennial grass basal cover >8 (>4 after disturbance)
- Pronghorn:
  - Maintain vegetation cover 10-18 inches during fawning season (April through June each year) in key fawning areas, and presence of >5 grass and shrub species in the vegetation communities.
  - Limit trees to no more than 5% of the total cover.
  - Maintain scattered trees >12 feet tall in the habitat.
  - Ensure usable water within 1 mile of key fawning areas.

Discussion/Feedback:

- What type of coordination is needed for the different activities and uses taking place at this site?
- Are there additional measures that need to be taken for pronghorn management?

2:15

Stop 4: Andrada Loop

Purpose: Look at post-burn recovery

Management objectives:

Ecological site: North Pasture. 2009 Cedar Burn was on Loamy Slopes, & Loamy/Sandy Loam Upland ecological sites. Only KA44 was burned.

- Objectives for Loamy Slopes:
  - KA2, north facing: Bare ground <20% (<30%); Perennial grass basal cover ≥8% (≥5%)
  - KA3, south facing: Bare ground <30% (<40%); Perennial grass basal cover ≥7% (≥4%)
  - KA44, east facing: Bare ground <30% (<40%); Perennial grass basal cover ≥7% (≥4%)
- Objectives for Sandy Loam Upland:
  - KA8: Bare ground <30% (<60%); Perennial grass basal cover ≥8% (≥4%)

Discussion/Feedback:

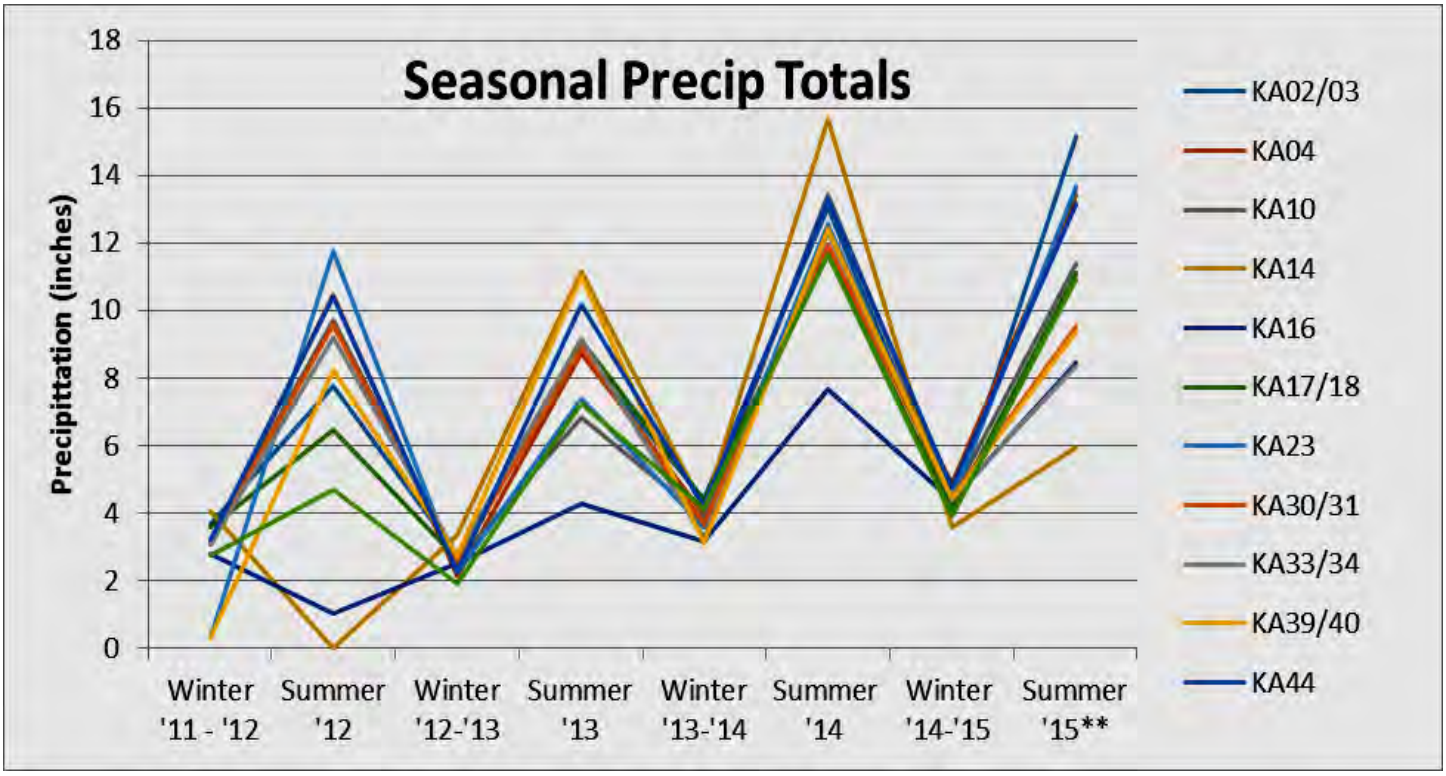
- Lessons learned on prescribed fire
- Upcoming plans for fire use
- Ways to track grass mortality and recovery

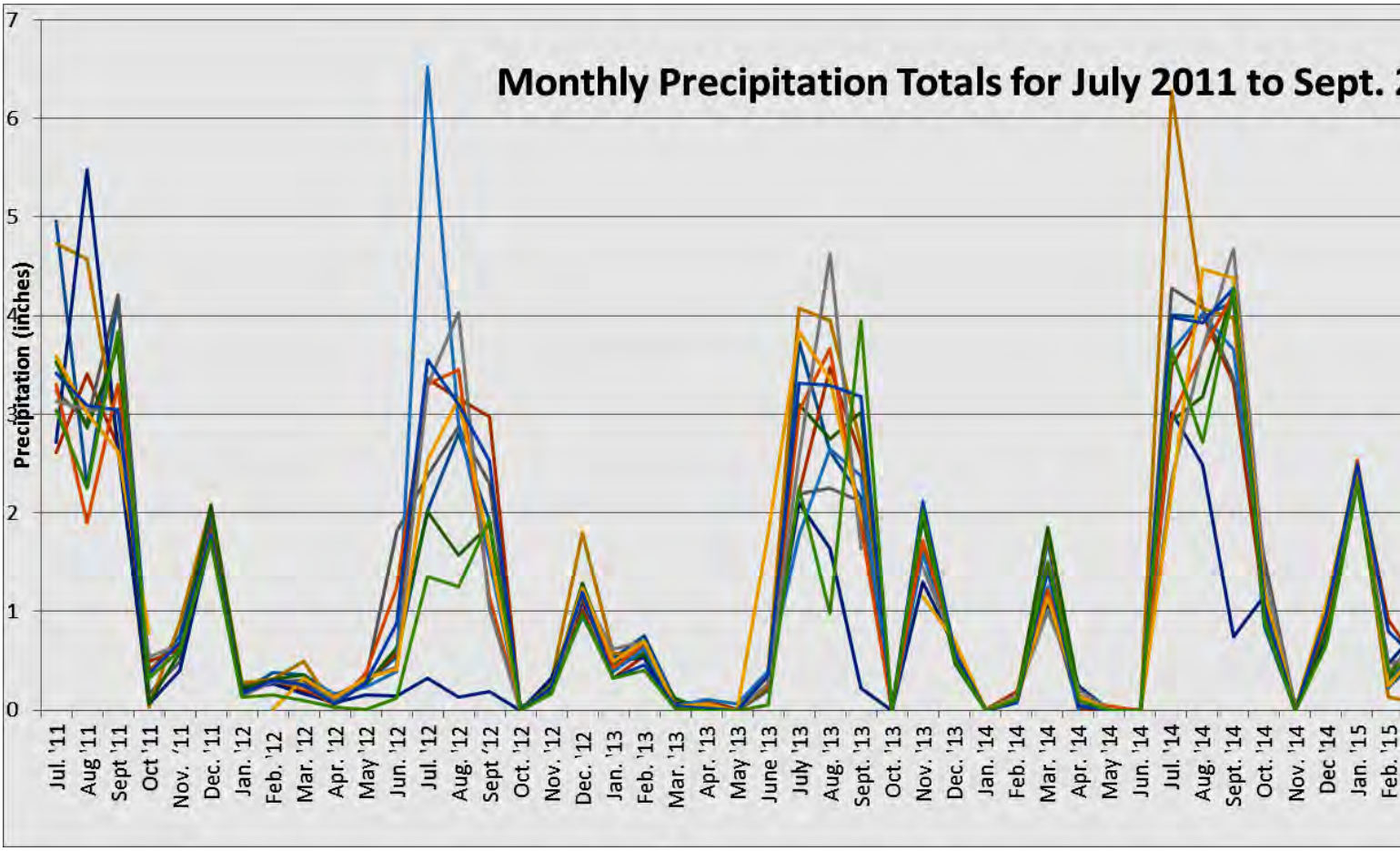
3:00	**Stop 4: Empire Pasture** – *Ian Tomlinson, Vera Earl Ranch* ***Purpose:*** Look at recovery after 3-4 years of severe drought and light grazing this year. Discuss proposed winter use. ***Management objectives:*** Ecological sites: Pasture has Loamy/Sandy loam upland (no KA), Loamy Slopes (KA42): Bare ground <30% (<40%); Perennial grass basal cover ≥7% (≥4%) ***Discussion/Feedback:*** Feedback on proposed use
3:30	**Wrap up and next steps**
4:00pm	**Head home**

Upcoming Meetings

Society for Ecological Restoration Southwest Chapter Conference – November 20-22
State of the Watershed – January, 2016 (date TBD)

LCNCA Precipitation Totals



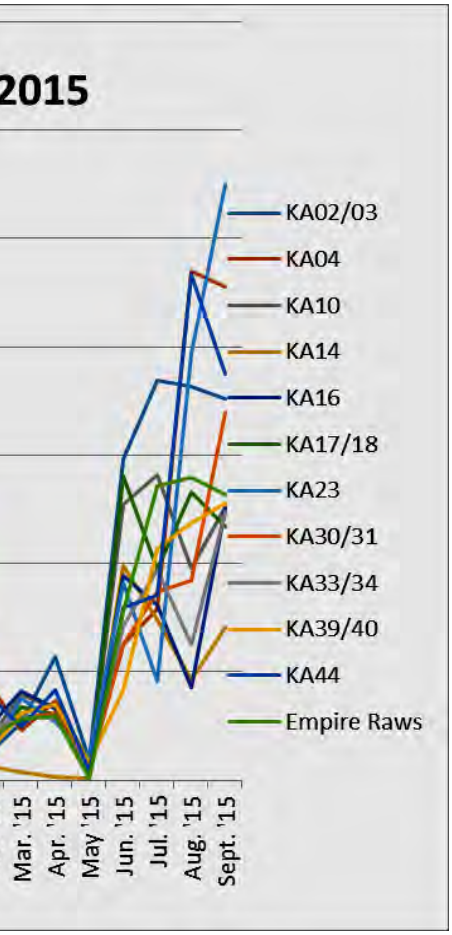


LCNCA Precipitation Totals

Seasonal* Totals	Winter '11 - '12	Summer '12	Winter '12-'13	Summer '13	Winter '13-'14	Summer '14	Winter '14 -'15	Summer '15**
KA02/03	3.68	7.75	2.76	8.72	4.42	13.04	4.11	15.13
KA04	3.09	10.44	2.15	8.72	3.94	11.89	4.86	13.45
KA10	3.22	9.71	2.56	6.81	3.88	13.42	4.46	11.40
KA14	4.03	0.02	3.33	11.14	4.13	15.64	3.56	5.93
KA16	2.80	1.01	2.53	4.28	3.16	7.67	4.37	8.44
KA17/18	3.56	6.47	2.64	9.11	4.38	11.66	4.11	11.10
KA23	0.33	11.75	2.22	7.38	3.58	12.55	4.39	13.68
KA30/31	3.17	9.56	2.54	8.90	3.65	11.96	4.46	9.53
KA33/34	3.05	9.21	2.75	9.17	3.26	12.3	4.41	8.37
KA39/40	0.33	8.21	2.72	11.00	3.11	12.41	4.43	9.40
KA44	3.21	10.40	2.26	10.17	4.19	13.29	4.76	13.15
Empire Raws	2.72	4.70	1.89	7.23	4.14	11.65	3.92	10.90

*Summer is April to October, Winter is November to March

** No October 2015 Data



Water Year Totals	2012	2013	2014	2015
KA02/03	11.79	11.5	16.61	20.09
KA04	14.03	10.87	14.79	18.89
KA10	13.1	9.34	15.8	16.6
KA14	4.08	14.47	18.59	10.59
KA16	3.88	6.81	9.67	13.15
KA17/18	10.08	11.78	14.96	15.61
KA23	12.08	9.6	14.91	18.53
KA30/31	13.14	11.44	14.63	14.39
KA33/34	12.80	11.92	14.16	13.59
KA39/40	9.32	13.72	14.32	14.41
KA44	13.98	12.43	16.43	18.47
Empire Raws	7.74	9.12	14.89	15.16

GRAZING OPERATIONS: ——Ian Tomlinson

SPRING AND SUMMER 2015 GRAZING ROTATION

April 20 thru July 15: **500 cows and 38 bulls in Mac's Sacaton, 500 Acres East, 5 Wire, Hummel Sacaton, Hilton Sacaton. Will use Hummel Pothole, Oil Well, Lane Tank, 5 Wire bog, Irrigation Well, Cienega Tank.** **Actual was the same.**

May 1 thru July 15: 520 **cows and 37 bulls in Cieneguita, 500 Acres West, Bill's Sacaton, Gardner Sacaton, Cottonwood Sacaton. (Add cows from Maternity on June 15).** **Actual grazing: Cattle stayed in the sacaton longer than anticipated despite the gates being opened for them on July 23rd. We moved the cattle out to Oil Well and Johnson on August 1st.**

July 15 to July 30: **1100 cows and 65 bulls in Johnson pasture.** **Actual: 1138 cows and 60 Bulls from July 15 to August 8 and 9. The cows were not moved into Johnson, at full numbers, until August 1. We also used Oil Well pasture. We stayed longer in the pasture because of good early rains and acceptable use levels. We also spread the cattle out more using Enzenberg Tank in conjunction with the others.**

August 1 to August 15: **1100 cows and 65 bulls in Springwater pasture.** **Actual: Did not use.**

August 16 to September 5 through 10: **1100 cows and 65 bulls in Bellota pasture** **Actual: Went into pasture August 8 through August 12 with 1138 cows. Stayed in the pasture until September 12th. Grazing was moderate but at the critical time. The plan is to rest the Bellota pasture next summer and then not graze it until October of 2017. Essentially giving the pasture two full growing seasons of rest.**

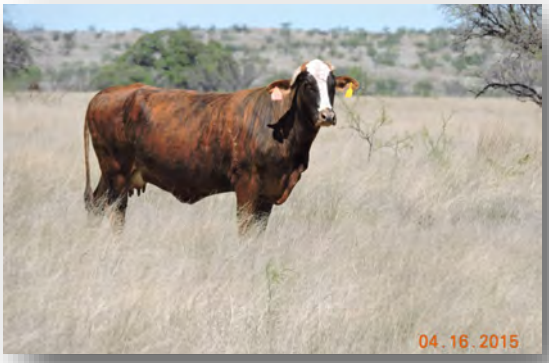
September 10 through November 1: **65 bulls in Enzenberg pasture** **Did not use. Bulls were moved to the Vera Earl.**

September 10 through September 30: **1100 cows in Empire Pasture** **Actual: 1138 cows September 12 to September 25.**

October 1 through October 7: **1000 cows in Traps, 1, 2, and Orchard. (Wean Calves)**

October 7 through November 30: **100 cows in Alamo Solo** **Did not do. Put 82 cows in Enzenberg pasture instead.**

October 7 through November 7: **1000 cows in North pasture.** **Actual: 832 cows in North pasture from October 7 to November 8.**

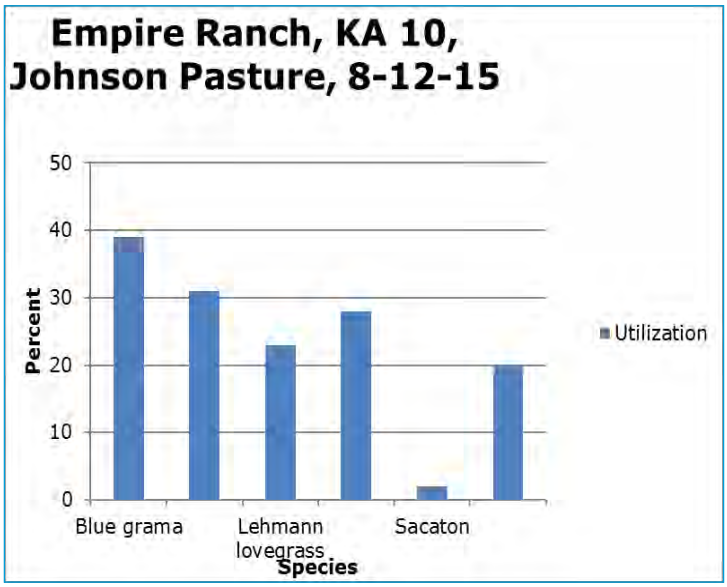


GRAZING REPORT: Dan Robinett

Robinett Rangeland Resources LLC, Elgin, Arizona 85611 11-5-15

On August 12th Ian Tomlinson, Kristen Duarte (BLM) and Alisha Phipps (NRCS) and I reviewed areas on the Empire ranch that had been grazed in the early summer of 2015. We judged utilization in the Johnson pasture and discussed the grazing plans for the late summer-fall grazing periods. Areas grazed during this summer growing season with the cow herd include the Bills and Gardner sacaton as well as the Oil Well and Johnson pastures.

The Johnson pasture was grazed by the cow herd in stages as follows; 500 head came in on July 15th. The Oil Well Pasture and tank were still open to them. Another 250 head came in on July 23rd and the final 400 head came out of the Bill's and Gardner sacaton pastures on August 1st. Most of the cow herd came out of Johnson pasture on August 8th and moved to the Bellota pasture. Stragglers were still being moved into the Bellota on the 12th. We looked at grazing utilization in Johnson in two places. We measured grazing utilization at KA 10 in the swale in the north side of Johnson pasture. We estimated utilization at the KA the southern part of the pasture near the Johnson homestead and about 0.25 mile from Johnson tank. Summer rainfall through August 3rd was 8.25 inches at Alvarez well and 6.25 inches at the Hummel house. Utilization was moderate on blue grama and light on other grass species.



On October 12th Ian and I revisited areas grazed in the Johnson, Bellota and Empire pastures during the summer of 2015. We looked at recovery in the Johnson pasture and judged grazing utilization in the Bellota and Empire pastures. The Johnson pasture made good recovery from grazing with an additional 3-4 inches of rain received late August through September.

Empire, Johnson Pasture, KA 10 on 8-12-15. After grazing period 1150 cows/calves from 7-15 through 8-8-15. (Below left)

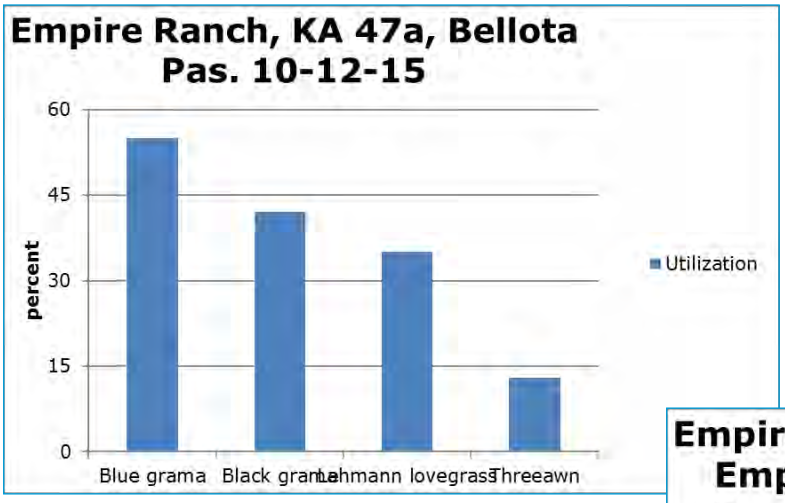
Empire, Johnson Pasture, KA 10 on 10-12-15. Two months recovery from grazing utilization. (Below right)

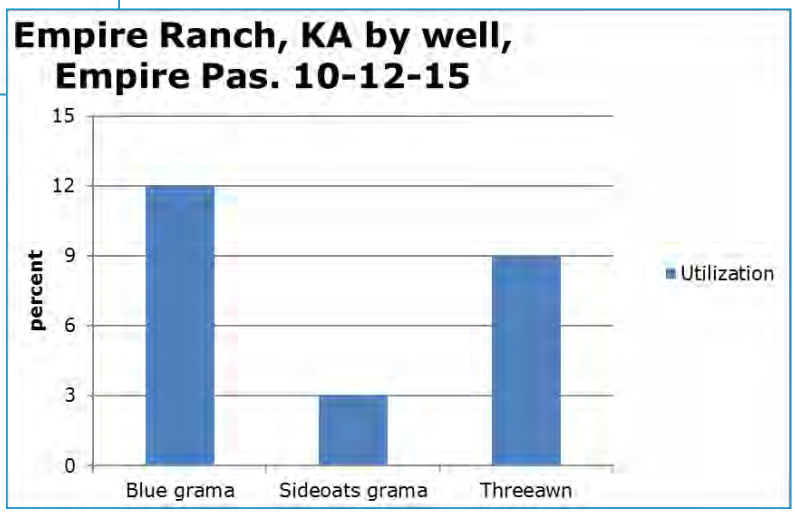
GRAZING REPORT: Dan Robinett continued Please see Newsletter Attachment

Empire, Bellota pasture, forage supplies at KA 47a, 8-12-15. Prior to grazing

Empire, Bellota pasture, grazing utilization at KA 47a, 1138 cow/calves from 8-10-15 to 9-12-15. Taken on 10-12-15.

The cow herd (1138 head) spent a month in the Bellota and Enzenburg pastures (8-10 through 9-12-15). Utilization was moderate at Key Area 37a with 55% on blue grama and 40% on black grama. Rainfall during this time period was about 7 inches. Since cattle came out of the pasture an additional 4-5 inches of rain in September and October resulted in partial recovery of native grass species.





Please see the rest of the Report as an Attachment to the Fall Newsletter…...

:GRAZING OPERATIONS: Proposed Fall and Winter Grazing Rotation —Ian Tomlinson

PROPOSED FALL AND WINTER 2015/2016 GRAZING ROTATION

November 9 thru November 21: **682 cows in North Pasture**

November 9 thru May 1: **100 cows in Alamo Solo Pasture**

November 9 thru February 15: **75 cows in West Pasture**

November 21 thru May 1: **282 cows Springwater Pasture**

November 21 thru May 1: **100 cows North pasture**

November 21 thru March 1: **100 cows Upper Mattie pasture**

November 21 thru May 1: **100 cows Apache pasture**

November 21 thru May 1: **82 cows Empire pasture**

November 21 thru May 1: **100 cows Upper 49 pasture**

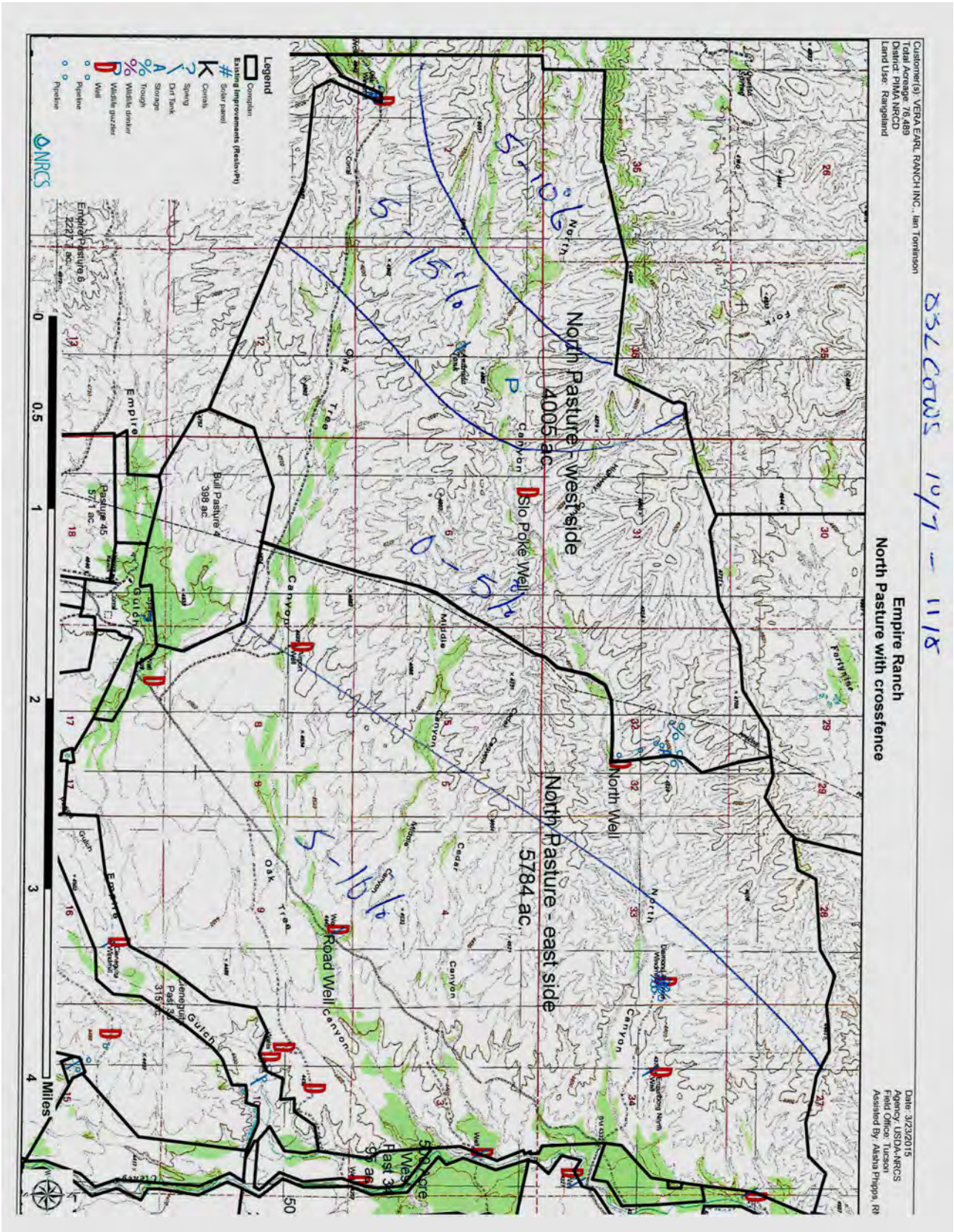
February 14 thru April 15: **75 cows Maternity**

March 1 thru May 1: **100 cows in Lower Mattie pasture**

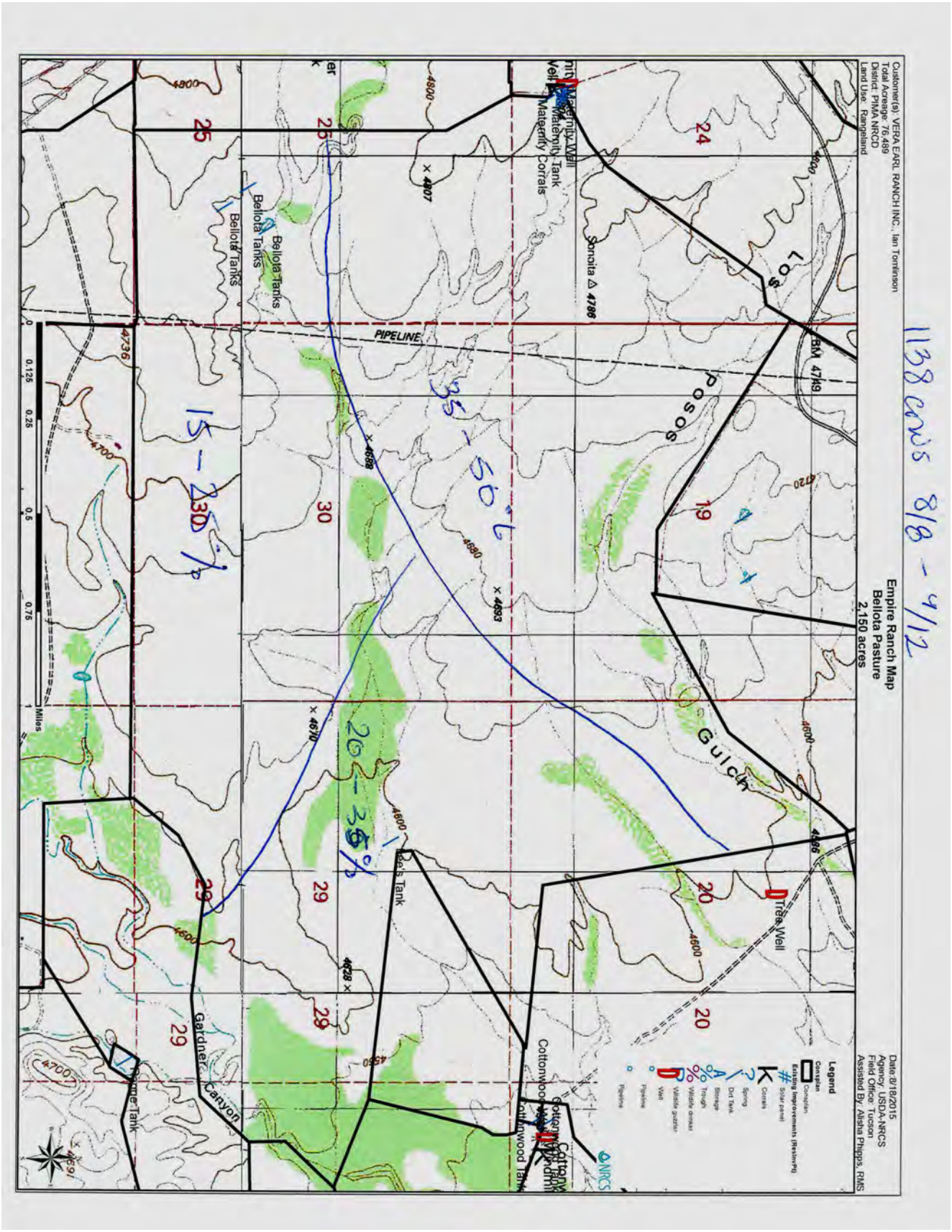
November 15 thru March 1: **55 bulls in Beck pasture**

March 1 thru May 15: **55 bulls in Enzenberg pasture**

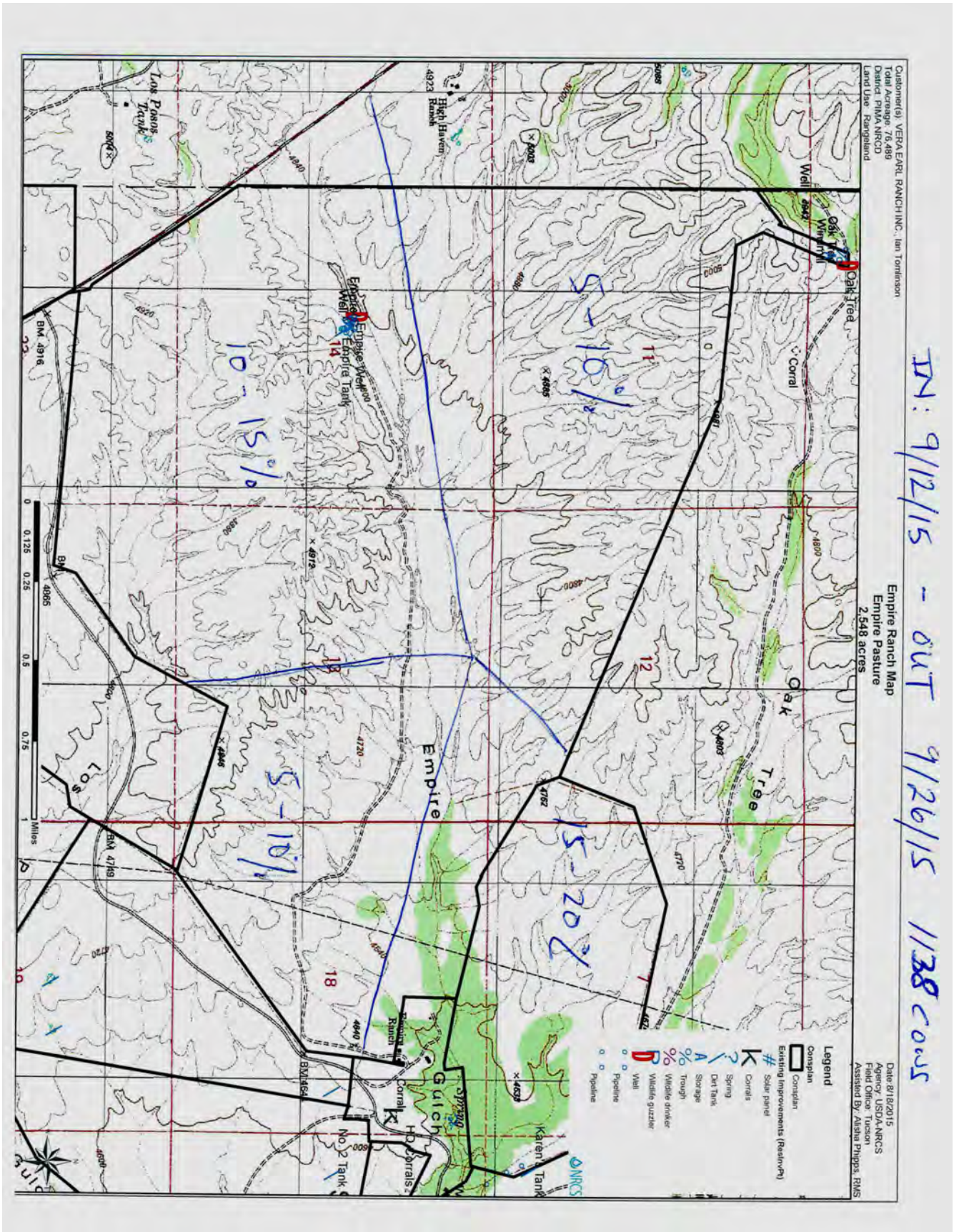
GRAZING OPERATIONS: North Pasture —Ian Tomlinson



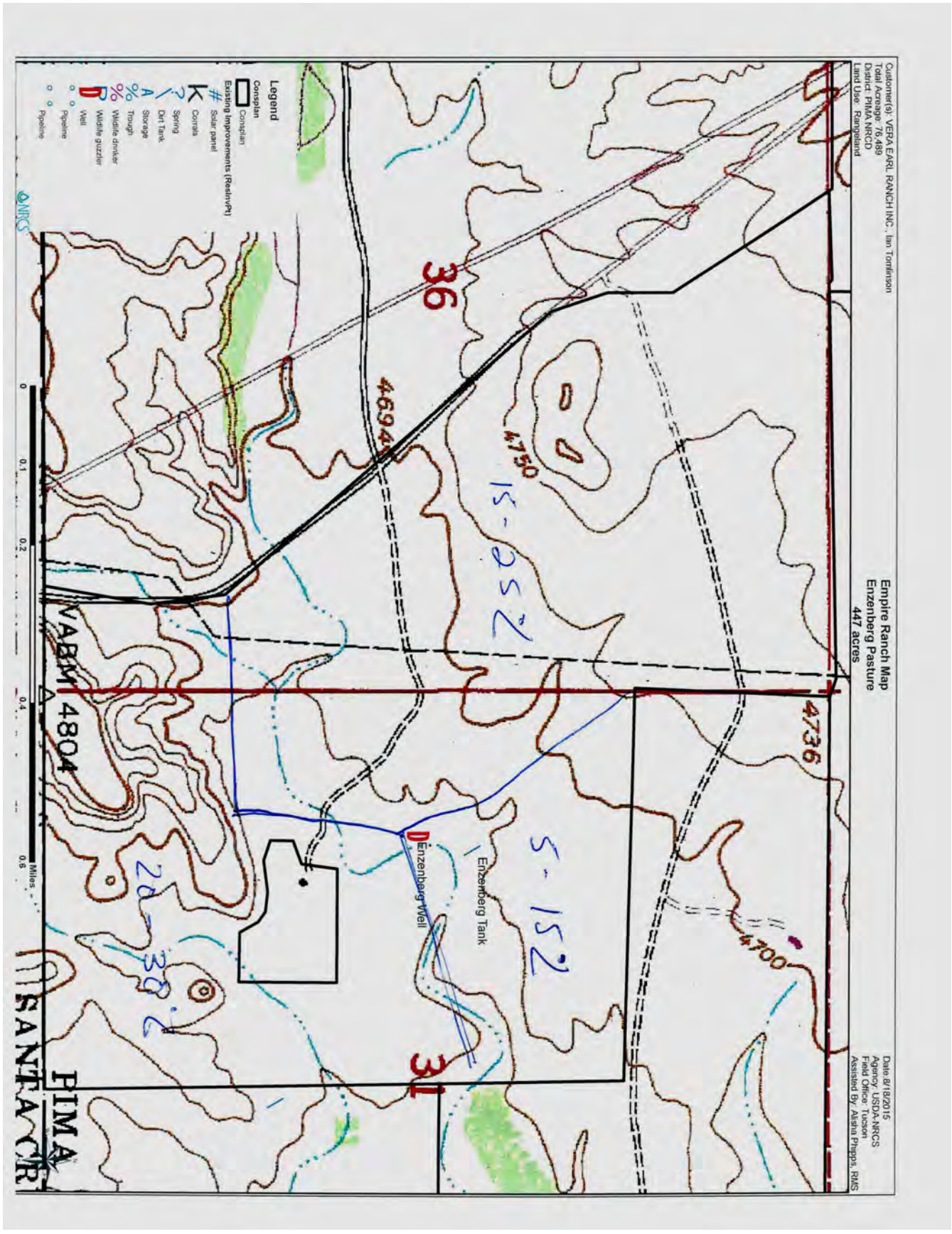
GRAZING OPERATIONS: Bellota Pasture —Ian Tomlinson



GRAZING OPERATIONS: Empire Pasture —Ian Tomlinson



GRAZING OPERATIONS: Enzenberg Pasture —Ian Tomlinson



GRAZING OPERATIONS: Johnson Pasture —Ian Tomlinson

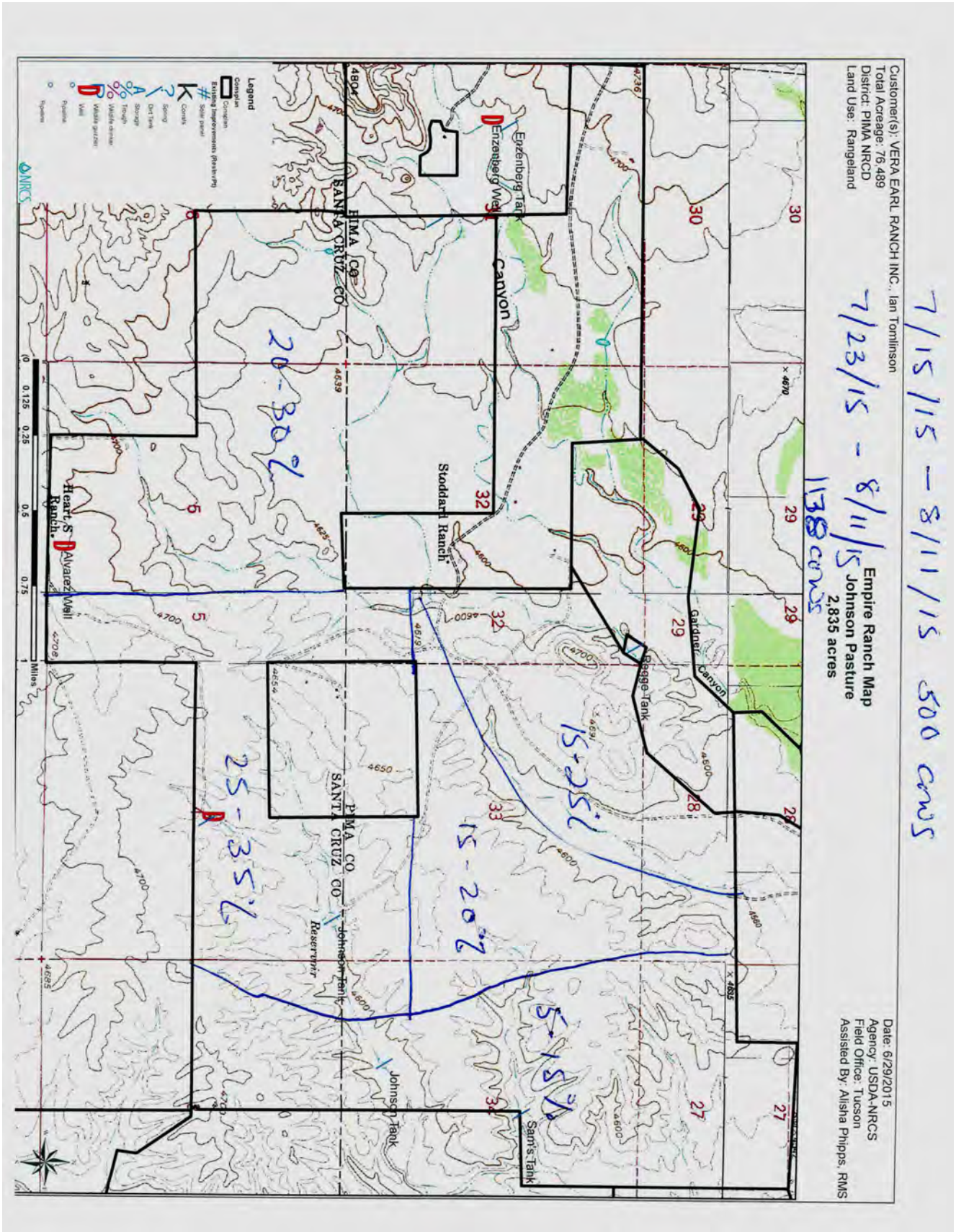


Photo Gallery Spring 2015 Biological Planning

The Cienega Watershed Timeline Project ——Shela McFarlin (CWP)

You must go to the Cienega Watershed Timeline to see the progress made by the Cienega Watershed Timeline Project work group.

Agricultural Research Services host the site at: http://apps.tucson.ars.ag.gov/cienegatimeline/

Over 690 entries are now included on the timeline; once the conservation dates are entered for plants, animals and habitat events, we expect over 1000. But it gets better—at the bottom of the timeline for those periods in which climate data is available, you will find displayed for each decade or year that you select.

Categories filter the events making your first step easy to research. Categories include:
History, animals, plants, land uses, land forms, policies and legislation, people and cultures, climate/weather, prehistory/archaeology, and water. Tags may also be researched but the real power is in key word searches. A menu is under development to guide users and user instructions are being developed for multiple audiences.

References? The standard adopted by the workgroup is that every entry be verified and sourced. In addition, bibliographic materials (books, maps, websites) is being developed as well. This should provide a start for anyone interested in Cienega Watershed history or resources.

What do entries look like? An example but go look for yourself:

Event: A Great Rift Valley forms in southeastern Arizona
Description: The rift valley is associated with the formation of the Gulf of Mexico. Ocean waters fill the southeastern portion of the valley, ebbing and flowing through the years. Rift valley lakes fill the northwestern portions of the valley, as far north as Tucson. A particularly large lake, perhaps 20 miles wide and 60 miles long existed for a period in this area.
Category/Tag: Land Form/Paleontology
Dates: 150,000,000 BP to 95,000,000 BP
Source: McCord R. Timeline for Cienega Watershed. Personal Communication. May 6, 2015.

Want to help? Doug Duncan and Gita Bodner are working on the conservation events—-please contact them to help.

While verification and sourcing are current activities a large looming issue is “significance”. How do we rank the significance of one event over another. This would allow us to vary the size of the fonts in the timeline itself showing major and minor events, but also to produce interesting educational materials. The working group has begun to identify some criteria for evaluating significance but would like your input as well. Some criteria under discussion:

Representative
Proportional
Impactful: Game-changing impacts- coming of the railroad
Changing from Spanish to Mexico to US
Scale from single event to decade?
Could be key context outside
Inside watershed—outside waterside
Unique or special to the watershed that had greater impact
Mineral resources brought mining

Share your thoughts with us. Working Group Members are: Shela, Alison Bunting, Robin Pinto, Doug Duncan, Gerardo Armendariz, Haiyan Wei , Gita Bodner and J J Lamb.

Historic Houses on the LCNCA– What Should Happen to These Houses?

The Grove House was visited by the Biological Planning Teams in April 2015. In June, the YES! youth cleared vegetation to prevent fire spreading under the supervision of Chris Schrager, BLM Archaeologist. The teens came up with a variety of future uses from interpreting nature to a reading room. Chris will consider adaptive re-uses as the conservation efforts move forward.

Historic photo: Grove House is most likely the small single room structure in the foreground.

The Hummel House was visited by the Biological Planning Team in Dec 2013. The Heritage Technical Team is working with BLM staff Chris Schrager and Amy Sobeich on the Cultural Resources Management Plan and planning a potential charrette to consider uses for the historic property from a cabin rental program to educational support facility. Besides the Hummel House historic features, a very large prehistoric site attest to earlier uses of the area.

Highlights from the Appleton-Whittell Research Ranch

Las Cienegas Biological Planning Meeting Fall 2015
Linda Kennedy, Ph.D., Director; Roger Cogan, Conservation Program Manager;
Suzanne Wilcox, Office Manager

The season was one of the busiest in recent memory for research. Examples of external (non-AWRR staff) projects that took place since the spring Bio Planning meeting include:

Erik Andersen, University of Arizona, and crew continued his dissertation work on the effects of woody encroachment on grassland birds,

Anthony Gilbert and crew, University of Ohio, studied thermal dependence on locomotor performance for *Urosaurus ornatus,*

Matthew Lattanzio, Ph.D. and crew, Christopher Newport University, continued previous work on tree lizards and spiny lizards, plus collected data on historic collection sites of tree lizards,

Richard Simpson, Arizona State University, studied black-chinned hummingbirds for his dissertation: "Evolution of Hummingbird Visual Ornaments,"

Greg Joder, independent researcher, established a network of trail cameras,

Tony Leonardini, Research Ranch volunteer, continued his year-round avian survey,

Andrew Salywon, Ph.D., Desert Botanical Garden, and **Ron Tiller**, Ph.D., continued their hydrological studies on the Research Ranch and in nearby cienegas,

Tice Supplee, Audubon Arizona, and crew conducted one survey for Yellow-billed Cuckoos, and another for the Research Ranch Important Bird Area,

Al Wheeler, Ph.D., Clemson, and **Billy Krimmel,** Ph.D., University of Arizona, collected specimens for their work on insects specialists on sticky plants,

Corynne Wright and Michael Meyer, Ph. D., Christopher Newport University, were onsite to study the responses of ground beetles to fire,

Justin Zweck, Saint Louis University, returned to continue his work on the pollination ecology of *Dalea.*

Biologists from federal and state agencies collected data on soils (NRCS), atmospheric conditions (NOAA and USDA-ARS), plants (BLM,CNF,NPS, USFWS), and vertebrates (AZGF, USFWS).

Kathryn Miller, a senior at Patagonia Union High School, is shown at left working on her volunteer project, development of a herbarium for TNC's Canelo Hills Cienega Preserve. Kat collects 2 voucher specimens of each species, 1 for CHCP and 1 to add to the Research Ranch herbarium collection.

AWRR staff and volunteers continue monitoring upland vegetation, mesquite encroachment, precipitation, depth-to-groundwater, reptiles, and amphibians.

Chiricahua Leopard Frogs are back on the Research Ranch! After being extirpated by unknown causes in the 1980s, this threatened species has been reintroduced to two locations (see photo). Both populations are doing well and we anticipate new populations will result as individuals mature and began migrating away from the release

Highlights from the Research Ranch continued

sites. Thanks to all who made the return of this species possible: staff from BLM, AZGF, USFWS, the Phoenix Zoo, and the Frog Project!

One of the tasks that no one enjoys is control of non-native **bullfrogs**, but it's necessary to protect natives like Chiricahua Leopard Frogs. All aquatic sites on AWRR and one on the nearby Babacomari Ranch are monitored year-round; this year 34 bullfrogs have been removed.

Thanks to a grant from the **Invasive Plant Program of Arizona State Forestry** (IPG 13-701), our efforts to protect areas of the Research Ranch from becoming dominated by non-native species have taken a huge step forward. *Cardaria draba* (whitetop) in sacaton of O'Donnell Canyon is the focus of one aspect of the grant; we hope to keep this noxious weed from spreading into the Babacomari Cienega, just downstream. In addition, we are treating approximately 200 acres of upland vegetation to maintain dominance by native grasses and treating 25 acres of upland that are dominated by (*Eragrostis lehmanniana*) Lehmann Lovegrass. These efforts will serve several goals: to maintain habitat and reference areas, to document whether heavily infested areas can be reclaimed, and to share the techniques and costs associated with protection of native uplands.

Roger Cogan, who has been with the Research Ranch for 5 years as Conservation Coordinator, recently accepted a promotion to a new position: Conservation Program Manager! The position change better acknowledges his responsibilities, especially his work with Species of Greatest Conservation Need as designated by AZGF (Federal and State Threatened & Endangered, species of concern).

Suzanne Wilcox is AWRR's new Office Manager, taking over from Pat Kugler, who recently retired after more than 9 years of service. Among Suzanne's responsibilities is organizing the Research Ranch's educational seminars – contact her at swilcox@audubon.org if you'd like to be notified of upcoming events.

Check the Research Ranch out on Facebook! https://www.facebook.com/ResearchRanch

YES! Young Engaged Stewardship —-Shela McFarlin and Chris In-Albon

YES! Youth Engaged Stewardship

https://sites.google.com/site/cwpyouth/

See The New Keepers: https://www.youtube.com/watch?v=VhS2yyCRV0E

YES! Youth Engaged Stewardship will open recruiting in May for 12 teens (14 to 19) for the summer 2016 program.

Go to www.cienega.org and then Yes! on the left menu. Applications are due to outreach@cienega.org.

HEAVY YOUTH ENGAGEMENT IN RESTORATION

YES! WE STILL NEED YOU !

Each year scientists and practitioners of land management step up to engage with the youth. In 2016, we will need only a few hours of your time in June or July and will "train" you in working with young people. Contact the YES! Partners:

Shela McFarlin, CWP, shela_mcfarlin@yahoo.com

Chris In-Albon, Empire High School, inac@vail.k12.az.us

Suzanne Dhruv, Ironwood Tree Experience, suzanne@ironwoodtreeexperience.org

Karen Simms, Bureau of Land Management Tucson, ksimms@blm.gov

What have the YES! Teens Contributed So Far?

YES! 2012: 7 students focused their efforts at improving Cottonwood Tank pond for future leopard frog reintroduction. They mapped the study area, propagated deer grass and planted, purchased rocks for stabilizing bank and water tank, laid out placement of fencing, established photo monitoring points, and designed educational signage for the site.

YES! 2013: 9 students focused on improving the Cieneguita ponds for aquatic species of animals and plants. They learned to identify a variety of grasses, sedges, and other native desirable plants. Almost 50 Huachuca water umbel plants were transplanted to one pond and logs were added to protect small fish. Students developed our first volunteer day at the site, transplanting over 150 plugs of native grasses and removing dirt piles. Two television crews filmed their work and reported the story.

YES! 2014: 12 students in nine-sessions assisted by scientists and volunteers completed a sacaton vegetation community restoration project. They purchased 10 tons of rock and placed 5 tons strategically reduce erosion and increase moisture and seed retention for the grasses; they placed downed mesquite limbs to reduce erosion control and to prevent off road access by vehicles. They successfully ran a volunteer day to complete their restoration work at the Cieneguita wetlands. Youth led 23 other volunteers in removing invasive species (cattails and bulrush) and transplanting spike rush to out compete the non-native plants in two habitat ponds. Students completed an initial design and allocated funding for interpretive signs for the sacaton erosion project and the Cieneguita habitat ponds. YES! teens were featured on Arizona Illustrated, Arizona Public Media, which aired in September. Watch us in action: The New Keepers at: https://www.youtube.com/watch?v=VhS2yyCRV0E

YES! 2015: 10 students in nine sessions assisted by scientists and volunteers completed their assessment, project planning, treatments, and related work June 4 through July 18. Teens revisited the Gardner Sacaton site; found that cattle had recently moved through the area and consumed most of the newly established grasses. Students decided to complete a complex restoration effort at the sacaton site working off the efforts of YES! 2014. They configured a long term study plot to compare soil treatments to mitigate erosion at the site. Four treatments were chosen: rock placement, scarification of topsoil, planting of alkaline sacaton plugs, and control (no treatment). Two plots, 100ft x 80ft were measured and marked. Within each plot, 50ft x 10ft subplots were marked off and randomly assigned soil treatment. With the help of the Vera Earl Ranch, cattle were excluded from one plot by installing a bobbed wire fence, but allowed to move freely on the other plot. USGS helped students to complete an Initial ground cover measurements and photo documentation was taken of each subplot. Other classes and individuals will conduct monitoring in 2015-2016.

Monitoring Data Summaries In Progress —-Gita Bodner

Key area monitoring results

2004-2015 Point-intercept measurements of *bare ground cover* versus upland objectives

Pasture	Key Area	Ecological Site	Objective	Bare ground basal cover %												
				2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	**2015**	Most recent
Trap #1	1	Sandy Loam Upland/Loamy Upland	30	51.4	40.8	49.6	18.3	36.2	34.2	28.8			15.9	10.7	**48.6**	48.6
North	2	Loamy Hills	20	9.9	9.6		12.9			2.3		1.1	7.1	5.0	**4.9**	4.9
North	3	Loamy Hills	30	13.1	14.5		23.0			16.5		1.1	10.0	8.8	**9.9**	9.9
North	4	Volcanic Hills/Limy Slopes	30	21.5	20.0		20.4			3.9				0.9		0.9
Upper 49	5	Sandy Loam Upland/Loamy Upland	30	16.5	25.5		32.2			21.6						21.6
Rockhouse	6	Volcanic Hills/Limy Slopes	30	13.5												13.5
Rockhouse	7	Volcanic Hills/Limy Slopes	30	19.4												19.4
North	8	Sandy Loam Upland/Loamy Upland	30	51.8	58.5	46.4	21.1	18.6	12.1		20.4	7.4	16.0	11.8	**16.8**	16.8
Alamo Solo	9	Sandy Loam Upland/Loamy Upland	30	36.4	42.9	54.2		47.4		27.8		26.5		17.9		17.9
Johnson	10	Sandy Loam Upland/Loamy Upland	30	20.9	20.3	37.3	5.2	6.4	11.2		9.2	10.1		3.5		3.5
Hilton	11	Loamy Hills/Limy Slopes	20	7.2	5.4	11.5	8.1	2.8		2.6		1.2				1.2
Hilton	12	Loamy Hills/Limy Slopes	30	18.1	28.0	31.9	11.3	13.1	17.2	16.5		5.5			**21.7**	21.7
Beck	13	Loamy Upland/Swales	30	26.9	47.7	49.2	42.5	13.3	10.5	10.2	11.5	5.2	5.7		**13.6**	13.6
Davis	14	Loamy Upland/Swales	30	25.7	22.6	26.0	11.2	4.0	3.0	4.0	5.2	1.7	6.1	2.3	**6.6**	6.6
Davis	15	Loamy Upland/Swales	20	16.2	8.0	7.5	11.4	8.0	8.8		3.7	1.0				1.0
Springwater	16	Sandy Loam Upland/Loamy Upland	30	22.3	29.3	32.1	35.1	21.0	21.5		10.0	9.5	4.8		**38.5**	38.5
West grazed	17	Loamy Upland/Swales	30	32.7	23.9	23.4	10.8	12.2	10.0	14.5	17.5	3.5	7.0	5.2	**11.6**	11.6
West	18	Loamy Upland/Swales	30	19.4	16.7	25.3	11.5	13.5	10.3	7.8	10.4	2.8	5.4	5.6	**10.6**	10.6
5 Wire	19	Loamy Bottom/subirrigated	30	23.9	24.0		6.9	18.5								18.5
Lower Mattie	20	Limy Slopes/Loamy Upland	30	28.1												28.1
Fresno	22	Limy Slopes	30	26.4	24.8			22.0	18.4		13.7	11.4	3.1	9.0	**15.8**	15.8
Triangle	23	Basalt Hills	30	10.0	10.3			7.5						14.5		14.5
Mac Sacaton excl	*30*	Limy Slopes/Loamy Upland	30	23.2	25.6			16.7				1.6				1.6
Springwater	31	Limy Slopes/Loamy Upland	30	47.3	42.2			35.9	13.2		26.5					26.5
Springwater	33	Limy Slopes/Loamy Upland	30			41.7	35.1	27.3	22.3		9.0	4.2				4.2
Springwater	*34*	Limy Slopes/Loamy Upland	30			51.4	36.2	28.9	25.8		11.8	0.9				0.9
Screwworm	35	Volcanic Hills/Shallow Upland/Clay Hills	30			37.8										37.8
Screwworm	*36*	Volcanic Hills/Shallow Upland/Clay Hills	30			41.3										41.3
Wood out	37	Limy Slopes	30			43.7			16.1		4.8	0.5			**9.7**	9.7
Wood excl	*38*	Limy Slopes	30			43.1			9.0		2.9	0.7			**8.7**	8.7
Apache out	39	Limy Slopes	30			44.1		30.8	17.8	11.0		5.6				5.6
Apache excl	*40*	Limy Slopes	30			45.9		21.3	23.5	13.1		5.5				5.5
Maternity	41	Loamy Upland/Swales	30			39.0	20.8	9.9	12.5	18.0	18.7	6.5	13.0	9.1	**17.7**	17.7
Empire	42	Loamy Hills	30							9.9	4.8	3.3				
North	44	Loamy Hills	30							12.3		7.7		0.8		
Trap #2	46	Sandy Loam Upland/Loamy Upland	30						43.7		32.3	32.3				32.3
Enzenburg	47b	Sandy Loam Upland/Loamy Upland	30						29.7	20.7	42.3	26.3				
Blue Hilton	49	Loamy Upland/Swales	30						13.9	8.2	7.7	7.0	2.7		**7.6**	7.6

paired *exclosure* and grazed key areas

Mesquite removed

meets objective

does not meet objective

meeting objectives:

#	33
%	87%

Notes: Many factors affect bare ground and grass cover including recent and past precipitation, recent temperature regimes, other drought effects, historic and recent use by livestock, soil type, topography, historic soil erosion, shrub invasion, recreational use, exotic plant species, wildlife use, etc.

Monitoring Summaries continued

Key area monitoring results

2004-2015 Point-intercept measurements of *perennial grass basal cover* versus objectives

Key Area	Ecological Site	Objective	Perennial grass basal cover %												
			2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Most Recent
1	Sandy Loam Upland/Loa	8	9.5	3.6	5.6	2.5	4.8	4.4	5.3			0.6	1.3	2.7	2.7
2	Loamy Hills	8	12.7	18.0		6.8			13.5		6.5	6.1	7.4	10.8	10.8
3	Loamy Hills	7	7.5	11.7		5.7			8.3		2.6	3.4	3.6	9.3	9.3
4	Volcanic Hills/Limy Slope	5	4.2	3.4		4.2			10.3				6.5		6.5
5	Sandy Loam Upland/Loa	5	2.8	5.1		3.9			4.6						4.6
6	Volcanic Hills/Limy Slope	5	4.0												4.0
7	Volcanic Hills/Limy Slope	5	3.8												3.8
8	Sandy Loam Upland/Loa	8	7.9	4.2	7.8	9.0	8.3	11.9		6.3	4.3	4.5	12.5	6.9	6.9
9	Sandy Loam Upland/Loa	8	10.5	4.7	7.7		7.0		9.1		4.8		3.6		3.6
10	Sandy Loam Upland/Loa	10	26.8	10.6	15.8	13.7	15.6	18.2		8.4	11.1		0.9		0.9
11	Loamy Hills/Limy Slopes	8	20.3	16.1	12.0	15.9	18.4		17.2		14.1				14.1
12	Loamy Hills/Limy Slopes	7	11.0	9.7	3.4	14.5	12.4	8.6	11.3		11.5			9.9	9.9
13	Loamy Upland/Swales	9	18.9	13.7	8.9	9.6	11.3	9.3	18.5	12.1	17.5	12.2		14.3	14.3
14	Loamy Upland/Swales	10	29.6	28.7	13.8	11.2	15.7	23.1	17.9	19.0	12.5	10.9	14.4	13.9	13.9
15	Loamy Upland/Swales	7	22.5	22.5	6.3	8.7	11.4	10.6		6.4	6.1				6.1
16	Sandy Loam Upland/Loa	8	20.4	11.7	4.7	5.5	10.3	7.8		5.7	4.0	5.2		13.9	13.9
17	Loamy Upland/Swales	9	12.4	19.3	16.0	12.5	15.0	13.5	11.9	5.4	5.8	5.6	6.0	10.8	10.8
18	Loamy Upland/Swales	9	17.8	24.8	19.5	10.9	11.4	11.7	14.1	9.7	9.7	6.6	9.2	7.0	7.0
19	Loamy Bottom/subirrigate	10	19.0	26.7		13.9	23.4								23.4
20	Limy Slopes/Loamy Upland		9.4												9.4
22	Limy Slopes	5	5.9	4.3			6.8	6.9		7.3	2.6	5.3	11.2	14.3	14.3
23	Basalt Hills	5	1.7	5.1			2.9						5.0		5.0
30	Limy Slopes/Loamy Upla	8	11.3	8.0			5.8				5.9				5.9
31	Limy Slopes/Loamy Upla	8	5.3	5.0			3.1	7.0		4.9					4.9
33	Limy Slopes/Loamy Upla	5			0.4	0.9	3.6	4.7		7.4	3.8				3.8
34	Limy Slopes/Loamy Upla	5			1.3	1.8	3.8	5.5		8.6	3.0				3.0
35	Volcanic Hills/Shallow Up	5			7.8										7.8
36	Volcanic Hills/Shallow Up	5			6.0										6.0
37	Limy Slopes	5			1.6			5.0		4.1	2.0			4.3	4.3
38	Limy Slopes	5			2.2			4.8		8.4	4.2			5.1	5.1
39	Limy Slopes	5			0.4		2.7	2.4	4.0		1.8				1.8
40	Limy Slopes	5			0.1		2.2	3.7	5.7		2.9				2.9
41	Loamy Upland/Swales	8			7.2	7.7	13.1	9.3	9.6	4.4	6.2	3.5	6.5	11.2	11.2
42	Loamy Hills	7							14.3	13.2	5.1				
44	Loamy Hills	7							8.8		0.7		2.6		
46	Sandy Loam Upland/Loa	8						4.6		3.0	2.7				2.7
47b	Sandy Loam Upland/Loa	8						6.7	8.7	7.5	7.4				
49	Loamy Upland/Swales	9						14.7	18.9	16.0	13.5	12.2		10.2	10.2

meets objective

does not meet objective

meeting objectives:	
#	18
%	51%

Your LCNCA Landscape

Some contacts:
Tahnee Roberston
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Karen Simms, ksimms@blm.gov
Shela_McFarlin shela_mcfarlin@yahoo.com

Web sites and links:

www.blm

Google site http://sites.google.com/site/lcncaadaptivemanagement/

The BLM Tucson Field Office
520-258-7200
3201 E. Universal Way, Tucson, AZ 85756

Photographs: Thanks to Linda Kennedy, Tahnee Robertson, Karen Simms, Other photos and articles not specifically identified are by Shela McFarlin.

Visit the Cienega Watershed Timeline at: http://apps.tucson.ars.ag.gov/cienegatimeline/

Biological Planning is a collaborative process to implement the flexible management prescriptions in the LCNCA RMP (with emphasis on livestock grazing management) using the best available science and with opportunity for meaningful stakeholder involvement to reduce conflicts.

SCIENCE ON THE SONOITA PLAIN — June 4, 2016

8th Annual

Science on the Sonoita Plain

June 4, 2016

Contacts:

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Larry Fisher at lafisher@email.arizona.edu

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The Science on the Sonoita Plain Symposium is held annually to share results of scientific investigations that are occurring within the upper watersheds of Cienega Creek, Sonoita Creek, and the Babocomari River, and to encourage exchanges among scientists, land managers, local landowners and citizens about the unique and diverse resources of the Sonoita Plain.

2016 Program: invasive species and general science updates.

More info? Contact outreach@cienega.org or he organizing team: Gita Bodner (TNC), Larry Fisher (CWP), Linda Kennedy (ARR)

(AudubonProceedings for SOTSP are posted:

http://researchranch.audubon.org/PDFs/Science%20on%20Sonoita%20Plain%202012.pdf