

UNITED STATES DEPARTMENT OF THE INTERIOR
 BUREAU OF LAND MANAGEMENT
 CALIENTE RESOURCE AREA
 P.O. BOX 237
 CALIENTE, NV 89008

710.2
 Nellis Monitoring File
 (INV055.07)

MEMORANDUM

TO: Area Manager *CHT 4-14-94*

FROM: Wild Horse and Burro Specialist

SUBJECT: Nellis Range Water Source and Utilization Monitoring

On April 7-8, 1994 Gary McFadden, Las Vegas District WH&B Specialist, Tracey Frons, Acting Supervisory Range Conservationist and I conducted water source monitoring and use pattern mapping of the Nevada Wild Horse Range (NWHR) and the associated Nellis Air Force Range. This water source monitoring has been completed at this same time period for the last three years. Use pattern mapping has been completed on the area since 1985.

All accessible water sources used by the wild horse herd on the Nevada Wild Horse Range and the Nellis Range were inventoried. A total of eleven water source (both springs and troughs) were measured. In the following tables is a comparison of the 1992, 1993 and 1994 readings for the monitored sources.

Water Source Inventory on the Nevada Wild Horse Range Nellis Air Force Base April 7-8, 1994			
Water Source	03/31/92	04/06/93	04/7-8/94
Cactus #1	0.625 gal/min	0.625 gal/min	2.14 gal/min
Cactus #2	0.94 gal/min	0.75 gal/min	0.83 gal/min
Lower Antelope A&B	0.016 gal/min	not measurable	trace flows not measurable
Upper Antelope	15 gal/min (due to rain runoff)	not measurable	trace flows not measurable
Middle Rose Trough	2.5 gal/min	3.0 gal/min	2.5 gal/min
Lower Rose Trough	1.875 gal/min	1.5 gal/min	not measurable break in pipe
Cedar Pass Spring	0.25 gal/min	0.54 gal/min	0.25 gal/min

Water Source Inventory on the Nevada Wild Horse Range Nellis Air Force Base April 7-8, 1994			
Water Source	03/31/92	04/06/93	04/7-8/94
Corral Spring Lower Trough	0.25 gal/min	0.625 gal/min	0.5 gal/min
Corral Spring Upper Trough	0.2 gal/min	0.2 gal/min	0.19 gal/min
Tunnel Spring	not measurable	0.4 gal/min	not measurable mine tunnel caved in
Harley Spring	0.125 gal/min	0.17 gal/min	0.125 gal/min

The most noticeable changes in the readings can be seen at Tunnel Spring, Upper and Lower Antelope Springs, Cactus Spring #1 and Rose Spring pipeline's Lower Trough.

Tunnel Spring was not measurable in 1994 because the mine tunnel containing the water source caved in. No measurable amount of water was present at the trough. Will need to re-established the collection box within the mine tunnel in order to use this water source. The cave in may have sealed off the water supply within the tunnel because no water was observed in the tunnel as normally observed.

The Upper and Lower Antelope Springs are essentially dry at this time. During observation of the springs there were approximately 25 horses standing around the springs waiting for the puddles to refill. We were at the sources for about twenty to thirty minutes and the puddles had only filled approximately a quart or so of water. These sources are not primary water sources but they do supply water for at least 100 horses based on horses within 3-5 miles from the springs. If these animals do not venture to the nearby Cactus Spring sources to water we could have a problem in the near future.

Cactus Spring #1 is showing over a three hundred percent increase in its flow rate when compared to the previous years' flows (from 0.625 gal/min to 2.14 gal/min). The collection pool near the source is the same size as last year's but the flow out of the pool is visibly larger than previous years. Cactus Spring #2 shows no dramatic increase in flow rates so I do not know why Cactus #1's flow has increased so dramatically.

The lower trough and overflow pond on the Rose Spring pipeline is dry this spring. The pipeline between the middle trough and the lower trough has several breaks in it. No water is pooling along the pipeline route so detection of the breaks is very difficult. With this water source being dry could pose a significant problem this summer if the pipeline is not fixed before the heat of the summer. I spoke with Joe Altavilla, Nellis Range Liaison about it and he is talking with the USAF about replacing the whole line between the two troughs (approx. 3.5 miles). Further negotiations will have to be pursued.

There are several other springs within the NWHR (Kawich Valley) and Nellis Range that need to be measured and photographed. These springs have been identified as being used by the horse population but no current flow rates or photographs of them can be found. By adding these addition sources to the water source binder developed for the NWHR, the CRA will have a complete and updated listing of all the perennial water sources available to the wild horses within the Nellis Range. Requests for weekend work within Kawich Valley for water source monitoring and utilization mapping are being discussed.

The utilization levels observed during the trip were in the heavy to severe ranges on last year's growth. The utilization levels are the highest (severe category) in the valley bottoms (all of Cactus Flat) and gradually decreasing to the heavy use category on the surrounding hillsides (see use pattern map). These heavy use areas border on being in the severe use category. It is extremely hard to find any residual biomass from last year. All of the previous year's production is being taken during the growing period and it is taken off at the soil surface. Inspection of the ricegrass clumps show that the plants have very little soil holding capabilities left. In fact most of last year's growth that was clipped off at the ground is covered by sand and silt, leaving only the plant's current year's vegetative growth showing where the individual plants are. In some areas it is visible where the blowing silt and sand has accumulated in small dunes between shrub species.

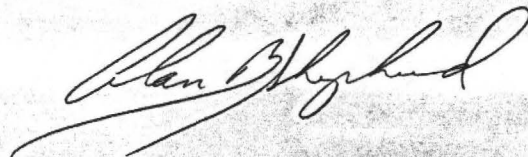
Due to the severe grazing pressure by the horses and the 1987-1991 drought, the perennial grasses in the area to be decreasing in frequency and density. Indian ricegrass plants that should be vigorous and healthy are spindly and have maybe 2 or 3 stems to the clump. They are not getting the chance to set seed and build up root reserves. All available energy is used to maintain itself before and after being grazed upon. If this occurrence continues into the future we may lose the desired grass species on the area.

During the period that Gary and I conducted the use pattern mapping, we also counted and observed the horses that we could see from the route travelled. During this time we counted 885 horses. They appear to be in fair to good health but are still showing signs of poor and inadequate feed. They are generally under weight with hip bones visible on most of the animals observed at close range. Some of the mares were clearly pregnant with this year's foal and some still had last year's foal trailing behind them. A number of foals (35-40) have been born already this year and appear to be healthy at this time.

RECOMMENDATIONS:

1. Continue to monitor the water sources. Measure the flow rates and photograph the springs that have not been added to the water source file.
2. Conduct a water availability inventory on a quarterly basis starting this summer. This has been the previous direction but time constraints have eliminated this previously. We need to make the time available.
3. Remove horses as soon as funding comes available. Utilization levels will support all necessary gathers.
4. Read the frequency transects on the Nellis Range this summer to document any changes in the vegetative community. These transects were last read in 1991 during the evaluation of the Nevada Wild Horse Range and the associated Nellis Range. By completing these transects again, we can see if the horse gathers are having any positive effect on the plant communities. At this time, from viewing the severe utilization levels and the condition of the plants I do not believe they have had an effect.
5. Construct the remaining exclosures that were planned for the NWHR. We need to have these areas to help observe the changes in the vegetation on this area following the future horse removals.

NWHRINV
ASHEPHERD/wm 04/27/93



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4710.2
Nellis Monitoring File
(NV055.07)

MEMORANDUM

TO: Area Manager
FROM: Wild Horse and Burro Specialist
SUBJECT: Nellis Range Water Source and Utilization Monitoring

On April 6-7, 1993 Gary McFadden, Las Vegas District WH&B Specialist and I conducted water source monitoring and use pattern mapping of the Nevada Wild Horse Range (NWHR) and the associated Nellis Air Force Range. This water source monitoring has been completed at this same time period for the last three years. Use pattern mapping has been completed on the area since 1985.

On April 6 Gary and I along with the Tonopah Test Site's Range Liaison, Joe Altavilla (our escort), completed the water source monitoring. All accessible water sources used by the wild horse herd on the Nevada Wild Horse Range and the Nellis Range were inventoried. A total of eleven water source (both springs and troughs) were measured and photographed. In the following tables is a comparison of the 1992 and 1993 readings for the monitored sources.

Water Source Inventory on the Nevada Wild Horse Range Nellis Air Force Base April 6, 1993		
Water Source	03/31/92 Reading	04/06/93 Reading
Cactus #1	0.625 gal/min	0.625 gal/min
Cactus #2	0.94 gal/min	0.75 gal/min
Lower Antelope A&B	0.016 gal/min	not measurable
Upper Antelope	15 gal/min (due to rain runoff)	not measurable
Middle Rose Trough	2.5 gal/min	3.0 gal/min
Lower Rose Trough	1.875 gal/min	1.5 gal/min
Cedar Pass Spring	0.25 gal/min	0.54 gal/min

Water Source Inventory on the Nevada Wild Horse Range Nellis Air Force Base April 6, 1993		
Water Source	03/31/92 Reading	04/06/93 Reading
Corral Spring Lower Trough	0.25 gal/min	0.625 gal/min
Corral Spring Upper Trough	0.2 gal/min	0.2 gal/min
Tunnel Spring	not measurable	0.4 gal/min
Harley Spring	0.125 gal/min	0.17 gal/min

As can be seen in the tables above, most of the water sources stayed basically the same with small increases or decreases between the two readings. The most noticeable changes in the readings can be seen at Tunnel Spring, the lower trough at Corral Spring, Cedar Pass Spring and Rose Spring pipeline troughs. Tunnel Spring was not measured in 1992 because the overflow from the trough spilled over the side of the trough. Following a slight adjustment of the overflow pipe, a reading can now be taken at this trough. The lower trough at Corral Spring showed an increase of approximately 0.375 gallons per minute. This trough is fed from a different collection box and pipe than the upper trough. Cedar Pass Spring had slightly over 100% increase in flow rate from 0.25 to 0.54 gallons per minute. The Rose Spring pipeline system showed an increase of 0.5 gallons per minute at the middle trough (identified as the upper trough in other documents) and a decrease of 0.375 gallons per minute at the lower trough. The decrease is believed to be due to gravity slowing the movement of the water through the pipe and an earlier incident of the water freezing in the pipeline when a valve was accidentally shut off. All the water as a whole are generally in good condition and readily being used by the horses.

There are several other springs within the NWHR and Nellis Range that need to be measured and photographed. These springs have been identified as being used by the horse population but no current flow rates or photographs of them can be found. By adding these addition sources to the water source binder developed for the NWHR, the CRA will have a complete and updated listing of all the perennial water sources available to the wild horses within the Nellis Range.

On April 7 we conducted the use pattern mapping of the horse use area west of the Kawich Mountain Range. This area consists of the east side of the Cactus Range, Cactus Flat and the west side of the Kawich Range. This area is the primary use area for the wild horses during the spring through fall months. Growth on the cool season grasses (Indian ricegrass and bottlebrush squirreltail) and shrubs (budsage, four-wing saltbush and spiny hopsage) has started and is available for use by the horses. The Indian ricegrass averages approximately 4 inches of new growth at the present time and the budsage is very prominent on the area. The horses are actively feeding on these two species. Soils moisture is presently 2-3 inches below the surface so the perennial species still have adequate soil moisture to stimulate growth.


We conducted the use pattern mapping of the horse use area west of the Kawich Mountain Range. This area consists of the east side of the Cactus Range, Cactus Flat and the west side of the Kawich Range. This area is the primary use area for the wild horses during the spring through fall months. Growth on the cool season grasses (Indian ricegrass and bottlebrush squirreltail) and shrubs (budsage, four-wing saltbush and spiny hopsage) has started and is available for use by the horses. The Indian ricegrass averages approximately 3 inches of new growth at the present time and budsage is very prominent on the area. The horses are actively feeding on these two species. Soil moisture is presently 4 inches below the surface so the perennial species still have adequate soil moisture to stimulate growth.

The utilization levels observed during the trip were in the moderate to severe ranges on last year's growth. The utilization levels are the highest (severe category) in the valley bottoms (all of Cactus Flat) and gradually decreasing to the moderate and light use categories on the surrounding hillsides (see use pattern map). The lower documented use levels (light, moderate, and heavy) border on being in the next higher use category (i.e. moderate to heavy). In most cases it is hard to find any residual biomass from last year. All of the previous year's production is being taken during the growing period and it is taken off at the soil surface. Inspection of the ricegrass clumps shows most of last year's growth that was clipped off at the ground is covered by sand and silt, leaving only the plant's current year's vegetative growth showing where the individual plants are.

While we conducted the use pattern mapping, we also observed the horses that we could see from the route travelled. During this time we observed about 600-650 horses. They appear to be in fair to good health but are still showing signs of poor and inadequate feed. They are generally under weight with hip bones visible on most of the animals (especially the mares with foals) when observed at close range. A large number of foals have already been born this year and other mares were clearly pregnant with this year's foal.

RECOMMENDATIONS:

1. Continue to monitor the water sources. Measure the flow rates and photograph the springs that have not been added to the water source file.
2. Conduct a water availability inventory on a quarterly basis starting this summer. This has been the previous direction but time constraints have eliminated this previously. We need to make the time available.
3. Remove horses as soon as funding comes available. Utilization levels will support all necessary gathers.
4. Work with the USAF to replace or maintain the pipeline at Rose Spring. This is a valuable water source and the horses will need its water during the upcoming summer months.
5. Work with the USAF to conduct a horse census during late May or early June to determine a more precise number for the horse population still existing within the NWHR and Nellis Complex.



Sept 93
Nell's Gather

23%
spread
rate

	TYPE ANIMAL		SEX		AGE CLASSIFICATION											ANIMAL COLOR					STATUS		BOBTILED		PREG. OR LAC.		
	HORSE	BURRO	MALE	FEMALE	COLT	1	2	3	4	5	6	7	8	9	10+	BR	BK	SO	BY	GY	OT	SHP	REL	Y	N	Y	N
TOTALS	1522	128	814	715	284	110	108	59	56	28	25	34	33	14	772	314	197	341	541	109	89	871	779	0	0	0	0
PERCENT	92%	8%	53%	47%	19%	7%	7%	4%	4%	2%	2%	2%	2%	1%	51%	20%	12%	21%	34%	7%	6%	53%	47%	ERR	ERR	ERR	ERR
	TYPE ANIMAL		SEX		AGE CLASSIFICATION											ANIMAL COLOR					STATUS		BOBTILED		PREG. OR LAC.		
	HORSE	BURROS	MALE	FEMALE	COLT	1	2	3	4	5	6	7	8	9	10+	BR	BK	SO	BY	GY	OT	SHP	REL	Y	N	Y	N

Jan-Feb 1993
Nellis Gather

33.9% *reprod. rate*

	TYPE ANIMAL		SEX		COLT	AGE CLASSIFICATION										ANIMAL COLOR					STATUS		BOBTAILED		PREG. OR LAC.		
	HORSE	BURRO	MALE	FEMALE		1	2	3	4	5	6	7	8	9	10+	BR	BK	SO	BY	GY	OT	SHP	REL	Y	N	Y	N
TOTALS	1067	0	497	570	270	7	48	51	48	31	29	37	50	9	484	323	109	290	268	17	54	576	487	193	869	152	909
PERCENT	100%	0%	47%	53%	25%	1%	5%	5%	5%	3%	3%	3%	5%	1%	45%	30%	10%	27%	25%	2%	5%	54%	40%	18%	82%	14%	80%
	TYPE ANIMAL		SEX		COLT	AGE CLASSIFICATION										ANIMAL COLOR					STATUS		BOBTAILED		PREG. OR LAC.		
	HORSE	BURROS	MALE	FEMALE		1	2	3	4	5	6	7	8	9	10+	BR	BK	SO	BY	GY	OT	SHP	REL	Y	N	Y	N

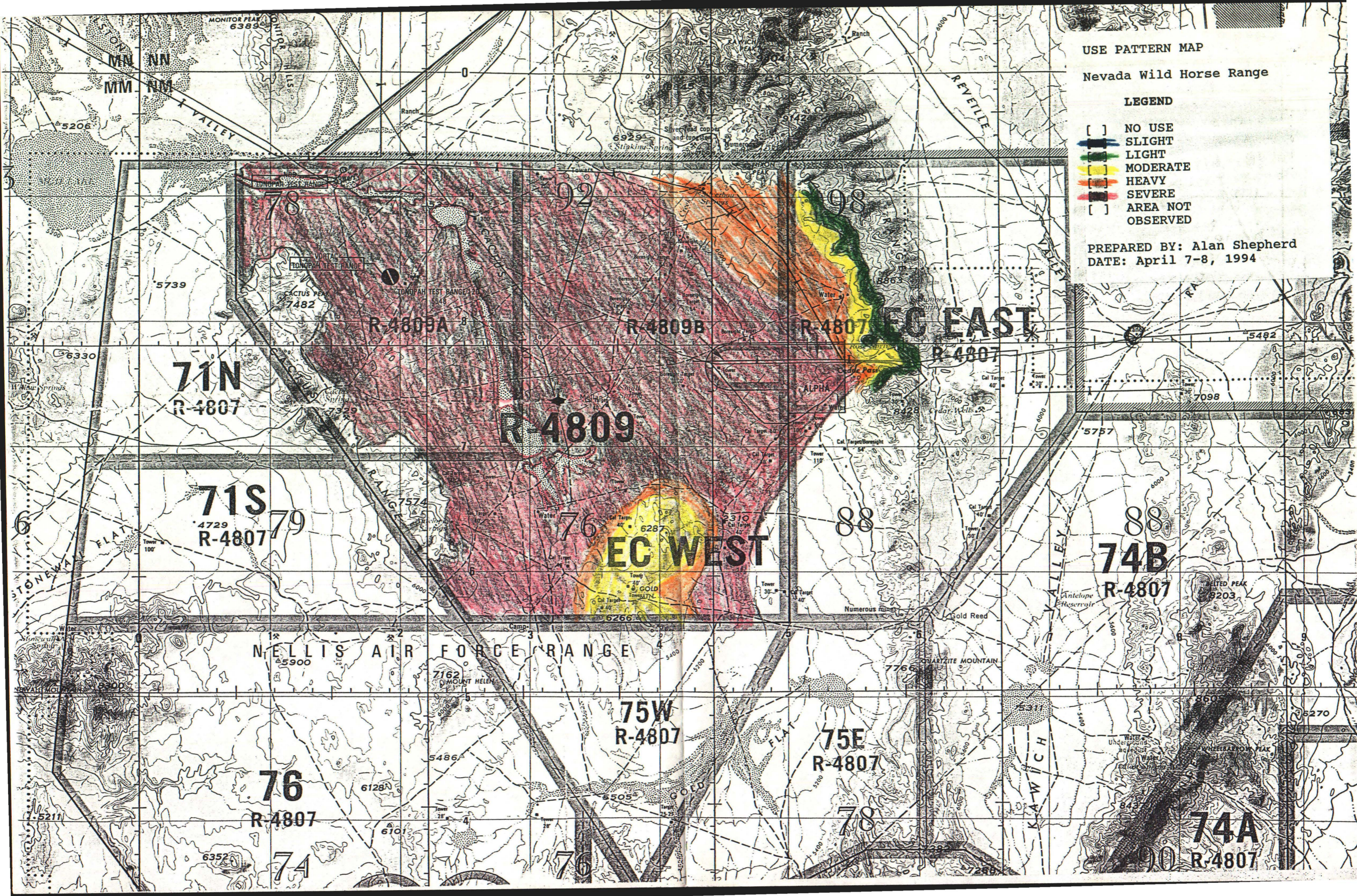
USE PATTERN MAP

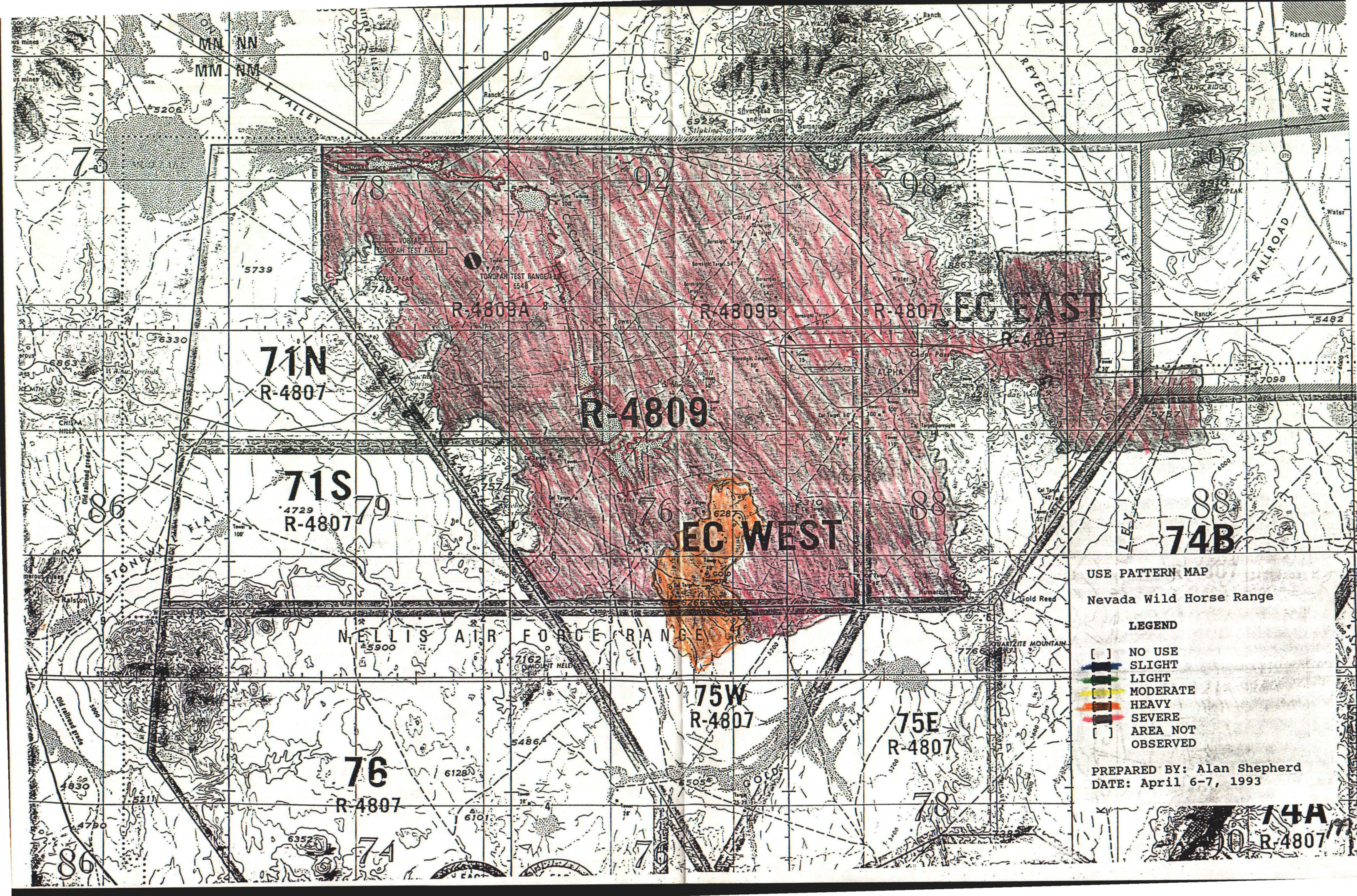
Nevada Wild Horse Range

LEGEND

- [] NO USE
- [] SLIGHT
- [] LIGHT
- [] MODERATE
- [] HEAVY
- [] SEVERE
- [] AREA NOT OBSERVED

PREPARED BY: Alan Shepherd
DATE: April 7-8, 1994





71N
R-4807

R-4809

EC EAST

EC WEST

71S
R-4807

74B

NELLIS AIR FORCE RANGE

75W
R-4807

75E
R-4807

76
R-4807

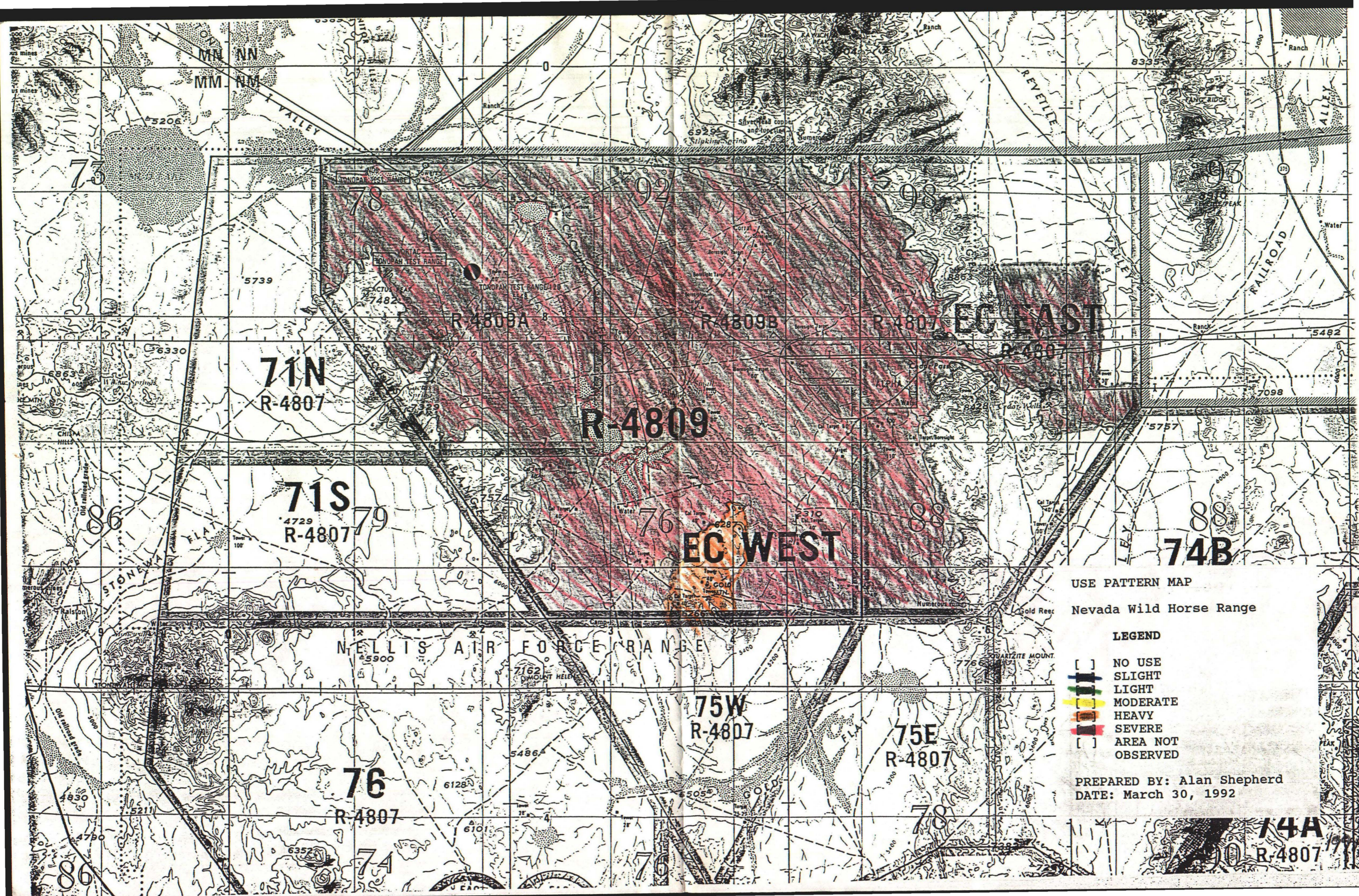
USE PATTERN MAP
Nevada Wild Horse Range

LEGEND

- [] NO USE
- [] SLIGHT
- [] LIGHT
- [] MODERATE
- [] HEAVY
- [] SEVERE
- [] AREA NOT OBSERVED

PREPARED BY: Alan Shepherd
DATE: April 6-7, 1993

74A
R-4807



71N
R-4807

R-4809

EC EAST

71S
R-4807

EC WEST

74B

NELLIS AIR FORCE RANGE

75W
R-4807

75E
R-4807

76
R-4807

USE PATTERN MAP
Nevada Wild Horse Range

LEGEND

- [] NO USE
- [] SLIGHT
- [] LIGHT
- [] MODERATE
- [] HEAVY
- [] SEVERE
- [] AREA NOT OBSERVED

PREPARED BY: Alan Shepherd
DATE: March 30, 1992

74A
R-4807