

**2012 Vegetation Monitoring Program Observation
Monitoring Sites and Livestock Grazing Summary
for the
KERN WATER BANK**



SUBMITTED TO:

KERN WATER BANK AUTHORITY

PREPARED BY:

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May 31, 2013

2012 VEGETATION MONITORING PROGRAM
OBSERVATION MONITORING SITES AND LIVESTOCK GRAZING SUMMARY
for the
KERN WATER BANK

Submitted to:

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May 31, 2013

Vegetation Monitoring Program Observation Monitoring Sites and Livestock Grazing Summary

The Kern Water Bank (KWB) vegetation monitoring program consists of eight permanently established vegetation monitoring sites (OMS), each one located in a representative habitat on the KWB (e.g., canal, ditch, pond, uplands, old farm lands, and conservation lands). The locations of monitoring sites have been unchanged since their establishment in the late 1990's. Their locations are indicated in Figure 1. The primary purpose of monitoring these sites is to provide a qualitative evaluation and documentation of the dynamic nature of the vegetation on the KWB. Data collected and observations made at the monitoring sites are used to help guide vegetation management decisions, particularly in regards to livestock grazing strategies, and to facilitate the application of successful adaptive management strategies for the KWB.

All eight of the vegetation monitoring sites are visited each quarter by two biologists. The biologists collect data such as the observed plant and animal species, basic weather conditions, general vegetation conditions, and other pertinent information. Lastly, photographs from all four cardinal directions (North, East, West, and South) are taken to provide a visual representation of the conditions encountered at each site. This approach has resulted in many years of successive photographic data that show the dynamic nature of the KWB.

Rainfall during the 2012 rain year (October 1, 2011 - September 30, 2012) for the KWB was approximately 4.95 inches (76% of normal). The low rainfall had a dramatic effect on the vegetation conditions in 2012. However, perhaps even more stunning was the effect on the vegetation from the timing of the rainfall. There was a relatively small amount of rainfall early in the season (0.55 inches in October 2011, and 0.76 inches in November 2011). Then, no rain in December 2011 coupled with several frosty nights killed much of the early germinating plants. January and February 2012 were also relatively dry and cool with a combined precipitation of only 0.73 inches. This left essentially all of the KWB devoid of any green growth except for the recharge basins and canals (Photograph 1).

A few brief, but relatively wet, storms in March and April of 2012 brought nearly 3 inches of rain. This late season precipitation did not appear to help the native vegetation; however, the invasive exotic Russian thistle (*Salsola tragus*) exploded throughout the KWB (Photographs 2 - 4). By the end of the year, large areas of the KWB recharge areas were dominated by dense Russian thistle stands. The conservation lands were similarly invaded by this species, but not to the same extent (Photograph 5).

When it was becoming evident in early March that we were having significant Russian thistle germination, cattle were allowed to remain in the Strand and West Areas in an effort to combat the rapidly growing plants (Photograph 6). Although the grazing had some positive effect, grazing alone did not significantly reduce the Russian thistle.

Dense, Russian thistle stands were a common sight throughout many areas of the southern San Joaquin Valley in 2012.

The challenge to control Russian thistle explosions on the KWB is a very difficult one indeed. There will always be years when conditions are going to favor this species. In retrospect, 2012 was one of the most prolific years of Russian thistle that we have witnessed. It is important to learn from this “perfect storm” that led to such favorable conditions for Russian thistle and be able to anticipate as much as possible when such a season may be repeating. This is no easy task, given the size and complexity of the KWB, and the sometimes competing management goals that must be met. However, each year we experience something different and we attempt to learn from these experiences. Because Russian thistle is such a problem for KWB operations, and dense stands of the plant dramatically diminish the habitat value for wildlife, controlling this invasive weed on the KWB is always a top priority. Given what was experienced in 2012 and what has been observed in prior years, the following approaches may be more effective at controlling Russian thistle:

- Earlier turnout of cattle, and a higher number of head remaining for longer duration than what has been implemented in the past
- Consider grazing year-round in the most problematic areas within the recharge area on the KWB
- Draw down the head count when conditions warrant, such as later in the season during a recovery cycle, but still leaving a smaller “maintenance herd” in place
- Consider conducting the mowing/chopping program earlier in the season, before the plants are able to produce viable seed, especially in the most troublesome areas within the KWB recharge area

It is unlikely that cattle can effect any significant rapid change when a Russian thistle explosion is occurring. However, over a period of time cattle can probably improve conditions and help to lessen the explosion of plants. At the KWB, this has to be balanced with other management objectives and goals, as there are also negative impacts associated with cattle grazing. A few of these impacts are excessive soil compaction that may lead to decreased water infiltration in the recharge basins and more difficult burrowing for small mammals within the compatible habitat sectors, excessive damage to vegetation in the areas around water sources where cattle tend to concentrate, and the possibility of overgrazing areas that are not currently Russian thistle trouble areas.

Mowing/chopping operations have been used historically to help with Russian thistle control. However, this technique has been employed largely after the plants have matured. Therefore, although the area is opened up by cutting the plants back to near ground level, there is probably a significant amount of seed that remain. Mowing earlier in the season when the plants are smaller and have not yet matured may diminish the amount of seed that is produced. However, ground nesting birds such as burrowing owl (*Athene cunicularia*), California horned lark (*Eremmophila alpestris*), western

meadowlark (*Sturnella neglecta*), killdeer (*Charadrius vociferus*), and several others are known to nest on the KWB. As a result, mowing that is conducted earlier in the season may not be a suitable choice in areas where nesting ground birds are present. Still, there would likely be sizable areas within Russian thistle zones where no ground nesting would be occurring.

The 2013 season does not appear to be anything like what was experienced in 2012. However, there are still large areas where last year's plants are still attached and ready to be carried away to spread their seed. The KWB Authority has been gathering huge numbers of the Russian thistle drifts along the fences, in the ditches, canals, and other areas, in an effort to reduce the potential for wildfires, remove clogged water conveyances, and enable wildlife movements (Photographs 7 and 8). With continued efforts, it is expected that recovery from the 2012 Russian thistle season will continue, and that hopefully, we might be in a better position to anticipate and react in the future, should there be a repeat of the conditions that led to such a proliferation of this noxious weed.



Photograph 1. Compatible habitat sector on March 26, 2012. Very little new green growth is visible. Most of what was growing was Russian thistle plants.



Photograph 2. Same area as shown in Photograph 1 on June 6, 2012. Russian thistle plants are growing rapidly as a result of the rains in March and April.



Photograph 3. Same area as shown in Photographs 1 and 2 on August 28, 2012. Mature Russian thistle plants dominate the landscape. Very few other plants are present. Unfortunately, large sections of the KWB experienced similar conditions.



Photograph 4. Same area as shown in Photographs 1- 3 on December 4, 2012. By the end of the year, many places on the KWB were dominated by these conditions; dense, senesced Russian thistle plants with very little other vegetation present.



Photograph 5. Conservation bank lands in the South Area on December 4, 2012. Russian thistle dominates the land scape, but to a much lesser extent than what was observed within the recharge areas.



Photograph 6. March 13, 2012. Cattle grazing on germinating Russian thistle and other vegetation in a recharge basin within the Strand Area.



Photograph 7. Canal bottom choked with Russian thistle and other weedy vegetation in mid December 2012.



Photograph 8. Same location as shown in Photograph 7 in early March, 2013 after mowing. Area is now open and wildlife can move through the area.

KERN WATER BANK 2012 VEGETATION MONITORING PROGRAM SITE OBSERVATIONS

LOCATION INFORMATION

LOCATION: OMS-1
 SECTION: 3
 TOWNSHIP/RANGE: 30S/25E
 COORDINATES (CAS-NAD83): 6181490, 2313744
 NUMBER OF ACRES: 40
 VEGETATION TYPE: EMERGENT WETLAND SPECIES PRESENT
 SITE TYPE: POND BASIN/POND LITTORAL ZONES

SURVEY INFORMATION AND PHOTOGRAPHS

1ST QUARTER	SURVEY DATE: 03/26/2012 TIME: 10:55 AM MONITOR(S): J. JONES, J. KANG RAINFALL TO DATE: 3.31 IN WIND DIRECTION: N/A WIND VELOCITY: 0 MPH TEMPERATURE: 64 F HUMIDITY: 41%	NORTH	EAST	SOUTH	WEST
	NOTES: DENSE VEGETATION IN BASIN WILDLIFE PRESENT: CALIFORNIA GROUND SQUIRREL, CALIFORNIA QUAIL, WHITE-CROWNED SPARROW PLANTS PRESENT: AMMANIA SP., BROMUS DIANDRUS, B. RUBENS, ELEOCHARIS MACROSTACHYA, HORDEUM MURINUM SSP. LEPORINUM, LEYMUS TRITICOIDES, MELILOTUS INDICA, RUMEX CRISPUS, SALIX GOODDINGII, XANTHIUM STRUMARIN				

2ND QUARTER	SURVEY DATE: 06/06/2012 TIME: 10:00 AM MONITOR(S): J. JONES, Z. BRISCO RAINFALL TO DATE: 4.93 IN WIND DIRECTION: N WIND VELOCITY: 5 MPH TEMPERATURE: 68 F HUMIDITY: 40%	NORTH	EAST	SOUTH	WEST
	NOTES: WILDLIFE PRESENT: CALIFORNIA GROUND SQUIRREL, CLIFF SWALLOW, MOURNING DOVE, RAVEN PLANTS PRESENT: AMMANIA SP., AMSINCKIA MENZIESII, CHENOPODIUM ALBA, ELEOCHARIS MACROSTACHYA, HIRSCHFELDIA INCANA, LACTUCA SERIOLA, POLYPOGON MONSPELIENSIS, RUMEX CRISPUS, SALIX GOODDINGII, TYPHA LATIFOLIA				

3RD QUARTER	SURVEY DATE: 08/28/2012 TIME: 8:00 AM MONITOR(S): J. JONES, A. VASQUEZ RAINFALL TO DATE: 4.95 IN WIND DIRECTION: N/A WIND VELOCITY: 0 MPH TEMPERATURE: 77 F HUMIDITY: 39%	NORTH	EAST	SOUTH	WEST
	NOTES: PHOTOS SLIGHTLY OFF DUE TO WASP NEST WILDLIFE PRESENT: GREAT HORNED OWL, MOURNING DOVE PLANTS PRESENT: AMMANIA ROBUSTA, CONYZA CANADENSIS, CONYZA COULTERI, ELEOCHARIS MACROSTACHYA, HELIANTHUS ANNUUS, POLYPOGON MONSPELIENSIS, RUMEX CRISPUS, SALIX GOODDINGII, SISYMBRIUM IRIIO, TYPHA LATIFOLIA, XANTHIUM STRUMARIUM				


4TH QUARTER	SURVEY DATE: 12/04/2012 TIME: 1: 20 PM MONITOR(S): J. JONES RAINFALL TO DATE: 0.12 IN WIND DIRECTION: N WIND VELOCITY: 4 MPH TEMPERATURE: 69 F HUMIDITY: 62%	NORTH	EAST	SOUTH	WEST
	NOTES: WILDLIFE PRESENT: BLACK PHOEBE, CALIFORNIA GROUND SQUIRREL, COOPER'S HAWK, MOURNING DOVE, REDTAIL HAWK PLANTS PRESENT: AMMANIA SP., BROMUS RUBENS, CONYZA COULTERI, ELEOCHARIS MACROSTACHYA, JUNCUS BALTICUS, LEYMUS TRITICOIDES, POLYPOGON MONSPELIENSIS, RUMEX CRISPUS, SALIX GOODDINGII, TYPHA LATIFOLIA				

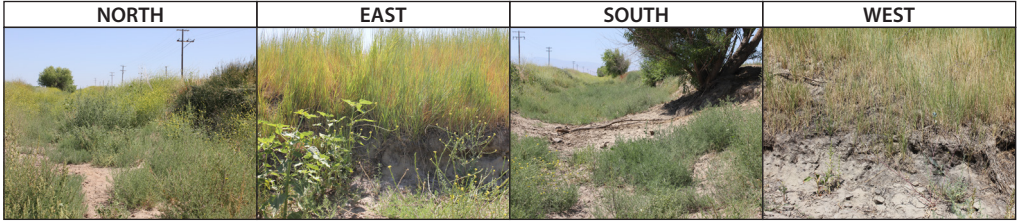
KERN WATER BANK 2012 VEGETATION MONITORING PROGRAM SITE OBSERVATIONS

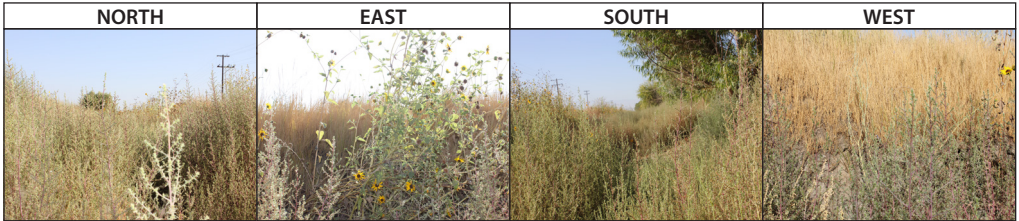
LOCATION INFORMATION


LOCATION: OMS-2
SECTION: 9
TOWNSHIP/RANGE: 30S/25E
COORDINATES (CA5-NAD83): 6177540, 2308574
NUMBER OF ACRES: >1
VEGETATION TYPE: EMERGENT WETLAND SPECIES PRESENT/MOSTLY DOMINATED BY ANNUAL GRASSES AND WEEDS
SITE TYPE: DITCH BANK/DITCH BOTTOM

SURVEY INFORMATION AND PHOTOGRAPHS

1ST QUARTER	<p> SURVEY DATE: 03/26/2012 TIME: 11:25 AM MONITOR(S): J. JONES, J. KANG RAINFALL TO DATE: 3.31 IN WIND DIRECTION: N/A WIND VELOCITY: 0 MPH TEMPERATURE: 65 F HUMIDITY: 43% </p> <p> NOTES: DITCH BOTTOM IS BARE AND MOIST, VEGETATION IS ON UPPER BANKS, OLD TUMBLEWEED DRIFTS SCATTERED IN PORTIONS OF DITCH WILDLIFE PRESENT: PLANTS PRESENT: HIRSCHFELDIA INCANA, HORDEUM MURINUM SSP. LEPORINUM, JUNCUS BALTICUS, LEYMUS TRITICOIDES, MELILOTUS INDICA, SALIX GOODDINGII, SISYMBRIUM IRIO </p>	NORTH	EAST	SOUTH	WEST
					

2ND QUARTER	<p> SURVEY DATE: 06/06/2012 TIME: 10:40 AM MONITOR(S): J. JONES, Z. BRISCO RAINFALL TO DATE: 4.93 IN WIND DIRECTION: N WIND VELOCITY: 5 MPH TEMPERATURE: 69 F HUMIDITY: 38% </p> <p> NOTES: WILDLIFE PRESENT: CALIFORNIA WHIPTAIL, LOGGERHEAD SHRIKE, MOURNING DOVE, REDTAIL HAWK PLANTS PRESENT: ATRIPLEX SERENANA, BASSIA HYSSOPIFOLIA, CHENOPODIUM ALBA, HELIANTHUS ANNUUS, HELIOTROPIMUM CURASSAVICUM, HIRSCHFELDIA INCANA, LEYMUS TRITICOIDES, RUMEX CRISPUS, SALIX GOODDINGII, SALSOLA TRAGUS </p>	NORTH	EAST	SOUTH	WEST
					

3RD QUARTER	<p> SURVEY DATE: 08/28/2012 TIME: 8:30 AM MONITOR(S): J. JONES, A. VASQUEZ RAINFALL TO DATE: 4.95 IN WIND DIRECTION: NW WIND VELOCITY: 5 MPH TEMPERATURE: 77 F HUMIDITY: 38% </p> <p> NOTES: PHOTOS SLIGHTLY OFF DUE TO WASP NEST WILDLIFE PRESENT: PLANTS PRESENT: BASSIA HYSSOPIFOLIA, HELIANTHUS ANNUUS, HELIOTROPIMUM CURASSAVICUM, LEYMUS TRITICOIDES, SALIX GOODDINGII, SALSOLA TRAGUS, XANTHIUM STRUMARIUM </p>	NORTH	EAST	SOUTH	WEST
					

4TH QUARTER	<p> SURVEY DATE: 12/04/2012 TIME: 1:35 PM MONITOR(S): J. JONES RAINFALL TO DATE: 0.12 IN WIND DIRECTION: N WIND VELOCITY: 2 MPH TEMPERATURE: 68 F HUMIDITY: 60% </p> <p> NOTES: MOSTLY BARE GROUND AND RUSSIAN THISTLE, KANGAROO RAT BURROWS WILDLIFE PRESENT: LOGGERHEAD SHRIKE PLANTS PRESENT: SALSOLA TRAGUS, SCHISMUS ARABICUS </p>	NORTH	EAST	SOUTH	WEST
					

KERN WATER BANK 2012 VEGETATION MONITORING PROGRAM SITE OBSERVATIONS

LOCATION INFORMATION

LOCATION: OMS-3
SECTION: 10
TOWNSHIP/RANGE: 30S/25E
COORDINATES (CA5-NAD83): 6177656, 2311449
NUMBER OF ACRES: 80
VEGETATION TYPE: MOSTLY DOMINATED BY ANNUAL GRASSES AND WEEDS/DOMINATED BY RUSSIAN THISTLE AND/OR PRICKLY LETTUCE
SITE TYPE: UPLAND-OLD FARM FIELD

SURVEY INFORMATION AND PHOTOGRAPHS

1ST QUARTER	SURVEY DATE: 03/26/2012 TIME: 11:10 AM MONITOR(S): J. JONES, J. KANG RAINFALL TO DATE: 3.31 IN WIND DIRECTION: NW WIND VELOCITY: 3 MPH TEMPERATURE: 64 F HUMIDITY: 41%	NORTH	EAST	SOUTH	WEST

NOTES: MOSTLY BARE GROUND WITH TRAMPLED DEAD STALKS FROM LAST SEASON. SOME ACTIVE KANGAROO RAT BURROWS
WILDLIFE PRESENT: REDTAIL HAWK
PLANTS PRESENT: AMSINCKIA MENZIESII, BROMUS RUBENS, ERODIUM CICUTARIUM, HIRSCHFELDIA INCANA, HORDEUM MURINUM SSP. LEPORINUM, SCHISMUS ARABICUS, SISYMBRIUM IRIO

2ND QUARTER	SURVEY DATE: 06/06/2012 TIME: 10:30 AM MONITOR(S): J. JONES, Z. BRISCO RAINFALL TO DATE: 4.93 IN WIND DIRECTION: N WIND VELOCITY: 10 MPH TEMPERATURE: 70 F HUMIDITY: 32%	NORTH	EAST	SOUTH	WEST

NOTES: SCHISMUS IS DOMINANT GRASS DUE TO PRECIP PATTERN THIS SEASON, KANGAROO RAT BURROWS
WILDLIFE PRESENT: MOURNING DOVE, RAVEN
PLANTS PRESENT: ATRIPLEX SERENANA, HIRSCHFELDIA INCANA, SALSOLA TRAGUS, SCHISMUS ARABICUS, SISYMBRIUM IRIO

3RD QUARTER	SURVEY DATE: 08/28/2012 TIME: 8:20 AM MONITOR(S): J. JONES, A. VASQUEZ RAINFALL TO DATE: 4.95 IN WIND DIRECTION: N WIND VELOCITY: 2 MPH TEMPERATURE: 78 F HUMIDITY: 35%	NORTH	EAST	SOUTH	WEST

NOTES: DENSE MATURE RUSSIAN THISTLE STANDS, CATTLE GRAZING, PHOTOS SLIGHTLY OFF DUE TO WASP NEST
WILDLIFE PRESENT: LOGGERHEAD SHRIKE
PLANTS PRESENT: ATRIPLEX SERENANA, BROMUS RUBENS, SALIX GOODINGII, SALSOLA TRAGUS, SCHISMUS ARABICUS, SISYMBRIUM IRIO

4TH QUARTER	SURVEY DATE: 12/04/2012 TIME: 1:48 PM MONITOR(S): J. JONES RAINFALL TO DATE: 0.12 IN WIND DIRECTION: N WIND VELOCITY: 5 MPH TEMPERATURE: 69 F HUMIDITY: 55%	NORTH	EAST	SOUTH	WEST

NOTES:
WILDLIFE PRESENT: BLACK-SHOULDERED KITE, LOGGERHEAD SHRIKE
PLANTS PRESENT: BASSIA HYSSOPIFOLIA, HELIANTHUS ANNUUS, LEYMUS TRITICOIDES, SALIX GOODINGII, SALSOLA TRAGUS, XANTHIUM STRUMARIUM

KERN WATER BANK 2012 VEGETATION MONITORING PROGRAM SITE OBSERVATIONS

LOCATION INFORMATION

LOCATION: OMS-4
SECTION: 11
TOWNSHIP/RANGE: 30S/25E
COORDINATES (CA5-NAD83): 6186254, 2311943
NUMBER OF ACRES: 10
VEGETATION TYPE: MOSTLY DOMINATED BY ANNUAL GRASSES AND WEEDS/NON-NATIVE PLANTS
SITE TYPE: DITCH BANK/DITCH BOTTOM

SURVEY INFORMATION AND PHOTOGRAPHS

1ST QUARTER	SURVEY DATE: 03/26/2012 TIME: 1:00 PM MONITOR(S): J. JONES, J. KANG RAINFALL TO DATE: 3.31 IN WIND DIRECTION: N WIND VELOCITY: 3 MPH TEMPERATURE: 66 F HUMIDITY: 37%	NORTH	EAST	SOUTH	WEST

NOTES: GERMINATING TUMBLEWEEDS IN DITCH BOTTOM, MOST OTHER PLANTS ON UPPER BANKS
WILDLIFE PRESENT:
PLANTS PRESENT: BROMUS RUBENS, ELEOCHARIS MACROSTACHYA, ERODIUM CICUTARIUM, HIRSCHFELDIA INCANA, HORDEUM MURINUM SSP. LEPORINUM, MELILOTUS INDICA, POLYGONUM LAPATHIFOLIUM, RUMEX CRISPUS, SCHISMUS ARABICUS, SISYMBRIUM IRIO, XANTHIUM STRUMARIUM

2ND QUARTER	SURVEY DATE: 06/06/2012 TIME: 11:35 AM MONITOR(S): J. JONES, Z. BRISCO RAINFALL TO DATE: 4.93 IN WIND DIRECTION: N WIND VELOCITY: 5 MPH TEMPERATURE: 72 F HUMIDITY: 35%	NORTH	EAST	SOUTH	WEST

NOTES: DENSE RUDERAL VEGETATION
WILDLIFE PRESENT:
PLANTS PRESENT: BASSIA HYSSOPIFOLIA, BROMUS DIANDRUS, B. RUBENS, CONYZA CANADENSIS, HIRSCHFELDIA INCANA, LACTUCA SERRIOLA, MELILOTUS INDICA, POLYGONUM LAPATHIFOLIUM, POLYPOGON MONSPELIENSIS, RUMEX CRISPUS, SALSOLA TRAGUS

3RD QUARTER	SURVEY DATE: 08/28/2012 TIME: 9:25 PM MONITOR(S): J. JONES, A. VASQUEZ RAINFALL TO DATE: 4.95 IN WIND DIRECTION: NW WIND VELOCITY: 5 MPH TEMPERATURE: 81 F HUMIDITY: 39%	NORTH	EAST	SOUTH	WEST

NOTES:
WILDLIFE PRESENT:
PLANTS PRESENT: ATRIPLEX SERENANA, CONYZA CANADENSIS, HELIANTHUS ANNUUS, HIRSCHFELDIA INCANA, MALVA PARVIFLORA, POLYPOGON MONSPELIENSIS, RUMEX CRISPUS, SALSOLA TRAGUS, SCHISMUS ARABICUS

4TH QUARTER	SURVEY DATE: 12/04/2012 TIME: 1:00 PM MONITOR(S): J. JONES RAINFALL TO DATE: 0.12 IN WIND DIRECTION: N WIND VELOCITY: 3 MPH TEMPERATURE: 70 F HUMIDITY: 61%	NORTH	EAST	SOUTH	WEST

NOTES: BANKS HAVE BEEN MOWED
WILDLIFE PRESENT:
PLANTS PRESENT: HIRSCHFELDIA INCANA, RUMEX CRISPUS, SALSOLA TRAGUS

KERN WATER BANK 2012 VEGETATION MONITORING PROGRAM SITE OBSERVATIONS

LOCATION INFORMATION

LOCATION: OMS-5
SECTION: 7
TOWNSHIP/RANGE: 30S/26E
COORDINATES (CA5-NAD83): 6194387, 2306947
NUMBER OF ACRES: 50
VEGETATION TYPE: MOSTLY DOMINATED BY ANNUAL GRASSES AND WEEDS/NON-NATIVE PLANTS/RUDERAL VEGETATION
SITE TYPE: UPLAND-OLD FARM FIELDS

SURVEY INFORMATION AND PHOTOGRAPHS

1ST QUARTER	SURVEY DATE: 03/26/2012 TIME: 10:14 AM MONITOR(S): J. JONES, J. KANG RAINFALL TO DATE: 3.31 IN WIND DIRECTION: W WIND VELOCITY: 5 MPH TEMPERATURE: 57 F HUMIDITY: 50%	NORTH	EAST	SOUTH	WEST
	NOTES: ONLY GERMINATING PLANTS, NO MATURE PLANTS, LARGELY BARE GROUND, NO TUMBLEWEEDS WILDLIFE PRESENT: RAVEN PLANTS PRESENT: AMSINCKIA MENZIESII, BROMUS RUBENS, HIRSCHFELDIA INCANA, PECTOCARYA PENICILLATA				

2ND QUARTER	SURVEY DATE: 06/06/2012 TIME: 12:00 PM MONITOR(S): J. JONES, Z. BRISCO RAINFALL TO DATE: 4.93 IN WIND DIRECTION: N WIND VELOCITY: 5 MPH TEMPERATURE: 76 F HUMIDITY: 31%	NORTH	EAST	SOUTH	WEST
	NOTES: KANGAROO RAT BURROWS, SPARSLEY VEGETATED, SCHISMUS DOMINANT GRASS WILDLIFE PRESENT: CROWS PLANTS PRESENT: BROMUS RUBENS, HIRSCHFELDIA INCANA, SALSOLA TRAGUS, SCHISMUS ARABICUS				

3RD QUARTER	SURVEY DATE: 08/28/2012 TIME: 9:45 AM MONITOR(S): J. JONES, A. VASQUEZ RAINFALL TO DATE: 4.95 IN WIND DIRECTION: NW WIND VELOCITY: 5 MPH TEMPERATURE: 82 F HUMIDITY: 37%	NORTH	EAST	SOUTH	WEST
	NOTES: FEW KANGAROO RAT BURROWS WILDLIFE PRESENT: CALIFORNIA GROUND SQUIRREL, SIDE-BLOTCHED LIZARD, TURKEY VULTURE PLANTS PRESENT: BROMUS RUBENS, HIRSCHFELDIA INCANA, SALSOLA TRAGUS, SCHISMUS ARABICUS				

4TH QUARTER	SURVEY DATE: 11/26/2012 TIME: 12:45 PM MONITOR(S): J. JONES RAINFALL TO DATE: 0.12 IN WIND DIRECTION: W WIND VELOCITY: 2 MPH TEMPERATURE: 69 F HUMIDITY: 49%	NORTH	EAST	SOUTH	WEST
	NOTES: BARE GROUND AND RUSSIAN THISTLE, FEW SCATTERED KANGAROO RAT BURROWS WILDLIFE PRESENT: PLANTS PRESENT: SALSOLA TRAGUS, SCHISMUS ARABICUS				

KERN WATER BANK 2012 VEGETATION MONITORING PROGRAM SITE OBSERVATIONS

LOCATION INFORMATION

LOCATION: OMS-6
SECTION: 36
TOWNSHIP/RANGE: 30S/25E
COORDINATES (CA5-NAD83): 6192992, 2287399
NUMBER OF ACRES: 160
VEGETATION TYPE: MIXED ANNUAL GRASSLAND WITH SCATTERED SHRUBS/SCATTERED SHRUBS-BARE SOIL
SITE TYPE: UPLAND-SENSITIVE HABITAT

SURVEY INFORMATION AND PHOTOGRAPHS

1ST QUARTER	<p> SURVEY DATE: 03/26/2012 TIME: 9:28 AM MONITOR(S): J. KANG RAINFALL TO DATE: 3.31 IN WIND DIRECTION: NW WIND VELOCITY: 1 MPH TEMPERATURE: 53 F HUMIDITY: 41% </p> <p> NOTES: KANGAROO RAT BURROWS WILDLIFE PRESENT: RAVENS, WHITE-CROWNED SPARROWS PLANTS PRESENT: ATRIPLEX POLYCARPA, BROMUS RUBENS, PROSOPIS GLANDULOSA, SCHISMUS ARABICUS </p>	NORTH	EAST	SOUTH	WEST

2ND QUARTER	<p> SURVEY DATE: 06/06/2012 TIME: 1:15 PM MONITOR(S): J. JONES, Z. BRISCO RAINFALL TO DATE: 4.93 IN WIND DIRECTION: NW WIND VELOCITY: 5 MPH TEMPERATURE: 78 F HUMIDITY: 23% </p> <p> NOTES: SPARSE VEGETATIVE COVER, SCHISMUS CO-DOMINATING WITH BROMUS RUBENS, SOME ACTIVE KANGAROO RAT BURROWS WILDLIFE PRESENT: PLANTS PRESENT: ATRIPLEX POLYCARPA, BROMUS HORDEACEUS, B. RUBENS, PROSOPIS GLANDULOSA, SCHISMUS ARABICUS </p>	NORTH	EAST	SOUTH	WEST

3RD QUARTER	<p> SURVEY DATE: 08/28/2012 TIME: 7:30 AM MONITOR(S): J. JONES, A. VASQUEZ RAINFALL TO DATE: 4.95 IN WIND DIRECTION: N/A WIND VELOCITY: 0 MPH TEMPERATURE: 69 F HUMIDITY: 47% </p> <p> NOTES: MOSTLY BARE AREAS IN BETWEEN SHRUBS WILDLIFE PRESENT: PLANTS PRESENT: ATRIPLEX POLYCARPA, BROMUS RUBENS, PROSOPIS GLANDULOSA, SCHISMUS ARABICUS </p>	NORTH	EAST	SOUTH	WEST

4TH QUARTER	<p> SURVEY DATE: 11/26/2012 TIME: 10:15 AM MONITOR(S): J. JONES RAINFALL TO DATE: 0.12 IN WIND DIRECTION: N/A WIND VELOCITY: 0 MPH TEMPERATURE: 66 F HUMIDITY: 59% </p> <p> NOTES: FEW KANGAROO RAT BURROWS, SHRUBS LOOK WATER STRESSED WILDLIFE PRESENT: WHITE-CROWNED SPARROWS PLANTS PRESENT: ATRIPLEX POLYCARPA, BROMUS RUBENS, PROSOPIS GLANDULOSA </p>	NORTH	EAST	SOUTH	WEST

KERN WATER BANK 2012 VEGETATION MONITORING PROGRAM SITE OBSERVATIONS

LOCATION INFORMATION

LOCATION: OMS-7
 SECTION: 34
 TOWNSHIP/RANGE: 30S/25E
 COORDINATES (CA5-NAD83):612246, 2290740
 NUMBER OF ACRES: 160
 VEGETATION TYPE: MOSTLY DOMINATED BY ANNUAL GRASSES AND WEEDS
 SITE TYPE: UPLAND-SENSITIVE HABITAT/UPLAND-OLD FARM FIELDS

SURVEY INFORMATION AND PHOTOGRAPHS

1ST QUARTER	SURVEY DATE: 03/26/2012 TIME: 9:43 AM MONITOR(S): J. KANG RAINFALL TO DATE: 3.31 IN WIND DIRECTION: NW WIND VELOCITY: S MPH TEMPERATURE: 54 F HUMIDITY: 39%	NORTH	EAST	SOUTH	WEST
	NOTES: ACTIVE KANGAROO RAT BURROWS WILDLIFE PRESENT: PLANTS PRESENT: AMSINCKIA MENZIESII, BROMUS RUBENS, SCHISMUS ARABICUS, SISYMBRIUM IRIO				

2ND QUARTER	SURVEY DATE: 06/06/2012 TIME: 12:20 PM MONITOR(S): J. JONES, Z. BRISCO RAINFALL TO DATE: 4.93 IN WIND DIRECTION: N WIND VELOCITY: 10 MPH TEMPERATURE: 76 F HUMIDITY: 28%	NORTH	EAST	SOUTH	WEST
	NOTES: ACTIVE KANGAROO RAT BURROWS, SHISMUS DOMINANT GRASS WILDLIFE PRESENT: CROW, REDTAIL HAWK PLANTS PRESENT: ATRIPLEX SERENANA, BROMUS RUBENS, HORDEUM MURINUM SSP. LEPORINUM, LACTUCA SERRIOLA, SALSOLA TRAGUS, SCHISMUS ARABICUS, SISYMBRIUM IRIO				

3RD QUARTER	SURVEY DATE: 08/28/2012 TIME: 7:00 AM MONITOR(S): J. JONES, A. VASQUEZ RAINFALL TO DATE: 4.95 IN WIND DIRECTION: N/A WIND VELOCITY: 0 MPH TEMPERATURE: 66 F HUMIDITY: 50%	NORTH	EAST	SOUTH	WEST
	NOTES: ACTIVE KANGAROO RAT BURROWS, LARGE MATURE RUSSIAN THISTLE THOURGHOUT AREA WILDLIFE PRESENT: PLANTS PRESENT: AMSINCKIA MENZIESII, BROMUS RUBENS, HORDEUM MURINUM SSP. LEPORINUM, SALSOLA TRAGUS, SCHISMUS ARABICUS, SISYMBRIUM IRIO				

4TH QUARTER	SURVEY DATE: 11/26/2012 TIME: 11:15 AM MONITOR(S): J. JONES RAINFALL TO DATE: 0.12 IN WIND DIRECTION: W WIND VELOCITY: 2 MPH TEMPERATURE: 67 F HUMIDITY: 51%	NORTH	EAST	SOUTH	WEST
	NOTES: DENSE RUSSIAN THISTLE, SCHISMUS SP. IS HIGHLY DOMINANT GRASS WILDLIFE PRESENT: WESTERN MEADOWLARK PLANTS PRESENT: BROMUS DIANDRUS, SALSOLA TRAGUS, SCHISMUS ARABICUS				

KERN WATER BANK 2012 VEGETATION MONITORING PROGRAM SITE OBSERVATIONS

LOCATION INFORMATION

LOCATION: OMS-8
 SECTION: 16
 TOWNSHIP/RANGE: 30S/25E
 COORDINATES (CA5-NAD83): 6173009, 2307209
 NUMBER OF ACRES: 40
 VEGETATION TYPE: MOSTLY DOMINATED BY ANNUAL GRASSES AND WEEDS/NON-NATIVE PLANTS
 SITE TYPE: POND BASIN

SURVEY INFORMATION AND PHOTOGRAPHS

1ST QUARTER	SURVEY DATE: 03/26/2012 TIME: 11:45 AM MONITOR(S): J. JONES, J. KANG RAINFALL TO DATE: 3.31 IN WIND DIRECTION: N WIND VELOCITY: 2 MPH TEMPERATURE: 57 F HUMIDITY: 36%	NORTH	EAST	SOUTH	WEST

NOTES: NEW CATTAIL GROWTH, CATTLE GRAZING ON CATTAILS
 WILDLIFE PRESENT: KILLDEAR
 PLANTS PRESENT: ELEOCHARIS MACROSTACHYA, JUNCUS BALTICUS, LACTUCA SERRIOLA, LUDWIGI PELOIDES, MARSELIA SP., MELILOTUS INDICA, POLYGONUM LAPATHIFOLIUM, RUMEX CRISPIUS, SALIX GOODDINGII, SISYMBRIUM IRIIO, TYPHA LATIFOLIA

2ND QUARTER	SURVEY DATE: 06/06/2012 TIME: 11:00 AM MONITOR(S): J. JONES, Z. BRISCO RAINFALL TO DATE: 4.93 IN WIND DIRECTION: N WIND VELOCITY: 5 MPH TEMPERATURE: 71 F HUMIDITY: 35%	NORTH	EAST	SOUTH	WEST

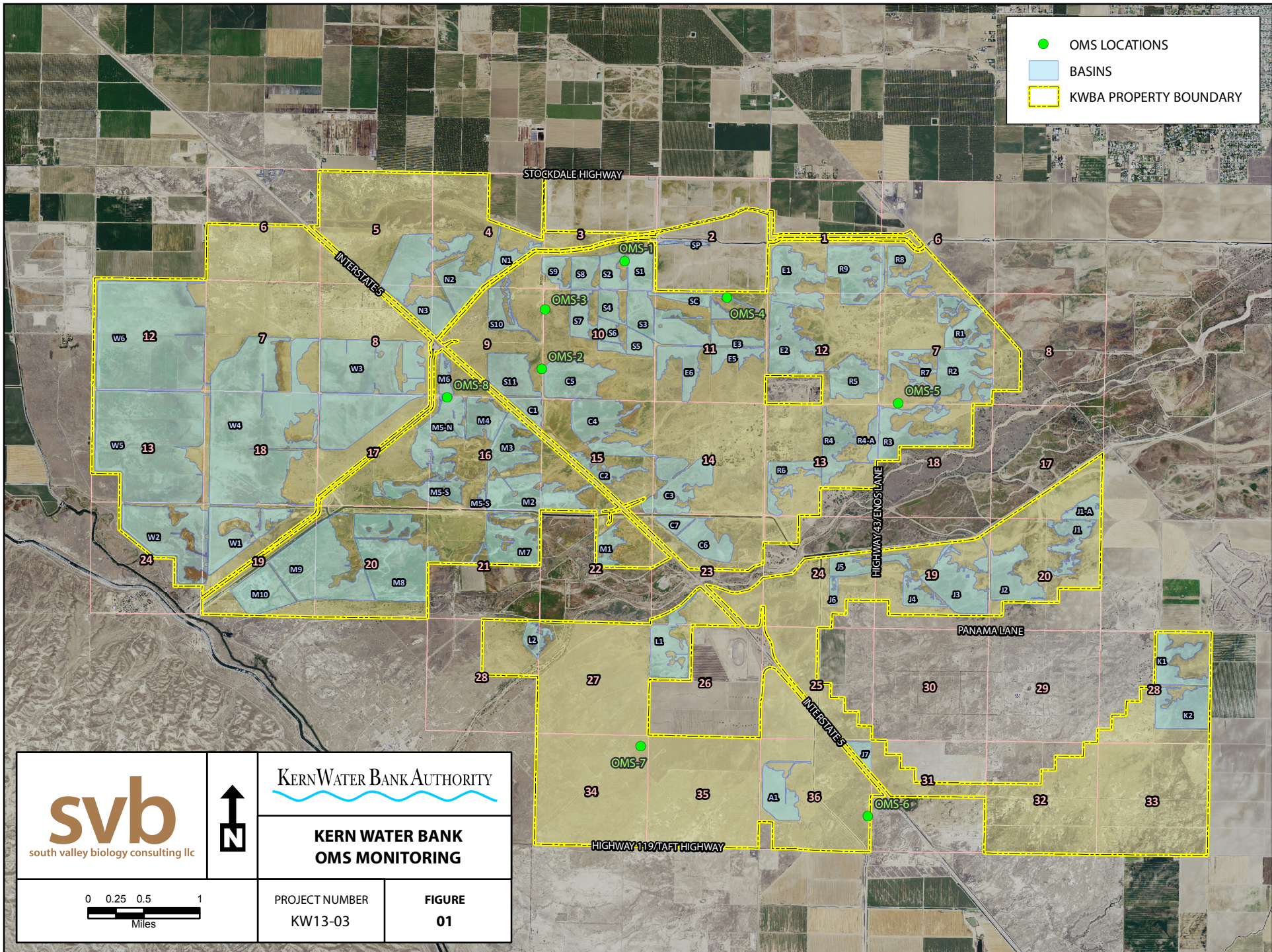
NOTES:
 WILDLIFE PRESENT:
 PLANTS PRESENT: ACROPTILON REPENS, AMARANTHUS BLITEDEOUS, ATRIPLEX SERENANA, CONYZA COULTERI, HELIANTHUS ANNUUS, HIRSCHFELDIA INCANA, LYTHRUM CALIFORNICUM, PHALA NODIFLORA, POLYGONUM LAPATHIFOLIUM, RUMEX CRISPIUS, SALIX GOODDINGII, SISYMBRIUM IRIIO, TYPHA LATIFOLICA

3RD QUARTER	SURVEY DATE: 08/28/2012 TIME: 8:50 AM MONITOR(S): J. JONES, A. VASQUEZ RAINFALL TO DATE: 4.95 IN WIND DIRECTION: NW WIND VELOCITY: 5 MPH TEMPERATURE: 77 F HUMIDITY: 36%	NORTH	EAST	SOUTH	WEST

NOTES: CATTLE HAVE GRAZED ON CATTAILS, NO SMALL MAMMAL BURROWS, GOPHER MOUNDS
 WILDLIFE PRESENT: KESTREL, MOURNING DOVES, ROADRUNNER
 PLANTS PRESENT: ATRIPLEX SERENANA, CONYZA CANADENSIS, C. COULTERI, HELIANTHUS ANNUUS, HIRSCHFELDIA INCANA, LACTUCA SALINA, LYTHRUM CALIFORNICUM, MALVELLA LEPROSA, PHALA NODIFLORA, SALIX GOODDINGII, TYPHA LATIFORLIA

4TH QUARTER	SURVEY DATE: 12/04/2012 TIME: 2:15 PM MONITOR(S): J. JONES RAINFALL TO DATE: 0.12 IN WIND DIRECTION: N WIND VELOCITY: 5 MPH TEMPERATURE: 69 F HUMIDITY: 49%	NORTH	EAST	SOUTH	WEST

NOTES:
 WILDLIFE PRESENT: RED-TAIL HAWK
 PLANTS PRESENT: CONYZA CANADENSIS, C. COULTERI, HELIANTHUS ANNUUS, HIRSCHFELDIA INCANA, LACTUCA SALINA, LYTHRUM CALIFORNICUM, MALVA PARVIFLORA, PHALA NODIFLORA, SALIX GOODDINGII, SALSOLA TRAGUS, TYPHA LATIFOLIA



- OMS LOCATIONS
- BASINS
- KWBA PROPERTY BOUNDARY

		KERN WATER BANK AUTHORITY	
	KERN WATER BANK OMS MONITORING		
	PROJECT NUMBER KW13-03	FIGURE 01	