

memorandum

DATE: 5-29-83

REPLY TO: Gina Rockefeller
ATTN OF:

SUBJECT: 1981 BICY Fire Summary

TO: Walt, Bob D., John, Cat, Dr. Bill, Lance, Dave S., Dale

Would you please review this and
add your comments.

Thanks a lot,

Gina



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OPTIONAL FORM NO. 10
(REV. 7-76)
GSA FPMR (41 CFR) 101-11.6
5010-111

Dr. Bill,

Finally I've got a rough draft.

Could you rip it apart, put it together and
add some remarks on veg & wildlife
affected by Turner 10?

Thanks, Gina.

Big Cypress

The third year of National Park Service fire control responsibility in Big Cypress National Preserve was characterized by low rainfall, low water levels, and large fires which were difficult to control. Since the Fire Management Plan had not yet received Regional approval, all fires were suppressed (NPS Fire Management Guideline, Policy 18, Chapter 2, p. 2, 1978).

The total number of fires and acres burned was higher in 1981 than in either 1978 or 1979 (Table 1, fig 1). Fire ignitions and average sizes of fires followed the same patterns as noted by Taylor and Doren (1982)(Table 2). They ^{defined} ~~designated~~ three "fire seasons": wet-season, June through October; dry-season, March through May; and hunting season, November through February. Most fires occurred during the hunting season, followed by the dry season. The largest average size fires and greatest ^{acreage} average burned during the dry season. Turner 10 (fire numbers 81099A-81117FA) burned about 165,000 ac. during the dry season.

Water levels were low during the first half of the ¹⁹⁸¹ ~~year~~ and below average in May, June, and July. Water levels monitored at Bridge 84 and Bridge 105 display an inverse relationship with the average fire size (figure 2 & 3). Average fire size, seasonality of fire in each vegetation type (Taylor and Doren, 1982), and difficulty of fire control (Dayhoff, pers. comm.) are affected by water levels.

Turner 10

The Turner 10 fire complex included fires numbered 81099A through 81117FA and was reported as having burned 165,906 ac. (fig. 4)

The estimate of 165,906 ac is the total area within the perimeter of the burn. However, approximately one third of the area did not burn (D. L. Taylor per. comm.). An accurate map of the burned and unburned areas was not made.

Fire suppression efforts during Turner 10 were hampered by low fuel moistures, below average rainfall, low ground water levels, and southwesterly to southeasterly winds. Cypress stands and domes contained no standing water and could not be relied upon as effective fire breaks.

Winds were predominately SW to SE compounding fire control difficulties since strands are oriented NE to SW. The southerly winds pushed fires along the strands rather than directly into them, ^{which would have impeded fire spread.} Fires spread north along strands, then around the northern edges into adjacent unburned prairies and pinelands.

Impacts of Turner 10 were variable and difficult to generalize due to the large area covered by the fire; the wide range of fuel loads encountered; and variable weather conditions occurring during the fire. Reports on impacts of the fire were sporadic and usually received from personnel not associated with the fire project. No concerted efforts were made to document the effects of the fire.

Documented fire effects included:

- 1.) Large areas of pine (Pinus ellioti var densa) mortality.
- 2.) Infestations of Ips spp. and Cerambycids were reported.
- 3.) Unusually high densities of Chrysopogon ^uparcifloris in flower in many pinelands
- 4.) Wildlife ... Dr. Bill, please add here.

Reports of several possible soil fires were made during Turner 10 by NPS personnel on surveillance flights. However since the areas were inaccessible by helicopter and difficult to reach by land, the sitings were not confirmed. In general, few soil fires are believed to have occurred during Turner 10. This is in sharp contrast to a similar situation that occurred during a fire on the eastern edge of the preserve in April 1974. During that fire, soil burned in many of the domes southwest of the L-28 tieback (fig. 3), killing most of the cypress trees. (Fred E. Dayhoff pers. comm.)

Water levels preceeding and during the 1974 L-28 fire were lower than those during the 1981 Turner 10 fire (figs. 5 & 6, Table 3). Water levels in 1981 were low enough to add to the difficulty of fire control, but were not as low as those in 1974, when soil fires were extensive.

Water Levels as Predictive Tools for Fire Managers

Water levels have the potential to be accurate, meaningful tools in predicting fire control difficulties. Water levels are

directly related to the average fire size (fig. 2) and (Taylor and doren 1982), fire control difficulty, and the potential for soil fires. In order for water levels to be an accurate measure in developing fire control strategies, they must be examined in context with other variables such as wind speed and direction, time since rainfall, age of rough, and fuel types.

Ground water well levels can be correlated with hydrologic ^{monitoring} ~~gauging~~ stations. Gunderson (1982 a and b) obtained high correlation coefficients between hydrologic stations at C-⁴⁹⁵~~4~~95 and Bridge 105 and groundwater wells in Copeland Prairie, the Raccoon Point pinelands, and a cypress prairie study site along 11-Mile Road (fig. 7). Ground water wells established in 1980 in Plant Ecology Research plots illustrate the varying dry rates within the Preserve (fig, 7 & 8).

Ground water wells located in cypress ^mdomes and strands hold the best possibility as predictive tools for fire managers because domes and strands are natural fire breaks. Ground water wells should be located in strategic areas based on hydrologic flow patterns and fire control considerations. In order for these water levels to be good a predictive measure, the wells must be monitored frequently. Ultimately, a fire boss should be able to use water levels in conjunction with fuel loads, fuel moistures, wind speeds, and age of rough to assess fire control difficulty.

Research Burns

The Big Cypress Fire Ecology Research Burn program, directed by the South Florida Research Center, began in 1978. Three objective of the study were:

- 1) to determine the effects of fire frequency and season on vegetative composition.
- 2) to determine the effects of fire frequency and season on fuel load accumulation.
- 3) to aid in developing prescribed burn parameters.

Research efforts were directed at pinelands, cypress prairies, and mixed grass prairies because most fires occur in these vegetation types. (figs. 3, 9, 10, 11). Preliminary analyses of the data have not been completed.

Research burns completed in 1981 were:

<u>Fire Number</u>	<u>Date</u>	<u>Plot Name</u>	<u>Age Rough</u>	<u>Comments</u>
<u>Mixed Grass Prairie</u>				
81042D	2-4-81	Winter Annual & Three Year	unknown	burned
81136D	9-24-81	Summer Annual	1 year	would not burn
81181D	12-21-81	Fall Annual	1 year	would not burn
<u>Cypress Prairie</u>				
81054D	3-5-81	Winter Three Year	unknown	burned
81055D	3-5-81	Winter Annual	unknown	burned
81131D	8-4-81	Summer Annual	1 year	would not burn
81182D	12-22-81	Fall Annual	1 year	would not burn

<u>Fire Number</u>	<u>Date</u>	<u>Plot Name</u>	<u>Age Rough</u>	<u>Comments</u>
<u>Pineland</u>				
81052D	2-25-81	Winter Annual	unknown	burned
81053D	2-25-81	Winter Three Year	unknown	burned
81127A	7-14-81	Summer Annual	1 year	*burned
81164D	12-10-81	Fall Annual	1 year	would not burn

*burned by an incendiary fire

Table 1. Total number of fires, number of acres burned, and suppression costs in Big Cypress National Preserve in 1979, 1980, and 1981.

<u>Year</u>	<u>Total Number of Fires</u>	<u>Total Acres Burned</u>	<u>Suppression Costs</u>
1979	84	24,140	\$28,376
1980	138	27,906	\$48,273
1981	170	217,440	\$886,508

Table 2. Number of fires (exclusive of pasture burns and research burns) by fire season in 1979, 1980, and 1981 in Big Cypress.

Number of Fires each Year				
Month	1979	1980	1981	Total
"Dry Season"				
March	20	29	27	
April	6	2	10	
May	6	13	16	
Total Fires	32	44	53	129
Total Acres	15,220	7,252	194,199	216,667
"Wet Season"				
June	1	1	11	
July	2	5	5	
August	0	2	3	
September	0	0	1	
October	3	4	5	
Total Fires	6	12	25	43
Total Acres	162	5,516	3,478	9,156
"Hunting Season"				
November	9	32	17	
December	14	32	23	
January	9	4	33	
February	8	2	12	
Total Fires	40	70	85	195
Total Acres	6,116	9,193	17,658	32,967
Grand Total # of Fires	78	126	163	

Table 3. Water levels at Bridge 84 and 105 during the 1981 Turner 10 fire and the 1974 L-28 fire.

Hydrologic Station	Water Level (ft MSL)	
	April 1974	May 1981
Birdge 84	0.73'-0.85'	0.8'-1.0'
Bridge 105	3.05'-4.0'	3.85'-4.41'

Table 4. 1981 Fire Statistics for Big Cypress National Preserve

Month	Incendiary		Lightning ^b		Research		Pasture Burns		False Alarms No.	Total		Ave. Fire Size(acres)
	No.	Acres	No.	Acres	No.	Acres	No.	Acres		No.	Acres	
Jan.	33	10,123	-	-	-	-	1	150	4	34	10,273	302
Feb.	10	3,169	-	-	3	250	-	-	2	13	3,419	263
March	25	27,902	-	-	2	80	-	-	5	27	27,982	1,036
April	10	311	-	-	-	-	-	-	2	10	311	31
May	10	165,906	-	-	-	-	-	-	-	16	165,906	10,369
June	6	2,947	5	81	-	-	-	-	-	11	3,029	275
July	2	441	3	31	-	-	-	-	-	5	472	94
Aug.	-	-	3	106	1	1	-	-	-	4	107	27
Sept.	-	-	-	-	1	1	-	-	-	1	1	1
Oct.	5	370	-	-	-	-	-	-	-	5	370	79
Nov.	17	701	-	-	-	-	-	-	1	17	701	41
Dec.	23	3,665	-	-	3	4	1	1,200	-	27	4,869	180
Totals:	147	215,535	11	218	10	336	2	1,350	14	170	217,440	

a. Costs are not listed because they were not reported on most fire reports.

b. Cause of fires in this category is not confirmed. Field documentations were not made

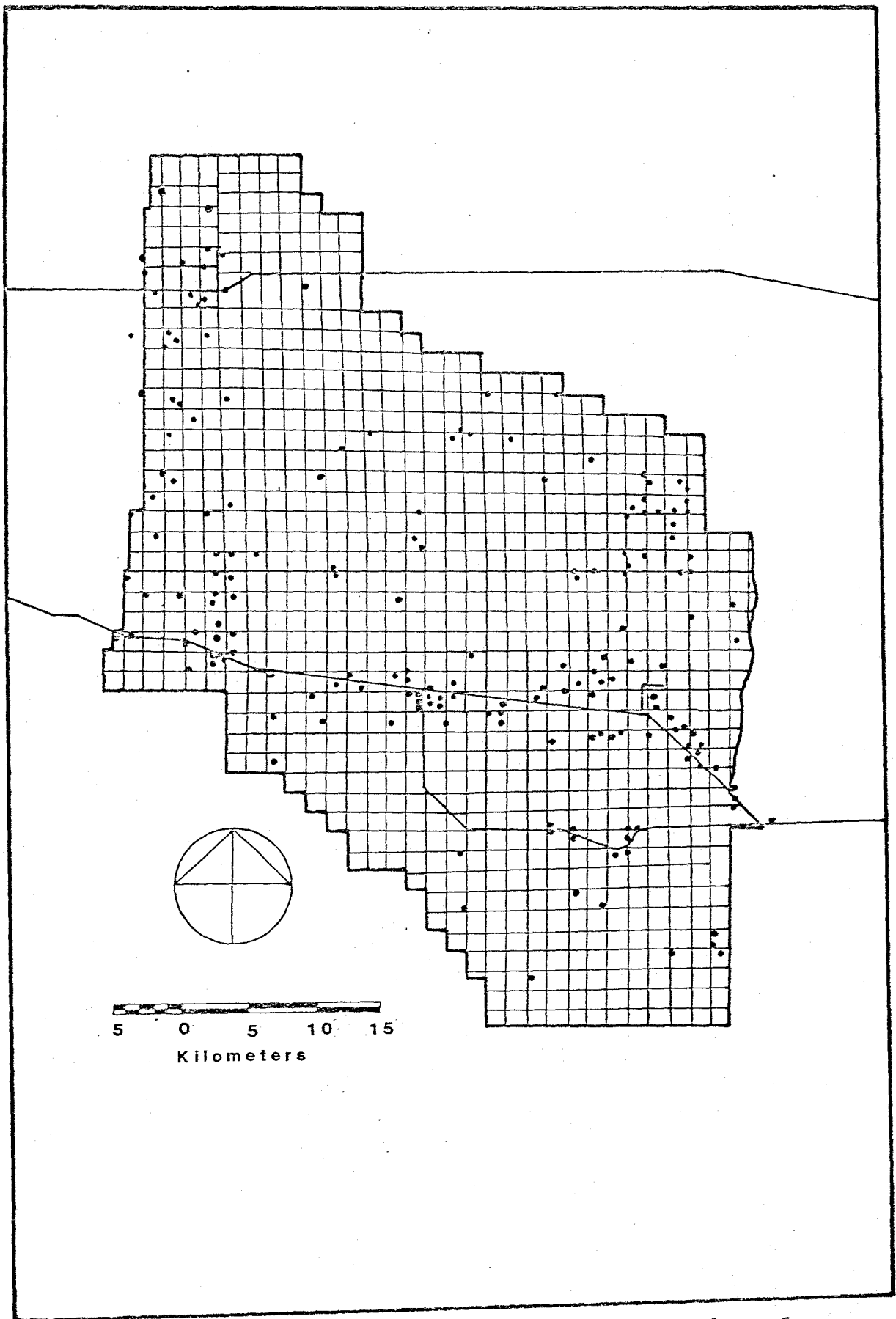


Fig 1 Approximate Locations of 1981 Fires in Big Cypress National Preserve

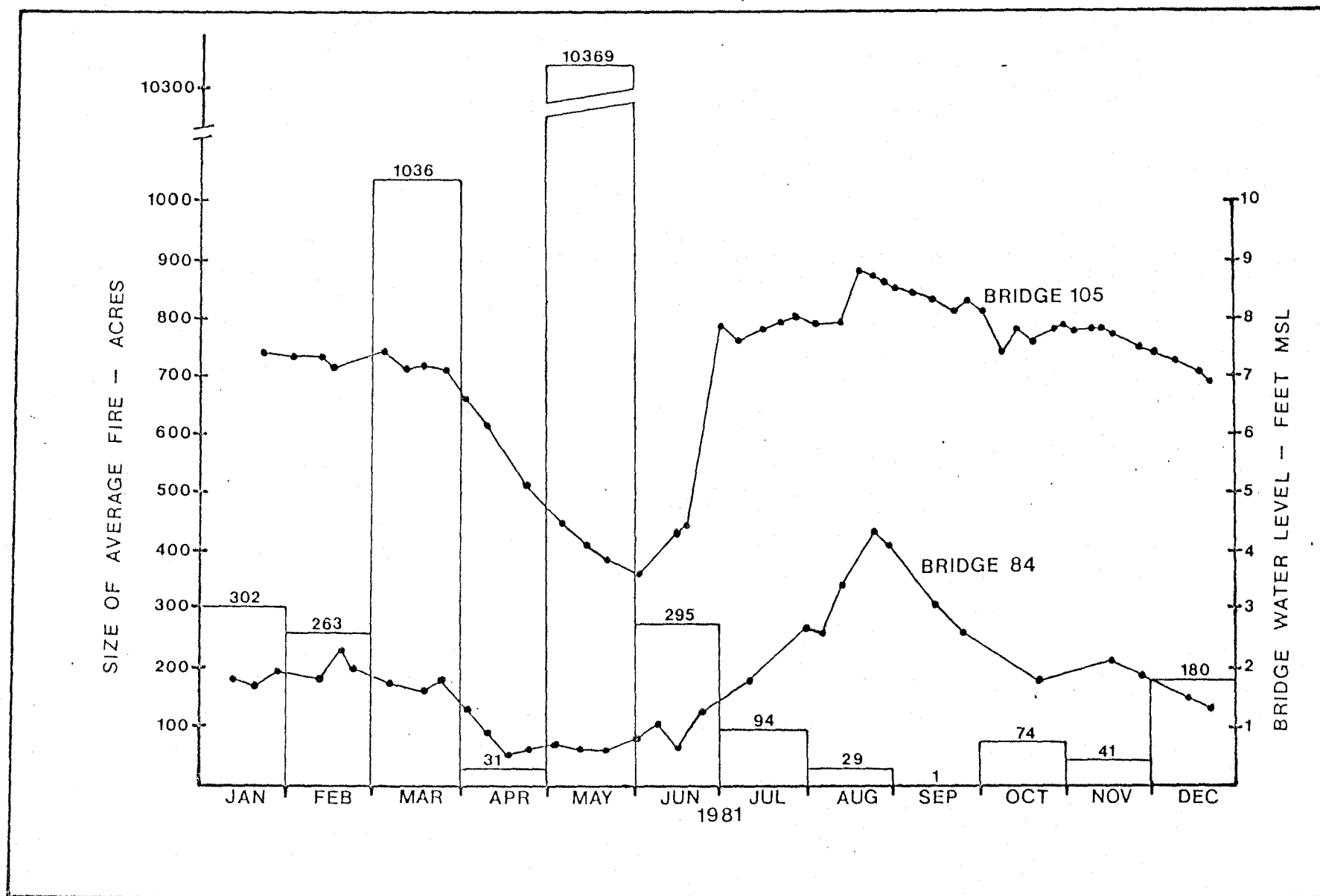


Fig. 2 1981 Monthly average fire size compared with water levels at Bridges 105 and 84

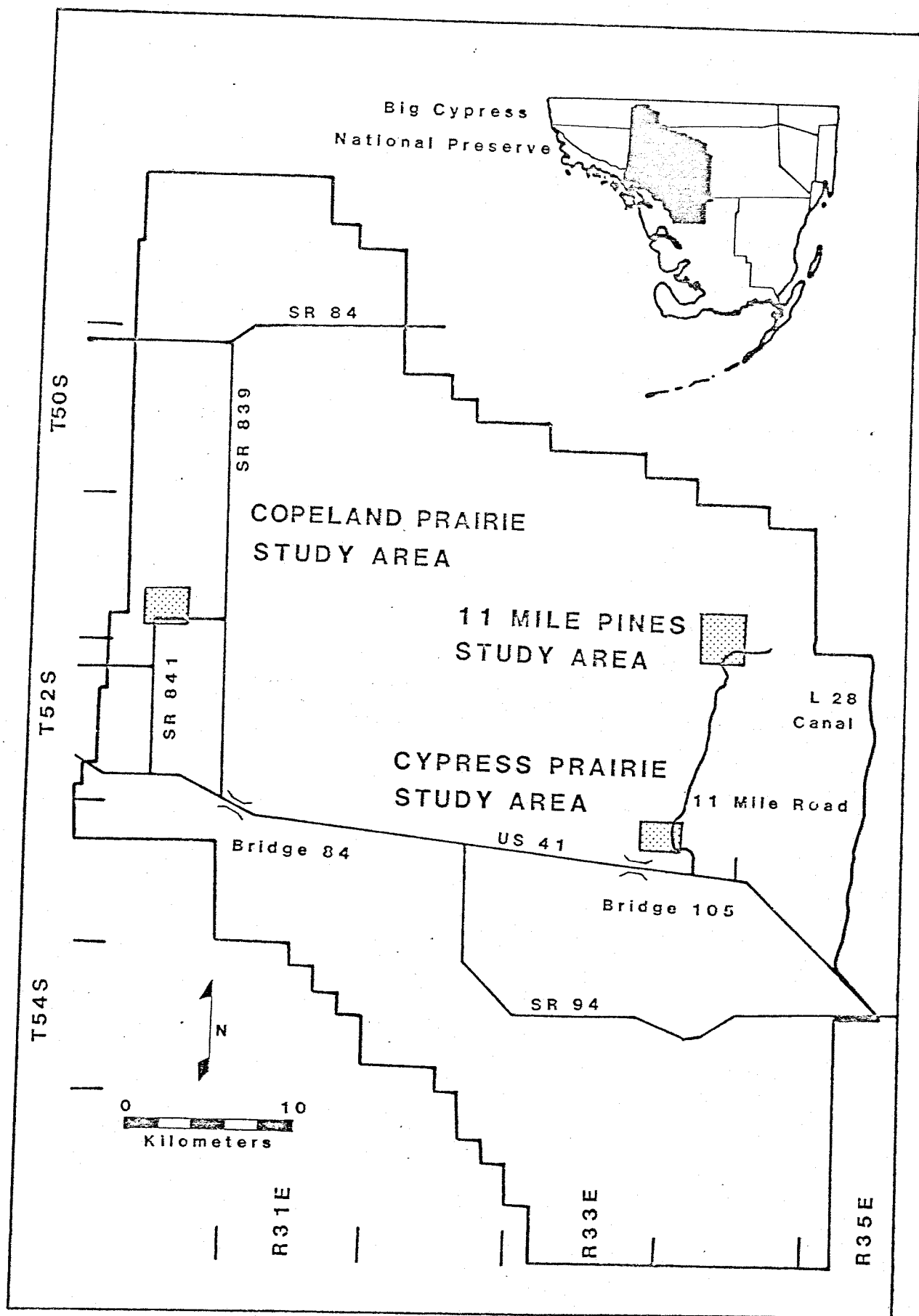


Fig 3 Location of fire ecology research study areas
in Big Cypress National Preserve

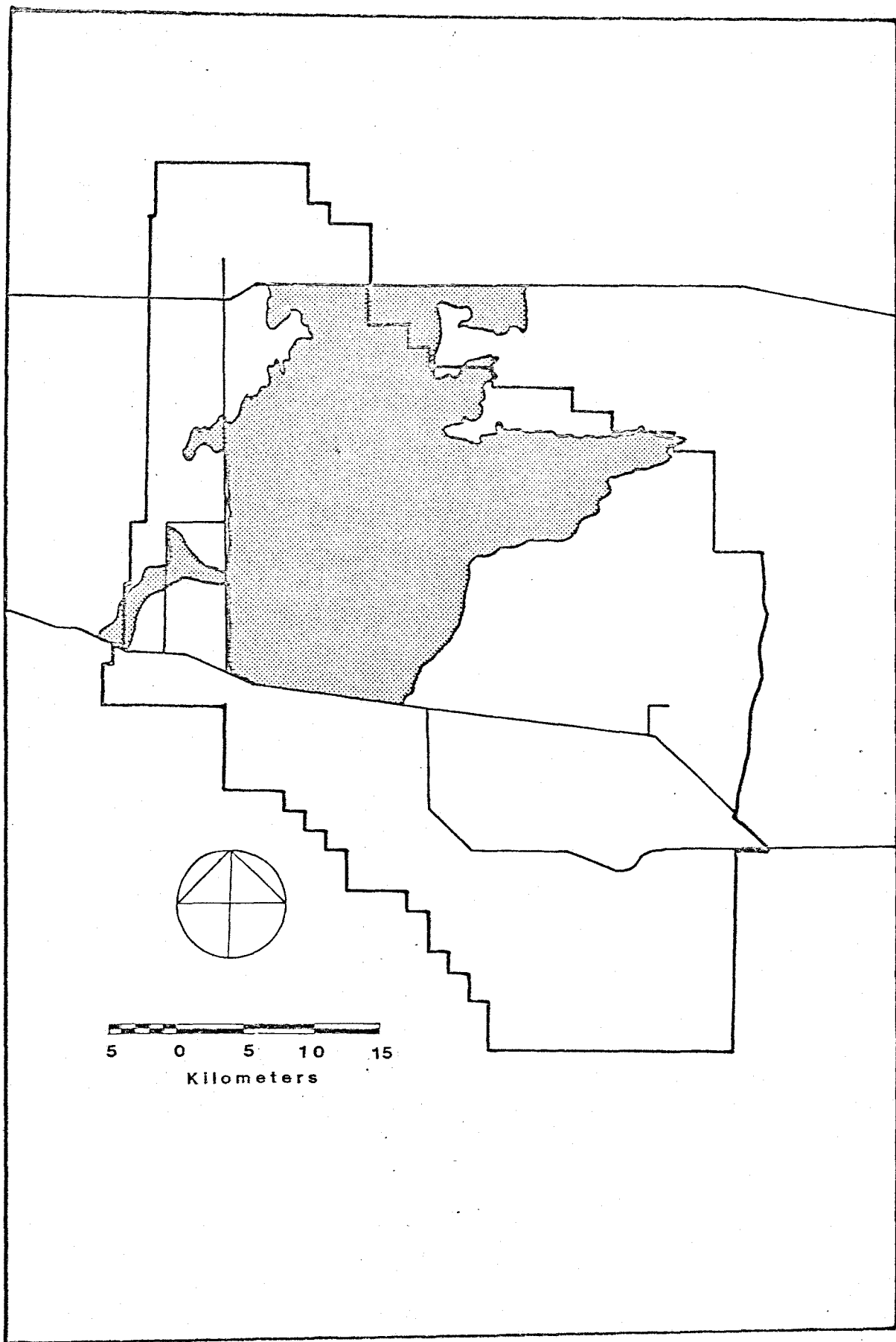


Fig 4. Map of the extent of the 1981 Turner 10 fire

this graph will
be cleaned
up for publication

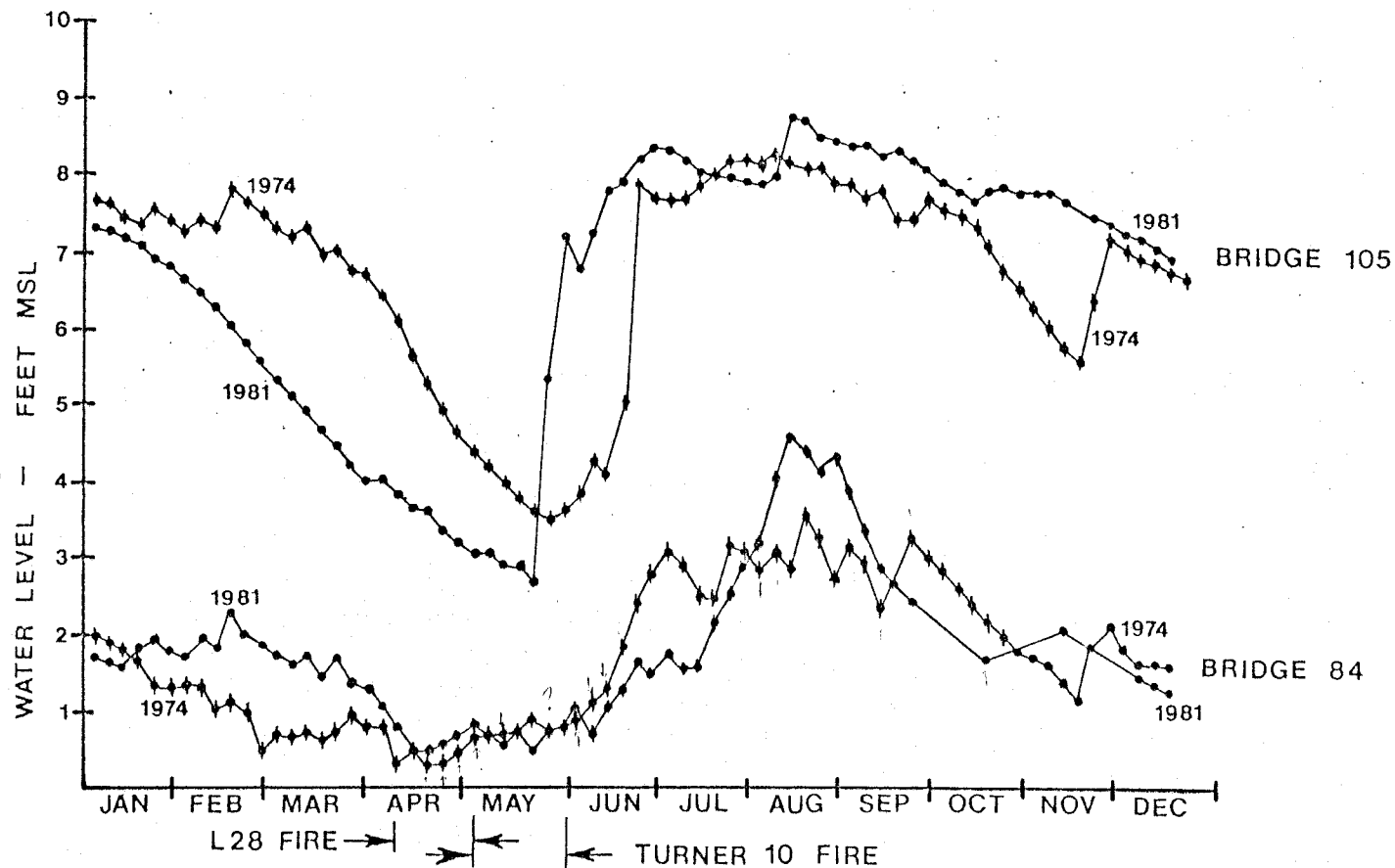


Fig 5 1974 and 1981 water levels at Bridges 84 and 105; the time spans for the 1974 L-28 Fire and 1981 Turner 10 Fire are marked

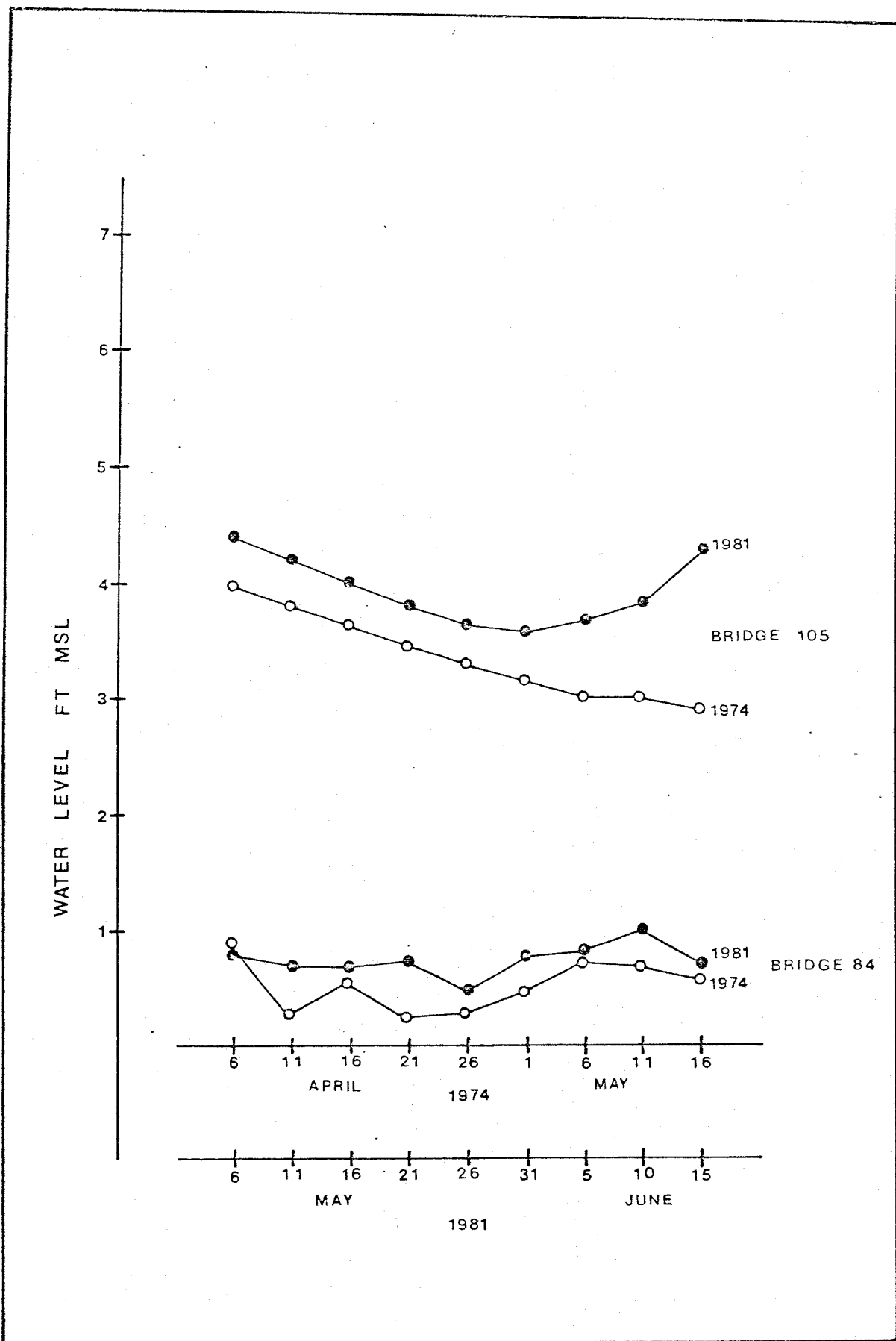


Fig. Comparison of Bridge 84 and 105 Water levels during the 1981 Turner 10 fire and 1974 L-28 fire

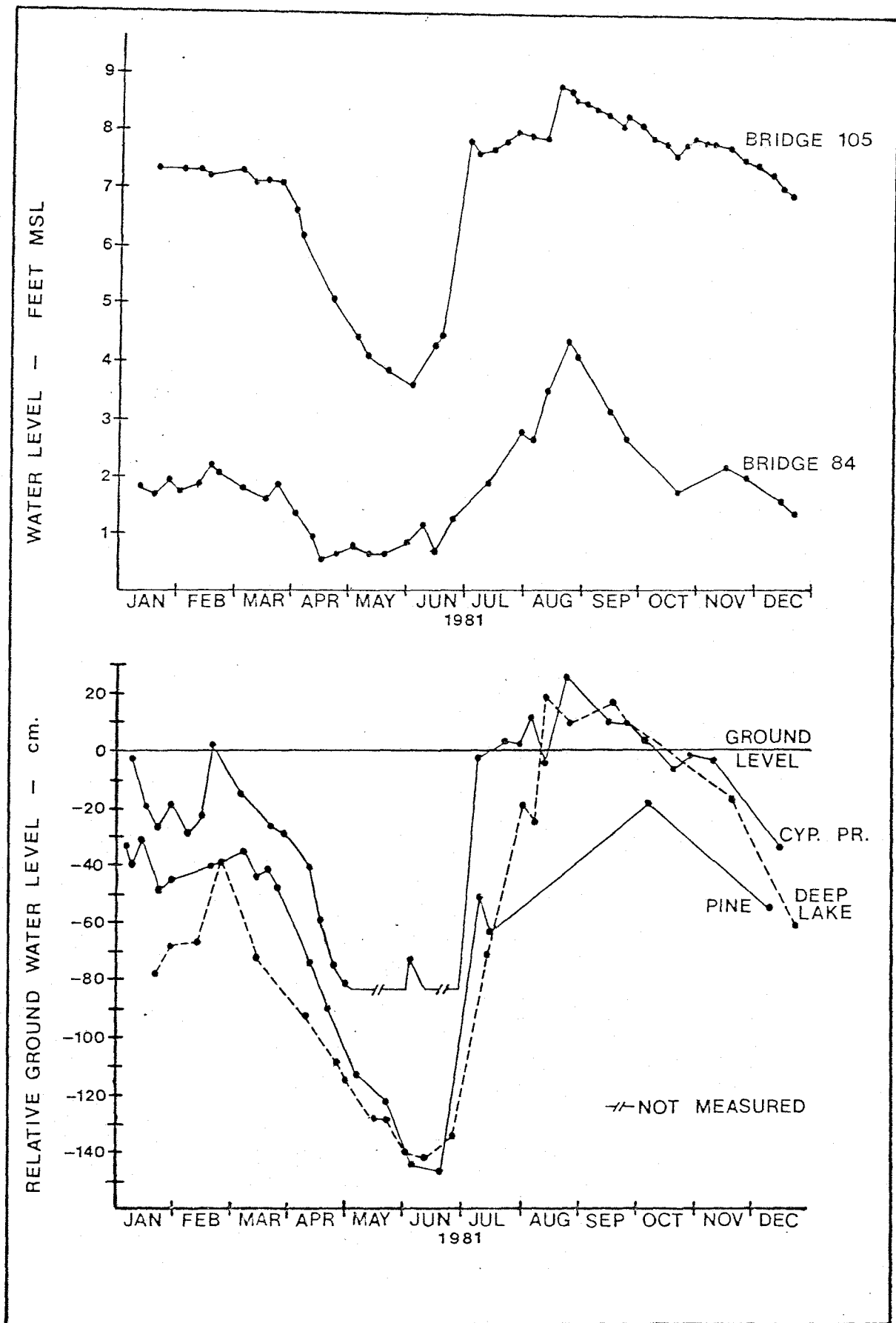


Fig. 7 1981 Water levels at Bridges 84 and 105 and Relative ground water levels in three Fire Ecology Study Areas

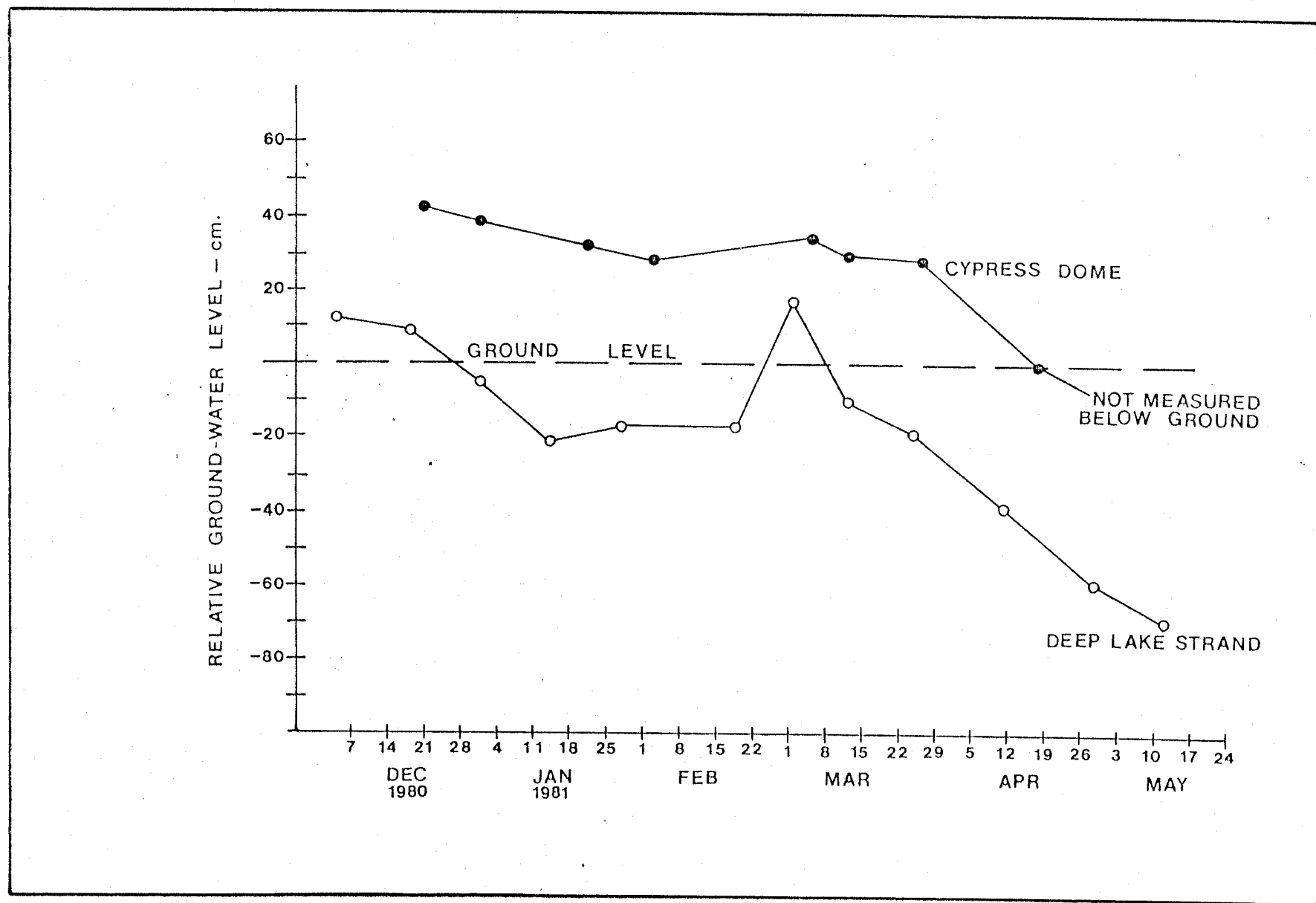


Fig. 8 1980/81 Ground water levels in Deep lake Strand and in a Cypress dome on 11 Mile Road

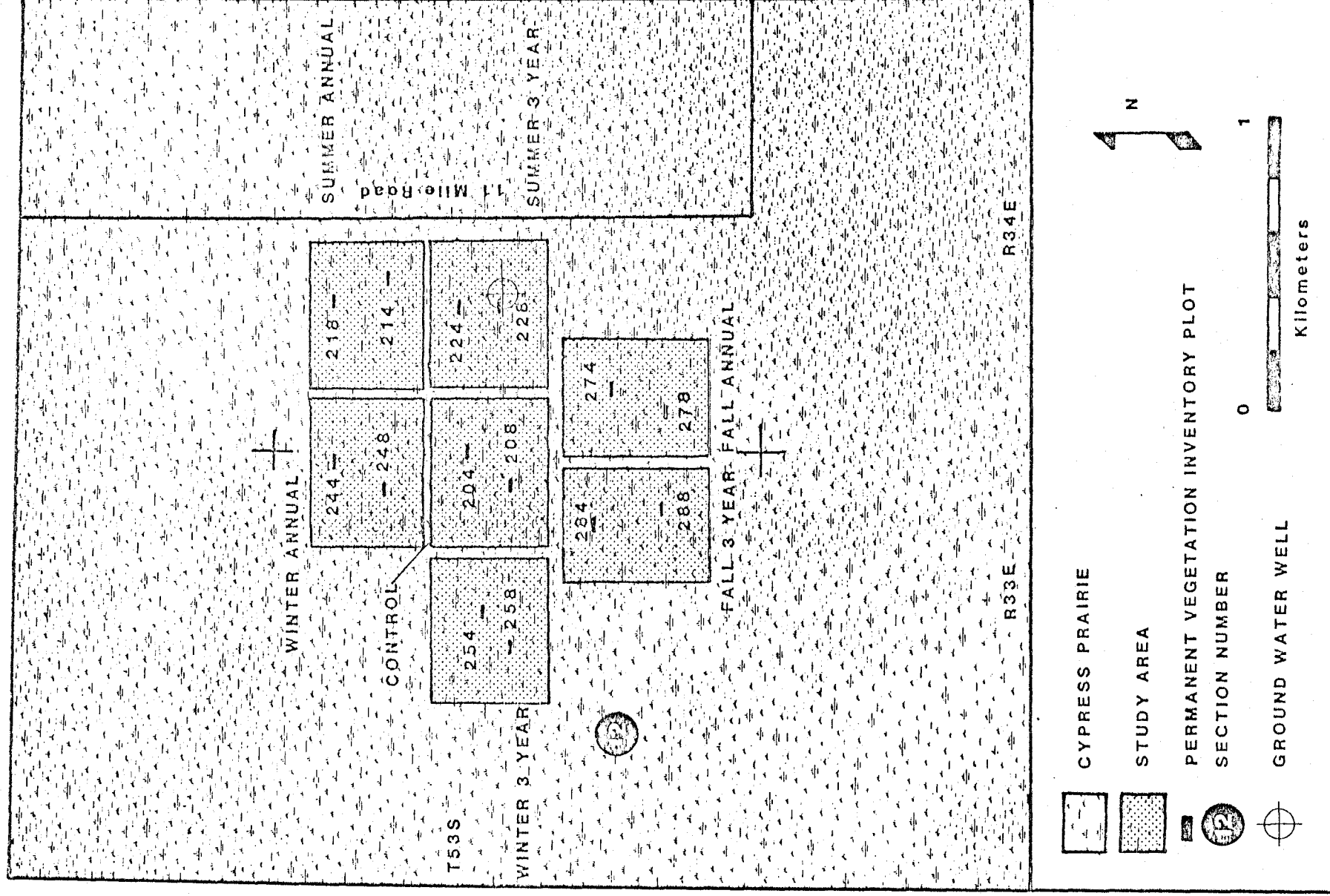


Fig 9 Cypress prairie Fire Ecology Research Study Plots

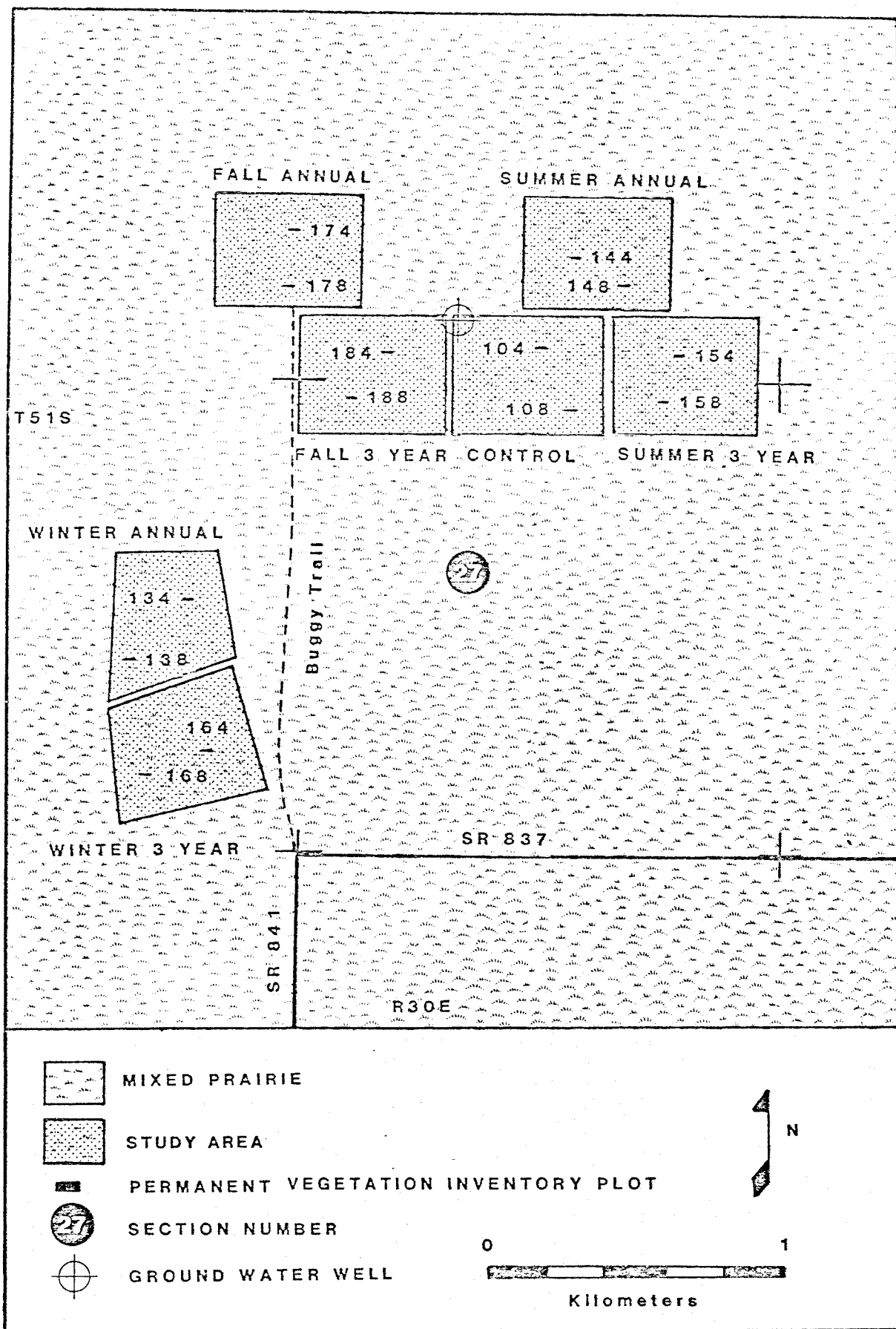
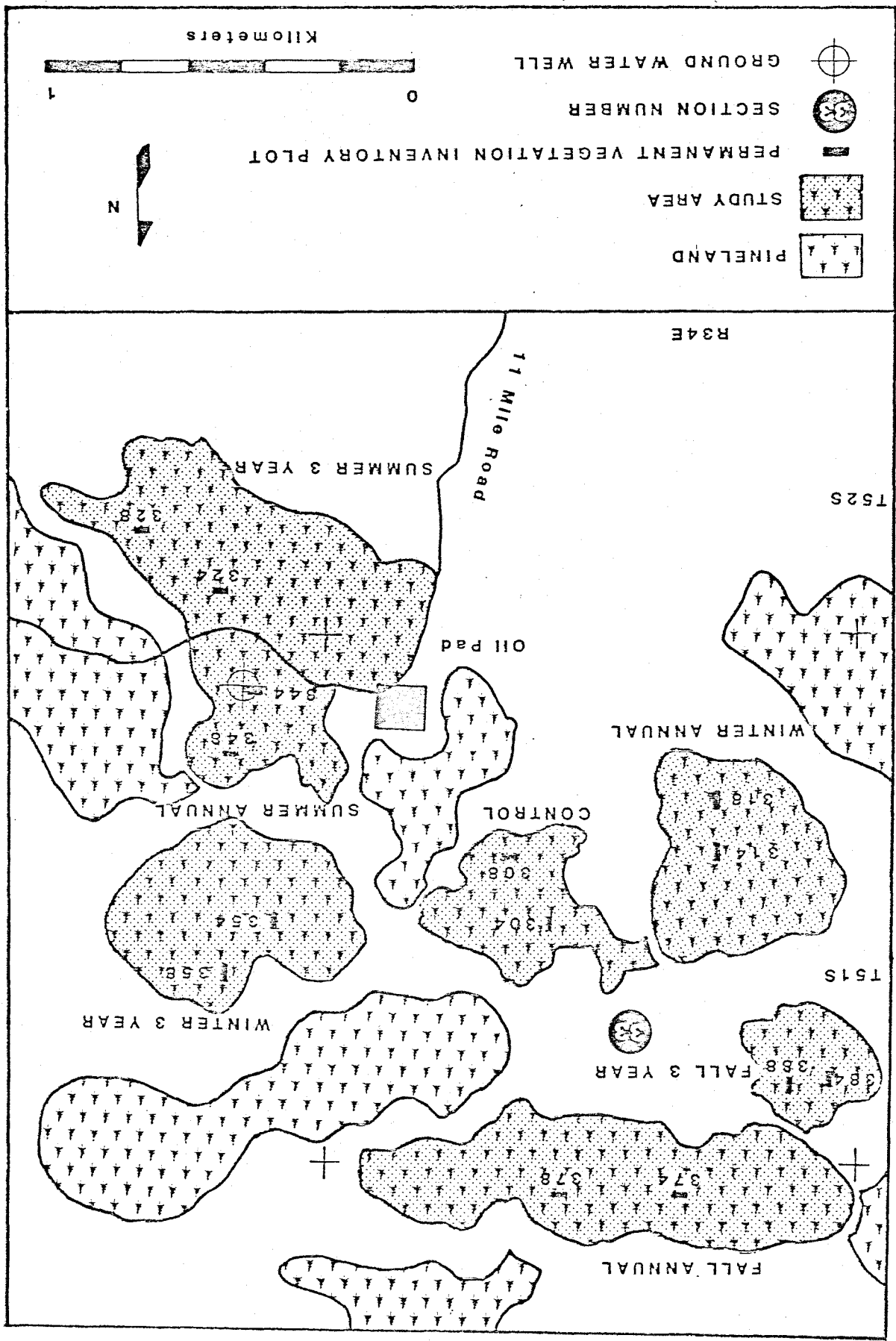


Fig 10 Mixed Prairie Fire Ecology Research Study plots

Fig 11 Pineland Fire Ecology Research Study Plots



Appendix 2. Individual Fires for Big Cypress National Preserve, 1981.

<u>Fire Number</u>	<u>Location T-R-S</u>	<u>Cause</u>	<u>Acres</u>	<u>Cost (\$)</u>	<u>Date</u>
		<u>January</u>			
81001A	55S-33E-19,25,30,31	Incendiary	280	300.00	1-3
81002A	51S-33E-9	Incendiary	70	225.00	1-4
81003A	50S-30E-1,2,11,12	Incendiary	1,200	345.00	1-5
81004A	52S-34E-7,18	Incendiary	140	250.00	1-5
81005A	53S-34E-2,3,11	Incendiary	140	225.00	1-5
81006A	53S-35E-19	Incendiary	9	225.00	1-4
81007A	52S-34E-12,13	Incendiary	105	225.00	1-4
81008A	52S-32E-3	Incendiary	125	75.00	1-5
81009A	51S-34E-18	Incendiary	15	75.00	1-5
81010A	53S-34E-8	Incendiary	10	75.00	1-5
81011A	53S-34E-25	Incendiary	80	100.00	1-5
81012A	53S-33E-6	Incendiary	12	25.00	1-5
81013A	49S-30E-25	Incendiary	50	20.00	1-5
81014A	52S-30E-24	Incendiary	90	300.60	1-5

<u>Fire Number</u>	<u>Location T-R-S</u>	<u>Cause</u>	<u>Acres</u>	<u>Cost (\$)</u>	<u>Date</u>
81015A	55S-32E-1,12 55S-33E-6,7	Incendiary	320	240.91	1-11
81016A	51S-33E-22,23	Incendiary	28	158.00	1-11
81017A	52S-32E-3	Incendiary	50	158.00	1-11
81018A	53S-31E-9	Incendiary	2	10.00	1-8
81019A	52S-31E-19	Incendiary	60	614.87	1-8
81020A	53S-32E-15,16,21,22	Incendiary	910	3,860.72	1-10
81021A	49S-30E-13	Incendiary	3,450	742.91	1-9
81022FA	50S-30E-34	False Alarm		78.00	1-10
81023FA	51S-30E-2	False Alarm		78.00	1-10
81024FA	54S-33E-19	False Alarm		78.00	1-10
81025A	52S-31E-7	Incendiary	120	589.00	1-13
81026A	53S-33E-15	Vehicle	1	22.40	1-14
81027A	53S-32E-9	Incendiary	120	159.76	1-16
81028FA	54S-34E-21	False Alarm		97.50	1-16
81029A	52S-30E-31	Incendiary	1	0	1-16
81030A	53S-33E-18 53S-32E-13,14,23,24,26	Incendiary	2,410	865.59	1-17

<u>Fire Number</u>	<u>Location T-R-S</u>	<u>Cause</u>	<u>Acres</u>	<u>Cost(\$)</u>	<u>Date</u>
81031A	52S-30E-24	Incendiary	50	467.55	1-17
81032A	52S-30E-4	Incendiary	75	90.00	1-19
81033C	49S-30E-9,10	Pasture Burn	150	0.00	1-23
81034A	51S-31E-12,13 51S-32E-18	Incendiary	50	78.00	1-24
81035A	53S-34E-6	Incendiary	12	58.50	1-25
81036A	52S-30E-35 53S-30E-2	Incendiary	20	219.19	1-26
81037A	53S-34E-5,6,7	Incendiary	28	71.79	1-26
81038A	51S-34E-23	Incendiary	90	234.00	1-31

February

81039A	51S-30E-26,27, 34 35,36 52S-30E-1,2,12	Incendiary	1,760	1,098.31	2-2
81040A	51S-32E-27,34,35	Incendiary	240	276.00	2-4
81041A	51S-31E-14,23,24,26	Incendiary	180	212.00	2-4
81042D	51S-30E-28	Research	100	281.00	2-4
81043A	50S-31E-6	Incendiary	60	347.00	2-5
81044A	54S-34E-29	Incendiary	12	310.50	2-8
81045A	53S-32E-10	Incendiary	2	18.00	2-8

<u>Fire Number</u>	<u>Location T-R-S</u>	<u>Cause</u>	<u>Acres</u>	<u>Cost(\$)</u>	<u>Date</u>
81046A	51S-32E-1,12 51S-33E-6,7	Incendiary	150	101.00	2-10
81047A	53S-30E-2,11	Incendiary	320	239.00	2-14
81048FA	51S-30E-10	False Alarm		15.00	2-14
81049FA	50S-30E-15	False Alarm		0.00	2-19
81050A	53S-33E-16,17	Incendiary	220	101.24	2-20
81051A	52S-30E-31,32	Incendiary	225	579.45	2-20
81052D	51S-34E-33	Research	80	445.00	2-25
81053D	51S-34E-33,34	Research	70	603.00	2-25
		<u>March</u>			
81054D	53S-33E-12	Research	40	185.00	3-5
81055D	53S-33E-12 53S-34E-7	Research	40	274.16	3-5
81056FA	50S-30E-12	False Alarm		0.00	3-7
81057A	53S-30E-1	Incendiary	60	432.00	3-8
81058A	54S-33E-24	Incendiary	65	597.00	3-11
81059A	52S-34E-11,12,13,14	Incendiary	115	297.00	3-11
81060A	53S-33E-1,2,11,12	Incendiary	160	189.00	3-14

<u>Fire Number</u>	<u>Location T-R-S</u>	<u>Cause</u>	<u>Acres</u>	<u>Cost(\$)</u>	<u>Date</u>
81061A	53S-33E-25, 26, 34, 35, 36 53S-34E-30, 31, 32 33, 34 54S-33E-1, 2, 3, 12 54S-34E-3-17	Incendiary	7,615	891.00	3-15
81062A	53S-32E-7	Incendiary	2	96.56	3-15
81063A	51S-33E-7, 8, 16-20	Incendiary	1,630	945.00	3-16
81064FA	52S-31E-8	False Alarm		189.00	3-17
81065A	53S-34E-36	Incendiary	1	66.00	3-18
81066A	53S-34E-23, 24, 25, 26	Incendiary	220	324.00	3-21
81067A	51S-32E-5, 6, 7, 8, 17	Incendiary	820	675.00	3-21
81068A	52S-30E-18	Incendiary	65	211.00	3-22
81069A	51S-33E-25, 36 51S-34E-17, 18, 19, 20, 21, 22, 28, 29, 30, 31	Incendiary	2,900	5,207.00	3-27
81070A	53S-32E-14	Incendiary	1	184.00	3-28
81071A	53S-34E-2, 3, 10, 11 54S-34E-26, 27, 28, 29, 32, 33, 34, 35, 36	Incendiary	3,250	1,996.00	3-28
81072A	53S-32E-14	Incendiary	4	64.37	3-28

<u>Fire Number</u>	<u>Location T-R-S</u>	<u>Cause</u>	<u>Acres</u>	<u>Cost(\$)</u>	<u>Date</u>
81073A	50S-30E-3 50S-31E-6 51S-30E-11, 12, 14, 15, 21-36 51S-31E-7, 8, 16-20, 29-32	Incendiary	10,970	16,276.00	3-28
81074FA	53S-32E-14	False Alarm		12.91	3-28
81075FA	53S-32E-14	False Alarm		14.14	3-28
81076FA	53S-32E-14	False Alarm		70.49	3-28
81077A	53S-34E-23	Incendiary	1	5.00	3-29
81078A	53S-32E-14	Incendiary	1	107.17	3-29
81079A	53S-32E-14	Incendiary	1	595.47	3-29
81080A	53S-32E-14	Incendiary	1	15.94	3-29
81081A	53S-32E-14	Incendiary	1	10.00	3-29
81082A	54S-34E-6	Incendiary	2	50.00	3-30
81083A	53S-30E-1	Incendiary	3	140.00	3-30
81084A	52S-30E-25	Incendiary	12	181.00	3-30
81085A	49S-30E-28, 29	Incendiary	5	89.00	3-31

<u>Fire Number</u>	<u>Location T-R-S</u>	<u>Cause</u>	<u>Acres</u>	<u>Cost(\$)</u>	<u>Date</u>
<u>April</u>					
81086A	53S-34E-21	Incendiary	20	65.00	4-5
81087FA	53S-34E-26	False Alarm		0.00	4-6
81088A	53S-31E-12	Incendiary	1	203.00	4-8
81089A	54S-34E-29, 30	Incendiary	245	3,085.70	4-10
81090A	53S-34E-36	Incendiary	1	28.15	4-12
81091A	53S-34E-36	Incendiary	1	98.44	4-12
81092FA	50S-30E-15	False Alarm		0.00	4-17
81093A	53S-34E-17	Incendiary	2	259.68	4-18
81094A	52S-30E-36	Incendiary	1	74.63	4-22
81095A	53S-34E-36	Incendiary	40	385.75	4-27
81096A	49S-30E-32, 33	Incendiary	3	605.00	4-28
81097A	52S-30E-32	Incendiary	1	64.83	4-30
<u>May</u>					
81098A	54S-34E-23, 24	Incendiary	1	18.83	5-5
81099A	52S-30E-32	Incendiary	163,280	750,000.00	5-8

<u>Fire Number</u>	<u>Location T-R-S</u>	<u>Cause</u>	<u>Acres</u>	<u>Cost(\$)</u>	<u>Date</u>
81100A	50S-31E-1-5,8-16, 21- 28, 32-36 50S-32E-1-6 50S-33E-4-8, 17 , 18, 19, 27, 31, 32, 34, 35 51S-31E-1-36 51S-32E-1-36 51S-33E-2-4, 9-12, 14-22, 25-36 51S-34E-2-5, 7-11, 13-22, 28-32 51S-30E-11-14, 33-35 52S-30E-1-4, 6-12, 14-16, 20, 21, 29,30 52S-31E-1-6, 8-17, 19-36 52S-32E-1-35 52S-33E-1-9, 18 53S-31E-1-6, 8-12 53S-32E-2-11, 18	Incendiary	(included w/81099A)	(included w/81099A)	5-11
81101A	51S-32E-12	Incendiary	"	"	5-11
81102A	52S-30E-13	Incendiary	"	"	5-14
81103A	52S-30E-13	Incendiary	"	"	5-17
81104A	52S-30E-13	Incendiary	1	"	5-17
81105A	50S-31E-2	Incendiary	75	"	5-22
81106A	53S-34E-18	Incendiary	1	"	5-22
81107A	53S-31E-6	Incendiary	1	"	5-22

<u>Fire Number</u>	<u>Location T-R-S</u>	<u>Cause</u>	<u>Acres</u>	<u>Cost</u>	<u>Date</u>
81108A	53S-31E-8, 9, 10, 11, 12, 13, 14, 15, 16, 17	Incendiary	2,250	(included w/81099A)	5-23
81109A	54S-35E-8	Incendiary	1	"	5-24
81110A	53S-34E-29	Incendiary	5	"	5-29
81111A	53S-34E-4	Incendiary	1	"	5-24
81112A	52S-30E-18	Incendiary	150	"	5-25
81113A	52S-29E-35, 36, 52S-30E-30, 31	Incendiary	140	"	5-29
<u>June</u>					
81114A	53S-33E-15	Incendiary	1	"	6-1
81115A	53S-33E-14	Incendiary	5	"	6-1
81116A	54S-35E-19	Incendiary	140	"	6-2
81117FA	53S-34E-36	False Alarm		"	6-3
81118A	55S-33E-27	Lightning	75	225.00	6-11
81119A	52S-30E-10, 11, 12 13, 14, 15 52S-30E-22-27	Incendiary	2,800	79,675.00	6-14
81120A	53S-30E-1	Incendiary	1	(included w/81119A)	6-16

<u>Fire Number</u>	<u>Location T-R-S</u>	<u>Cause</u>	<u>Acres</u>	<u>Cost(\$)</u>	<u>Date</u>
81121A	53S-31E-23	Incendiary	1	(included w/ 81119A)	6-16
81122A	53S-31E-23	Lightning	1	"	6-17
81123A	53S-31E-14	Lightning	1	"	6-17
81124A	52S-34E-9	Lightning	3	"	6-18
81125A	55S-33E-8	Lightning	1	"	6-19
<u>July</u>					
81126A	53S-32E-15	Lightning	1	76.66	7-11
81127A	51S-34E-27, 33-35	Incendiary	440	3,827.91	7-14
81128A	54S-34E-32	Lightning	20	12.09	7-21
81129A	52S-30E-22	Lightning	10	424.60	7-27
81130A	54S-35E-8	Incendiary	1	109.64	7-29
<u>August</u>					
81131D	53S-34E-7	Research	1	812.50	8-4
81132FA	51S-34E-27, 28	False Alarm	1	*	8-4
81133A	55S-35E-18, 19	Lightning	56	*	8-7
81134A	55S-35E-19	Lighting	20	*	8-7

*Not available. Costs were not reported on DI-1201 submitted to the Regional Office.

<u>Fire Number</u>	<u>Location T-R-S</u>	<u>Cause</u>	<u>Acres</u>	<u>Cost(\$)</u>	<u>Date</u>
81135A	54S-34E-33	Lightning	30	*	8-7
<u>September</u>					
81136D	51S-30E-22	Research	1	*	9-24
<u>October</u>					
81137A	53S-34E-27, 28	Incendiary	120	*	10-11
81138A	52S-33E-12, 13	Incendiary	50	*	10-11
81139A	53S-32E-21	Incendiary	50	*	10-11
81140A	51S-34E-26, 35	Incendiary	40	*	10-11
81141A	50S-30E-17,20	Incendiary	110	*	10-13
<u>November</u>					
81142A	52S-32E-?	Incendiary	unable to determine	*	11-13
81143A	50S-33E-25, 26, 35	Incendiary	150	*	11-14
81144A	50S-33E-?	Incendiary	unable to determine	*	11-14
81145A	51S-34E-26	Incendiary	60	*	11-15
81146A	52S-34E-9	Incendiary	1	*	11-15
81147A	53S-32E-16, 17, 20	Incendiary	70	*	11-15

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<u>Fire Number</u>	<u>Location T-R-S</u>	<u>Cause</u>	<u>Acres</u>	<u>Cost(\$)</u>	<u>Date</u>
81148A	53S-32E-16, 17, 20	Incendiary	70	*	11-15
81149A	53S-32E-9,16	Incendiary	80	*	11-15
81150FA	50S-30E-2	False Alarm		*	11-16
81151A	51S-34E-35	Incendiary	60	*	11-18
81152A	54S-33E-24	Incendiary	1	*	11-19
81153A	50S-30E-4	Incendiary	1	*	11-19
81154A	53S-33E-20, 21	Incendiary	135	*	11-20
81155A	53S-31E-21	Incendiary	120	*	11-21
81156A	54S-33E-23	Incendiary	1	*	11-25
81157A	54S-35E-15	Incendiary	1	*	11-25
81158A	53S-32E-12	Incendiary	1	*	11-26
81159A	52S-35E-32	Incendiary	20	*	11-29

December

81160A	53S-32E-21	Incendiary	570	*	12-6
81161A	55S-32E-1	Incendiary	110	*	12-6
81162A	53S-30E-1	Incendiary	1	*	12-7
81163A	52S-34E-29, 32, 33	Incendiary	460	*	12-10

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<u>Fire Number</u>	<u>Location T-R-S</u>	<u>Cause</u>	<u>Acres</u>	<u>Cost(\$)</u>	<u>Date</u>
81164D	51S-34E-28, 33	Research	1	*	12-10
81165A	53S-34E-30	Incendiary	90	*	12-12
81166A	52S-33E-13	Incendiary	110	*	12-12
81167A	51S-34E-23	Incendiary	50	*	12-13
81168A	54S-34E-21	Incendiary	11	*	12-14
81169A	52S-34E-2	Incendiary	40	*	12-15
81170A	52S-34E-25	Incendiary	20	*	12-16
81171A	54S-35E-17	Incendiary	1	*	12-17
81172A	53S-34E-29	Incendiary	10	*	12-19
81173A	51S-34E-25, 26, 35, 36	Incendiary	40	*	12-19
81174A	52S-35E-20	Incendiary	20	*	12-19
81175A	51S-34E-15, 16, 22,	Incendiary	240	*	12-19
81176A	50S-30E-15, 16, 17, 20, 21, 22	Incendiary	700	*	12-19
81177A	52S-34E-8, 9	Incendiary	2	*	12-19
81178A	52S-34E-9, 10, 15, 16, 17, 22	Incendiary	1,070	*	12-19
81179A	53S-34E-29, 30	Incendiary	40	*	12-20

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<u>Fire Number</u>	<u>Location T-R-S</u>	<u>Cause</u>	<u>Acres</u>	<u>Cost (\$)</u>	<u>Date</u>
81180A	50S-30E-34	Incendiary	11	*	12-20
81181D	51S-30E-21, 22	Research	1	*	12-20
81182D	53S-34E-7	Research	2	*	12-22
81183A	50S-30E-1	Incendiary	8	*	12-22
81184A	50S-30E-13	Incendiary	18	*	12-22
81185A	52S-30E-20, 21	Incendiary	43	*	12-25
81186A	49S-30E-26, 27, 34, 35	Cattle Permit	1,200	*	12-26

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