

STATE Texas  
PROJECT NO. F-4-R-2 Job B-11  
PERIOD June 1, 1954-October  
31, 1955.

## Segment Completion Report

by

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Project Leader

### TITLE

A check on Commercial Catch of Rough Fish from Possum Kingdom Lake.

### OBJECTIVES

To determine the effectiveness of commercial fishing on the control of rough and predatory species and the value of the legal fishery, as well as the relative abundance and the seasonal variation by species in the commercial catch.

### METHODS

Since the general sale of fish from Possum Kingdom Lake is prohibited by Legislative action there is only a limited commercial fishery. This fishery is operated by persons under contract to the Texas Game and Fish Commission. These contractors are permitted to sell the rough fish to defray the cost of the removal operation. This contract specifically states which species are undesirable and may be retained by the fisherman, all others must be returned to the water immediately. The contractor is required to post a bond in the amount of \$1000 to insure compliance with the rules and regulations for commercial fishing in Texas, a copy of which is attached to this report. The contractor is also required to make a monthly report to the Chief Aquatic Biologist of the Texas Game and Fish Commission detailing the catch for the month, showing the number and pounds of each species taken.

The data used in this report was taken from these monthly reports and also obtained from checks of local wholesale and retail fish dealers who buy the fish taken by the contract fisherman. Periodic checks were made in the field to determine to what extent game fish were damaged by the commercial netting operations.

### DESCRIPTION OF LAKE

Possum Kingdom Reservoir, completed in 1941, is a multipurpose reservoir located on the Brazos River near Graford, Texas. The basin, when full, extends into Stephens, Young and Jack Counties with the major portion situated in Palo Pinto County. Possum Kingdom Reservoir is owned and operated by the Brazos River Conservation and Reclamation District and is used for production of Hydroelectric Power, irrigation, and municipal uses.

The impoundment covers 19,991 surface acres at spillway and has a storage capacity of 733,800 acre feet. The lake is a winding body of water some 67 miles in length with a 310 mile shoreline. This shoreline is irregular and characterized by a mixture of gently sloping valleys and tall limestone bluffs.

The water level is subject to rather severe fluctuation due to periodic draw-downs to provide water for irrigation and hydroelectric power production.

## FINDINGS

Table Number 1 shows the number of each species taken per month together with the percentage of the total catch represented by each species. Buffalo made up more than 50% of the total catch each month and provided as much as 94.37% of the total in June of 1955. The average percentage for the entire seventeen (17) months period was 84.83%. The other species were generally of little importance except for September, 1954 when carp provided 39.8% of the total catch and in November and December of 1954 and January and February of 1955 when carpsucker provided from 10% to 20% of the catch.

Table Number 2 presents the weight variations in the catch by months. Buffalo dominates the weights as much as it did the numbers since only the gar attains a size sufficiently in excess of the buffalo to overshadow the advantage of numbers held by that species.

Table Number 3 presents the number of pounds of dressed fish of various species taken by the commercial fishermen, together with the average price paid by the jobber for these fish. The total value of the catch, to the fishermen, was \$46,450.36 with buffalo providing \$44,934.57 or 96.74% of the total value (fig. 1).

Table Number 4 shows the retail market value of the various species in the commercial catch together with the price per pound, paid by the consumer, for the various species. The variation in price per pound for which the various species were sold is less marked than the price paid the fishermen. The retail price difference was only 2¢ per pound while the fisherman was paid 10¢ per pound more for buffalo than for carp, carpsuckers, or suckers. At the retail level buffalo made up 91.54% of the total cash value of the fishery against 96.74 at the jobber level. (fig. 2).

## DISCUSSIONS AND CONCLUSIONS

It will be readily noted that the buffalo dominates the catch in both weight and number. This is due more to the selective netting skill of the commercial fishermen than to the relative abundance of this species. Netting operations of the Game and Fish Commission Biologists show that the buffalo do not dominate the population to the extent indicated. The reason for this selectivity may be found in the price per pound paid by the jobbers who bought these fish from the fishermen. Buffalo brought 19¢ per pound while the other species brought only 9¢ per pound. This is the incentive that brought about a selective netting operation that excluded all species other than buffalo from the catch whenever possible.

This selective netting places a heavy pressure on the buffalo but has little effect on the other undesirable species. Care is taken to avoid concentrations of gar, carp, carpsuckers and suckers since they have relatively little market value. The overall effect of the present netting program is definitely lessened by the failure of commercial fishermen to remove the large quantities of undesirable species that they now so carefully avoid because of the low market value.

The damage to game species that is often attributed to contract netting has apparently been exaggerated since repeated examination of the nets of Contract Fishermen in Possum Kingdom Lake have revealed such a small number of Game Fish that their loss would appear negligible if they all perished in the nets. This is not the case however and many recover after being released.

The fishing methods of the contract fishermen are sharply criticized by a number of the sport fishermen who complain that the crowding of gill nets in the better sport fishing areas offers a hazard to boat traffic as well as trolling and casting. This complaint has been found to have a basis in fact and contract fishermen have been advised to spread the nets more and sink them to avoid entanglement with propellers of power boats.

#### RECOMMENDATIONS

1. It is recommended that further study be made of Possum Kingdom Reservoir to determine suitable means for controlling the undesirable species present.
2. It is further recommended that, if possible a market be located for those undesirable species that are now avoided by the Contract Fishermen because of their low market value.

#### SUMMARY

1. Possum Kingdom Reservoir is located on the Brazos River near Graford, Texas and is situated in Palo Pinto, Young, Stephens, and Jack Counties.
2. The reservoir covers approximately 20,000 surface acres at spillway level and has a storage capacity of 733,800 acre feet.
3. Possum Kingdom is a multipurpose reservoir that provides water for hydroelectric power production as well as irrigation and municipal uses.
4. The commercial fishery is limited to fishermen operating under contract with the Texas Game and Fish Commission since general sale of fish from Possum Kingdom is prohibited by Legislative action.
5. The most dominant species in the catch is buffalo which provides 84.83% of the total number and 84.65% of the total weight as well as 96.74% of the market value to the Contract Fishermen.
6. The predominance of buffalo is due to the higher price more than to relative abundance of this species.

Table 1. Number and Percentage of Various Commercial Species taken by Contract Fishermen, Possum Kingdom Lake, June 1, 1954-October 31, 1955.

Species Month	Buffalo No.	Buffalo %	Suckers No.	Suckers %	Carp No.	Carp %	Gar No.	Gar %	Carp suckers No.	Carp suckers %	Total No.	Total %
June-1954	12,667	86.45	2	.01	660	4.50	691	4.73	632	4.31	14,652	100.0
July	9,311	88.85	11	.10	476	4.54	195	1.86	487	4.65	10,480	100.0
August	5,657	89.30	34	.54	290	4.58	182	2.87	172	2.71	6,335	100.0
September	829	50.45	21	1.28	654	39.80	83	5.05	56	3.41	1,643	100.0
October	4,233	87.39			274	5.66	290	5.98	47	.97	4,844	100.0
November	2,928	80.11			77	2.11	257	7.03	393	10.75	3,655	100.0
December	6,081	82.04			259	3.49	256	3.45	817	11.02	7,413	100.0
January-1955	4,359	70.52			294	4.76	282	4.56	1,246	20.16	6,181	100.0
February	3,037	78.64	73	1.89	128	3.31	270	6.99	354	9.17	3,862	100.0
March	3,676	73.31	17	.34	302	6.02	241	4.81	778	15.52	5,014	100.0
April	5,025	82.24	36	.59	511	8.36	355	5.82	183	2.99	6,110	100.0
May	6,270	83.76	505	6.75	404	5.40	253	3.38	53	.71	7,485	100.0
June	8,098	94.37	18	.21	230	2.68	198	2.31	37	.43	8,581	100.0
July	5,818	93.66			224	3.61	135	2.17	35	.56	6,212	100.0
August	5,255	93.11	2	.03	237	4.20	142	2.52	8	.14	5,644	100.0
September	6,914	85.90			423	5.25	122	1.51	590	7.33	8,049	100.0
October	3,569	82.63			259	5.00	276	6.39	215	4.98	4,319	100.0
Totals	93,727	84.83	719	.64	5,702	5.16	4,228	3.86	6,103	5.52	110,479	100.0

Table 2. Weight and Percentage of Various Commercial Species taken by Contract Fishermen, Possum Kingdom Lake, June 1, 1954-October 31, 1955.

Species Month	Buffalo Lbs.	%	Suckers Lbs.	%	Carp Lbs.	%	Gar Lbs.	%	Carp sucker Lbs.	%	Total Lbs.	Total %
June-1954	40,701	81.07	4	0.01	3,304	6.58	4,901	9.76	1,294	2.58	50,204	100.0
July	34,995	89.83	32	.08	2,115	5.43	991	2.54	827	2.12	38,960	100.0
August	21,818	87.12	82	.33	1,469	5.86	1,211	4.83	464	1.85	25,044	100.0
September	6,242	65.32	41	.43	2,505	26.22	622	6.51	145	1.52	9,555	100.0
October	12,226	82.52			920	6.21	1,545	10.43	124	.84	14,815	100.0
November	10,060	79.80			286	2.27	1,398	11.09	862	6.84	12,606	100.0
December	25,323	85.36			1,184	3.99	1,776	5.99	1,384	4.66	29,667	100.0
January-1955	28,098	84.83			1,108	3.34	2,061	6.22	1,858	5.61	33,125	100.0
February	10,317	75.93	230	1.69	408	3.01	1,818	13.38	814	5.99	13,587	100.0
March	13,021	82.58	48	.31	874	5.54	1,353	8.58	472	2.99	15,768	100.0
April	17,032	80.43	90	.42	1,904	8.98	1,760	8.30	389	1.87	21,175	100.0
May	21,522	84.51	637	2.50	1,580	6.20	1,605	6.30	125	.49	25,469	100.0
June	30,329	93.56	38	.12	747	2.30	1,214	3.74	90	.28	32,418	100.0
July	21,373	92.74			842	3.65	760	3.30	71	.31	23,046	100.0
August	21,027	90.86	6	.03	1,064	4.60	1,026	4.43	20	.08	23,143	100.0
September	28,783	83.09			1,897	5.48	957	2.76	3,004	8.67	34,641	100.0
October	15,037	76.73			1,034	5.27	3,053	15.57	472	2.41	19,596	100.0
Total	357,904	84.65	1,208	.29	23,241	5.49	28,051	6.63	12,415	2.94	422,819	100.0

Table 3. Relative Value to Contract Fishermen of the Various Species Taken from Possum Kingdom Lake, June 1, 1954-October 31, 1955.

<u>Species</u>	<u>Lbs. of Dressed Fish</u>	<u>Average Price Paid By Jobber</u>	<u>Total Value</u>
Buffalo	238,603	\$ 0.19	\$ 44,934.57
Suckers	805	\$ 0.09	72.45
Carp	7,747	\$ 0.09	697.23
Carpsucker	8,279	\$ 0.09	746.11
Gar	None Dressed	No Market	
<b>Totals</b>	<b>255,434</b>		<b>\$ 46,450.36</b>

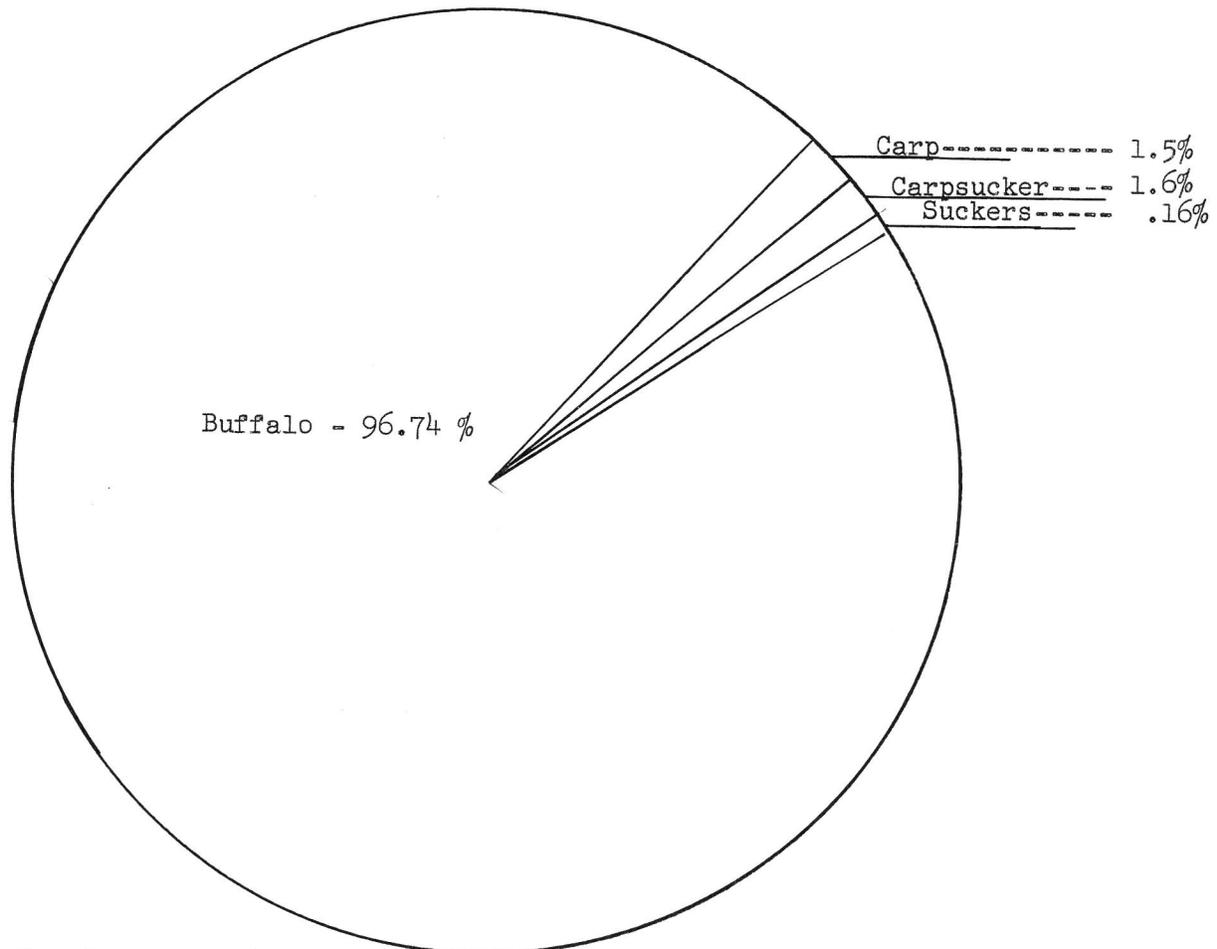


Figure 1. Percentage of Value to Fisherman Represented by Each Species in the Catch of Contract Fishermen, Possum Kingdom Lake, 1954 - 1955.

Table 4. Retail Market Value of Fish Taken by Contract Fishermen, Possum Kingdom Lake, June 1, 1954-October 31, 1955.

<u>Species</u>	<u>Lbs. of Fish Taken</u>	<u>Average Retail Price Per Lb. - Not Dressed</u>	<u>Total Value</u>
Buffalo	357,904	\$ 0.19½	\$ 69,791.28
Suckers	1,208	\$ 0.17½	\$ 211.40
Carp	23,241	\$ 0.17½	\$ 4,067.17
Carpsucker	12,415	\$ 0.17½	\$ 2,172.62
Gar	28,051	No Market Value	
<b>Totals</b>	<b>422,819</b>		<b>\$ 76,242.47</b>

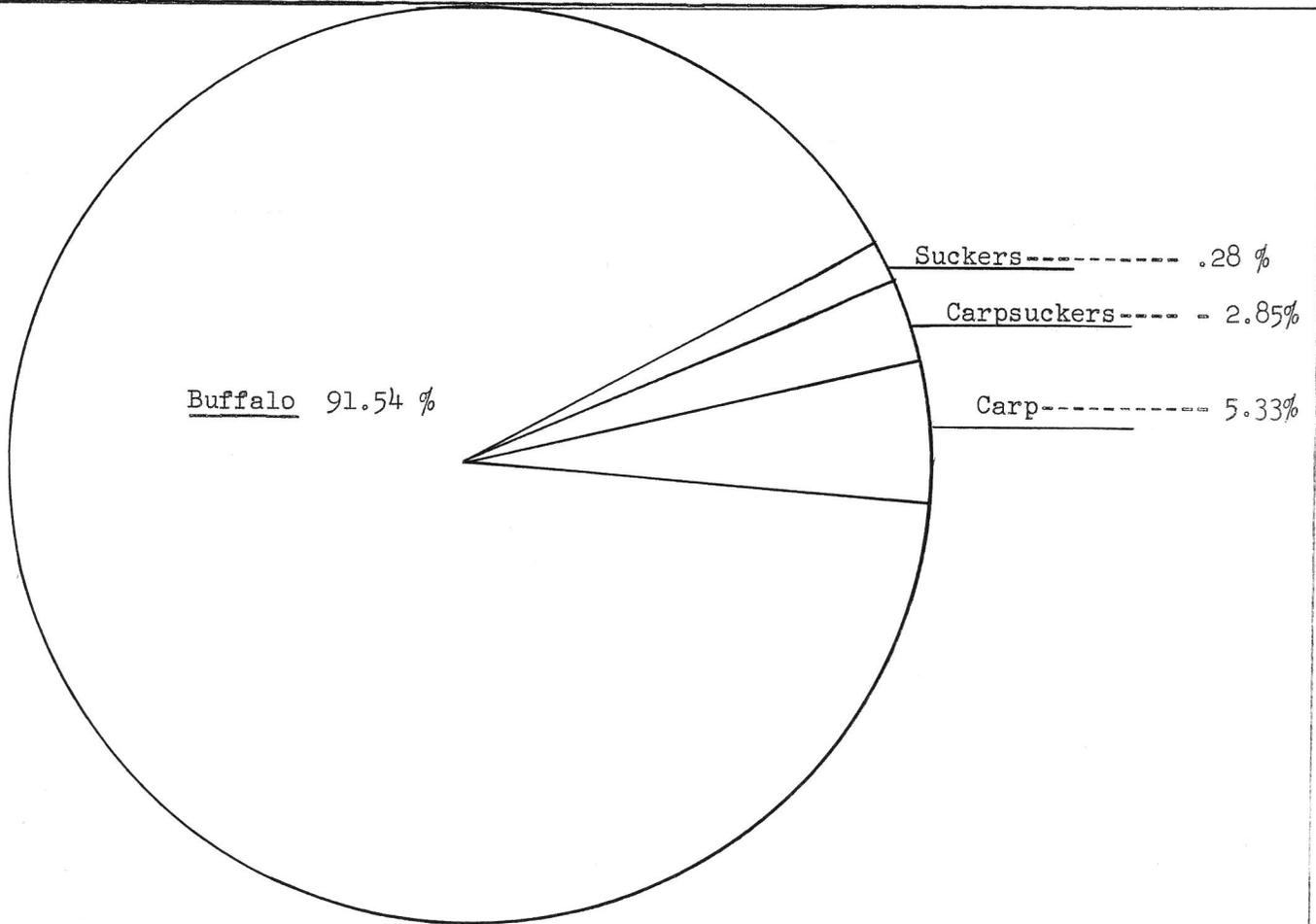


Figure 2. Percentage of Retail Value as Represented by Each Species in the Catch of Contract Fishermen, Possum Kingdom Lake, 1954 - 1955.

Rules and Regulations for Contract Commercial Fishing in Texas

1. All persons desiring a contract for fishing in closed waters must fill out an application questionnaire, answering all questions fully and after having signed and notarized the questionnaire, return it to the Game and Fish Commission, Walton State Building, Austin, Texas.
2. The person receiving a contract must provide the Commission with a One Thousand (\$1,000.00) dollar bond, made with a reliable surety company and payable to the State of Texas and approved by the Executive Secretary of said Commission, conditioned upon his faithful performance of the terms of such contract under regulations prescribed by said Commission.
3. License Requirements. The person holding the contact and all persons employed for fishing by the contract holder must have a Commercial Fishing License. All boats used must be provided with a Fish Boat License. Seine or Net License, to be of metal, must be firmly attached to each one-hundred (100) feet or fraction thereof of seine or net.
4. Each contract that is issued will be given a contract number. The contract holder must provide 2" x 8" x 8" blocks made from balsa or other light wood that will float, painted with water - proof white paint and the following legend, GAME AND FISH COMMISSION CONTRACT NO. \_\_\_\_\_, stenciled on the block with black paint. The contract holder's contract number will be inserted after the No. Such a block must be firmly attached to each net that is set out.
 

The diagram shows a 3D perspective of a rectangular block. The top surface is an 8" x 8" square. The front-left vertical edge is labeled as 2". The top-left edge is labeled as 8". The top-right edge is also labeled as 8". On the top surface, the text "GAME AND FISH COMM. CONTRACT" is stenciled in three lines. Below this, "No. \_\_\_\_\_" is stenciled, with a horizontal line indicating where a contract number should be written. Arrows point to the 2", 8", and 8" dimensions.
5. No fishes other than those listed in the contract will be permitted on the premises or in possession of the contract holder or his employees during the time the contract is in force.
6. No contract will be transferable.
7. Each contract holder must personally supervise the fishing activities of his employees.
8. A monthly report, provided by the Game and Fish Commission, must be sent to the Chief Aquatic Biologist monthly, giving the information called for. (These reports will be strictly confidential.)

9. The Game Warden responsible for the waters the contract holder desires to fish must be notified where the nets will be placed. Each time the nets are relocated, this notification is necessary. Such notification may be made by phone or personal contact.
10. The name and Commercial Fishing License number of each person employed to assist in taking fish under this contract shall be furnished the Game and Fish Commission and attached to the contract. Notice shall be given immediately of any person dropped or added to such employment.

Contract No. \_\_\_\_\_

STATE OF TEXAS :

COUNTY OF TRAVIS :

Permission is hereby granted to \_\_\_\_\_ of \_\_\_\_\_, Texas and those working under his direct supervision to take carp, buffalo, suckers, gar and/or turtles from \_\_\_\_\_ through the use of seines and/or nets and for this purpose he is appointed agent of the Game and Fish Commission and authorized to sell such fish for the purpose of defraying the expenses of the operation of the removal of such fish from said waters.

It is specifically provided that no other fish shall be in the possession of said \_\_\_\_\_ or his employees, while removing such rough fish as specifically named in this permit from the waters mentioned in the permit or while selling same.

All contracts entered into hereunder shall become null and void and terminate immediately upon breach by the contracting person, or the attached list of persons, working under this contract, of any of the terms thereof or of the attached rules and regulations that are hereby prescribed by the Texas Game and Fish Commission.

It is a consideration upon which this permit is written and accepted that said \_\_\_\_\_ will provide suitable equipment for the removal of such rough fish from the said \_\_\_\_\_ and will make every reasonable effort to reduce the rough fish population in said lake.

This permit shall be in full force and effect from \_\_\_\_\_ until \_\_\_\_\_, unless same is suspended before that time by the Game and Fish Commission of the State of Texas and that said Game and Fish Commission reserves the right to suspend or withdraw this permit at any time for any reason whatsoever.

Witness my hand and seal of office at Austin, Texas this \_\_\_\_\_ day of \_\_\_\_\_, A. D. 19\_\_\_\_.

TEXAS GAME AND FISH COMMISSION

by

\_\_\_\_\_  
Marion Toole

STATE OF TEXAS :

COUNTY OF TRAVIS :

Before me, a Notary Public, in and for \_\_\_\_\_ County, Texas this \_\_\_\_\_ day of \_\_\_\_\_ 19\_\_\_\_, personally appeared \_\_\_\_\_ well known to me to be the person whose name is subscribed in this instrument and says that he understands the purposes and stipulations of same and agrees to all of the terms and conditions stated herein.

\_\_\_\_\_  
Notary Public, in and for \_\_\_\_\_ County, Texas

RECORD OF CATCH OF COMMERCIAL FISHERMEN

Commercial fishermen are required to fill out the following permits monthly. Failure to comply will result in the loss of rough fishing permit.

Period of Catch: From \_\_\_\_\_ to \_\_\_\_\_  
 Area Where Fish Were Caught \_\_\_\_\_  
 Number and Type of Equipment Used \_\_\_\_\_

Date	Buffalo		Suckers		Carp		Gar		Carpsucker		Other	
	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.
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Signature of Contract Holder

\_\_\_\_\_  
Date