

78.3
Regional Director, Portland, Oregon

January 25, 1950

Thomas C. Horn, Refuge Manager

Narrative Report - September-December, 1949

Reference is made to Mr. MacDonald's memo of January 11th.

Gravel is measured in the skip of the cement mixer or through the use of a gravel level gauge made for the skip and by a line inside the skip. Either one, or both, are used.

Thomas C. Horn
By IEC

Office Memorandum • UNITED STATES GOVERNMENT

TO : Refuge Manager, Stillwater Refuge,
Fallon, Nevada
FROM : Regional Refuge Supervisor, Portland, Oregon
SUBJECT: Narrative Report - September-December 1949

DATE: January 11, 1950

With further reference to your September-December 1949 Narrative Report, a question has been raised concerning Photo No. 45 as to what provision you used in measuring the aggregate into the hopper.

Mr. Willis has indicated that a painted line on the interior of the hopper was probably used but we would appreciate your clarifying this point for us.

Kenneth F. MacDonald

Kenneth F. MacDonald

Office Memorandum • UNITED STATES GOVERNMENT

TO : Refuge Manager, Stillwater Refuge,
Fallon, Nevada
FROM : Regional Refuge Supervisor, Portland, Oregon
SUBJECT: Narrative Report for September-December 1949

DATE: January 11, 1950

We have just reviewed hurriedly the Narrative Report which you submitted for the period September-December 1949. You and your personnel who had a part in the preparation of this report are to be commended upon an excellent job. It was received on time, carries good factual information, a splendid pictorial section, and its general preparation in typing and composition is excellent. This is exactly the type of narrative that we desire to have from all refuges. It will serve an excellent purpose as a reference as well as a historical record of the development of that important area.

In our hurried review we found but one instance where the report was short, and that is you have apparently overlooked the submission of the NR-2 form which is required in all reports for that period. We would appreciate your having this report prepared and submitted in the usual number of copies.

Again, our thanks for this excellent job.

Kenneth F. MacDonald

Kenneth F. MacDonald

NARRATIVE REPORT

STILLWATER WILDLIFE MANAGEMENT AREA

SEPTEMBER - DECEMBER
1949

PERSONNEL

Thomas C. Horn	- - - - -	Refuge Manager
LeRoy W. Giles	- - - - -	Biologist
Illa E. Cross	- - - - -	Clerk-Typist
Carter S. Hughes	- - - - -	Mechanic
Earl W. Nygren	- - - - -	Maintenance Men

I N D E X

	PAGE
WEATHER CONDITIONS	1
WATER CONDITIONS	1
FIRES	2
MIGRATORY BIRDS	2
UPLAND GAME BIRDS	5
BIG GAME ANIMALS	6
FUR ANIMALS, PREDATORS, RODENTS & OTHER MAMMALS	6
PREDACEOUS BIRDS	7
FISH	7
PHYSICAL DEVELOPMENT	7
PLANTINGS	11
COLLECTIONS	12
RECEIPTS OF SEED AND NURSERY STOCK	12
FUR HARVEST	12
PROGRESS REPORT	12
RECREATIONAL USES	15
REFUGE VISITORS	15
REFUGE PARTICIPATION	16
HUNTING	17
FISHING	23
VIOLATIONS	23
OTHER ITEMS	24
SIGNATURE	25

Regional Director, Portland, Oregon

January 10, 1950

Thomas C. Horn, Refuge Manager

Correction - September-December Narrative Report

Page 5, Section 3, Botulism, 7th line, 3rd word.

Please change date from September 28 to October 9.

Thomas C. Horn

I GENERAL

A. Weather Conditions

As a whole the weather suited everyone, except the waterfowl hunters. At the time of Mr. Salyer's visit, the latter part of November, he spoke of our "bluebird" weather which was a very apt description. October was agreeable; November was even more so. As a matter of record, November was the warmest in the 45 year history of the weather station. There was very little wind and very few days when one couldn't get a suntan. In fact there were only 4 cloudy days during the 50 day hunting season. As might be expected, hunter success was nothing to brag about.

The close of the waterfowl season also marked the end of the balmy weather. On December 11th the temperature dropped to 3 above. This was followed by a weak rally, then another drop to 0, on the 20th. Occasional snow flurries preceded the cold fronts. In Fallon one inch of snow was recorded on December 19th. The marsh area, however, lies close enough to the Stillwater range of mountains to be affected by the increase in precipitation which falls at higher elevations. As a result, we measured 2 1/2 inches of snow in the Management Area.

A summary of weather data recorded from Fallon is as follows:

	<u>Precip.</u>	<u>Miles of Wind</u>	<u>Max. Temp.</u>	<u>Min. Temp.</u>	<u>Mean</u>	<u>Evap.</u>
Sept.	.04	1447.3	94	34	63.2	5.216
Oct.	.00	1786.1	86	21	48.9	3.373
Nov.	.13	1006.2	73	19	44.6	1.716
Dec.	<u>.06</u>	<u>1576.4</u>	<u>63</u>	<u>0</u>	<u>31.4</u>	<u>0.219</u>
TOTALS	.23	5816.0	94	0	47.0	10.524

B. Water Conditions

Marsh water levels for the period were the highest in recent years. Drought conditions, which started in the summer, continued throughout the fall, as a glance at the precipitation data will show. Lack of rain resulted in excessive irrigation requirements right up to the end of the irrigating season on November 15th, and the ditches and drains carried an extremely heavy flow of water. The estimated outflow from the Stillwater Point Reservoir was 13,742 acre feet. In addition our marsh received approximately 2,000 acre feet through the Paiute Drain, plus some surplus water from the Canvasback Gun Club marsh. The combined volume of flow

was enough to raise water levels at least 6 inches above the high mark of the last few years and to flood outlying areas which had not been under water since 1915.

Despite the fact that the marsh now has ample water, prospects for the coming year are not too good. The big reservoirs which store the irrigation water are at their lowest levels since 1934, and, if the winter is a dry one, the water supply may be much shorter this next season. This could very well work a hardship on our wildlife population. On the other hand, it would be advantageous from the standpoint of facilitating work in the marsh, particularly the construction of earth plugs, dikes and water control structures.

On December 11th the marsh froze over with ice averaging 3 inches in thickness. Subsequent thawing on warm days has produced occasional open spots, but below freezing temperatures each night have prevented any extensive melting. By their activity the geese and swans have maintained two areas of open water. Most of the ducks, though, have been forced to leave the marsh and have gone to the Indian Lakes channel, and outside areas where there was sufficient water current to prevent freezing.

G. Fires.

None.

II WILDLIFE

A. Migratory Birds

1. Population and Behavior

As early as the first of September we were finding noticeable changes in the numbers and composition of our waterfowl population.

Some of these changes undoubtedly represented local movements, the gathering of birds which were raised on nearby farmlands, and flights between the various marsh areas in the Lahontan Valley. Some migration was also taking place, however. Our summer population of cinnamon teal disappeared at this time while green wing teal began to show up in considerable numbers.

Mallards appeared in largest numbers the last few days in September when 6,000 were counted from the Fish and Wildlife Service airplane. These birds then moved on, most of them probably scattering out through the valley, for by the time of the next census, only a month later, only 1,000 were present. During November and December mallards

increased again to an estimated 4,500.

Pintails began congregating in large numbers on the Big Water at the northeast corner of the marsh during September. At the first of October at least 5,000 succumbed to botulism in this area. Their numbers continued to increase until a peak was reached on October 26th when 23,500 were counted. A month later the population had decreased to 14,000 and by mid-December there were less than 5,000 present.

Gadwall reached a peak of 10,500 the latter part of September. By December only 1,000 were found on the Area.

Baldpates, like the pintails, showed a preference for the Big Water with its growth of wigeon grass and lack of emergent cover. The greatest number was recorded on October 26th when approximately 5,500 were present, the bulk of these appearing on the Big Water. By the latter part of December most of the baldpates had evidently moved on south.

Our summer population of redhead ducks was leaving by the first of September and the number of incoming northern birds was too small to maintain a population commensurate with the summer concentration. The summer peak was estimated at 4,200. On September 28th about 1,300 were to be found on the marsh ponds, and, by the time of the freeze-up in December, only a few stragglers were left.

The first Canada geese that could be classed as migrants were seen on September 14th. They did not utilize the marsh area in particularly large numbers, though, until the latter part of December when they began to flock in an ice-free area on the Stillwater Point Reservoir. About 2,000 were coming into this open water at night after feeding in nearby alfalfa fields during the day.

The greatest number of snow geese, 8,000, was seen on October 19th and was evidently a migratory concentration. From that time until the December freeze-up sent most of these birds on south the number using the Management Area was about 5,000.

Whistling swans first appeared on October 18th when a family group of 5 was seen. No mass migration was noticed as their numbers increased gradually throughout the fall. As far as we have been able to determine, the peak was reached about mid-December. At that time we estimated that 1,000 were present. It must be admitted, however, that we were unable to get a complete count of these birds, our estimate not including birds undoubtedly present in inaccessible portions of the marsh.

This might be the appropriate place to say a few words concerning the Service airplane and Ross Hanson, the man-behind-the-

stick, who is not only a good pilot but a capable observer at the same time. It would have been impossible for us at any time to obtain an indicative waterfowl inventory without the use of this airplane as many of our birds are to be found in marsh which, at the present time, can only be reached on foot, while others tend to raft up in compact groups that may include anywhere from 1,000 to 10,000 ducks making enumeration from the ground impossible. For this reason the airplane has been almost indispensable, and we are hoping that the future will see it crossing the Sierras more frequently than has been possible heretofore.

2. Food and Cover.

The supply of marsh food plants was excellent and seed production was heavy. A better distribution of the food supply is about all that could be desired. Food production is virtually limited to the north end of the Area. The marsh on the south end consists almost entirely of cattail growth while the ponds are in general deep, turbid, full of carp, and consequently barren.

Food plant acreage has been computed roughly at:

Alkali bulrush (nutgrass), <u>Scirpus paludosus</u>	1,000 acres
Hardstem bulrush, <u>Scirpus acutus</u>	460 acres
Saltgrass, <u>Distichlis</u>	1,700 acres
Sago pondweed, <u>Potamogeton pectinatus</u>	2,000 acres
Wigeongrass, <u>Ruppia maritima</u>	6,000 acres

Field observations indicate that saltgrass has a very definite place in this list. When rising marsh water inundated the marginal saltgrass zone after the first of November, the mallards practically deserted the nutgrass marsh to feed in the saltgrass. This was verified by the feeding activities of the mallards and substantiated by a sampling of gizzard contents.

During the hunting season, at least, cover may be classified into two opposing types. The first consists of emergent vegetation which offers some concealment for the ducks. The second is lack of emergent vegetation which offers no concealment to the duck hunter. The effectiveness of this second type will in part explain the continued presence of some 20,000 ducks plus several thousand geese on the so-called Big Water throughout the waterfowl season in spite of the fact that this area was open to hunting.

Much of the emergent cover on the Management Area is too dense and unbroken to be of maximum value. It is hoped that the increasing muskrat population will soon open up some of this rank growth.

On the other hand, shoreline vegetation has been overgrazed to the extent that cover is almost completely lacking. This is strikingly

illustrated by the presence of a zone of open water which separates the shoreline and the marsh throughout the entire area.

3. Botulism

Sometime between September 28 and October 9 an outbreak of botulism occurred on the Big Water area. Losses amounted to at least 6,000 ducks of which about 85% were pintails, 5% shovellers, 5% baldpates, and the rest miscellaneous species. The epidemic seemed unusual in that it struck suddenly, terminated as abruptly, and there was no lingering sickness. When the first inspection was made, on ~~September 28~~ ^{October 9} the east shore was littered with fresh carcasses and numerous dead ducks floated against the nutgrass border on the south. The absence of sick ducks at this time was an unusual manifestation of the outbreak.

The Big Water is a potential botulism hazard. The water develops a feather-edge on the flat shoreline, and high winds push it about freely on this level extension of the Carson Sink. The construction of structures to regulate and control this water in order to reduce the danger of recurring botulism should merit high priority on our marsh development program.

4. Lead Poisoning.

A few ducks displaying the symptoms of lead poisoning have been seen, but this condition does not seem to be severe. We have noted a much higher incidence of lead poisoning on other nearby areas which are subject to more concentrated hunting. With development and greater shooting on the hunting area, we can expect to find an eventual increase in mortality from lead poisoning.

Just as a sidelight we might mention that on an inspection trip covering a part of the Greenhead Club marsh, following the freeze-up, a total of 20 ducks were seen of which 7 were pretty definitely suffering from lead poisoning. A male mallard which had lost practically all control of its wings, legs and neck was picked up for examination, and 11 lead shot were found in the gizzard.

B. Upland Game Birds

At the present time the Management Area cannot be considered as having, or providing, habitat suitable to upland game birds. Occasionally, however, pheasants or valley quail which occur on adjacent farmlands, will be found using the fringes of the Area. We should be able to develop a resident population of both species after our pastures have been developed.

C. Big Game Animals

None

D. Fur Animals, Predators, Rodents and Other Mammals.

1. Fur Animals.

The only fur animals present, in any numbers, are muskrats. There is a possibility that weasels, mink and skunk may occur occasionally, but if so they are so rare as to be of no significance. One badger was seen near the Navy Cabin on November 16th, but this animal may also be considered so uncommon that the observation is worth mentioning just for the record.

A muskrat inventory was taken during the period from October 4th to 7th. At that time an estimate of 1,500 muskrats was made. This was followed up by a house count made from the Service plane on November 14 with a total of 55 houses being seen. A number of known houses obscured in heavy cattail marsh were missed, but it is believed that at least 50% of the houses were recorded. The house count provided no basis for enlarging our original estimate and recommendations for no trapping were made.

2. Predators

Coyotes are distributed throughout the Management Area. Tracks and other sign are to be seen everywhere, though, so far, we have failed to find an active den. In spite of the many indications of their presence, coyotes are not often seen and it would appear that the sign is indicative of a few, widely ranging, individuals rather than any heavy concentration of animals. This view has also been expressed by several of the local ranchers and was corroborated by Vince Bogatich, who is doing predator control work on the Area.

The coyote population is increased in the winter as snowfall in the Stillwater mountains forces these animals down to lower ^{that} elevation. This facilitates control measures for these coyotes ~~than~~ come within range of the 1080 stations which are scattered throughout the marsh and desert areas.

Last winter coyote control work was started late in the season and was hampered by bad weather and deep snow which made parts of the area inaccessible. Nevertheless it resulted in a very noticeable reduction in the coyote population. This season 12 bait stations have been established. These are supplemented by traps and coyote-getters in the vicinity of farmland where the use of 1080 is dangerous.

3. Rodents

Of special interest is the evidence of an irruption in the population of field mice. This has not been particularly noticeable on the marsh edges probably because of the concentrated trampling of cattle. On the islands, however, where cattle usage has been comparatively light, extremely large numbers of Microtus have been found in the saltgrass. In some places the ground is literally covered with the castings from their burrows. The abundance of these mice has attracted numerous marsh hawks and short-eared owls, and these have been commonly seen over the marsh throughout the fall.

E. Predaceous Birds

There are probably 10 bald eagles on the Stillwater Area and occasionally a golden eagle is seen. Hawks, except for marsh hawks, have been comparatively uncommon.

There are very few magpies though more are seen now than during the past summer. The hunters of this locality are very predator control conscious so that the magpie has little opportunity of increasing to the point where it might become a problem.

Ravens have been frequently seen in the latter part of the period, but whether or not this is unusual we cannot say. Since the Area is new we are unable to draw any comparison with previous years.

F. Fish

Conditions for fish in the marsh were not the best through September. Evaporation lowered the level of the water areas and maximum depth in the marsh was not in excess of 4 feet. Water temperature was high. Activity of carp in the water areas was evidenced by high turbidity of most of the open water in the marsh.

There was no opportunity to check the condition of the bass planted earlier in the year in Stillwater Point Reservoir.

III DEVELOPMENT AND MAINTENANCE

A. Physical Development

Development of the Area through this period was intensive. Much was accomplished. Approximately one-third of a million yards of earth were moved in construction of canals, drains and roads. In

general, the entire water distribution system was completed.

1. Paiute Canal

Excavation of this Canal was completed and the headgate poured and riprapped. The county road culvert was placed, backfill made, and a wing dike approximately 1/4 mile long was built from the culvert to the hill to prevent overflow of the road during periods of heavy flow in the Canal.

2. West Canal

The first segment of this Canal was completed and at the close of the report period, the north extension into the open hunting area was 1/2 completed.

3. East Canal

Excavation of this was completed. The headgate and check #2 were poured. Excavation for check #3 and two turnouts were completed. The headgate and all checks in this canal are 3-barrelled structures. See photos 44 and 45.

4. Hunter Drain

Excavation of this was completed and 3 culverts installed. Excavation for 2 4-way structures is completed. Excavation of a 1/2 mile north extension of the Hunter Drain to connect the drain with a more easterly section of the marsh was completed. Two shifts were worked by the Lorain on this job, September 6 to October 3rd.

5. Hunter Road

All but 8,400 feet of this 39,000 foot road were graded and surfaced, 20 feet wide. The unfinished portion of the road was through an irrigation sump where soil was too wet to work.

6. Gravel Pit and Road

A withdrawal order was obtained for the gravel pit and approximately 5 miles of road built and maintained over which gravel for the Hunter Road was hauled.

7. Division Road

The 27,620 feet of this road were bladed out to provide a definite line between the open and closed hunting areas.

8. Other Roads and Trails

Approximately 40 miles of minor roads and truck trails were bladed, or dragged, to provide access to job locations throughout the project.

9. West Canal Road

The spoil bank on the lower side of the West Canal was dozed down over 29,000 feet for use as a road.

10. East Canal Road

Most of the 39,300 feet of the lower spoil bank on the East Canal was dozed down for use as a road.

11. Boundary Posting

Boundary posting on 25 miles of the closed area, or Refuge, boundary was completed. A stenciled sign (Closed Area, Behind This Sign) was mounted on every other boundary marker post.

12. Directional Signs

Directional signs for the benefit of hunters were placed at all intersections of newly constructed roads or trails. These pointed out various landings and lakes or other favored hunting spots. Much favorable comment was received from hunters.

13. Earth Plugs

The following 3 dikes were completed along the north line of T. 20 N., R. 31 E., Sec. 23., and are for confining water to a large alkali flat that lays south of the dikes. All were built with a 16 foot top to accommodate a roadway.

Dike "A" - 1,753 feet long - 3.5 feet high

Dike "B" - 445 feet long - 3.0 feet high

Dike "C" - 2,719 feet long - 5.2 feet high

14. Reservoir Outlet Canal

The 200 yards of this canal, immediately above the West Canal headgate, too small to carry the required reservoir outflow, has been enlarged.

15. Pasture Development

Approximately 50 acres of pasture area has been cleared. The 22 tractor used for this is too small for this use, and further work on this has been deferred until receipt of the R-5 tractor from Moiese, Montana.

16. Headquarters Location

The headquarters lot, 180' x 230', has been covered with a 6" layer of pea gravel, after the ground was cleared and leveled.

The 26 x 72 steel Butler building was erected on a 24" wall with 6" x 18" footings below. A 6" reinforced concrete floor was poured inside the building.

The floor slab for the oil house floor and foundation has been poured and covered to prevent freezing.

17. Temporary Headquarters Location - Greenwood's Store

Early in the report period, the following work was done at this location to provide a safe, temporary base of operations.

Gasoline tank - 5 coats asphalt paint, buried and pump installed.

Diesel tank - Installed on temporary foundation

Pyramid tents - 3 set up on frames for:

Oil House

Tool House

Supply House

One tent has been removed since the service building is complete.

18. Equipment

A service truck bed was built and installed on the 1940 GMC. This is a complete service unit for all machines in use. Lubrication equipment is air operated to expedite work.

A hoist assembly has been nearly completed on a 1 1/2 ton Chev. chassis.

The Lorain dragline was down for nearly a month for rebuilding the center pin assembly. Clutch and brake linings were installed. About a week was lost when bushings on the main drive shaft had to be replaced.

The Lima lost 3 days when the spacer in the hubs of the main drive sprockets had to be rebuilt. This was the second time this trouble occurred. Repairs made this time corrected improper original design. No further trouble is expected. A week was lost for this machine when the starting motor had to be rebuilt. Improper assembly of the motor before acquisition by the Service resulted in the loss of the main and rod bearings, damage beyond repair of the crankshaft and improper functioning of the bendix starting unit. Clutch and brake bands in this machine were also relined.

Valves were ground and motor tuneups were performed on several

trucks, the 22 Cat., the elevating grader and the Allis Chalmers HD-14, S/N 995.

In general, all equipment on hand is now in better shape than when received. This is particularly true of the war surplus machines.

Machines used on the work done through the period were:

- 2 - Allis Chalmers HD-14 Tractors
- 1 - Caterpillar 22 Tractor
- 1 - 48" elevating Grader
- 1 - F&H 1/2 yard Dragline
- 1 - Lima 1 1/4 yard Dragline
- 1 - Lorain 2 1/2 yard Dragline
- 1 - Farmall M Tractor with loader
- 1 - Gilson, 1 sack, Cement Mixer
- 1 - 3" Centrifugal Pump
- 1 - 2" Centrifugal Pump
- 6 - 1/2 Ton Light Trucks
- 10 - Dump Trucks
- 1 - Flat Bed Truck

Two oil burning aggregate heaters for concrete aggregate were built of grease barrels. Heating of water and aggregate is expected to be necessary through January and February to provide warm concrete for pouring through freezing weather. Canvass is on hand for covering the poured structures. Structures will be kept warm for 6 days after pouring.

19. Planning

Aerial photos of part of the Management Area were assembled and a tracing made. A photostatic reduction of the original 5" scale tracing, gave us a 2 1/8" scale project map. Because of the high degree of accuracy of the finished map, it has proven invaluable in planning work. The same type of map has been nearly completed for the Indian Lakes Area. This will include nearly all of the water in the entire area.

Considerable planning has been done in marsh development and for the project as a whole. A separate report will be furnished in the near future.

B. Plantings

1. Aquatic and Marsh Plants

The only plantings made this quarter were of marsh smartweed, Polygonum muhlenbergii. Planting stock was brought from Tule Lake,

rootstocks were set out at 3-foot intervals along the edge of Stillwater Point Reservoir. As it was late in the season only a small planting was made, about 60 yards of shoreline being covered. The first frost hit at the time when the new shoots were just beginning to break through the ground. It is hoped, however, that there will be some survival.

C. Collections

None

D. Receipts of Seed and Nursery Stock

On December 23rd we received 500 pounds of white sweet clover seed from Camas Refuge.

IV ECONOMIC USE OF REFUGE

C. Fur Harvest

The dense cattail growth which is characteristic of so much of the marsh area is badly in need of control. A large muskrat population would be desirable in this type of marsh as the feeding and house building activities of these rodents would materially help in opening up the stand. For this reason and also because the population is not large enough to warrant any extensive trapping, we are not attempting a removal program this season.

V FIELD INVESTIGATION AND RESEARCH

A. Progress Report

Biological Investigations

Student Assistant Marshall's report on the results of his summer's observations on the Stillwater Area was forwarded on November 9th after review and minor corrections. The report was very well put up and contained much information of value for future development and management.

Irrigation

In connection with planning work, considerable investigation on irrigation requirements and results was collected. The following data briefly summarized indicates the best available information at present. There is little doubt that experience will furnish us with

information more exact.

Seeded grass pastures will be planted on our best soil under the East Canal and the Paiute Canal. Approximate arable area is 800 acres that will require ten irrigations per year.

Irrigating period from start of water on to the end of water cycle should not exceed 24 hours. Tolerance of plants to flooding and the probability of raising subsurface alkali makes this limitation.

Considering checks set on 1 foot contours, .8 acre foot of water is required per irrigation for each acre. Of this, .5 acre foot of water per acre will be available as return flow to other lower contours or to the marsh. Net loss per irrigation per acre is .3 acre foot, making a total water loss for the grass pastures 2,400 acre feet.

Plants adaptable to use, irrigated pastures, with approximate pounds per acre for each species follows:

Mixture for Alkaline Soil

Smooth Brome	6
Meadow Fescue	6
Strawberry Clover	2
Birdsfoot Trefoil	2
	<u>16</u>

Mixture for Mild Alkaline Soil

Smooth Brome	6
Meadow Fescue	4
Perennial Ryegrass	4
Strawberry Clover	2
Alsike Clover	2
	<u>18</u>

Millet would be adaptable to this soil also

Mixture for Non-Alkaline Soil

Smooth Brome	6
Orchard Grass	4
Perennial Ryegrass	4
Sweet Clover	1
White Dutch Clover	1
Alfalfa	2
	<u>18</u>

Millet would be adaptable to this soil also

The irrigation period of 24 hours will dictate the size of contour headgates and the area within the individual contours. Sound planning here can save us many hundreds of dollars later on in irrigating costs.

Interior fences on these pastures will be necessary to keep cattle on the dry part of the pasture while other portions of the pasture unit is being irrigated.

These pastures should tolerate grazing from May 1 through October 31st.

Marsh plant pastures will be planted in soils of moderate and heavy alkali content. It is expected that after a period of from 5 to 10 years these, if desired, can be cleaned up and seeded to grass pasture as the soil should lose its soluble alkali by leaching.

The approximate arable area for these pastures is 700 acres.

Irrigation will consist of flooding over extended periods with infrequent periods of drying up to allow the forage to be utilized by livestock.

Checks will be set at 1 foot contour intervals. Water consumption per acre per year through evaporation, transpiration and seepage is expected to average approximately 5 acre feet per acre. Total water loss for this type pasture is estimated to be approximately 3,500 acre feet.

Plants expected to be adaptable to this type of pasture are:

Scirpus paludosis

Scirpus americanus

Eleocharis quadrangulata

Eleocharis palustris

Juncus balticus

Succession is expected to be to foxtail. Cattail and Acutus are not expected to be a problem.

These pastures should tolerate grazing from June through October.

Marsh Development Program

Extensive investigation as to the best and most economical method to break the northern part of the marsh up into management units was done. It is evident that by locating structures in the deepest channels and constructing small earth plugs, rarely over 150 feet long,

between islands in the northern marsh can be broken up into 8 separate management units of 580 to 1,500 acres.

In conducting this work all open channels were worked out with boats and islands were covered on foot. In general, all islands in the western $\frac{2}{3}$ of the marsh area were high enough (up to 10 feet above the water level) to eliminate the necessity of any fills on the island. Only a few, those not large, will be needed.

At the approximate time this work was done, 4 separate water level checks by Engineer Jacoby indicated the water level in Lead Lake at 3877.21 and at 3876.5 over the rest of the marsh.

A marsh development plan is now in the process of preparation and will in the near future be forwarded with recommendations and cost estimates.

VI PUBLIC RELATIONS

A. Recreational Uses

This use this period was confined to ice skating on Stillwater Point Reservoir through the last 3 weeks of December. Approximately 35 man days were spent in this sport.

B. Refuge Visitors

The following visitors were received in Fallon:

September 9 - Ross Hanson came in with the Service plane from Sacramento and spent the day flying the Area making a census of the waterfowl.

September 16 - Mr. MacDonald and Richard E. Griffith, of the Washington and office spent the day in Fallon. Mr. Griffith returned 17 to Reno on the evening of the 16th and Mr. MacDonald continued in Fallon making an inspection of the Refuge Area.

September 19 - Ross Hanson returned with the Service plane to aid in the botulism outbreak that had occurred in Toulon marsh.

September 22, 23 - Robert Boone, FR Division, Regional Office spent and 24 these 3 days making an inspection of the Stillwater Area.

September 28 - Ross Hanson was in from Sacramento with the Service plane.

- September 29 - Wilfred N. Anderson, Regional Office, spent three and
to one-half days in the Fallon Office going over the
October 2 cost accounting system to be used in connection with
the cooperative work program.
- October 26 - Ross Hanson was in with the Service plane and spent the
day with the Refuge Manager and the Biologist. Flying
time was spent making waterfowl census and mapping
Lead Lake and the landings in that vicinity.
- November 17 - Messrs. Jorgensen and Hollister, Regional Office, spent
to this week on the Area making appraisals of all the
25 privately owned land that is within the boundaries of
the Stillwater Wildlife Management Area.
- November 27 - Mr. MacDonald, Mr. Paul Quick and Mr. Salyer, Washington
and Office, spent these two days on an inspection trip of
28 the Stillwater Area.
- November 29 - Mr. Jacoby, Regional Office, spent 10 days in the
to Stillwater Area doing the survey work necessary for
December 8 the northern extension of the West Canal and laying
out the sites of the checks, etc. in the other canals.
- December 1 - Mr. Reimer, Washington Office, and Mr. Schaar, Regional
Office, spent 4 hours on inspection trip of the Area.
- December 4 - Mr. Willis, Regional Office, spent one day conferring
on the engineering plans for the Refuge.
- December 15 - John Sypulski and Fred Evenden, Sacramento Basin Studies,
spent 4 hours on an inspection trip over the Area.

C. Refuge Participation

The following meetings were attended through the report period.

- September 16 - With Messrs. MacDonald and Griffith attended a conference
with the County Commissioners and the Navy on the
request of the Navy to lease land for a gummery range
which lies north of the Refuge.
- September 19 - Attended meeting of the Nevada State Fish and Game
Commissioners and the Navy officials in State Attorney
General's office in Carson City, relative to the gummery
range lease request.
- September 20 - Spoke before a joint meeting of the Fallon Rotary and
Lions Clubs as a guest of Mr. Larry Grohore on the work

progress on the Stillwater Wildlife Management Area.

- September 23 - Met with the Advisory Committee and recommendations were made for the improvement of roads, etc. There was also recommended that no overnight camping on the Area be permitted.
- October 11 - Attended the meeting of the Carson City Rotary Club, and spoke briefly on the Refuge development program and explained some of the benefits that could be expected from the growth of this development program.
- October 26 - Advisory Committee meeting to reconsider the overnight camping regulation and amend this regulation to permit camping of not more than 3 successive nights.
- November 4 - Presented progress report and sum of expenditures to the State Fish and Game Commissioners at their meeting in Fallon.
- November 21 - Spoke before the Business and Professional Women's Club of Fallon. Gave a review of the Branch of Refuges.
- December 5 - Met with the Churchill County Commissioners and settled a misunderstanding relative to out-of-State men employed on Management Area.
- December 22 - Showed the film "Haunts for the Hunted" and spoke briefly on the purposes of the Fish and Wildlife Service to the Stillwater crew and guests.

D. Hunting

The following data was prepared by Fred Wright, Nevada State Fish and Game Commission's Biologist as his PR quarterly progress report. This covers all the data secured at the Stillwater checking station for both the Refuge Hunting Area and the Canvasback Gun Club and data voluntarily furnished by the members of the Greenhead Club on Carson Lake. This data is incorporated in this report for its future historical value.

QUARTERLY PROGRESS REPORT

INTRODUCTION

To determine the effects of development work at the Stillwater Management Area on hunting conditions, a waterfowl checking station

was maintained for the full season. In this way the 1949 hunting season will be used as a basis for the following years when the improvements will have altered the habitat. The checking station was operated during the daylight hours for a total of 48 days out of the 49 1/2 days of the current hunting season. Complete coverage of the hunters using the area was not possible because of the many access roads, however, it is estimated 85 percent of all the hunters using the Stillwater Area were checked out.

HUNTING CONDITIONS

Although no records are available for past hunting seasons the general opinion of the hunters is that it was a comparatively poor season. The weather was a contributing factor in that October had 22 clear days, 7 partly cloudy, and 2 cloudy days; and November had 23 clear days, 4 partly cloudy and 3 cloudy days. Although there were several storms of short duration, they occurred during the weekdays when hunting pressure was low. For the most part October and November were warm and calm; with this November being one of the warmest on record and the least windy.

The water level in the area continued rising through the hunting season due to reduced evaporation loss and continued inflow from the Stillwater Point Reservoir and the Paiute Drain. The rising water inundated the saltgrass (Distichlis sp.) flats that border the small ponds and potholes of the marsh and made available more feeding and resting areas for the waterfowl. A large flat of 700 acres on the north end of the area became flooded during the last several weeks of October and through the first part of November. The area has an abundance of wigeongrass (Ruppia maritima) which was available to the ducks after it became covered with several inches of water. Up to 11,000 ducks concentrated on this flat feeding out of gun range and consequently were not available to the hunters. An adjoining flat containing 6,200 acres of open water was flooded all summer and afforded another safe place for a larger concentration of ducks and geese to feed and rest. For the most part the birds did very little flying and when they did move they flew high.

DATA FROM CHECKING STATION

The hunters from the Canvasback Gun Club which adjoins the Stillwater Public Shooting Grounds and Stillwater Refuge were checked and noted as Canvasback Gun Club members on the checksheets. In tabulating the statistics both areas have been worked out as a unit with the exception of hunter success. The Canvasback Gun Club kept no records for the season.

Checksheets were given to the caretaker of the Greenhead Gun Club which is south of Fallon approximately 8 miles. Only the kill by species was tabulated on these checksheets although the total number of hunters was kept as a separate record for the gun club.

Table I shows the kill by species for the Stillwater Management Area, and the Greenhead Gun Club.

Waterfowl Kill - 1949 Stillwater Management Area			Waterfowl Kill - 1949 Greenhead Gun Club		
Ducks	No. Killed	% of Total	Ducks	No. Killed	% of Total
Pintail	941	17.5	Mallard	3808	29.0
Mallard	885	16.4	Pintail	3376	25.5
Green-winged teal	755	14.0	Baldpate	1381	10.5
Gadwall	732	13.6	Shoveller	1298	9.8
Shoveller	700	13.0	Green-winged Teal	979	7.4
Redhead	643	8.2	Blue-winged Teal	822	6.2
Baldpate	346	6.5	Cinnamon Teal	724	5.5
Canvasback	312	5.8	Gadwall	511	3.8
Ruddy	108	2.0	Redhead	221	1.6
Cinnamon Teal	59	1.1	Canvasback	48	.36
Blue-winged Teal	47	.9	Lesser Scaup	16	.12
Lesser Scaup	34	.6	Bufflehead	13	
Bufflehead	13	.2	Ruddy	7	
Ring-necked	4	---	Golden-eye	4	
Hooded Merganser	4				
Surfscoter	1				
White-winged scoter	1				
Total Ducks	5,385		Total Ducks	13,208	
Geese			Geese		
Canada Geese	45	65.2	Snow Geese	256	74.6
Snow Geese	22	31.9	Canada Geese	69	20.4
Cackling Geese	2	2.9	Cackling Geese	18	5.0
Total Geese	69		Total Geese	343	
Coots	49		Coots	20	
TOTAL WATERFOWL	5,503		TOTAL WATERFOWL	13,571	

Thirty-seven and three-tenths percent of the total ducks killed were taken the first 2 1/2 days of the season by 26.4 percent of all hunters checked through the Stillwater Station.

Table II, the "Cripple to Kill Ratio", is considered conservative. Due to the hunting conditions such as clear weather, birds flying at extreme range, and the tall dense emergent vegetation of the marsh the losses were probably more nearly 1 lost for every 2 or 3 taken.

TABLE II

	<u>First 25 days</u>	<u>Second 25 days</u>	<u>Total for Season</u>
No. of Ducks Killed	4,008	1,377	5,385
No. of Cripples Reported	945	323	1,268
Cripple: Kill Ratio	1:4.25	1:4.26	1:4.24

Table IIIA shows the success ratio, birds per hunter day for the Stillwater Area and the Greenhead Club, and Table IIIB shows the separation of the Stillwater Area and Canvasback Gun Club. The high success ratio shown for the Canvasback Club hunters is the result of the members staying overnight on the weekend and holiday hunts which enabled them to bring out the possession limit if successful. Boats and blinds also are available at the gun club.

TABLE IIIA

<u>Area</u>	<u>No. of Hunters</u>	<u>Birds Per Man Day</u>	
		<u>Ducks</u>	<u>Geese</u>
Stillwater	2,000	2.7	-
Greenhead Club	4,832	2.72	-

TABLE IIIB

<u>Area</u>	<u>No. of Hunters</u>	<u>Birds Per Man Day</u>	
		<u>Ducks</u>	<u>Geese</u>
Stillwater	1,654	2.24	-
Greenhead Club	4,832	2.72	-
Canvasback Club	346	4.84	-

Records available from the Greenhead Gun Club for the 1947 and 1948 hunting season are included for comparison with this years record from that club.

TABLE IV

	<u>Hunters</u>	<u>Ducks</u>	<u>Geese</u>	<u>Ducks</u>	<u>Geese</u>
1947	2,337	6,207	462	2.66	.198
1948	3,797	11,853	937	3.12	.248
1949	4,832	13,208*	343*	2.72	.071

*These figures are the total of birds by species from the checksheets

kept through the cooperation of the Greenhead Gun Club.

The number of hunters that were unsuccessful on the Stillwater Area was 551, or 27.6 percent. Accessibility of the area, weather conditions, and the concentrating of a large percent of the ducks and geese in the open water, were contributing factors. Future improvements will make the area more accessible. Maps of the area were given out through the checking station to help familiarise the hunters with the area.

Average number of trips per hunter was 3.34. Out-of-State hunters on the Stillwater Area made up 11.3 percent of the total use and represented 27 out of State localities, primarily from California.

PERCENTAGE OF WATERFOWL KILLED BY SEX

Species	FIRST 25 DAYS		SECOND 25 DAYS		FULL SEASON OCT. 14-DEC. 2	
	Male	Number	Male	Number	Male	Total
	Female	Checked	Female	Checked	Female	Checked
	%		%		%	
Pintail	42:58	455	43:57	209	42:58	664
Mallard	54:46	436	48:52	122	53:47	558
Gadwall	51:49	363	57:43	103	53:47	466
Shoveller	51:49	356	53:47	130	51:49	486
Redhead	58:42	288	42:58	12	58:42	300
Green-winged Teal	46:54	263	49:51	206	47:53	469
Canvasback	53:47	178	40:60	60	50:50	238
Baldpate	49:51	170	49:51	61	49:51	231
Cinnamon Teal	50:50	34	- -	-	53:47	36
Ruddy	38:62	21	- -	-	41:49	32
Lesser Scaup	61:39	13	- -	-	50:50	20

FOOD HABITS STUDY

Gizzards were collected at the checking station through the season, and the contents have been preserved and labeled to be handled when time permits. A total of 86 gizzards were taken from 10 species of ducks.

BOTULISM

An outbreak of botulism occurred after the 28th of September and before the 9th of October, on the open water of the Nutgrass area. Mr. Horn, of the Fish and Wildlife Service, flew the area on the 28th of September and reported no dead birds. I was in that vicinity on

the 9th of October and noted many dead birds along the east shore. By actual count on foot of a measured four-tenths of a mile, we counted 300 dead ducks, and 625 ducks were counted by driving along the shore for one mile and eight-tenths. The carcasses covered an estimated three and one-half miles of shore, and in most instances had been carried high upon the beach by strong winds. The total number of dead birds on the east shore is estimated at 1500, a breakdown by species, 85 percent pintails, 5 percent shovellers, 4 percent baldpates, and the rest green-winged teal, gadwall and mallard, and an occasional redhead. Twelve sick ducks were picked up, and no sick or dead were seen on the open water.

The west shore line had an estimated 2500 dead birds and the south shoreline and the potholes in the nutgrass an additional 1000. Due to the prevailing northwest winds we were surprised to find so many dead birds on the west shore, most of which were still in the water. Only a sample portion of potholes on the east and west side of the nutgrass was covered, and were found to contain from one to several birds, if any. The south shore line is formed by the nutgrass growing in the water, and the dead birds here were floating along the fringe in a relatively narrow strip. The majority of the carcasses had not started to "melt down" or decay.

As stated before only twelve sick ducks were seen on the 9th of October, which in comparison to the number of dead seemed to indicate the flare-up was over. This was further borne out when the nutgrass area and the west shoreline was covered on the 18th and 20th of October respectively, and two sick birds were seen.

An aerial survey of the area later showed that our previous estimate was low, and that 7,000 would be a conservative estimate. A correlation between weather conditions, water conditions, and the botulism will be attempted as weather data becomes available.

SUMMARY

1. Because development work on the Stillwater Management Area has not yet materially altered the area, the 1949 waterfowl season will be used as a basis for comparison of future hunting seasons in accordance with development. Contributing factors such as weather, water conditions, and population estimates will be considered.
2. In the opinion of hunters the current hunting season was comparatively poor.
3. Weather conditions were not conducive to good hunting.
4. The waterfowl concentrated on the large open water areas of the public shooting grounds and refuge. There was very little movement of birds during the shooting hours.

5. The data available from the Greenhead Gun Club does not include crippling loss or unsuccessful hunters. In recording species the birds were not actually examined by the checker in many instances which would inject an error into the final tabulation. One exit from the club resulted in 100 percent coverage.

6. The cooperation of other gun clubs throughout the State will be sought in keeping season records on checksheets provided by the Nevada Fish and Game Commission.

7. The inaccessibility of the Stillwater Management Area is an inhibiting factor to a successful hunt. Hunters staying overnight on the Stillwater Public Shooting Grounds and on the Canvasback Gun Club showed a higher success in proportion to time spent in the field. Development work will improve the daily hunters success as the Area will be more accessible.

8. Possible inclusion in next years hunter check will be determination of adult to immature ratio by species and recording the use of dogs in retrieving.

9. Collection of food habits material will be continued during the next hunting season and augmented throughout the year whenever possible.

10. The big open water north of the Nutgrass area is a shallow flat bottom lake, the type conducive to botulism. Proposed dikes will provide the needed control of water levels.

E. Fishing.

Sports fishing on the Area through this period was negligible amounting only to approximately 15 man days.

A commercial fishing permit for carp issued to Howard Black by the Nevada State Fish and Game Commission covered commercial fishing in the open hunting area. Total carp catch for this period under this permit was 13,338 pounds. Black stated that these carp were in excellent condition.

F. Violations

Sufficient information for filing charges against Fred Stiverson for rallying waterfowl with an airplane over the open hunting area was collected by Refuge Manager Horn. The information was turned over to Game Management Agent Cantrell and resulted in a \$50.00 fine paid by Stiverson.

Pilferage of gasoline from machines occurred occasionally

through the report period and on December 23rd, a steady night patrol of the Area was started. No theft occurred after the patrol was set up; no one was apprehended.

VII OTHER ITEMS

Carter S. Hughes, General Mechanic, CPC-0, received a temporary appointment on September 21, 1949.

Earl W. Mygren, Maintenance Man, CPC-4, received a temporary appointment on October 5, 1949.

David B. Marshall, Student Assistant, completed his duties on September 15, 1949 and forwarded his report shortly thereafter.

Several laborers were on Federal payroll for approximately 2 weeks erecting the service building on the headquarters lot.

The operating crew employed on Nevada State Fish and Game Commission payrolls consisted of the following on December 23rd.

- 1 - Construction Foreman
- 1 - Concrete Leadman
- 3 - Dragline Operators
- 4 - Oilers
- 2 - Tractor Operators
- 1 - Elevating grader Operator
- 1 - Concrete Mixer Operator
- 3 - Truck Drivers
- 4 - Laborers

The use of the Sacramento plane on Stillwater has proven highly invaluable in a number of ways. Flights over the Area have been made at about 3 week intervals since early in September. Briefly the results have been:

A highly accurate method of censusing waterfowl and muskrats on an area that is at present difficult to cover on land. This has been important in securing historical data before the effects of development on the Area is evident.

A rapid and accurate method of marsh exploration for determining the location of dikes, canals, boat landings, etc. Reconnaissance from the plane coupled with ground checks has saved a great deal of time and has given personnel a better overall picture of the Area than could possibly have been secured by any other means.

The continued use of the plane in both wildlife and development work is highly recommended.

Composition credit for this report is:

LeRoy W. Giles - Sections, I; II; III B, C; IV; V

Thomas C. Horn - Sections, II F; III A; V; VI A, D, E, F; VII

Illa E. Cress - Sections, III D; VI B, C

The following NR forms are not applicable to this Area through this report period:

- NR 3 - Big Game
- 4 - Predators and Small Mammals
- 8 - Cultivated Crops
- 8a- Grain Report
- 10 - Haying and Grazing
- 11 - Timber Removal

Submitted January 9, 1950

Thomas C. Horn
Refuge Manager

REFUGE Stillwater Wildlife Management Area

W A T E R F O W L

MONTHS 0 September to December, 1949

(1) Species		(2) First Migrants Seen		(3) Peak Concentration		(4) Last Migrants Seen		(5) Young Produced		(6) Total
Common Name		Number	Date	Number	Date	Number	Date	Broods Seen	Estimated Total	Estimated for Period
1. <u>Swans:</u>										
Whistling swan		5	10/18	1000	12/16					1000
2. <u>Geese:</u>										
Canada goose		200	9/14	2000	12/25					2000
Cackling goose										
Brant										
White-fronted goose										
Snow goose		8	10/3	8000	10/19					8000
Blue goose										
3. <u>Ducks:</u>										
Mallard				6000	9/28					6000
Black Duck										
Gadwall				10,500	9/28					10,500
Baldpate				5,500	10/26					5,500
Pintail				23,500	10/26					23,500
Green-winged teal				3,000	11/15					3,000
Blue-winged teal				200	11/15					200
Cinnamon teal				900	9/6					900
Shoveller				1,000	10/26					1,000
Wood duck										
Redhead				1,300	9/28					1,300
Ring-necked duck										
Canvas-back				1,000	11/15					1,000
Scaup				100	11/15					100
Golden-eye				35	12/16					35
Buffle-head				50	12/16					50
Ruddy duck				500	10/26					500
4. <u>Coot:</u>										
3-1750				7,500	9/28					7,500

(June 1949)

(over)

Form NR-1

72,085

SUMMARIES

Total Production:

Geese _____

Ducks _____

Coots _____

Total waterfowl usage during period 72,005

Peak waterfowl numbers 51,260

Areas used by concentrations _____

Principal nesting areas this season _____

Reported by Thomas C. Horn

INSTRUCTIONS

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance.
- (2) First Seen: The first refuge record for the species during the season concerned in the reporting period, and the number seen. This column does not apply to resident species.
- (3) Peak Concentration: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned in the reporting period.
- (5) Young Produced: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (6) Total: Estimated total number of the species using the refuge during the period. This figure may or may not be more than that used for peak concentrations, depending upon the nature of the migrational movement.

Note: Only columns applicable to the reporting period should be used. It is desirable that the Summaries receive careful attention since these data are necessarily based on an analysis of the rest of the form.

3-1751

Form NR-1A
(Nov. 1945)MIGRATORY BIRDS
(other than waterfowl)Refuge ~~Stillwater Wildlife Management Area~~ Months of September 1 to December 31 194 9

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Western Grebe			50							50
Pied-billed Grebe			75							100
White Pelican			200							200
Common Loon			25	9/13						25
Great Blue Heron			100							100
Snowy Egret			250							250
Black Crowned Night Heron			100							100
American Bittern			10							10
Glossy Ibis			1000							1500
II. <u>Shorebirds, Gulls and Terns:</u>										
Killdeer			150							150
Least Sand Plover			100							500
Dowitcher			2000	9/6						2000
Western Sand Plover			2000							2000
Marbled Godwit			1000	9/6						1000
Avocet			300	9/6						300
Black-necked Stilt			300	9/6						300
Northern Phalarope			15	9/7						15
Ring-billed Gull			100							100

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u>					
Mourning dove		400			400
White-winged dove					
IV. <u>Predaceous Birds:</u>					
Golden eagle		1			1
Duck hawk					
Horned owl					
Magpie		50			50
Raven		200	11/11		200
Crow					
Reported by <u>Thomas C. Horn</u>					

INSTRUCTIONS

- (1) Species: Use the correct names-as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

Regional Director, Portland, Oregon

January 13, 1950

Thomas C. Horn, Refuge Manager

Narrative Report, September - December, NR-2

Attached is the NR-2 forms in triplicate which were omitted from our recently submitted Narrative Report and which were requested by Mr. MacDonald in his memo of January 11, 1950.

Thomas C. Horn

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Stillwater Wildlife Management Area Months of September to December, 1949

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Valley Quail		1	2	30					45	Intermittent use of Area

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

Refuge Stillwater Wildlife Management AreaYear 1949

Botulism

Period of outbreak About October 1, 1949Period of heaviest losses Same

Losses:

	Actual Count	Estimated
(a) Waterfowl	<u>6,000</u>	<u> </u>
(b) Shorebirds	<u>100</u>	<u> </u>
(c) Other	<u> </u>	<u> </u>

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl	<u>0</u>	<u> </u>
(b) Shorebirds	<u>0</u>	<u> </u>
(c) Other	<u> </u>	<u> </u>

Areas affected (location and approximate acreage) 2,000
Big Water north of "Nutgrass" Area

Water conditions (average depth of water in sickness
 areas, reflooding of exposed flats, etc.)

Water depth ranged from 0 at shoreline to 18 inches;
 water level rising slowly; but winds moderate

Condition of vegetation and invertebrate life Heavy growth of Ruppia, some above water lineRemarks

Lead Poisoning or other Disease

Kind of disease Not importantSpecies affected

Number Affected Species	Actual Count	Estimated
<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>

Number Recovered Number lost Source of infection Water conditions Food conditions Remarks

Refuge Stillwater Wildlife Management AreaYear 1949

Species	Relative Abundance	Sport Fishing		Commercial Fishing		Restocking		Number removed for Restocking
		Man days Fishing	Number Taken	No. of Permits	Pounds Taken	Number Stocked	Area Stocked	
Bullhead	Abundant		3500					
Carp	Abundant		--	1	38,383			
Outfish	Few	400	50					
						See May - August Report		

REMARKS:

Carp taken from marsh waters under permit issued by Nevada State Fish and Game Commission

3-1757
Form NR-7
(April 1946)

PLANTINGS
(Marsh - Aquatic - Upland)

Refuge Stillwater Wildlife Management Area Year 1949

Species	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount & Nature of Propagules	Date of Planting	Survival	Cause of Loss	Remarks
<i>Polygonum mahlenbergii</i>	Stillwater Point Reservoir	3 foot spacing	60 yds. shoreline	Rootstocks	9/6	?		Stock secured on recent trip to Tule Lake

TOTAL ACREAGE PLANTED:

Marsh and aquatic 60 yards of shoreline
Hedgerows, cover patches.....
Food strips, food patches.....
Forest plantings.....

3-1759
Form NR-9

COLLECTIONS AND RECEIPTS OF PLANTING STOCK
(Seeds, rootstocks, trees, shrubs)

Refuge Stillwater Wildlife Management Area Year 1949

Species	Collections				Receipts		Total Amounts on Hand	Amount Surplus
	Amount	Date or Period or Collection	Method	Unit Cost	Amount	Source		
White Sweet Clover Seed					5007	Canas Refuge		



Left to Right - PITTMAN-ROBERTSON CREW - Back row - Henderson, Rawlings, Paul, Moiola, Englestead, Fansler, Hewitt, Brown, Warren, Tobin and Cramer. Middle row - Fred Wright, Nevada State Fish and Game Dept. Biologist; Brubaker, Holt, Andreason, Leonard Weaver, Construction Foreman; Carl Carpenter, Cement Cres Leadman; Trease, Dunivent, Neff, and Hayden. REFUGE PERSONNEL - Front row - Thomas C. Horn, Refuge Mgr.; Carter S. Hughes, Mechanic; Illa E. Cress, Clerk; Earl Nygren, Maintenance Man; LeRoy Giles, Biologist



Photo 1. HD-14 and carryall scraper from Malheur, Glen Jensen Driver - 2 days enroute



Photo 2. Hanson, Marshall and Sacramento L-5, prior to first serial survey of Stillwater Area. Waterfowl censused and a few victims of botulism found.



Photo 3. Stillwater Point Canal structure showing erosion below. Up to 150 cfs of water flows through the 2-barrel, 4' flashboard, structure. The results of the water velocity created is plainly visible. This indicates the type of soil in the Refuge. Removal of this structure has been recommended.



Photo 4. Site of takeout structure of the Paiute Canal.



Photo 5. Elevating Grader cut on Paiute Canal.



Photo 6. Lorain, 2-1/2 yd., dragline at work on Hunter Drain.



Photo 20. Paiute Canal headgate forms in place.



Photo 21. Looking lengthwise through cutoff wall from West.
Note the combination form ties and spreaders.



Photo 22. Paiute Canal headgate forms going up.



Photo 24. Front of structure, upstream side, showing density and finish of job.
Hand tamped.



Photo 26. Lorain Dragline on East Canal, finishing job started by elevating grader. Material in bottom is soft, slick, clay.



Photo 25. Cement Crew's setup. Trailer, mixer, etc. The Cement Crew is a complete unit, not dependent on other crews.



Photo 27. Lima Dragline at Station 278+00 on the East Canal.



Photo 28. Cement Crew installing floor in new Butler Building.



Photo 29. Farmall, "M", piling up earth for covering oil house slab. Temperature 8 degrees above 0. Equipment like this properly used, saves many man hours and expense.



Photo 30. The going gets rough for the service truck at times. This is a complete service unit for all equipment operated.



Photo 31. The Cement Crew at the No. 2 check on the East Canal, at noon. The crew moves as a unit, water truck, tool truck, and forms trailer. The trailer adds greatly to the efficiency of the crew.



Photo 32. The "22" Caterpillar on the land clearing drag. The R-5 scheduled to arrive soon will more nearly match the drag. Drag width, 27 feet, double rails, designed so as to give maximum land leveling action at the same time brushing is done.



Photo 33. This is a "before" view of an area to be developed as an irrigated pasture. Subsequent photos from this location will show laterals, contours, seeding, and final pasture production.



Photo 34. Same location as Photo 33, except East Canal completed by the elevating grader.



Photo 35. Servicing HD-14, S/N 1042, and elevating grader. Service time for these machines runs from 30 minutes to one hour and averages 45 minutes, air operated lubrication equipment makes this possible. Consider 102 grease fittings on the elevating grader, and service time is short.



Photo 36. Elevating grader and HD-14 building Dike "C" in closed area. This pair of machines has consistently moved earth at less than 5¢ per cubic yard. The fill will be widened for a road.



Photo 38. P&H finishing fill for Hunter Road. This excavation will also act as a collecting ditch on the west side of the Hunter Road.



Photo 44. No. 2 check in the East Canal, pouring nearly completed. This is the first dry hole the cement crew has had in which to build a structure.



Photo 45. The Concrete Crew setup in operation. Water is being warmed to bring the temperature of the mixture up to prevent freezing after pouring. The aggregate has been heated. East Canal Check No. 2.



Lorain - $2\frac{1}{2}$ yard.

December 22, 1949

Lina - $1\frac{1}{4}$ yd.

This photo was taken a few minutes before the last bucketful of dirt was moved to complete excavation of the East Canal. The central section of the Canal, in rough ground, was completed by the draglines working from each end, after both ends had been finished by the elevating grader. This photo was taken as the Lima dumped its last bucket of dirt to move out of the Lorain's way for completion of the job.

(Personal photo by Loris Andreason, State employee)