

R
Mud Lake
Improvements

Bureau
February 27, 1940

Mr. George Tonkin,
207-A Federal Building,
Des Moines, Iowa.

Dear Mr. Tonkin:

On page 7 of the Mud Lake report, August-October, Mr. Vogen suggests a stone fence approximately two feet high be constructed on the south side of the headquarter's site, along the relocated county road "E".

Inasmuch as the construction of such a fence would prevent trespass, and also add to the appearance of the headquarters, for a very nominal cost, this office concurs with Mr. Vogen's recommendations. This work should be done under the CCC program, and it is requested that project estimates be prepared and forwarded to this office for approval.

Very truly yours,

John H. Ball,
In Charge,
Section of Operations,
Division of Wildlife Refuges.

/pgw



NARRATIVE REPORT

MUD LAKE REFUGE MINNESOTA

PERIOD: AUGUST 1st TO OCT. 31 st, 1939

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1. GENERAL CONDITIONS

The migratory waterfowl season is drawing to a rapid close. To-day, November 2nd, is one of those perfect fall days that one reads about, but seldom experiences. Most of the water areas are frozen over, the ground is frozen to a depth of from two to three inches and is covered with a very thin blanket of snow. The cold weather set in during the last week in October and on Saturday October 28th approximately three inches of snow fell. Most of the ducks and all of the geese started from here on their southward journey during the snow storm. There are still a number of birds left on the refuge and adjacent areas, but the number is infinitesimal as compared to the numbers that were here during the fall months. Our estimate of approximately one-half million ducks on the refuge this fall has never been disputed by anyone who is familiar with the situation here.

Owing to the fact that there was no frost in the ground last spring, there was no run-off that could be impounded. The ground absorbed the water as fast as the snow melted. The precipitation during the summer months was about normal (from 20 to 25 inches) and was sufficient to maintain water levels in Green Stump Lake, part of Mud Lake, a few pot holes and ditches at about 3 to 4 feet below the crests of the spill-ways. This fall, however, the ground is wet and is freezing up in that condition which should result in a very good run-off next spring. The present conditions, therefore, indicates that the water supply next spring should be ample to flood our contemplated water areas.

The food supply during the summer months seemed to be satisfactory, but there would have been a shortage during the late fall, when the migrants

came in, had it not been for the fact that there were a number of un-threshed grain fields in the adjacent territory where the birds fed after they had cleaned up the grain fields on the refuge. Arrangements have already been made, thru the share-cropping method, to substantially increase the grain acreage next year, and it is also planned to substantially increase the aquatic plantings next spring.

There was no Botulism or duck-sickness during the season; the hatchings were large and the survivals excellent ; the development activities progressed in a satisfactory manner; there were no law violations or disturbances of any kind on the refuge; in short, it was a very successful year.

11. WILDLIFE

(A) Waterfowl

In the previous quarterly report, under this heading, it was stated that according to estimates made, there were on the refuge at that time approximately fifty-thousand adult ducks and that the young would number approximately one hundred thousand. It is, ofcourse, impossible to make an accurate count, but it seems safe in stating that there were at least that many resident ducks and that these together with the migrants numbered at least one-half million during the fall months. During the early fall season the Blue-wing[✓] teal were the most numerous followed by Coot^{1✓}, Mallard^{3✓}, Shoveller[✓], Wigeon[✓], Pintail^{6✓} and other ducks, but during the late fall the Mallards[✓] were more numerous than the total of all the other species. During the early mornings this fall, it was nothing unusual to see wave after wave, numbering thousands to each wave, come in to the refuge from their outside feeding

grounds. It was, indeed, a grand sight to behold.

Last July, ¹⁹³⁹ thirty-four Canada Honkers were transferred to this refuge from the Bear River refuge. They were kept in the barnyard enclosure at the headquarter site for approximately two months and were then transferred to the ten-acre, woven wire enclosure, located on Johnson Island in Section 17, T. 156 N., R. 41 W. This enclosure embraces an area consisting of approximately three acres of water, one acre of marsh and six acres of upland of which three acres have been planted to rye which will serve as grazing. During the winter months they will again be brought back and kept in the barnyard enclosure at the headquarter site. A few acres of barley was cut and bailed and this together with some wheat obtained from the Tamarac refuge will be used to feed the geese and upland species this winter.

(B) UPLAND GAME BIRDS

In addition to the fifty odd game bird shelters that have been constructed from time to time the past two years, six more were constructed during this reporting period. They are all located on accessible roads and are protected from drifting snows.

(C) PREDATOR AND RODENT CONTROL

Authortiy was obtained last year from the Washington office to control the predators and rodents on the refuge by trapping. There are a number of skunks and Mink and a few coyotes on the refuge which will have to be reduced in number. It is planned to start the trapping activities in the hear future- probably about December 1st .

(D) BIRD BANDING OPERATIONS

Bird banding operations were carried on from August 6 until October 3. The following is a summary of this activity:

SPECIES	SEX			TOTAL
	JUVENILE	MALE	FEMALE	
✓ Blue-wing Teal	5	2	2	9
✓ Mallard	9	16	2	27
✓ Pintail	1			1
✓ Black Duck	1			1
✓ Green-wing Teal		2	1	3
	16	20	5	41

A detailed report as required, will be made covering this activity, when the proper time comes.

III. REFUGE DEVELOPMENT AND MAINTENANCE

(A) PHYSICAL DEVELOPMENT

During the reporting period the secondary dwelling has been completed to the stage where it is ready for plastering, floors and finishing, but further progress is held up owing to the fact that the funds for the purchase of materials have been exhausted and as yet, no materials have been obtained from other refuges as contemplated some time ago. This matter was left to the CCC Superintendent to look after when it was last discussed with representatives from the regional office. The service building on the secondary headquarter site is partially completed and most of the landscaping has been completed. All of the boundary fences have been constructed except seven miles from the southeast corner running west on the south boundary. This is under construction at the present time and should be completed during the present month. The narrow dike in section 3, T. 156 N., R. 41 W., was widened and sloped to eliminate any possible wave action as per instructions from the District Engineer. Two concrete water controls were completed and the third is under way. The relocated county road "E" was partially reshaped and graveled from the headquarter site to the west boundary.

Thirty acres of the brush area on the south side of Mud Lake has been cleared and the further expansion of this activity is under way at the present time.

Last August when Messrs. Elmer, Tonkin and Miller were here, the matter of constructing a second residence on the headquarter site was discussed at some length. The preponderance of opinion, among those present at that time, seemed to be that this should be done so that one or two of the regular employees as well as temporary employees would have a place live while working on the refuge. It is presumed that the living conditions here are familiar to almost every one in the division who has anything to do with this matter, but in case they are not, the following information concerning the same is herewith stated: The headquarter buildings are located eleven miles from Holt, where there ^{is} no available living quarters; twenty-one miles from the CCC camp; and twenty-three miles from Thief River Falls, where there are living accommodations. If an employee were to live at either the CCC camp or at Thief River Falls, he would be put to a considerable expense in driving his car back and forth and such an arrangement would not be at all satisfactory because this refuge job is more or less on a twenty-four hour basis and it is very desirable that the employees should live on the refuge for that reason. The Labor-patrolman lives at his home which is two miles west of the refuge and Mr. Kubes lives with the refuge manager. This arrangement has worked out fairly well, but, of course, it can not be continued indefinitely and it is hoped that something can be done forthwith about providing another residence at the headquarter site. It would seem that there should be almost sufficient surplus materials on other refuges that could be utilized for the construction of this proposed residence.

It was the understanding at the time this matter was discussed that if the second residence at the headquarter site was constructed that there would be no patrol cabins constructed on this refuge. It might be well to construct a small building that can be moved from place to place on skids and used for a patrol cabin if one should be needed, but there is absolutely no need for any elaborate patrol cabins on this refuge. The patrolman as well as the other members of the personnel can best work out of headquarters.

At the present time, there is no fence along the south side of the headquarter site, along the relocated county road "E" running east and west near and abutting the building site, except a series of large boulders spaced from 6 to 8 feet apart. This is not at all satisfactory as was evidenced during the summer. Whenever the gates on the refuge roads leading to the refuge area were closed and someone wanted to enter the refuge without a permit, all they did was to get out, move a boulder and drive around the gates. It is thought that a nice stone fence of about two feet high or such a matter, could be constructed without much cash outlay and that a fence of this kind would be very useful as well as add to the attractiveness and general appearance of the headquarter site. If this suggestion is favorably acted upon, authority should be forthcoming as soon as possible. The fence would, of course, be constructed by the CCC, if this suggestion ripens into an actuality.

Considerable work has been done by the CCC this season on relocated county road "E" in reshaping and graveling the same. The reason for reshaping this road was because the county would not accept the road in the condition it was in or as it was constructed by the contractor.

Mr. Ball

A Decree issued by District Judge, James E. Montague, on the 19th day of April, 1937 provide among other things the following:

"NOW, THEREFORE, IT IS HEREBY ORDERED, ADJUDGED AND AND DECREED, That the bridges, culverts and salvage from said State Aid Road E. lying within said Mud Lake Project be, and the same shall remain the property of the County of Marshall for its use and benefit, and that the United States Government establish and construct a public road along the south edge of said Mud Lake project for the use and benefit of the County of Marshall and the residents therein prior to the destruction of State Aid Road E. lying within said project. "

From the above, it will be noted that the kind of a road to be constructed by the United States to replace County or State Aid Road E is not specified and that for this reason it is pretty much up to the county to say what kind of a road it will accept. There should, of course, have been an understanding with the county before the contract was let on this score, but it does not seem that there was such an understanding and the only thing that can be done now is to fix it up in a condition that will be acceptable to the county. As the matter now stand, the county will not accept the road in its present condition and we are therefore confronted with the maintenance problem, even the removal of snow from it during the winter months. A few days ago, the Camp Superintendent received notice from the CCC inspector, Mr. Vroman, to cease work on this road at once on the grounds that District Engineer, Mr. Hall had written to Washington office that reshaping of the road was detrimental to drainage structures. Orders of that kind will not solve this road problem. Whoever is responsible for this matter should give this matter his immediate attention and endeavor to work out something with Marshall county that will be acceptable to both sides.

(B) PLANTINGS

1. MARSH AND AQUATIC PLANTS

Because of the fact the plantings for this season can now be discussed retrospectively a detail report concerning the same follows:

To understand the problems peculiar to planting marsh and aquatic seeds on this refuge for the 1939 season, a brief summary of the water condition will in part explain reasons why plantings were made in seemingly localized areas. Very heavy freezing periods during April did not permit plantings until May when most of the migrant ducks had left.

By the end of April dense mats, up to four inches thick, of green algae completely covered entire water areas at times. Experience with algae indicated that the beds were constantly shifting, and that no dependence could be placed upon their movements in planning favorable planting sites for the various aquatics. These mats began disintegrating by the end of June, and by the middle of July practically disappeared except in some of the pot holes formed by peat burnouts. Most of the ditches remained reasonably clear of algae at least until the end of June and were the only places where CCC labor could be of assistance in planting without losing too much time travelling about looking for suitable spots.

Subnormal water levels in the pools and burnouts necessitated planting in ditches. Later during periods of normal water levels when there is a flow through these ditches, especially Ditch 11, the plants or plant parts may disperse into the larger water areas. Some of the ditches near good roads, particularly the east and west ends along the Mud Lake dike were intended as nurseries where plant

parts such as sago tubers, entire plants, or seed could be collected easily and at a low cost and transplanted to areas where seedings might be impractical or impossible.

1a. BUSHY PONDWEED

Three hundred and fifteen pounds of dried bushy pondweed seeds and plant portions from the Tamarac refuge were planted June 5 to 23. The plant portions were soaked 24 to 72 hours, or until they would sink quickly. The najas was planted by mudballing the seeds and throwing the mudballs out to places where it was impossible to walk where Mud Creek flows through the pool in Section 3, T. 156 N., R. 41 W. and the ditches traversing Green Stump Lake. Later the dense algae beds made observations on these areas impossible. The small planting in a peat burnout immediately southeast of headquarters was planted by pushing the plant parts into the mud. Dense algae growths made later check-ups impossible.

A test area extending into Mud Lake indicated that better results were obtained by scattering the plants rather than by pushing them into the mud. The rate of spread was almost twice as rapid on the broadcast part as on the adjacent part where the plant parts were partially imbedded in the mud.

A check on a planting made June 14th showed that by July 25th a dense mat was forming. Ducks were feeding all fall on the plantings. By October 24th the pondweed was heavy with seed and was sinking to the bottom. Survival on the entire plantings were approximately 85 %.

1b. SAGO PONDWEED

Four hundred and six pounds of sago pondweed were received from the Bear River refuge. Instructions for storing the seed dry were not received until after the shipment had been made, and, accordingly,

the seed was placed in a flowing well with a constant temperature of 41° F. (5.0°C.) from April 15th to the middle of June. As the seed was needed it was transferred to a shallow ditch where the temperature ranged from 59 to 70 degrees F. (15-21° C.). The seed was planted from June 5th to June 13th according to directions by scattering the seeds and raking them into the mud.

The dense mats of algae prohibited planting in the pool areas with the exception of isolated spots in Mud Lake, Green Stump Lake, and the pool in Section 3, T. 156 N., R. 41W. and a few potholes where approximately fifty pounds of seed was used. Later these areas were covered with algae, and the plantings were failures.

The greater part of the plantings were made in ditches, some selected so that plants, rootstalks, or tubers could be collected without very much expense and transplanted to those locations where it will be difficult for seedlings to survive. It appears that potholes can best be planted by this method.

Survival was very high, ranging from 100 % in most cases down to 75 %. All sago areas were very similar in their reactions to the environment. The ditch along the Mud Lake dike was seeded June 8th; on July 15th the plants were 8 to 12 " high and survived approximately 95 %; August 9th the sago was in blossom; September 8th the ducks were eating the seed; by October 12th the plants were beginning to sink; October 21st three-fourths of the seeds were eaten and most of the sago was on the bottom; and by October 24th only a few plants were near the surface. Ice covered most of the ditches on the 28th of October. Bluebills and mallards fed heavily on the sago in open water.

The total survival is estimated at approximately 85%. It is

suggested that plants be pulled up and be transplanted in the pot-holes and extensive water areas in late June when the algae begin to disintegrate.

(1c) SMARTWEED

Five hundred pounds of Pennsylvania smartweed were received from the Swan Lake Refuge and were planted according to instructions from June 21st to June 28th. A small trial sample germinated, but none of the field plantings did anything more than germinate. The entire planting was a failure. It appears that planting this species of smartweed is a doubtful undertaking on this refuge as the plant is on the edge or beyond its natural range. There is an abundance of native smartweed, especially the pale smartweed (Polygonum lapathifolium).

(1d) WILD MILLET

A shipment of five hundred pounds of wild millet was received from the Arrowwood Refuge. The seed was planted from June 5th to June 27th by various methods. Because of the large areas which should be treated and because the amount of seed was not sufficient to plant these areas, the distribution was planned so that small amounts would be distributed over as much territory as possible and spread out from these centers.

The larger areas in Sections 25 & 26, T. 156 N., R. 42 W., and Sections 9 and 30 in T. 156 N., R. 41 W. were dragged either with a peg tooth or a spring tooth harrow, seeded, redragged. The millet on these areas was stunted, often no taller than three or four inches, and the survival was approximately 60 %. An area, part of which was seeded and dragged with harrows and part by broadcasting seed and letting it lie on the moist ground, showed the difference in

treatment to good advantage. The broadcast portion germinated almost 100 % and was twice as tall as the part that was machine treated. Half of the entire allotment of millet was seeded on machine prepared tracts.

The other half of the seed was soaked in a ditch and then broadcast in a few inches of water or on the mud and moist lands on marsh areas, along ditch banks, and at spillways where the seed could be carried into adjacent marshes by overflow waters. Raking in the seed did not aid germination or hasten growth. The plantings germinated and survived almost 100 %.

Field observations made throughout the summer indicate the success of millet plantings. By July 15th the stands were two feet high; August 4th the growth was three to four feet tall and beginning to head out; September 8th the seeds started shelling out of the heads; by September 30th these areas were flooded with several inches of water and ducks were feeding heavily; and by October 20th most of the millet on the inundated marshes was consumed. Survival of all plantings was 80 %. It is suggested that much more planting of millet be done, especially on the borders of those marshlands along Webster Creek, along the Thief River channel, and on the north and west sides of Mud Lake.

(1e) WILD RICE

Seven hundred and eighty four pounds of wild rice seed were received from the Arrowwood Refuge on April 8th. Heavy freezing weather prohibited immediate plantings, and the seed was stored in a flowing well that maintained a constant temperature of 40° F. (4.5° C.).

The seed was agitated several times a week and remained in such

good condition that no attempt was made to plant until the peak of the spring migration was over. The seed was removed from the well as needed for the duration of the seeding from May 5th to June 2nd.

The rice was put in as close to a two feet depth as possible to allow for a rise of a foot in event of considerable precipitation and to allow for a lowering of eighteen inches should no rains fall. Algae were so dense in the lakes that ditches of suitable soil types were resorted to for the bulk of the planting. It was noticed that unless the seed was slightly covered or the bottom roiled, ducks fed heavily on planted areas. This was accomplished by dragging the bottom with an old bed spring, with garden rakes, or by stirring up the bottom by foot while broadcasting seed ahead of the planter. The water temperature was 57-61° F. (13-16° C.) during the planting period.

From observations secured on those few plantings that started growth, it appears that a mixed clay and peat bottom seemed to be most suitable. Since so few plantings yielded any results, the case history of each planting that even evidenced signs of germination will be treated separately.

Planting 8R: Section 24 in Mud Lake, both sides of Ditch 11
Planted May 9th on clay bottom in 18-24" water, seed broadcast and tramped into mud; May 16th no signs of germination; May 23rd 4" high, still in water; June 12th 18" tall, up to surface of water; July 15th, beginning to straighten up; July 18th 12" above water, 80% survival; July 25th blossoming; August 17th almost entirely cut down by muskrats, only plants surviving were a few above the water in mud.

Planting 10R: between Sections 16 & 17 immediately north of Ditch 11 in a ditch with 18-24" of water, mud bottom, continuing 400 feet north of road. Seeded May 9th and bottom roiled by tramping; May 16th no germination noted; June 12th 3-9" tall, 50% survival; July 25th blossoming, 10% left; September 8th, seed dropping to ground and being eaten. Rice growing on moist mud after blossoming.

Planting 14R: In ditch along side of road, immediately southwest of headquarters on main road. Clay and peat bottom with some algae present. Planted May 20th in 12-24" water, seed tramped in; May 29th no sign of germination; June 17th leaves beginning to float on water; July 10th leaves straightening up, 100% survival, some of the plants beginning to turn yellow; July 15th in blossom, 75% survival; September 6th Blue-winged Teal feeding on rice seed; October 1st rice all gone. This was the only successful stand on the refuge.

Planting 16R: In channel leading into Mud Lake, immediately north and west of section corner common to Sections 17, 18, 19, & 20. Planted May 23rd in 12-24" water on clay bottom, seed broadcast and tramped in by foot; June 12th, 10% survival, 6" high and being nibbled off, looks like ducks might be cause; July 7th entirely gone.

Planting 21R: In ditch along Mud Lake dike, immediately north and west of water control structure at Ditch 11. Planted May 26th in 6-36" depth on clay and peat sides of ditch bank, seed broadcast and raked in; June 8th 60% survival, plants 3-12" tall, under water, most stems nibbled off, and also beginning to turn yellow and brown; June 15th only a few spears left; June 18th last trace of rice

disappeared.

Planting 24R: Along Webster Creek and adjacent ditch banks northeast of Mud Lake. Planted June 1st in 18" of water on clay bottom only where algae not dense; June 14th 50% survival, plants 6-9" tall, under water; June 28th found no traces of rice.

The total survival was less than 5%. Old settlers do not recall seeing wild rice in the immediate vicinity of Mud Lake and until the water conditions become more stabilized, it is recommended that only small quantities of seed be sown on a purely experimental basis.

Examination of the lake bottoms indicated that very little food was present in spring. For this reason it is advisable to delay plantings until the migrant ducks have left and only resident waterfowl remain, but the seedings should not be delayed so long that there is danger of the seed maturing too late.

(1f) RECOMMENDATIONS FOR THE 1940 SEASON

Sago Pondweed: Those areas along portions of Mud Creek, Webster Creek, Thief River Channel, ditches in Green Stump Lake, and portions of Mud Lake that are suitable for sago should be planted. Additional ditches along the northeast and east sides of the water areas should be planted as they are the last locations to freeze over and provide food for the diving ducks. Most of the above mentioned areas must be reached by boat. One thousand pounds of seed will be needed.

Millet: There are extensive areas of marshlands and mud flats that are entirely barren of plant life. Many of these areas on both sides of Webster Creek, the edges of potholes southeast of headquarters, along the Thief River Channel, and on the north, west, and east sides of Mud Lake should receive a light seeding of wild millet. Two

thousand pounds will provide an initial supply of seed to provide a supply for later dissemination by natural means.

Bushy Pondweed: The deeper pools east of headquarters, creek beds in Mud Lake, and portions of Thief River Channel, and parts of Green Stump Lake that can be reached by boat only should be lightly planted to bushy pondweed. Five hundred pounds of dried plant parts of this excellent duck food will suffice to seed small scattered areas.

Wild Rice: Because of the poor results obtained from wild rice plantings and not knowing if it will become established on this refuge, it is suggested that no more than one hundred pounds be planted along waters that have a slight current. Such places as Thief River Channel, Webster Creek, and Ditch 11 are worthy of trial areas.

2. TREES AND SHRUBS

One hundred thousand cedar liners (Thuja occidentalis), 2-0 stock, grades C and D were received May 6, 1939 from the U. S. Department of Agriculture, Soil Conservation Service Nursery at Winona, Minnesota. Five hundred trees selected for their vigorous root systems were planted for a hedge at the headquarters. Most of these trees grew exceptionally well and are not considered in the survival of the transplant stock.

The cedars were planted by CCC's, inexperienced in handling trees, with transplant boards and using approved nursery practices. During the entire planting period winds were extremely strong and hot, sometimes almost drying out the roots, even when utmost precautions were taken. The beds were weeded biweekly with garden

cultivators and by hand.

Fifteen thousand cedars were planted on a $\frac{1}{2}$ acre plot immediately east of the headquarter site, 4 inches apart in rows 18 inches apart, and 84,500 were planted on a $5\frac{1}{2}$ acre plot in Section 15, T. 156 N, R. 42 W., 4 inches apart, in rows three feet apart. Because the soil did not pack well, very small trees were transplanted with planting dibbles. The nursery by the headquarters was watered several times, and the large plot was watered once.

A rapid survival count was made by counting the number of blanks in a group of five consecutive trees in a row and then moving ahead to the next row until at least one group of five trees had been counted in each row. The rows in the large nursery were crossed four times. The survival was 57.5% or 8,625 trees for the smaller tract and 31% or 26,196 trees for the larger tract. The total survival for the entire 99,500 trees was 35% or 34,821 trees. Considerable mortality took place after July first during very hot dry weather.

The cedars in the transplant beds should be planted around and in the old permanent groves to provide better food and shelter for upland game birds and mammals. The areas should be scalped to delay competition with grass. Additional conifers, preferably white pine and some spruce to cover a total area of five acres would be desirable for cover for upland game birds and mammals.

The foregoing data on marsh and aquatic plants and trees and shrubs was prepared by Karl G. Kobes. (Pages 9 to 18)

3. CULTIVATED CROPS

This season two hundred twenty three [✓]acre were plowed, prepared and planted to barley. Refuge equipment was used for this purpose. All of the grain was left standing, (except a few acres that were cut and baled to be used for feed for the wild geese and upland species this winter,) and was all consumed by the ducks before they left. The following is a resume of the grain planting program for next season:

160 acres summer-fallowed and to be planted by refuge personnel,
550 acres leased out on share-cropping basis of 25% net to refuge,
440 acres leased out on share-cropping basis of 33-~~1~~/3 left
standing for the benefit of the refuge.

See attached planting map which is self explanatory.

4. GRASSES-RANGE IMPROVEMENT ETC.

In order to hold down the fire hazard as much as possible on this refuge it is planned to fence in suitable areas for grazing purposes and it is also planned to lease out some hay lands. A detailed plan covering these items will be submitted at a later date.

IV. PUBLIC RELATIONS

(B) Refuge Violations

There were no refuge violations during the season. Two persons were apprehended outside of the refuge area by Mr. Karl G. Kobes, for hunting without licenses. They were convicted in State court and each paid a fine of \$10.00 plus \$2.50 costs.

V. Other Items

(A) Goose Pasture

Last August 160 rods of woven wire fencing was received from Region 2. This amount of wire did not permit us to fence in an

area large enough to include a flowing well located about one half mile east of the goose pasture and consequently, there is no water available during the winter months. It would be highly desirable to secure about 700 rods more of woven wire so that the goose pasture can be enlarged to include the flowing well and also to include additional upland areas for grazing purposes.

SUMMARY OF ACTIONS DESIRED:

1. 2nd residence at headquarter (see pages 6 & 7)
2. Stone fence at headquarter (see page 7)
3. Relocated State Aid road "E" (see pages 7 & 8)
4. Woven wire needed (see pages 19 & 20)

taken care of J.H.B.

not approved

Since the above was written, Messrs. Terhune, Vroman, Tonkin and Miller have been here and the road situation is now straightened out. Item number 3 under Summary should therefore be disregarded.

C.B. Vegen
C.B. Vegen
Refuge Manager

Nov. 9, 1939

Proposal to enlarge goose pen disapproved since present pen is adequate for temporary use. Permanent pen not necessary KEG



