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**GULF STATES UTILITIES COMPANY**

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July 31, 1979

RBG - 6612

File G9.5

Mr. W. C. Seidle, Chief  
Reactor Construction and Engineering  
Support Branch  
U. S. Nuclear Regulatory Commission, Region IV  
611 Ryan Plaza Drive, Suite 1000  
Arlington, TX 76011

Dear Mr. Seidle:

River Bend Station - Units 1 & 2  
Docket Nos. 50-458, 50-459

Gulf States Utilities (GSU) offers the following status report concerning the environmental study of the culvert crossing of Alligator Bayou. This is submitted in partial fulfillment of additional information required in your inspection report 50-458/459 - 78-04 dated May 26, 1978. Since July 1978 GSU has received five quarterly ecological narrative reports from our consultant, Louisiana State University (LSU). The summary of each of these reports did not identify any conclusive short-term or long-term environmental impact associated with the culvert crossing.

Attached to this letter is a recent summary of the LSU monitoring effort to date. This summary critiques the last year's efforts and makes recommendations for future monitoring activities. As a result of recent consultations with LSU, it is not deemed necessary at this time to instigate any mitigating action.

Sincerely,

J. G. Weigand  
General Manager - Nuclear Projects

Attachments

WJR/mb

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LOUISIANA STATE UNIVERSITY  
AND AGRICULTURAL AND MECHANICAL COLLEGE

BATON ROUGE . LOUISIANA . 70803

*Center for Agricultural Sciences  
And Rural Development*

LOUISIANA AGRICULTURAL EXPERIMENT STATION

SCHOOL OF FORESTRY AND  
WILDLIFE MANAGEMENT  
249 AG CENTER

July 31, 1979

Mr. James E. Booker  
Gulf States Utilities Company  
P.O. Box 2951  
Beaumont, Texas 77704

Dear Mr. Booker:

At the request of Bill Reed of your licensing division, this letter will summarize our progress on the special floodplain studies of the LSU Phase II Interim Ecological Monitoring Program at the River Bend site. It will also address various problems we have encountered during the first 14-16 months of sampling and document changes in our procedures that we feel are justified.

The basic objective of our floodplain studies is to evaluate the aquatic environmental effects of the earthen fill and 12-culvert configuration for the river access road crossing of Alligator Bayou. Two major, interrelated issues are being considered: (1) whether or not movements of fishes along Alligator Bayou and the floodplain are significantly hindered and (2) the extent to which spawning and/or nursery habitats are affected. As noted in earlier correspondence and discussions, both of these issues are clouded by the lack of extensive baseline data from the floodplain in its unaltered condition. That is, no matter how detailed our present observations may be we can never be sure what they mean in terms of the preconstruction situation.

It is possible, nevertheless, to obtain some information that will enable us to infer changes and assess their relative significance. Our approach toward gathering of such information has involved three main thrusts:

- a) Monitoring of changes in fish population structure in Needle Lake with respect to successive periods of isolation or semi-isolation during low-water seasons, in hopes of recognizing additions/deletions that could be attributed to its connection to the Mississippi River via lower Alligator Bayou and Thompson Creek times of backwater encroachment.
- b) Periodic sampling of the river access road culverts to detect the actual passage of fishes.
- c) Intensive sampling of adults and young-of-the-year of fishes on opposite sides of the river access road during vernal high-water periods to evaluate possible differences.

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Virtually nothing has been accomplished with respect to item (a) for two principal reasons. Throughout most of the low-water period of semi-isolation in 1978 we did not have operational pulsating DC electrofishing equipment. Even so, access to Needle Lake was (and remains) inadequate for the trailering in of the necessary equipment. The major difficulties with the existing road (jeep trail) into Needle Lake are its narrowness and several sharp turns. An improved surface would definitely enhance the usefulness of the road but is not crucial except perhaps during excessively wet weather. At any rate, it is our understanding that sufficient widening and straightening of the road will not be possible due to objections raised by the terrestrial ecology consultant. We therefore have resolved to abandon our efforts to monitor fish population changes in Needle Lake in favor of intensified sampling of larval and early juvenile fishes. This decision is further justified by another, essentially overriding, factor -- namely, the increased tendency for overbank flooding into and out of the river above Needle Lake. Migratory routes for fishes to and from Needle Lake now seem unlikely to be confined to lower Alligator Bayou except in relatively unusual water years.

Sampling in the access road culverts has been frustrated by the irregular configuration of their mouths on opposite sides and, especially, by the relatively brief periods (in Springs of 1978 and 1979) when stages/flows were appropriate for the use of hoopnets in the apertures. Opportunities were missed altogether in 1979 but we managed to make three overnight sets in April-May of 1978. These observations, which each consisted of two nets fishing "upstream" and two nets fishing "downstream" (i.e., 4 culverts on a given set), indicated at least some movement in either direction by a few species of fishes. A few bowfin, carp, and gizzard shad were caught moving "upstream," whereas even fewer bowfin, gizzard shad, and river carpsucker were recorded as moving "downstream." Of the fishes moving "upstream," some of the shad and the single carp were running-ripe individuals. That is, they were specimens in spawning condition that could be interpreted as being involved in migration for purposes of reproduction. Thus one preliminary conclusion seems justified: The culverts do not completely inhibit movements of some species which are known to be migratory (gizzard shad, carp). Given the appropriate hydrographic conditions in Spring 1980 we plan to intensify the culvert monitoring efforts to derive a better understanding of the qualitative and quantitative aspects of fish passage.

Another approach to the evaluation of fish passage is the marking or tagging and release of specimens above and below the access road. The greater the number of marked fish released and recaptures obtained, regardless of the position of the recaptures, the more information we will have to assess the relative significance of culvert passages or lack of the same. With the availability of our electrofishing equipment in Spring 1979 we were able to make numerous (weekly or more frequent) attempts to mark/release fishes above and below the access road. Unfortunately, throughout most of the season stages were so excessively high that fishes had various routes in addition to the culverts for traversing the access road. The prolonged high stages also tended to disperse adult fishes to the extent that electrofishing was relatively unproductive. Only several dozens of fishes other than shad (which are too fragile for tagging) were caught, as opposed to the hundreds or even thousands for which we had hoped. Even so, two recaptures were recorded. One was a black crappie that was released south of the road and recaptured in the same place on the following visit; the other was a flathead catfish released north of the road and caught several days later in the main river channel near Port Hudson (roughly 8 miles downstream). As in the case of direct sampling in the culverts we plan to greatly intensify mark/release

activities during the high-water period of 1980.

Sampling for assessment of relative abundance of adult fishes on opposite sides of the access road was accomplished to a limited extent in 1978 (primarily due to lack of equipment). Much greater intensity of effort was possible in 1979. Some of the samples from the latter year are as yet unprocessed, but the general results are that markedly greater numbers of fishes were taken per unit of effort below the access road. This was especially true earlier during each high-water period, when opposite sides of the access road were more effectively isolated. There also tended to be more kinds of fishes on the south side of the road, and the increased diversity was largely attributable to the occurrence of species with main river channel affinities (e.g., shortnose gar, skipjack herring, bigmouth buffalo, blue catfish, white bass, striped mullet). A possible inference here, of course, is that the relative concentrations of fishes below the access road represent a piling up, or "traffic jam," of individuals attempting to traverse the road. On the other hand, the concentrations might merely reflect a tendency for the fishes to be attracted to localized areas of relative turbulence.

Floodplain samples of young-of-the-year fishes from Spring and early Summer 1979 are, for the most part, unprocessed as of this writing, but the results from 1978 offer some insights. Again, there tended to be greater relative abundance and diversity below the access road. Of particular importance was the disparity in apparent densities (in favor of the south side) of larval and early juvenile buffalosuckers, which are major commercial fishes in the river. This could mean that reproductive success for these suckers was greater below the access road, either in terms of more intensive spawning or perhaps a greater rate of survival. As in the case of adult fishes, however, these observed concentrations might merely reflect the influence of some overriding physical factor(s). For example, the concentrations of young near the southern apertures of the culverts could represent a preponderance of individuals that were recently flushed through from the north side. In future high-water spawning seasons we plan to intensify our sampling efforts for young fishes in floodplain habitats, both in and near the culverts as well as in the far-field, in an attempt to compile more relevant information.

Routine sampling of larval and early juvenile fishes in Needle Lake indicated that in both 1978 and 1979 it was used to only a limited extent as a spawning area by fishes other than its normal inhabitats. Inasmuch as overbank flooding afforded direct access to Needle Lake from the river in both years it might be inferred that this swamp area is of marginal value as spawning habitat for riverine fishes, regardless of any influences of the access road on migrations. This concept has relatively profound implications in terms of our basic objective, so we have decided to intensify sampling of larval and early juvenile fishes in Needle Lake by means of more frequent visits, additional stations, and supplemental gears. For this reason we still would appreciate any effort that is possible to improve vehicular access to Needle Lake.

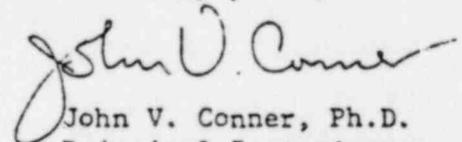
In summary, we have the following preliminary indications from two high-water seasons of special floodplain studies:

- a) At least some movement by certain species of fishes occurs in both directions through the access road culverts.

- b) Relative abundance and diversity of adult fishes tend to be greater on the south ("downstream") side of the river access road, especially during the earlier phases of backwater encroachment, when the culverts are the only means of traversing the road. The differences seem largely attributable to fishes of main river channel affinities.
- c) Relative abundance and diversity of young fishes, especially those resident as adults in the river, tends to be greater on the south side of the river access road.
- d) The swamp area known as Needle Lake seems to receive only limited use as a spawning site by migratory riverine fishes, even when direct access is afforded by exceptionally high flood stages.

On balance, the above lead us to the highly speculative conclusion that the river access road crossing of Alligator Bayou does have some inhibitory influence on fish movements and associated aspects of their reproductive ecology but that these effects may not have as great a negative significance as we had thought possible. Perhaps more importantly, we feel that these observations and the experience gained through their compilation have better defined the strategy needed for future sampling.

Sincerely yours,

  
John V. Conner, Ph.D.  
Principal Investigator

cc: Bill Reed, GSU Beaumont  
Joe Leazines, GSU River Bend  
Mark Walton, GSU River Bend

JVC/cf

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