RECONVENED FIRST SESSION

OF THE

C O N F E R E N C E

IN THE MATTER OF

POLLUTION OF THE NAVIGABLE WATERS OF

GALVESTON BAY AND ITS TRIBUTARIES

held at

Houston, Texas

November 2-3, 1971

TRANSCRIPT OF PROCEEDINGS

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C O N T E N T S

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The reconvened first session of the conference in he matter of pollution of the navigable waters of Galveston ay and its tributaries was held at the Shamrock Hilton Hotel, uston, Texas, November 2-3, 1971, commencing at 9:30 o'clock.

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P R O C E E D I N G S

OPENING STATEMENT

BY

MR. MURRAY STEIN

MR. STEIN: The conference is open.

And I would apologize for the delay. These conferences, as you know, sometimes are rather complicated, and in a complex situation such as we have in the Houston area it is complicated indeed. But we are almost on time.

This reconvening of the first session of the conference in the matter of pollution of the navigable waters of Galveston Bay and its tributaries, involving the State of Texas and the United States Environmental Protection Agency, is being held under the provisions of Section 10 of the Federal Water Pollution Control Act.

The first session originally met on June 7 to 12 of 1971. And if you just think of those dates, that was a rather long session of the conference. The conference recessed to permit a technical committee representing the State of Texas and the United States Environmental Protection Agency to get together and try to come up with a report and some recommendations.

Opening Statement - Mr. Stein

In accordance with our practice, we are going to permit anyone who feels that he has something to say to make a statement at the conference, and we have several requests. However, I would suggest that we try not to replow old ground. I think we have had a very thorough exploration of the aspects of the problem at the session we held in June, and I just ask all of us to use our own good judgment and not rehash this, because I think what we need is to try to get on with the program and not have prolonged talkfests. I hope we will confine ourselves to the recommendations, new ideas, and new material.

Just to recollect the situation, under the provisions of the Act, the Administrator of the Environmental Protection Agency has called this conference, as he is authorized to do when he finds that substantial economic injury results from the inability to market shellfish or shellfish products in interstate commerce because of pollution subject to abatement under the Federal Act, and action of Federal, State, or local authorities.

The conferees are the official agencies represented here: The Texas Water Quality Board, represented

by Mr. Hugh Yantis, to my left; the Federal conferee is Mr. Richard Vanderhoof, of the Environmental Protection Agency Dallas office, on my right. And my name is Murray Stein. I am from the Environmental Protection Agency in Washington, D. C., and a representative of Administrator William Ruckelshaus.

We at the head table representing these two agencies constitute the conferees. The conferees, however, may have invitees to the conference. Several people have sent up cards indicating they wish to speak. Everyone who has indicated that they wish to speak will be called on. We hope to have a prognosis of when you will be called as soon as we get under way, but you have to remember that the conferees are just the representatives of the official agencies. We do not take questions from the floor, but you can reserve questions until your time comes to speak, and I would suggest that anyone who wishes to speak other than the panel come up to the lectern and make his statement from there, first identifying himself by name, title and organization, for purposes of the record.

We will be preparing a transcript and a summary of the conference, which will be available to you through

your State agency.

First I would like to call on Mr. Bill Brown, who I believe has a motion.

Mr. Brown.

WILLIAM R. BROWN, GENERAL COUNSEL
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MR. BROWN: Mr. Chairman, distinguished conferees.

I am William R. Brown, General Counsel of Houston Lighting & Power Company.

We received a short time ago a communication from the Environmental Protection Agency which indicated that the Houston Lighting & Power Company matter would probably be dropped from the agenda of this conference.

I want at this time to file a motion to the effect that it should be dropped. I have furnished a copy already to the chairman, and in the interest of time I will not read the motion. I would like the record to show that the motion has been filed for your action.

MR. STEIN: Without objection, the motion will be included in the record as if read.

(The above-mentioned motion follows:)

GALVESTON BAY ENFORCEMENT CONFERENCE

RECONVENED SESSION

HOUSTON, TEXAS

* * * * * *

MOTION FOR DISMISSAL

OF

HOUSTON LIGHTING & POWER COMPANY

GALVESTON BAY ENFORCEMENT CONFERENCE
RECONVENED SESSION
HOUSTON, TEXAS

TO THE HONORABLE MURRAY STEIN, CHAIRMAN:

The Environmental Protection Agency, in a document dated October 8, 1971, filed with the District Engineer, Galveston District, Corps of Engineers, suggested that it is likely that the Houston Lighting & Power Company problem will be removed from the Conference agenda. Houston Lighting & Power Company now petitions this Conference that any and all matters pertaining to this Company be removed from the agenda of this Conference, and that the Conferees take no further evidence and make no recommendations with respect thereto. In support of this request Houston Lighting & Power Company would respectfully show the following:

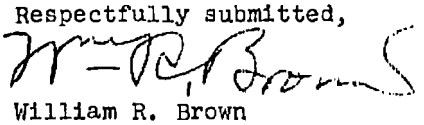
(1) This Conference was called by the Honorable William D. Ruckelshaus, Administrator, Environmental Protection Agency, without any request by the Governor of the State of Texas, and according to the provisions of Section 10(d)(1) of the Federal Water Pollution Control Act, a prerequisite to jurisdiction is that there be "substantial economic injury * * * resulting from the inability to market shellfish products in interstate commerce" because of the pollution of Galveston Bay and its tributaries.

(2) At the first session of this Conference held on June 7 through June 12, 1971, no evidence was presented reflecting that there are any shellfish in the vicinity of your Petitioner's Cedar Bayou Generating Plant or that the proposed operation of such plant threatens any damage to shellfish.

(3) By reason of the foregoing, it now appears that there is no statutory jurisdiction for consideration by this Conference of matters relating to Petitioner's said plant, and that further consideration by this Conference of matters relating to Petitioner's said plant will serve no useful purpose.

NOW, THEREFORE, in view of the absence of jurisdiction and in the interest of conserving the time of this Conference and its Chairman, Petitioner moves this Conference and its Chairman to delete from the agenda any further consideration of Petitioner's Cedar Bayou Generating Plant and that it refrain from hearing further evidence, or making findings, with respect thereto.

Respectfully submitted,



William R. Brown
Attorney for Petitioner
Houston Lighting & Power Company

MR. STEIN: Mr. Brown, I think the Administrator of the Environmental Protection Agency is the only one who can make the determination of the jurisdiction of the conference, but your recommendation will be taken to the Administrator. However, I would suggest pending the action by the Administrator that we forego discussion of the Houston Lighting & Power situation except as to anyone who wants to make a passing reference to it.

And with that, may we go on. And thank you very much.

MR. BROWN: Thank you.

MR. STEIN: I would like to see if we could get the technical committee report. Who is going to present that, Mr. Vanderhoof?

MR. VANDERHOOF: Mr. Gallagher.

THOMAS P. GALLAGHER, DIRECTOR
DIVISION OF FIELD INVESTIGATIONS
DENVER CENTER, EPA, REGION VII
DENVER, COLORADO

MR. GALLAGHER: Mr. Chairman, conferees.

My name is Thomas P. Gallagher. I am Director of the Division of Field Investigations, Denver Center,

Environmental Protection Agency, and a member of the Technical Task Force mandated by you to examine and present a common baseline of data.

I would now like to read the suggested recommendations of the Technical Task Force to the conferees, and I would like the transcript of these recommendations entered into the record.

MR. STEIN: Without objection, that will be done.

(The above-mentioned recommendations follow:)

STATEMENT

OF

FEDERAL - STATE TECHNICAL TASK FORCE

FOR

GALVESTON BAY ENFORCEMENT CONFERENCE

September 1971

STATEMENT
OF
FEDERAL - STATE TECHNICAL TASK FORCE
FOR
GALVESTON BAY ENFORCEMENT CONFERENCE

The Galveston Bay Enforcement Conference was convened in Houston, Texas from June 7 through 12, 1971, under the provisions of Section 10 of the Federal Water Pollution Control Act, for the purpose of considering pollution affecting shellfish harvesting in Galveston Bay, Texas. The Conferees are the Environmental Protection Agency, representing the Federal Government, and the Texas Water Quality Board representing the State of Texas.

During the Conference, a great number of presentations were made by Federal, State and local regulatory agencies, as well as industries and private consumers and environmental groups of the Houston metropolitan area. These presentations contained an extraordinary amount of technical information concerning quantity and characteristics of waste discharges, as well as effects on receiving water quality and beneficial uses; some of which was apparently contradictory. Consequently, the Conferees decided that because of the voluminous record compiled during the six days of the Conference, it would be impossible to immediately assimilate all of the testimony presented and develop a pertinent series of recommendations concerning the conduct of the waste abatement program in the Galveston Bay and Houston Ship Channel area. Therefore, the Conferees directed that technical personnel of the Texas Water Quality Board and the Environmental Protection Agency review and update the data presented, and compile a common baseline which will permit conclusions and recommendations for developing a continuing waste abatement program.

An extensive review was made of the numerous presentations to the Conference; of subsequent field and laboratory analyses in the receiving waters; and pertinent data not previously evaluated. This review constitutes an enormous amount of information which can be used as reference material, or submitted for the record at the Conferees discretion.

As a result of the evaluation made by the Technical Task Force, agreement has been reached on ten of the eleven recommendations concerning water quality and waste abatement in the Galveston Bay system. In the recommendation where no agreement could be reached, the various positions have been set forth for the disposition of the Conferees.

Participation in this joint technical evaluation has been by the Deputy Director and his staff of the Texas Water Quality Board; the Division of Field Investigations - Denver Center, Office of Enforcement, EPA; the Region VI Enforcement Office, EPA, Dallas; and the Galveston Bay Field Station, EPA. Cooperation and support was also supplied by the Regional Office of the Food and Drug Administration; the Texas State Health Department; the Harris County Pollution Control Department; and the U.S. Air Force at Bergstrom Air Force Base, Texas. This cooperation is gratefully acknowledged.

RECOMMENDATIONS

1) The Food and Drug Administration, in cooperation with appropriate State regulatory agencies, continue their recently initiated national study of oil and hydrocarbon residues in oysters, including those taken from Galveston Bay, with the objective of determining toxicological effects, if any, of such concentrations. These data, and any evaluations, will be made available to the Conferees of the Galveston Bay Enforcement Conference.

2) To insure that approved shellfish harvesting areas are properly classified at all times, sampling for determining bacteriological acceptability of areas for shellfish harvesting in Galveston Bay shall continue to emphasize the most unfavorable hydrographic and pollution conditions. The most unfavorable hydrographic and pollution conditions will be determined by technical personnel of the Texas State Health Department, in cooperation with other State and Federal agencies as the Texas State Health Department deems appropriate.

3) Effective disinfection of all domestic waste sources contributing bacteriological pollution to the Galveston Bay system will be provided. The Texas Water Quality Board policy to this effect shall continue to be implemented. Where effective disinfection is not presently being accomplished, it is recognized that adequate measures are underway to secure that disinfection.

The Texas Water Quality Board will continue to implement its policy requiring the elimination of small plants. The centralization of facilities, wherever possible, and the halt of proliferation of small plants will continue, consistent with existing appropriate procedures.

The implementation schedule for this program, as initiated by the Texas Water Quality Board, will be made available to the Conferees of the Galveston Bay Enforcement Conference.

4) The EPA will offer its resources and its cooperation in a study of Galveston Bay. This study is presently being conducted by the Texas Water Quality Board on all sources of municipal and industrial wastes permitted by the Texas Water Quality Board to discharge effluent to Galveston Bay and its tributaries. These examinations shall emphasize determination of complex organic compounds, heavy metals and other potentially toxic substances, as well as oil and grease, from each waste source. Recommendations and scheduling of necessary abatement will be provided to the Conferees as soon as they become available. The Texas Water Quality Board permits and self-reporting data system should be amended, as necessary, to reflect the recommendations of this waste source survey. A progress report on results of this study will be made to the Conferees within six months of the date of the reconvened session of the Galveston Bay Enforcement Conference.

5) The Texas Water Quality Board will continue its review of each waste source discharging to Galveston Bay and its tributaries, and will amend those permits as necessary to insure that the best reasonable available treatment is provided relative to discharges of oil and grease. It is recognized that improvements in technology will be incorporated into future permit revisions. A progress report will be made to the Conferees within six months of the date of the reconvened session of the Galveston Bay Enforcement Conference.

6) The ongoing review and amendment by the Texas Water Quality Board of existing permits recognizes that greater reductions of waste will be required of waste dischargers to the Galveston Bay system to meet water quality standards. The Conferees note that in the past three years the organic waste load being discharged into the Houston Ship Channel has been lowered from about 430,000 pounds per day of BOD to 103,000 pounds per day of BOD. Any amendments to existing or new Texas Water Quality Board waste control orders as a result of this program will prohibit dilution as a substitute for treatment. A progress report on continuing reduction of waste loads will be provided to the Conferees within six months of the date of the reconvened session of the Galveston Bay Enforcement Conference.

7) A characterization and evaluation of the water quality significance of materials from pollution sources contained in the organic sludge dredged from the Houston Ship Channel shall be conducted. Based on the results of this evaluation, and examination of present spoil disposal areas, recommendations will be made by the Texas Water Quality Board and the Environmental Protection Agency on location of suitable spoil disposal areas and other appropriate action to minimize or eliminate deleterious effects on water quality.

8) Alert levels for acute and chronically toxic or growth inhibiting parameters are being developed by the Food and Drug Administration for shellfish from all approved national growing waters, including Galveston Bay. These alert levels will be discussed with technical personnel of the Environmental Protection Agency and will be presented at the Seventh National Shellfish Sanitation Workshop sponsored by the Food and Drug

Administration. The Environmental Protection Agency, in cooperation with the Food and Drug Administration, and other appropriate State and Federal agencies, will work to develop parameters for the same characteristics in waters approved for shellfish harvesting.

9) Chemical constituents causing color in waste effluents, such as those from pulp and paper mills, shall be reduced as soon as practicable as stated in existing Texas Water Quality Board waste control orders. A report on feasible processes to accomplish this recommendation shall be submitted to the Conferees within six months of the reconvened session of the Galveston Bay Enforcement Conference.

10) To meet present official State-Federal water quality standards established for dissolved oxygen in the Houston Ship Channel, it is expected that the maximum waste load discharged from all sources will be about 35,000 pounds per day of five-day B.O.D., including projected future development. Studies scheduled for completion in 1973 will provide the basic mechanics necessary to achieve maximum water quality in the Houston Ship Channel. Between now and the completion of the study, the Texas Water Quality Board will continue the program of waste reduction described in Recommendation No. 6 above. The Environmental Protection Agency will also continue its program consistent with its statutory requirements and in cooperation with the Texas Water Quality Board. Upon completion of the study, determination will be made by the Texas Water Quality Board on further measures, if necessary, beyond its ongoing program to insure adequate water quality in the Houston Ship Channel.

The following recommendation was not susceptible to joint agreement

by the technical Task Force and both versions are presented for the Conferees' consideration:

11) re: Houston Lighting and Power Cedar Bayou Power Plant

(a) Texas Water Quality Board recommendation:--the once through cooling system, with discharge to Trinity Bay, proposed for the Cedar Bayou plant shall be carefully monitored to determine whether irreparable damage to aquatic life is occurring and/or water quality is being deleteriously affected. If such effects are shown, Houston Lighting and Power Company will take immediate steps to correct the situation.

(b) Environmental Protection Agency recommendation:--no discharge of cooling water from the Cedar Bayou plant to Trinity Bay shall be permitted. The Houston Lighting and Power Company shall be required to abate the waste heat load by incorporation of a system utilizing recirculation and reuse of cooling water for all units at the Cedar Bayou plant or return of used cooling water to Tabbs Bay and adjacent waters or location of additional units at suitable alternative sites.

GPO 837-960

T. P. Gallagher

MR. GALLAGHER: The Galveston Bay Enforcement Conference was convened in Houston, Texas, from June 7 through 12, 1971, under the provisions of Section 10 of the Federal Water Pollution Control Act, for the purpose of considering pollution affecting shellfish harvesting in Galveston Bay, Texas. The conferees are the Environmental Protection Agency, representing the Federal Government, and the Texas Water Quality Board, representing the State of Texas.

During the conference, a great number of presentations were made by Federal, State, and local regulatory agencies, as well as industries and private consumers and environmental groups of the Houston metropolitan area. These presentations contained an extraordinary amount of technical information concerning quantity and characteristics of waste discharges, as well as effects on receiving water quality and beneficial uses, some of which was apparently contradictory.

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the conduct of the waste abatement program in the Galveston Bay and Houston Ship Channel area. Therefore, the conferees directed that technical personnel of the Texas Water Quality Board and the Environmental Protection Agency review and update the data presented, and compile a common baseline which will permit conclusions and recommendations for developing a continuing waste abatement program.

An extensive review was made of the numerous presentations to the conference, of subsequent field and laboratory analyses in the receiving waters, and pertinent data not previously evaluated. This review constitutes an enormous amount of information which can be used as reference material or submitted for the record at the conferees discretion.

As a result of the evaluation made by the Technical Task Force, agreement has been reached on ten of the eleven recommendations concerning water quality and waste abatement in the Galveston Bay system. In the recommendation where no agreement could be reached, the various positions have been set forth for the disposition of the conferees.

Participation in this joint technical evaluation

has been by the Deputy Director and his staff of the Texas Water Quality Board, the Division of Field Investigations, Denver Center, Office of Enforcement, EPA, the Region VI Enforcement Office, EPA, Dallas, and the Galveston Bay Field Station, EPA. Cooperation and support was also supplied by the Regional Office of the Food and Drug Administration; the Texas State Health Department, the Harris County Pollution Control Department, and the U. S. Air Force at Bergstrom Air Force Base, Texas. This cooperation is gratefully acknowledged.

I will now read the suggested recommendations of the Technical Task Force:

1) The Food and Drug Administration, in cooperation with appropriate State regulatory agencies, continue their recently initiated national study of oil and hydrocarbon residues in oysters, including those taken from Galveston Bay, with the objective of determining toxicological effects, if any, of such concentrations. These data, and any evaluations, will be made available to the conferees of the Galveston Bay Enforcement Conference.

2) To insure that approved shellfish harvesting areas are properly classified at all times, sampling for determining bacteriological acceptability of areas for

shellfish harvesting in Galveston Bay shall continue to emphasize the most unfavorable hydrographic and pollution conditions. The most unfavorable hydrographic and pollution conditions will be determined by technical personnel of the Texas State Health Department, in cooperation with other State and Federal agencies as the Texas State Health Department deems appropriate.

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Houston Ship Channel shall be conducted. Based on the results of this evaluation and examination of present spoil disposal areas, recommendations will be made by the Texas Water Quality Board and the Environmental Protection Agency on location of suitable spoil disposal areas, recommendations will be made by the Texas Water Quality Board and the Environmental Protection Agency on location of suitable spoil disposal areas and other appropriate action to minimize or eliminate deleterious effects on water quality.

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Water Quality Board on further measures, if necessary, beyond its ongoing program to insure adequate water quality in the Houston Ship Channel.

The following recommendation was not susceptible to joint agreement by the Technical Task Force, and both versions are presented for the conferees consideration:

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(b) Environmental Protection Agency recommendation: No discharge of cooling water from the Cedar Bayou plant to Trinity Bay shall be permitted. The Houston Lighting & Power Company shall be required to abate the waste heat load by incorporation of a system utilizing

recirculation and reuse of cooling water for all units at the Cedar Bayou plant or return of used cooling water to Tabbs Bay and adjacent waters or location of additional units at suitable alternative sites.

That completes the recommendations of the Technical Task Force to the conferees, Mr. Chairman.

MR. STEIN: Thank you, Mr. Gallagher.

Any comments or questions?

MR. VANDERHOOF: Yes, sir, Mr. Stein.

Mr. Gallagher, what was your primary mission as assigned by the conferees in the June conference?

MR. GALLAGHER: As stated in the material which I just read to you, Mr. Vanderhoof, it was that the technical personnel of the Texas Water Quality Board and the Environmental Protection Agency review and update the data presented and compile a common baseline which will permit conclusions and recommendations for developing a continuing waste abatement program.

MR. VANDERHOOF: The first part, that is the agreed baseline, was this agreed to by the technical task committee?

MR. GALLAGHER: I don't think there is any

question among the members of the Technical Task Force on the validity of the data.

MR. VANDERHOOF: Then we do have a common baseline? This is really what I am searching for. You have achieved your mission?

MR. GALLAGHER: Yes.

MR. VANDERHOOF: We do have a common baseline?

MR. GALLAGHER: Yes.

MR. YANTIS: Mr. Chairman, I think this needs a comment, if I may.

MR. STEIN: You go right ahead.

Is that all right?

MR. VANDERHOOF: Sure.

MR. YANTIS: Within the various meetings of the technical task forces, your people and our people, we came to an understanding, as I believe Mr. Gallagher has said, that the simple mass of data is too large for detailed one-by-one handling and that there would be no salvation in that direction.

We also noted that other data was being acquired at a rapid rate and this would go on forever. We agreed that in the sense of a reedited, republished report similar to the one available in June that this was simply

not a feasible thing to do.

So when you say is there a common baseline, I think we have all agreed that there is available within the various State and Federal agencies an adequate body of data, much of it in file and not necessarily in formal report form, to which we will all agree. So in the sense that within the files available to us there is data which we can all work towards, yes, we do have a common baseline.

If you mean is there a published report, a specific catalog of data, no, there is not.

MR. STEIN: Are there any other comments on that?

MR. VANDERHOOF: It appears to me that we have to have something tangible to work with.

Mr. Gallagher, can you straighten me out on this? Do we have something documented that we don't have to search into files that we can agree upon?

MR. GALLAGHER: There were several work papers prepared for the Technical Task Force containing data that could help to lead to the recommendations which were just read to you.

MR. STEIN: I think the charge to the technical task force at the last session

of the conference was to try to reconcile what appear to be differences in data. I believe at that point I pointed out that I didn't quite share that view in listening to the presentation from the State and Federal people--that I thought that the data was consistent and the problem might have been in the sense of terms of the presentation. I recognize that this may have been a bias on my part, perhaps because I had heard a good deal of the data.

But my understanding of what all of you are saying is that, really after the task force was completed, you found that there were no fundamental differences on the facts or the data between the Texas people and the Federal people. Is that correct?

MR. GALLAGHER: That is correct, Mr. Stein.

MR. STEIN: All right.

MR. VANDERHOOF: Well, Mr. Gallagher, I do thank you and the task force for the completion of your assigned work. I would point out that the recommendations that you have placed in there are not necessarily agreed to by the Federal conferee. Let me then comment.

That is all the questions I have for you.

MR. GALLAGHER: Thank you.

R. A. Vanderhoof

R. A. VANDERHOOF, DIRECTOR OF WATER PROGRAMS

ENVIRONMENTAL PROTECTION AGENCY

REGION VI

DALLAS, TEXAS

MR. VANDERHOOF: I would point out that I, too, have read the document entitled, "Report on Pollution Affecting Shellfish Harvesting in Galveston Bay, Texas," dated March 1971, and I have listened to the rebuttal of the data shown by the staff of the Texas Water Quality Board. I have also read the compilation of the data prepared in the working document dated August 1971.

I would state that in my opinion the March 1971 report did not properly compile the waste loads permitted by the Texas Water Quality Board in 1968, and the staff of the Texas Water Quality Board did describe existing loads as reported by the permittees. This apparently caused the original difference of opinion. But I think we were talking of two different sets of data and these were accurately described by both parties.

Now, it is clear from reading these documents that there has been some reduction in waste loadings since 1968. The supplementary document prepared under date of

R. A. Vanderhoof

August 1971 describes existing loads during the period August 1970 through March 1971 as compiled from the self-reporting system of Texas Water Quality Board. These data are in general agreement with the presentations made by Texas during the June conference. We can agree generally with the existing loads.

But I still want to make it abundantly clear that the Federal report of June 1971 is correct in that it stated permitted loads.

The supplementary document of August 1971 I believe is also correct, and it describes the 1971 permitted loads and the existing loads to the Galveston Bay system for the period August 1970 through March 1971.

I also wish to make it clear that while these documents are believed correct, they may not be absolutely complete. In addition, the August 1971 document is the only one known to me that describes the actual quantity of waste discharged into the Galveston Bay system based on effluent sampling. Again, the numbers shown are at least the values shown, for as I have stated, the summary may not be complete.

Also the March 1971 document is the only published report that I know of on waste loads permitted in

1968 to be discharged to the Galveston Bay system.

Now, I observe that the permits issued for loads to the Ship Channel in 1968 were over allocated by a factor of 10 and that existing loadings on the channel appear to be over allocated by a factor of about 3. I have been informed, and I have read in the document of August 1971, that aerial reconnaissance of the Galveston Bay system has shown frequent and ubiquitous oil spills to be occurring.

On the basis of everything that I have personally observed, read, and heard entered into the record, I believe that the recommendations originally proposed in the March 1971 document are reasonable. Summary wording is certainly necessary to fairly address the ongoing activities of other Federal and State agencies. I believe that there could be some rewording and some improvement to describe best available treatment, and towards this end, Region VI has prepared some recommendations, which I will give to the Chairman and to Mr. Yantis.

The Region VI recommendations take a much longer view of the Galveston Bay system. Therefore, they are not furnished as recommendations to this conference but as suggestions to the Texas Water Quality Board that

they may wish to strive toward as the long-range program to correct the Galveston Bay system.

Mr. Chairman, I don't know if you would want these read into the record. I will give you copies.

MR. STEIN: How long are they?

You have alluded to them so much already and there are so many people here, I think either you had better read them or give us a pretty thorough summary so everyone will know what these are.

MR. VANTIS: Mr. Stein, on the assumption that I am kind of a slow learner, I think it would be best if we actually read them and look at them materially as we go. I do not mean to discuss each one individually as we go, but I don't think it is the sort of thing that a simple summary can do justice to, and I am sure there are people in the audience who do not have copies and who have a great deal of interest.

So as Rudy Vallee used to say on the radio, "My time is your time," so let's have at it. (Laughter.)

MR. STEIN: O.K. Is that agreeable?

MR. VANDERHOOF: Again, I want to make it abundantly clear that these are not my recommendations to this conference. They are recommendations or suggestions to

the Texas Water Quality Board on a long-range--

MR. STEIN: I understand that. But let us go through these. The problem that I have--and let me go off the record here a moment.

(Discussion off the record.)

MR. STEIN: Would you go ahead.

MR. VANDERHOOF: The first paragraph, of course, must be restated. Originally we were thinking of these for the recommendations to the conference.

1) The Food and Drug Administration, in cooperation with appropriate State regulatory agencies, continue their recently initiated study of oil and hydrocarbon residues in oysters taken from Galveston Bay with the objective of determining toxicological effects, if any, of such concentrations. These data, and any evaluations, shall be made available to the conferees of the Galveston Bay Enforcement Conference.

I believe that is identical with No. 1.

2) To insure that approved shellfish harvesting areas are properly classified at all times, sampling for determining bacteriological acceptability of areas for shellfish harvesting in Galveston Bay shall emphasize the most unfavorable hydrographic and pollution conditions.

R. A. Vanderhoof

The most unfavorable hydrographic and pollution conditions will be determined by technical personnel of the Texas State Department of Health, in cooperation with the Food and Drug Administration and other appropriate State and Federal agencies.

I believe that is generally consistent with the task force No. 2.

MR. YANTIS: Mr. Chairman, I am sure we did not want to discuss them one at a time, but there is a very small but significant change here which we will bring up later.

MR. VANDERHOOF: 3) Effective disinfection of all waste sources contributing bacteriological pollution to the Galveston Bay system shall be provided.

4) A regional plan, including implementation schedules, shall be developed within 6 months for collection and treatment of all municipal wastes within the Galveston Bay drainage area. Regional planning includes elimination of small plants within a specified time frame, centralization of treatment facilities to include a small number of large treatment plants and pretreatment of all industrial wastes accepted into the system in a manner acceptable to EPA. No toxic or hazardous materials

will be permitted to enter the regional system.

5) The regional plan shall require the best available treatment for municipal wastes, and such treatment is now defined, in August 1971, as 5 mg/l BOD_5, 5 mg/l suspended solids, 1 mg/l total phosphorous, and 1 mg/l residual chlorine. Provisions shall be made for reduction of total nitrogen to 2 mg/l as N.

6) A joint waste source survey shall be conducted by the Texas Water Quality Board, in cooperation with EPA, on all sources of industrial wastes permitted by the Texas Water Quality Board to discharge effluent to Galveston Bay and its tributaries. These examinations shall emphasize determination of complex organic compounds, heavy metals and other potentially toxic substances, and oil and grease from each waste source. No toxic or hazardous materials will be permitted to enter public waters. Recommendations and scheduling of best available treatment will be provided to the conferees within 6 months. The Texas Water Quality Board permits and self-reporting data system should be amended to reflect the recommendations of this industrial waste source survey.

7) The Texas Water Quality Board will review the permits of each waste source discharging to Galveston

Bay and its tributaries and will amend them to insure that the best available treatment is provided such that discharges of oil and grease from any source will not exceed 5 mg/l in any individual sample. As technology improves, this requirement will be regularly reviewed and readjusted to a lower figure. Fail-safe facilities will be built to contain any possible oil or grease spills.

8) The characteristics of wastes described in the permits shall be representative of the total amounts of wastes to be discharged after required treatment. For example, BOD_5 is not a proper measurement to describe strength of industrial wastes. Limitations in amounts of chemical oxygen demand or total organic carbon are more realistic indicators of magnitude of wastes discharged to public waters. Wastes permitted shall be expressed in pounds per day of each type indicator rather than a combination of flow and concentration of each indicator. The Texas Water Quality Board shall replace BOD with TOC in the self-reporting system.

9) A characterization and evaluation of the water quality significance of materials contained in the organic sludge dredged from the Houston Ship Channel shall be conducted. Based on the results of this evaluation

and examination of present spoil disposal areas, recommendations will be made by the Texas Water Quality Board and EPA on location of suitable spoil disposal areas to minimize or eliminate deleterious effects on water quality.

10) Cores of sludge from the bottom of the Houston Ship Channel shall be physically, chemically and biologically examined for the purpose of determining the exact source of settleable solids. With the assistance of the Corps of Engineers estimated volumes of dredged materials shall be developed, relating to source of settleable solids. These estimates shall be furnished to the Government Accounting Office for recovery of funds expended on Ship Channel dredging.

(a) The city of Houston, the several counties draining into the Galveston Bay system, and the State of Texas shall develop legislation restricting earthmovers' work for development of land to prevent erosion of sediments into the Ship Channel. A system of penalties and bonds will be required to protect the Federal Government from excessive costs of dredging the Ship Channel.

(b) No raw sewage or sludges will be

allowed to discharge into the Ship Channel. A system of fail-safe structures, such as holding ponds, will be built to prevent sludge from entering the channel.

11) Alert levels for acute and chronically toxic or growth-inhibiting parameters shall be developed by the Food and Drug Administration for shellfish from all approved growing waters, including Galveston Bay. These alert levels will be discussed with technical personnel of the Environmental Protection Agency and will be presented at the Seventh National Shellfish Sanitation Workshop sponsored by the Food and Drug Administration. The Environmental Protection Agency, in cooperation with the Food and Drug Administration and other appropriate State and Federal agencies, shall develop parameters for the same characteristics in waters approved for shellfish harvesting.

12) Color of the waste effluent from U. S. Plywood-Champion Paper Company and Southland Paper Mills shall be no greater than 75 color units at pH 7.6.

You can see from the tone of the following statement that the Technical Task Force had some discussion

of these previous 12 recommendations.

The following recommendations were not susceptible to joint agreement by the Technical Task Force and both versions are presented for the conferees consideration.

No. 13 is regarding the Houston Lighting & Power Company Cedar Bayou plant, and this is identical to the previous 11) that was read by Mr. Gallagher.

14) Allowable total waste discharge to the Houston Ship Channel, on which the State position is presented and the Federal position is presented.

(a) The Texas Water Quality Board recommendation: The minimum feasible total waste load discharged to the Houston Ship Channel shall not exceed 120,000 pounds per day of 5-day BOD. Criteria for control of waste discharges to the channel should be based on water quality determined at Morgan's Point, such that the relatively cleaner waters of Galveston Bay could be preserved. Water quality standards in the channel itself, except for definite health hazard situations, would serve as indicators of waste abatement progress and would not be

the primary factor determining levels of waste abatement.

(b) Environmental Protection Agency recommendation: To meet official State-Federal water quality standards established for the Houston Ship Channel, the maximum waste load discharged from all sources shall not exceed 35,000 pounds per day of 5-day BOD, including projected future development. This requirement must be accomplished by use of the best available waste treatment practices, which should be continually updated as further technology is developed; and fail-safe, nonbypassing devices, such as holding ponds, will be built. Consideration shall be given to other waste disposal alternatives to discharge to the Houston Ship Channel.

15) The Houston Port Authority shall implement a system of stationary and self-propelled barges to receive both liquid and solid wastes from all shipping in the Galveston Bay system. Proper means of disposing of these waste materials, satisfactory to EPA, will be developed by the Port Authority.

R. A. Vanderhoof

16) The Texas Water Quality Board will immediately ban the ocean dumping of any wastes from Texas industries unless such disposal is in accordance with national policy. If the Texas Water Quality Board does not have such authority from the Texas Legislature, it will immediately prepare and request such legislation at the next meeting of the Texas Legislature.

17) The Texas Water Quality Board will immediately curtail deep well disposal of industrial wastes (excluding return of oil field brine to source formation) unless such disposal is in accordance with national policy as described by EPA.

18) The Texas Water Quality Board will immediately begin a program of continuous-flow bioassay to assure that the receiving waters of Galveston Bay and its tributaries do not contain concentrations of waste materials, singly or in combination, that exhibit acute or chronic toxicity to sensitive, endemic aquatic species. All toxic substances found in wastes discharged to Galveston Bay and its tributaries shall be identified and the toxicity of each source shall be determined in accordance with procedures described in Standard Methods for the Examination of Water and Wastewater, 13th edition.

19), and the last. If, after best available treatment as described by the Environmental Protection Agency, the water quality of the Houston Ship Channel is not materially enhanced to the level projected by the Galveston Bay Study, an alternate method, particularly in-stream aeration, will be implemented. Cost of such activity will be borne by dischargers in proportion to their pounds per day COD or TOC loading by industries and municipalities. Further, such in-stream treatment will be performed in cooperation with and approval by the Houston Port Authority.

Mr. Chairman, those are the suggestions to the Texas Water Quality Board.

Now--

MR. STEIN: You are not suggesting that they be adopted by the conference at this time?

MR. VANDERHOOF: No, I am not. I am pointing out that this appears to us in the Region to be the long-term program that the Texas Water Quality Board should at least explore.

My own recommendations to the conference are close to the task force committee, but there are, I believe, significant differences and perhaps, if you so

desire at this time, we can go through and these will be the official Federal conferees' proposals to this conference.

MR. STEIN: Yes. Well, I would like to concentrate on the action for this conference. Of course you can have full discussion on any relevant issues, but I think the charge that we have at the conference is to come up with recommendations for the conferees here.

MR. VANDERHOOF: Very good.

I compared the Federal position with the document presented by Mr. Gallagher, and I believe Recommendation No. 1 is the same.

No. 2 is essentially the same, but there are some differences, so I propose to read No. 2 as proposed by the Federal conferee to this conference.

> To insure that approved shellfish harvesting areas are properly classified at all times, sampling for determining bacteriological acceptability of areas for shellfish harvesting in Galveston Bay shall emphasize the most unfavorable hydrographic and pollution conditions. The most unfavorable hydrographic and pollution conditions will be

determined by technical personnel of the Texas State Department of Health, in cooperation with the Food and Drug Administration and other State and Federal agencies.

MR. YANTIS: Mr. Chairman, this is completely satisfactory to us. And as a matter of fact, that is the way it is. We simply lumped FDA with other Federal Agencies.

But we agree wholeheartedly to this reading of that particular recommendation.

MR. VANDERHOOF: All right.

3) Effective disinfection of all waste sources contributing bacteriological pollution to the Galveston Bay system shall be provided. The Texas Water Quality Board policy to this effect shall continue to be implemented. Where effective disinfection is not presently being accomplished, it is recognized that adequate measures are under way to secure that disinfection. These measures shall be in effect by December 31, 1971.

MR. YANTIS: Well, there is another paragraph to No. 3 which is on a slightly different subject.

R. A. Vanderhoof

MR. VANDERHOOF: All right, let me continue on 3.

3), the second paragraph: The Texas Water Quality Board will continue to implement its policy requiring the elimination of small plants. The centralization of facilities, wherever possible, and the halt of proliferation of small plants will continue, consistent with existing appropriate procedures. The implementation schedule for this program, as initiated by the Texas Water Quality Board, will be made available to the conferees of the Galveston Bay Enforcement Conference not later than April 1, 1972.

MR. YANTIS: Mr. Chairman, we agree to that, with one small addition.

In the original writing of that particular paragraph, the one on disinfection, there was not a completion date shown. We agree that one should be shown, and yet we also know that all of the waste discharges cannot be disinfected by the same date because of the needs to purchase equipment, carry out certain types of construction, and so on, and emergency methods of

chlorination, stop gap methods, would probably not be effective and are probably not needed.

So we would simply add this after the phrase, "these methods shall be in effect by December 31, 1971, or at such other date as may be feasible under properly pursued programs of construction," because we happen to know that the city of Houston is building its right now. It won't be finished by that date, and I don't think that we should write something which we know will not be met barring some, let's say, improperly pursued construction schedule.

If you all would agree to that addition, that "properly pursued construction program" we will agree.

We note a change here too. So far as the transmission of disease is concerned, domestic sewage is the source of pathogenic bacteria, even the domestic sewage within an industry. In the original writing it said domestic sewage, meaning domestic sewage wherever found, but the word "domestic" is now left out. We would point out that there are some methods of industrial waste treatment which do use bacteria, biological systems, and disease transmission is not a factor, but there would be bacteria in their wastes. I think some thought would need

to be given as to whether an industrial waste treated by a biological means is absolutely to be equated with a domestic sewage treated by a biological means.

But we will agree to the statement as shown, with the addition of a suitable work schedule.

MR. STEIN: This is just for purposes of clarification, Mr. Yantis. On the suitable work schedule, presumably you are thinking in terms of a disclosure to the public or EPA of what that schedule would be?

MR. YANTIS: Sure; everything we do is public disclosure. There are no secrets.

MR. STEIN: I understand that.

MR. YANTIS: No matter what Keith Ozmore down there may think. (Laughter.)

MR. STEIN: But again, Mr. Vanderhoof, what they are saying is that in some cases--as I understand it, particularly in a large city--December 31, 1971, is not a realistic date, but if in pursuing this you put the disinfection system in in accordance with a suitable work schedule, then that would be acceptable.

When do you think you would need the suitable work schedule to make it public?

MR. VANDERHOOF: How soon could you provide us

a work schedule, Mr. Yantis?

MR. YANTIS: On the major ones probably we could do it within the next week. On some of those it would probably take 30 days. And I am sure that there would be a few who haven't even sold bonds or done things like that that might drag on for several months.

But I will say this, we will give you that work schedule long before the city of New York builds a new sewage treatment plant. (Laughter.)

MR. VANDERHOOF: Mr. Stein, I would recommend, then, that we hold that portion of it in abeyance. It is a point of agreed-upon engineering detail that could be included later, if this is satisfactory to you.

MR. STEIN: All right.

You know, Mr. Yantis, I don't know why you brought that up, but I am thinking--

MR. YANTIS: I thought it would be interesting. (Laughter.)

MR. STEIN: I was thinking of New York. You know, when we went up there in a conference of this type, we asked them to build that new sewage treatment plant, and after much travail they decided to do it. The cost estimate at the time we started asking them to do it was

$220 million. But because of the backing and filling and the delays, guess what it is costing now? $600 million! So I think there might be a lesson to be learned in New York.

Mr. Vanderhoof.

MR. VANDERHOOF: All right.

No. 4, I believe, is essentially the same, but let me read it to make certain.

> 4) The EPA and the Texas Water Quality Board will cooperate in a study of Galveston Bay. This study is presently being conducted by the Texas Water Quality Board on all sources of municipal and industrial waste permitted by the Texas Water Quality Board to discharge effluent to Galveston Bay and its tributaries. These examinations shall emphasize determinations of complex organic compounds, heavy metals and other potential toxic substances, as well as oil and grease from each waste source. Recommendations and scheduling of necessary abatement will be provided to the conferees as soon as they become available. The Texas Water Quality Board permits and

self-reporting data system shall be amended as necessary to reflect the recommendations of this waste source survey. A progress report on results of this study will be made to the conferees within 6 months of the date of the reconvened session of the Galveston Bay Enforcement Conference.

MR. YANTIS: Mr. Chairman, that is all right with us. The original wording said in effect that we had a study going now financed primarily with State funds, to which in recent times have been added some Federal funds, and that if you all wanted to help us you were certainly welcome to do so. The only change I see is that instead of helping us you would like to be a partner, and we are agreeable to that too.

MR. VANDERHOOF: All right.

5) The Texas Water Quality Board will continue its review of each waste source discharging to Galveston Bay and its tributaries and will amend those permits as necessary to insure that the best reasonable available treatment is provided relative to discharges of oil and grease. The Texas Water Quality

Board will cooperate with EPA in determining what treatment is the 'best reasonable available treatment.' It is recognized that improvements in technology will be incorporated into future permit revisions. A progress report will be made to the conferees within 6 months of the date of the reconvened session of the Galveston Bay Enforcement Conference.

MR. YANTIS: That is entirely satisfactory.

MR. VANDERHOOF: 6)--I believe this is essentially the same as the task force's.

6) The ongoing review and amendment by the Texas Water Quality Board of existing permits recognizes that greater reduction of waste will be required of waste discharges to the Galveston Bay system to meet water quality standards. The conferees note that in the past 3 years the organic waste load being discharged into the Houston Ship Channel has been lowered from about 430,000 pounds per day of BOD_5 to 103,000 pounds per day of BOD.

I note in here that the BOD_5 subscript has been

left off.

Any amendment to existing or new Texas Water Quality Board waste control orders as a result of this program will prohibit dilution as a substitute for treatment. A progress report on continuing reduction of waste loads will be provided to the conferees within 6 months of the date of the reconvened session of the Galveston Bay conference.

MR. YANTIS: That is quite all right. I mean it is fine; just the way I wrote it. (Laughter.)

MR. VANDERHOOF: 7) A characterization and evaluation of the water quality significance of materials from pollution sources contained in the organic sludge dredged from the Houston Ship Channel shall be conducted. Based on the results of this evaluation and examination of present spoil disposal areas, recommendations will be made by the Texas Water Quality Board and the Environmental Protection Agency on location of suitable spoil disposal areas and other appropriate action to minimize or eliminate deleterious

effects on water quality.

MR. YANTIS: Mr. Chairman, except that the words "and other appropriate actions" have been added, this is as it was and it is satisfactory, provided that we do not read into the words "other appropriate actions" a great many things which would not reasonably be construed.

MR. STEIN: Where is that?

MR. YANTIS: It is not in my copy.

MR. STEIN: Here (indicating).

MR. YANTIS: I am reading the one over here that we had in Denver. But this is all right.

MR. STEIN: Has that been added?

MR. YANTIS: It has been added, but it is all right; it is fine.

MR. STEIN: O.K. Go ahead.

MR. VANDERHOOF: 8) Alert levels for acute and chronically toxic or growth inhibiting parameters are being developed by the Food and Drug Administration for shellfish from all approved national growing waters, including Galveston Bay. These alert levels will be discussed with technical personnel of the

Environmental Protection Agency and were presented at the Seventh National Shellfish Sanitation Workshop sponsored by the Food and Drug Administration. The Environmental Protection Agency, in cooperation with the Food and Drug Administration and other appropriate State and Federal agencies, will work to develop parameters for the same characteristics in the waters approved for shellfish harvesting.

MR. YANTIS: Mr. Chairman, there is a need there for some discussion.

At staff level we were concerned with the interpretation that might be placed upon the words "alert level." What would it mean to a professional working in the field? What would it mean to a newspaperman? What would it mean to the general public? How does it relate to some other level at which something would actually be prohibited? There was a great deal of concern and is a great deal of concern among Food and Drug people over the word--over the idea itself.

But the information given here was presented to the Shellfish Sanitation Workshop and they declined to adopt alert levels. So I can only assume that the idea

is still undergoing modification and further development. There may or may not be alert levels developed. It is one of these things where the idea may be good, but the actual working out of it may be quite difficult.

I would suggest that we rewrite that paragraph, taking the advice of the Food and Drug people themselves, and simply put it into its modern context as an idea not yet developed--not yet adopted.

MR. VANDERHOOF: Mr. Stein, I wonder if we could call on Mr. Gallagher for any comment he may have on this issue.

MR. GALLAGHER: Yes, sir.

The concept of the alert level is such to initiate action by the Food and Drug Administration to determine whether or not harmful effects may or may not occur. It is not an enforceable level, as I understand it from my discussions with the Food and Drug Administration. This particular recommendation was reviewed with staff people from the Food and Drug Administration when it was being developed by the Technical Task Force committee.

The Shellfish Sanitation Workshop has been held, and as Mr. Yantis says, at the time they declined to accept the alert levels proposed by the Food and Drug

Administration. I understand that they are still undergoing revision and there is no schedule as to when they will adopt those alert levels at this time.

MR. YANTIS: Mr. Chairman, my comment is simply this, that we should modify the statement to be technically correct, and since it is primarily a Food and Drug and Texas State Health Department statement, simply include whatever statement they would now wish to make on the same subject matter.

MR. STEIN: Right. Are there any problems there?

The statement says that "Alert levels for acute and chronically toxic or growth inhibiting parameters are being developed by the Food and Drug Administration for shellfish." As I understand this, presumably they will be utilized by the Food and Drug Administration, no matter what we or Texas or anyone else might have, but they are not going to use it for a regulatory device, just as announcing an alert level. And you are suggesting that we work with the Food and Drug Administration to develop these requirements. Does that fit?

MR. GALLAGHER: Yes, sir, we feel that they are absolutely necessary in terms of the heavy metals, toxic

materials, and so on.

MR. STEIN: No, no. I know what the view is. What I am trying to get at is for the purposes of this conference. The point is, we are making a declarative judgment on a state of affairs on something to be utilized by the Food and Drug Administration. You are not suggesting here, as I read this even in here, that we use this as a regulatory tool for EPA or the State of Texas, right?

MR. GALLAGHER: That is the responsibility of the Food and Drug Administration.

MR. STEIN: That is right. So I think we should try to get that just to reflect their point of view and indicate we worked with them.

In other words, I don't see any difference among the conferees.

MR. VANDERHOOF: No.

MR. YANTIS: No.

MR. STEIN: All right. If not, let's hopefully try to work out their problems.

Thank you.

MR. GALLAGHER: Thank you.

MR. VANDERHOOF: 9) Chemical constituents

causing color in waste effluents, such as those from pulp and paper mills, shall be reduced to natural background in area waters as soon as practicable as stated in existing Texas Water Quality Board waste control orders. A report on feasible processes to accomplish this recommendation will be submitted to the conferees within six months of the reconvened session of the Galveston Bay Enforcement Conference.

MR. YANTIS: This is satisfactory.

MR. VANDERHOOF: 10) To meet present official State-Federal water quality standards established for dissolved oxygen in the Houston Ship Channel, it is expected that the maximum waste load discharged from all sources, including projected future development, will be about 35,000 pounds per day of 5-day BOD. The Texas Water Quality Board, in cooperation with the EPA, shall allocate allowable waste discharges for 5-day BOD and other pertinent parameters for the 15 largest sources as determined by the Texas Water Quality Board by February 15, 1972. The remaining waste sources

on the Houston Ship Channel shall have allowable waste allocations made by the Texas Water Quality Board by June 30, 1972. The total allocated waste load for all sources on the Houston Ship Channel shall not exceed 35,000 pounds per day. These schedules will include interim dates and will require all facilities to be completed not later than December 1974. The EPA will continue its program consistent with statutory requirements and in cooperation with the Texas Water Quality Board.

MR. YANTIS: Mr. Chairman, this is the one that we will have all of our discussion on, and I would suggest this might be a good place for a coffee break.

MR. STEIN: I think that is a very good idea.

Let me call your attention to the last sentence before the discussion. You may want to consider it during the break. It really just restates the secondary requirement under the law.

MR. VANDERHOOF: That is right.

MR. STEIN: And you might consider whether you need it or not.

R. A. Vanderhoof

We will recess for about 10 minutes.

(RECESS)

MR. STEIN: We probably will continue with the State and Federal discussion here all morning and then this afternoon hear from as many people as we can.

We have also received several requests from those people who, according to them, have seen such a bulk of new material that they wish time to reflect on it. So we will plan at this point to have another public session tomorrow.

From the way the schedule looks to me, if we don't have some very long presentations today, very possibly we can accommodate those who want to speak today, either the public or official representatives. Those who want time to reflect, we will call on tomorrow morning starting at 9:30. I am pretty sure we will be able to complete the open and public sessions tomorrow.

Mr. Yantis.

MR. YANTIS: Mr. Chairman, we had covered a discussion of disinfection, which to most people means chlorination. There are, of course, other methods of disinfection besides chlorination. And I did state

without necessarily being informed at that time, that December 31, 1971, which is a couple or three months from now, was not a feasible date. I suggested that we add, and we did, "or at such other date as may be feasible under properly pursued construction program," and we agreed to that.

One of my staff came up to me just a moment ago during the coffee break and said that he had looked into the matter for the city of Houston, and this is what I would like to see discussed and perhaps have a response. Houston has been held up, so I was informed, by at least 8 months by some problem in the EPA Dallas office. Now, whether we are talking about approval of plans or something else that is not relevant or financing, I do not know. But I cannot see that this type of delay is what we really need to try and resolve some of the problems that are real nuts and bolts types of problems.

So I would like to have some rebuttal to what my staff has just told me.

MR. STEIN: Mr. Vanderhoof?

MR. VANDERHOOF: I am not sure that this is the forum to describe the specific arguments. I do see Mr. Jones, our construction grants man. I don't know if he

is prepared to discuss Galveston Bay construction grants or not.

Just nod your head yes or no, Ancil.

MR. STEIN: Well, here is what I would like to do, Mr. Vanderhoof. If we have anyone on the staff who can provide an answer to the direct question that Mr. Yantis asked, I would like to see if we can get that.

MR. VANDERHOOF: All right, without the public discussion, this would be fine.

Ancil, could you prepare the answer to that question?

MR. STEIN: No, I mean right here, not without public discussion.

MR. YANTIS: I mean with public discussion, Mr. Chairman. We are quite sensitive to being criticized in public and to having the problem worked out in private. I would like to have this one worked out in public.

MR. STEIN: We are all for working it out in public.

Do you want to talk about this or do you want--

MR. VANDERHOOF: I think Mr. Jones knows the detail of the Galveston situation and perhaps he should respond to the question posed.

R. A. Vanderhoof

MR. JONES: Mr. Chairman, conferees.

If I know specifically what problem Mr. Yantis is troubled with, I will be glad to try to respond.

MR. YANTIS: Well, I have got corns, bunions, indigestion (laughter), but mostly I would like to know what the answer is as to why a city of Houston sewage treatment plant had its chlorination plans held up by EPA for 8 months, either lack of engineering approval, lack of financing, or whatever. I know only that my staff told me that part of Houston's problem was an eight-month delay in the Dallas office of EPA, and I would like to know what the delay was. What did we do wrong, since obviously we did something wrong.

MR. JONES: There were five projects which we made grant offers to in March. There was no specific chlorination problem involved. That was not the issue that delayed any projects in EPA office.

MR. YANTIS: There must have been some issue, since it was delayed.

MR. JONES: Well, I understood that we were talking about an issue of chlorination. There were other problems involved. Chlorination was not one of them

MR. YANTIS: Mr. Chairman, what I am trying to

determine is: Here is a city proposing to construct a facility which will improve its public health posture, reduce pollution. As far as I know the city has cooperated. So far as I know we have, and yet some problem has occurred which has held this up for eight months. I think we ought to know what it is.

MR. VANDERHOOF: Mr. Yantis, I apparently misunderstood. Are we talking of the city of Houston or the city of Galveston?

MR. YANTIS: The city of Houston.

MR. STEIN: Well, you know, in a sense I am dismayed at the whole problem. We had been studying this area for a while and if there is or has been an alleged delay for eight months, I wish, if this ever happens again, that when you get some kind of delay we have this referred to us at an earlier stage so we can look into it.

But let's take the question that we have at its face. We have a statement made here that the city and the State have done their part and sent in a grant application on the city of Houston, and because of some action on our Agency's part the project has been delayed.

Do you want to comment on that?

R. A. Vanderhoof

MR. VANDERHOOF: Well, let me take it from there, because I understood that Mr. Yantis was complaining about a specific chlorination problem.

I understand the Houston problem and let me describe it to you. Ancil, you correct me if I am wrong.

I presume we are talking about Clear Lake. Within the water quality standards agreed to by the State and the Federal Government there was a requirement that called for diversion of effluent without stating when. We have called and asked for a clarifidation and a plan of implementation and a regional plan for the Clear Lake area to comply, as we see, with the water quality standards.

The alternative proposed for the Clear Lake situation was best available treatment. That is, before the Regional Administrator consigns a construction grant he must be assured that he is in compliance with the water quality standards. And the way this paragraph is worded we interpret it to mean that there must be a regional plan for diversion of effluents, or in the alternative to have a plan telling specifically when this is proposed, or in the meantime best available treatment.

R. A. Vanderhoof

Apparently we are hung up on the definition of best available treatment. We believe it is the 5-5-1, and I believe Texas says 12-12. Apparently this is the dilemma.

Is that correct, Mr. Yantis?

MR. YANTIS: I have no idea.

Joe Teller, are you out there somewhere?

MR. TELLER: Yes, sir.

MR. YANTIS: Is this the plant we were talking about?

MR. TELLER: That is not the way it is, as I understand it.

MR. STEIN: Come on up, Joe, because the girl who is recording isn't going to hear you.

MR. TELLER: The 12-12-1 grew out of our desire to remove the phosphate from the discharges going into the Clear Lake Basin. The most feasible reasonable way of doing that was with chemical precipitation. When you take the phosphate down to the level we need to take it down to, then you can get out additionally the BOD to get you down to the 12-12.

We have not said that 12-12 was the best available treatment or best reasonable treatment and we have

not yet been shown that [illegible] from the standpoint of organic is needed in the Clear Lake Basin. If it is needed, then I don't have any doubt that the Water Quality Board, with a recommendation to this effect, will require the discharges to go to that level. But we haven't been shown that the need exists for that.

The 12-12 grew, Mr. Vanderhoof, from our desire to get the phosphate out, and as a result of the best method of taking out the phosphate we could also get the BOD down to 12.

Did that clarify or confuse?

MR. STEIN: Well, let's see, I think I am seeing the light on this.

Really the delay, and I put this in quotes, the alleged delay really in both your views does not have to do with the disinfection operation per se, is this correct, but another aspect of the Houston problem? Is that correct?

MR. YANTIS: Mr. Chairman, that is essentially correct, because when I posed the question I didn't even know what plant we were talking about. I was simply reporting that here is a plant that needs chlorination, whatever else it may need is another subject, and for

eight months the improved chlorination has not been provided because of a, may I say, bureaucratic disagreement between the two bodies.

Now, let's point out here that we have a Galveston Bay study which has hardly been discussed today at all. But the purpose of the Galveston Bay study is to provide a technical and scientific background as an aid to the making of decisions. It was long ago judged by the Texas Water Quality Board and its predecessor that significant decisions should not be made on guesswork. There was too much involved in the way of money, resources, simply too many social values to proceed on the basis of guesswork. And the Galveston Bay study was started primarily with State funds to provide us the knowledge we did not have, and we have learned a great deal from the Galveston Bay study.

But in the Galveston Bay study there is not a Clear Lake study. The Galveston Bay study simply does not have the money, the funds, the resources to study Clear Lake. In one sense Clear Lake is simply not that big, though it is very important to the people who live around it, and we still hope to find some way of studying Clear Lake.

R. A. Vanderhoof

But here is a small body of water into which wastes are discharged, and we knew on the basis of judgment that the quality of waste discharges going into this body were not good enough. So we started a series of public hearings and conferences several years ago and one conference was followed by another, then one public hearing by another. These were all heavily attended by technical people from everywhere, Federal people, State people, local people, everything. They were all held in public, they were all advertised, both in the newspapers and by mail. And after all of these considerations we adopted a tentative order that would set forth the treatment levels which we thought were necessary in the Clear Lake area and these were circulated for months and months before they were finally adopted. Then they were finally adopted by the board, and it set forth such things as time schedules, reporting schedules, and quality of effluent.

Only after they were adopted, after these years of hearings and conferences, did the Federal Government propose some different quality standards, not because there was any shown need, but simply because at Lake Tahoe it could be done. If you want to go to the best available treatment, we can get it down a lot lower than 5. There

are many techniques available that could get it lower than 5. Are they practical? Perhaps not. Are they necessary? Perhaps not. But there is no scientific sanctity back of any 5 number that has been thrown out any more than that there is any behind this 12 number that has been thrown out.

If the Federal Government didn't like the 12, why didn't they say so when all of the work was being done, when the technical problems were being reviewed? So now after we have issued our judgment, we come up with another set of signals, and we have not resolved this problem in months and months and months.

We brought this up at the first meeting of this shellfish conference in June and it appears that we are not any closer to a resolution of it now than we were then. And if that is the kind of progress that we make on other issues, we will never solve the pollution problem.

I did not know when I raised the issue of chlorination that it was going to lead into the problem of Clear Lake, which is another island yet to be discussed. And I think it does need to be discussed here. But I find no cause for optimism in the continued lack of reasonable solution to a problem like this.

If my question on chlorination raised some other issues, I am sorry, but I do want to point out that lack of agreement between two agencies does not benefit the public.

So Mr. Chairman, I think we ought to drop this one and bring it back up at the proper time and go on with a discussion of item No. 10.

MR. STEIN: That is fine.

Do you want to say anything?

MR. VANDERHOOF: Only that Mr. Yantis has stated the State position. He has not stated the Federal position, and I will hold the Federal position response to him until we get into this issue later.

MR. YANTIS: Mr. Chairman, I stated the State's position and I stated the people's position. If the Federal position is different, I am sorry.

MR. VANDERHOOF: I cannot agree with you, Mr. Yantis. I am not sure you do speak for the people.

MR. STEIN: Self-serving statements are allowed. (Laughter.)

May we go on?

MR. VANDERHOOF: We had completed Recommendation No. 10.

Recommendation No. 11--

MR. YANTIS: No, we didn't even talk about No. 10. We simply read it.

MR. VANDERHOOF: All right, I had completed reading it.

MR. YANTIS: Mr. Chairman, I think it should be read again and discussed.

MR. STEIN: Will the discussion be lengthy?

MR. YANTIS: Yes, it is not possible to discuss it between now and lunch. You can skip it and go on with No. 11, if you wish, and come back to 10. I don't know what is going to happen on 11, but it is actually what I was just talking about in a sense.

MR. STEIN: Do you want to talk about No. 11?

MR. VANDERHOOF: Well, why don't we put the recommendations out on the table before lunch and then discuss them after lunch?

MR. STEIN: They have been out.

MR. YANTIS: This is fine.

MR. STEIN: That's right. We are so close to lunch, I think we should proceed in sequence, and perhaps we can beat the rush if we recess now. Let's try to be back from lunch at half past 1.

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We will recess for lunch.

(Whereupon, at 11:50 o'clock a noon recess was taken.)

AFTERNOON SESSION

TUESDAY, NOVEMBER 2, 1971

1:30 o'clock

MR. STEIN: Let's reconvene.

I believe we were discussing the recommendations.

Mr. Yantis.

MR. VANDERHOOF: Mr. Stein, I hadn't completed reading my recommendations.

MR. STEIN: Oh, I am sorry. Go ahead.

MR. VANDERHOOF: May I proceed?

MR. STEIN: Yes.

MR. VANDERHOOF: I had finished reading Recommendation No. 10, and I recognize, Mr. Yantis, that you neither agreed nor disagreed with it at this time and I expect comment later.

Recommendation No. 11:

All waste sources--

MR. STEIN: Do you want to skip to 11 first?

MR. VANDERHOOF: I read 10.

MR. STEIN: Yes, but we had more comment.

MR. YANTIS: That is all right.

MR. STEIN: All right, go ahead.

MR. VANDERHOOF: All waste sources which

discharge directly to Galveston Bay and other tributary areas, including Clear Lake, shall have allowable waste loads allocated by June 30, 1972, consistent with best available treatment practices. This allocation includes interim dates for accomplishment of required waste treatment and/or waste treatment facilities will be in operation by December 31, 1974.

Recommendation No. 12 is identical to a previous one which related to the Houston Lighting & Power Cedar Bayou plant. It is identical. I will read it if you wish.

The following recommendation was not susceptible to joint agreement by the Technical Task Force and both versions are presented for the conferees consideration:

Re: Houston Lighting & Power Cedar Bayou Powerplant -

(a) Texas Water Quality Board recommendation. The once-through cooling system, with discharge to Trinity Bay, proposed for the Cedar Bayou plant shall be carefully monitored to determine

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whether irreparable damage to aquatic life is occurring and/or water quality is being deleteriously affected. If such effects are shown, Houston Lighting & Power Company will take immediate steps to correct the situation.

(b) Environmental Protection Agency recommendation. No discharge of cooling water from the Cedar Bayou plant to Trinity Bay shall be permitted. The Houston Lighting & Power Company shall be required to abate the waste heat load by incorporation of a system utilizing recirculation and reuse of cooling water to Tabbs Bay and adjacent waters or location of additional units at suitable alternative sites.

That is the end of my recommendations, Mr. Stein.

MR. STEIN: Thank you.

Are there any questions or comments?

MR. YANTIS: Mr. Chairman, the comments that I would make on No. 10 are rather basic to our Houston

proceeding and would be, of course, I think quite long.

We had in the original series of recommendations, No. 4, which talks about a joint study, as it will turn out to be, of the Galveston Bay system with recommendations as to corrective actions, and so on, to be made within the end of 6 months.

No. 5, the Texas Water Quality Board will continue its review of each waste source and will amend those permits as necessary to insure the best reasonable available treatment, especially with regard to oil and grease, and again a progress report will be submitted in six months.

No. 6, the ongoing review and amendment by the Texas Water Quality Board of existing permits recognizes that greater reductions than have been made will undoubtedly need to be made in the future, and we point out the reduction that has been made up to this point. We also have pointed out that we do not propose dilution in lieu of treatment and a report will be made in 6 months.

No. 7 has to do primarily with the sludges on the channel in the channel bottom.

No. 9 has to do primarily with the color. It

also says a report in 6 months.

Then we come to 10 as it has been altered, and it seems to be out of keeping with those that I just mentioned.

Now, the way we had it, we agree that to meet official water quality standards for dissolved oxygen in the Houston Ship Channel we think, and that is my word, that the waste load which the channel can accept without harm is about 35,000 pounds of BOD, 5-day BOD. This is purely a guess based upon some computer work and some thinking, but there is nothing about it that is so solid as to use it as a firm design basis.

I think there is no need to use it as a firm design basis. The number which the channel can accept might well be 60, it might well be 10, but looking at the history of the channel a long, long time ago, it has probably had far greater than 35,000 pounds per day of 5-day BOD back in the days when people thought the channel was in quite good condition.

So I would like to point out the uncertainties involved in the 35,000 pounds of BOD per day, plus the error that is implicit in trying to use that to the exclusion of some other things. I cannot say that we

have excluded other things, but our thinking is projected as though we did.

And Mr. Gallagher sitting here in front of me in the red shirt is quoted in the paper, in Mr. Harold Scarlett's article--

MR. STEIN: Does the red shirt have anything to do with Mr. Scarlett?

MR. YANTIS: Yes. When I cut his throat, the blood won't show. (Laughter.)

Mr. Gallagher said the restudy confirmed a State contention that the total BOD, meaning biochemical oxygen demand, load going into the ship channel had been greatly reduced since 1968. But the other parameters are still quite excessive, and these are the ones we feel will have the most effect on Galveston Bay and its shellfish. He listed the other parameters as chemical oxygen demand, suspended solids, oil and hydrocarbons, organic content and heavy metals.

Well, I think that BOD is sufficiently unknown, sufficiently imprecise, and the response of the channel is not accurately computed, that to lock in on 35,000 pounds of BOD as a firm design parameter is a mistake. I also think that we are not in a position yet intelligently to

allocate the pounds of BOD which can be discharged among the various industries on this precise a basis, and I would include that among the cities. We do not yet know the position of the Gulf Coast Waste Disposal Authority; we do not yet know the names and locations of industries not even existing now; we do not know the purchases back and forth among industries which may be on the channel. I think it is a little bit like Pandora's box.

I don't believe that we are prepared, that anyone is prepared, to lock in the amount of waste discharge that each source along the channel can have, not even the 15 largest sources, and say there can be no more. I think it is leading to a mistake.

It also will lead to some very significant legal complications. There was an attempt to introduce legislation into the State legislature roughly three years back which would clarify this problem by legislation. The legislation didn't even get through its first sponsor because of the number of problems that it would raise.

So I think that the accomplishment of reducing the waste load going into the channel measured in terms of BOD--which is itself not really a proper method of

measuring ordinary industrial waste but it is one of the methods which we have--but we have reduced it from over 400,000 pounds per day to less than 100,000 or to about 100,000, due to construction of treatment plants either under way or proposed, coupled with plant improvements. And remember that the reduction which we had noted, and to which you have agreed, is in the face of population growth and in the face of industrial growth. We have brought it down to about 100,000 or less. It will probably come down on the momentum of the program presently going to somewhere between 50,000 and 80,000 pounds of BOD per day--I have not run a calculation out on the figure--within the next year or two years. To try to put a firm BOD value on the channel limit at this time I feel negates the consideration of the progress that has been made, the advice that may come from the Galveston Bay study, and I think it gives an unreal sense of understanding of the entire process which is simply not in existence.

So I would like to suggest that we go back to the discussion that took place within the last few hours or even few days and suggest that we delete the 35,000 pounds as an absolute goal or guide and simply agree that we will mutually review all the waste discharge

permits and as a continuation of the program already in force make the best judgments we can make until we are in a position to make better judgments. To proceed as though we could make these good judgments when we in fact cannot, I think, does the public a disservice and industry a disservice. And I think is not really complimentary of any of us who want to do that kind of an undertaking.

But anyhow, I could go on further. I think it is unnecessary. But I would suggest that we go back to the thing that can be done which has accomplished good, which will accomplish more good, and review these permits, waste discharge orders, without a limitation, as is proposed in the rewritten document.

I would like to suggest one problem which has been brought out here. It is about our communications with your Dallas office, with your Washington office. We were assured that no new material would be proposed today or if it were to be proposed we would be told. It has been proposed, we were not told, and this gives us a real problem in responding quickly to things that come up. A number of the documents that are here today have not ever been seen by anybody until today, and I do not

think that is a proper way for EPA to go about its business, but apparently EPA does think so. But you have to understand the handicap that it puts on us.

MR. STEIN: Van, do you want to comment?

MR. VANDERHOOF: I sure do.

Mr. Yantis, I understood that you partially wrote No. 10 in Denver and you specifically agreed to a 35,000 pounds limitation in the Houston Ship Channel. It appears to me that we have to have a point of beginning.

Now, you have studied the Houston Ship Channel for many years. You have a fine professor, Roy Hann, whom I saw around here not too long ago, who made a good study. He concurs that 35,000 pounds per day of 5-day BOD is a good objective, an immediate objective. I can't see why an action program can't be based upon this

If it can't be based upon some finite number, we will get nowhere, we will never achieve the water quality standards that Texas has pledged to achieve, and I submit that we must start somewhere. Let's start with that 35,000.

MR. YANTIS: Mr. Chairman, we brought the standards down--I mean the actual measured BOD down from

over 400,000 to less than 100,000 without that particular goal being fixed in concrete. I would point out that a great number of these BOD's in the outer reaches don't ever get down there in the first place. So the real load reaching the Ship Channel is even less than has been projected.

My only objection is the language selected. I do not think that a flexible goal, a guide to your thinking, should be couched in the language in which I read no flexibility, that says as follows: "The total allocated waste load for all sources on the Houston Ship Channel shall not exceed 35,000 pounds per day."

I do not see any flexibility, any recognition that this number might be wrong. If you will reinsert that we will use this as a guide to our thinking but that we are not locked in on it, then I will agree to it. If you leave it as it is, I will oppose it.

MR. STEIN: Let me try this.

I am reading from the statement of the Federal-State Technical Task Force. This is one document I had in advance and I thought that at least the Federal-State technical people were in agreement on it. This reads, and I took the pertinent sentence, it is very small:

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> To meet present official State-Federal water quality standards established for dissolved oxygen in the Houston Ship Channel, it is expected that the maximum waste load discharged from all sources will be about 35,000 pounds of 5-day BOD.

Now, as far as I understand it, both the State and the Federal technical staffs agreed on that statement in the task force and in the committee. I think this is significant. Let me parse this a little--I hope I won't overdo this--as a passage from the Good Book or something:

"To meet present official State-Federal water quality standards." That means the State has approved these standards, the Federal Government has approved these standards. Both the State and Federal people believe that about, and I agree possibly with Mr. Yantis, that about 35,000 pounds of BOD including future projected development--there you go, and presumably the technical people have taken that into account--will have to be considered.

Now, let us assume that it may take a year or may take two years or may take less for this 35,000 to

be adjusted if it is going to be adjusted, and I don't know one way or another if it is right. But if we are going to embark on a program immediately to worry about or expect to tell an industry or a city what kind of waste reduction they are going to get or to start planning for next month or the month after that, what number are we going to use if we don't use this which I thought was the one selected by the State and Federal people?

Conceivably, certainly, according to your point, this must be adjusted later, but this may be, if you are talking about a study, a year or two years away. The suggestion is that we are going to be in a difficult situation in assigning an allocable figure of discharge or approving a permit for any individual source unless we know what number we are shooting at tomorrow.

And I would like to have some kind of judgment on it, because I don't think you fellows are far apart.

MR. YANTIS: Mr. Chairman, let me read what was written previously, to which I do give my whole-hearted endorsement. Now, please understand, and the lau. down here in the red coat--and I have nothing to go on for red just because Gallagher's shirt is red and her coat is red--she was asking some questions about water

quality standards and how did we know they were the right standards and how did we know they shouldn't be different. Contrary to what one of the Federal people was telling her a while ago, we have been specifically instructed that the Federal funds available under Section 3(c) cannot be used to determine whether the water quality standards should be altered, whether they should be changed. We have been told they can be used only to develop an enforcement scheme for the water quality standards that have been set. I hope I am wrong, but that is what we have been told.

Now, since I helped set the water quality standards, I helped write them, I reviewed the data that went into them, I am rather familiar with the data that did not go into them, the things that were not known, the guesses that were made, the number of public hearings to which the public did not come, I am familiar with all of these things, and since in a sense I wrote them, I fail to find any basis right now for the Federal Government thinking I know nothing about them. I think that I do.

But we set these by arbitrary decision, by guess, by judgment. They are pretty good, but they are not perfect. And we brought this out at the June session

very vigorously. It is just as valid to look at the water quality standards and see if they are wrong as it is to work out a procedure for meeting them no matter what the cost.

Now, we did say to meet the present water quality standards established for dissolved oxygen in the Houston Ship Channel--and let me point out that our original goal, no matter what it says now, and I know what it says--but our goal was to avoid septic conditions in the channel, which means dissolved oxygen at any level.

We started out with a half and we tried on one and we argued, negotiated--no science; negotiation--with the Federal representative of the FWQA at that time. And he in a sense insisted on 2 because fish would live at 2. But there is nothing that says it is right, nothing says it is wrong. It is just a number picked out of the air.

But it is the number that goes into the computer when you try to come up with 35,000 pounds of BOD. If I put 1 in there instead of 2, no one in this room would ever know the difference, but the computer would come up with a totally different answer on the pounds of BOD the channel can take. If we put 4 or 5 or 6 in the computer, a good high dissolved oxygen level, the

computer would probably tell you that the city of Houston and the industry in this area could not even exist and have any kind of a discharge at all.

The entire transaction we are talking about here is sensitive to the dissolved oxygen level that has been picked and the one that is picked is a guess, though it is probably a pretty decent guess. But there is nothing sacred about it.

But to meet this level, it is expected--now, to me the word "expected" does not read the same as "shall not exceed"; I do not equate those terms as synonyms--it is expected that the maximum waste load discharged from all sources will be about 35,000 pounds of 5-day BOD, including future development.

At this point we have agreed upon a guess. We think we are in the right ball park and it is a pretty rigorous ball park, I will tell you.

Studies scheduled for completion in 1973, and from here on please keep this in mind, the Texas view is that as soon as we know what should be done we will do it. We interpret the Federal view as you do it whether you know what you are doing or not, and I do not buy that philosophy. Studies scheduled for completion in 1973.

That is only two years away, roughly, and the Ship Channel has been there for 70 years, so it is not like it was just invented yesterday. These studies will provide the basic mechanics necessary to achieve maximum water quality in the Houston Ship Channel.

We do want to clean up the Houston Ship Channel and we want to do it intelligently and properly and economically, and we think that we need to know more than we now know to do it. Therefore, we have the Galveston Bay study. I wonder why the Federal Government put some money into it if they didn't believe in it.

Between now and the completion of the study, this is only two years. Now, remember in the past three years roughly, maybe four, we have cut the BOD--and there are other parameters that are just as important--we have cut the BOD to one-fourth of what it was before. No one challenges that. And it will be cut further in the next year or two without any action by the Federal Government whatsoever because of the actions that we have already taken or will take.

So it is not like we are about to walk off of a precipice. There is already a direction established, waste treatment facilities being built by cities and

industries. We are going to get considerably below this 100,000 level where we are now. But studies scheduled for completion in 1973 will provide the basic mechanics for how to go about doing it right.

Between now and the completion of the study the Texas Water Quality Board will continue the program of waste reduction described in Recommendation No. 6. Now, I read you No. 6, which simply says that we will continue to review and amend the existing permits in order to improve the quality of waste being discharged.

We will continue that, and we do not have to have an absolute locked-in goal in order to do it. We will continue this as described in Recommendation No. 6. Upon completion of the study, determine--and that is just 1973, though which end of 1973 I don't know at the moment--upon completion of the study, determination will be made by the Texas Water Quality Board upon further measures, if necessary, beyond its ongoing program to insure adequate water quality in the Houston Ship Channel.

And there are many, many things that must be considered. There is diversion, there is water reuse, there is additional treatment. It is mentioned somewhere else there are such things as in-stream aeration. There

are a lot of things that we ought to take a look at. And we have spent considerably over several million dollars to try to find out these answers.

Two years to go and we will know a lot more than we know now. Can anyone please tell me what is so urgent that we have got to do it next month when we don't know how?

MR. STEIN: Do you want to reply to that--

MR. VANDERHOOF: Surely.

MR. STEIN: --or shall I? Go ahead.

MR. VANDERHOOF: Go ahead.

MR. STEIN: Well, I have a problem here.

What you said, and I think to put it really firm, if you put it in the computer and you put 1 part of dissolved oxygen or 2, no one in this room would know the difference. That is true. But the fish would know the difference.

MR. YANTIS: Not the fish in the Houston Ship Channel. (Laughter.)

MR. STEIN: Sure would, if there are fish. Now, we have had standards in the waters of the United States and here is what we are talking about in a lot of the States, whether we are going to have 4 parts or 5

ppm. When we get down to 2 we generally find we have septic conditions and all--euphemistically called an industrial stream. An industrial stream is just another euphemism for a polluted stream.

Now, if we are talking just about maintaining 2--there aren't many places that have 2; maybe the Mobile River in Alabama, or below 2 in the Arthur Kill, between Staten Island and New Jersey; below 2 somewhere in the Delaware River around Chester--there are not too many places in the country that are down to 2.

You fellows are going to have to decide this, but the problem that I have here, if we are going to argue whether we are going to come to the objective of 2 and that if we go to 35,000 that you have computed and you might exceed 2, I suggest that possibly the world wouldn't come to the end if there is more than 2 parts of dissolved oxygen in the Houston Ship Channel when we are talking about 4 and 5 and 6 and 7 for desirable oxygen levels for fish.

MR. YANTIS: Mr. Chairman, if you will look at the water quality standards, they recognized that there was a time when Buffalo Bayou was a bayou, it was not a

Ship Channel. It was a typical southern United States bayou subject to the ebb and flow of the tide, subject to rainfall, subject to mud, subject to everything you can think of. I was raised in the coastal area of Texas, and I know what I am talking about. Then somewhere around the year 1900 it was dredged to be a ship channel. From and after that date the city of Houston began to grow.

But this is not a recreational body of water, it never was; it was never intended to be--except down around Baytown there are some waters around the edge, some of the little bays, where people have built their homes. And upon one of these bays I used to live myself, so I do know that area. Those people in those edgewaters have a right to good water quality.

But this is not a fisheries resource. It is only supposed not to injure Galveston Bay. It has injured Galveston Bay in the past, we know this. But there is no basis for any claim that within the next 20 years the Houston Ship Channel needs 5 or 6 ppm of dissolved oxygen. It is simply a waste of a resource. It is like buying more pair of shoes than you need when you don't even have pants.

MR. VANDERHOOF: Mr. Yantis--

MR. YANTIS: There is simply no basis for trying to produce in the channel some things which aren't germane to the channel which are not recognized in law at this present time.

Go ahead.

MR. STEIN: Go on.

MR. VANDERHOOF: Mr. Yantis, the Federal Government has never asked for 5 or 6 ppm in the Houston Ship Channel. We are asking for protection of the bay area, the oyster-producing area.

Now, you are asking us to wait 2 years for the results of a study, yet your own study shows that 35,000 pounds per day right now is a reasonable number to shoot for within the channel. Now, if you ask us to wait for 2 years and then maybe not like those answers, we will never get started.

MR. YANTIS: Mr. Chairman, I would like to ask if most of you would like to quit college at the end of your sophomore year just because you don't have time to graduate. I think we are talking about the same thing.

We began the Galveston Bay study cooperatively with the Federal Government of the United States, and the

fact that we had a different administration then than we have now is not important. The fact that it was in the Department of the Interior then and is not now, that is not important. But here you are in effect saying, although we approved a Galveston Bay study, although we believed you needed the additional knowledge that it would propose, if we believed you needed the planning that it would produce, you are saying that you now think that you were wrong and that you should proceed without this extra knowledge. I simply cannot conceive of anyone who feels that there is such a panic abroad that we have to proceed before we know what we are doing.

We have already brought the channel down to manageable proportions. It will come down much further in the next two years. We have already eliminated primarily, from at least the effluents, the heavy metals that we were concerned about. We are eliminating the suspended solids. There is no reason to believe that these things will not be carried further.

And I think, going back to Mr. Gallagher's remarks as quoted in the paper, that we are getting so locked in on BOD that we are forgetting essentially what we are trying to do, which is to put the channel into

pretty good shape by the most intelligent method we can at a time frame that is reasonable and which does protect the public as far as the public needs protecting.

MR. STEIN: Are there any other comments?

MR. VANDERHOOF: Of course. (Laughter.) To me it is unbelievable the way words are twisted. The Federal Government greatly endorses the Galveston Bay study. We need to know the stresses upon that bay. We strongly suspect that bay is near the breaking point, and we want to know what is a proper number for the bay.

We believed and we understood that a number has already been developed for the Ship Channel. I can't see why these two things can't go hand in hand. We now know the channel number. Let's proceed with it. The next logical method, order of business, is to proceed with the reduction of other loads to the Galveston Bay system.

MR. YANTIS: Mr. Chairman, if the language which I had written originally out in Denver does project that 35,000 pounds of BOD per day is a usable but not accurate design goal and that we should continue the program that we have until we know better, and if this says about what is said in the new statement which I saw this morning for the first time, why don't we simply go

back to the one we wrote in Denver? It did seem to have quite a bit of support among the technical people that knew what they were doing at that particular point. What about it is all at once so bad that somebody not technically competent should simply throw it out in Washington?

MR. STEIN: I don't know that it is technically bad, but let's see if I understand it.

You had a statement in Denver that said, it is expected the maximum waste load from all sources will be about 35,000 pounds of 5-day BOD, and we are going to have a study for completion in 1973 which may give us some more information. O. K. You have got permits coming in every day. We are going to have to have Federal permits.

Until the score is in on the 1973, what number do you use or how do you make an allocation for the day-to-day decisions? Is it your suggestion, Mr. Yantis, that we use the maximum waste load from all sources, about 35,000 pounds a day, since this is the best judgment we have now?

MR.YANTIS: No, Mr. Chairman. We know on the basis of what we measured in the channel and the rate of

industrial growth which is taking place, and it is not as though you had two brand-new major industries created every day along the channel. Houston is simply not that lucky. They wish they were, I am sure.

We know that the population growth, the industrial growth, if we shoot for BOD levels in the various effluents, plus the removal of the toxins and things like that of numbers between 20 and 50, in this general range, we know that the load on the channel will continue to come down, the channel will continue to improve, and probably just about as fast as if you said right now that you have got to shoot for a BOD of 10. It still takes time to design these things, to buy the equipment, to let the Gulf Coast Waste Disposal Authority make its negotiations among industries, and so on.

You are not really wasting any time while you do it this way. The essential difference is that I say we will continue as we are, which has proved successful. And as soon as we learn, in about two more years, what we ought to do, then we will go do it. And you are saying, don't wait to learn it, go do it now anyhow.

MR. STEIN: No, I'm not saying--

MR. VANDERHOOF: You have already learned it.

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MR. STEIN: I am not saying don't wait to learn it, because I rely on the technical people. You say the maximum waste load discharged from all sources will be about 35,000. Then what I am saying, if this is the best information I have--and this is from the State people and our Federal people--this seems to be the judgment we are going to make.

The only thing I have to say about this is what the devil are we going to get for that 35,000, a miserable 2 ppm of oxygen, which is just above nuisance level? And that isn't very, very much you are asking for.

If you are scraping the minimum that you are going for, it wouldn't be so terrible, it seems to me, if you went a little above it if you were wrong. But the problem that I have with this--and I just put this to you because I am really groping and trying to look at this.

Let us suppose you have cities and 15 or 20 large industries coming in on a permit. What other figure, other than the 35,000--which I didn't produce, which you people did produce--do we have to look at to see if those permits are anywhere within the ball park? And I really put that to you. This isn't a legal judgment.

this is a technical judgment you have made.

MR. VANDERHOOF: May I speak to that, Mr. Stein?

MR. STEIN: Yes, sure.

MR. VANDERHOOF: Mr. Yantis, if Texas was truly hurting, I think we would be sympathetic. But I quote you one example of where you can reduce immediately 37,000 pounds of 5-day BOD, and I submit that is significant.

You have two plants in the Houston area, the two Houston plants. They now have a permit for around 39,600 pounds. That load can be reduced to 2,100 pounds per day at a cost of between 2 and 3 cents per person per day. Now, I submit this isn't unreasonable, it can be done.

Similarly, I would think if you would examine every industrial permit--we know there is treatment for everything--as critically as the municipalities, I submit you would come mighty close to the 35,000 immediately.

MR. YANTIS: I think we probably would, too, and this is what I think I have been saying to you. But we don't have to have the 35,000 as a locked-in goal with the words "shall not exceed" set down there in our delightful little flexible guide.

MR. STEIN: Again I think you are very close together. If this is what you both mean, then I think the question here that I see is in developing a formula that should get you together.

Here is the problem, and I hope we are not going to be hoisted by a bureaucratic petard here. If the best estimate of both the Federal people and the State people is that it will be about 35,000 pounds a day and they both come back to that, then the question is, one, are we going to set it in concrete or are we going to be able to adjust it if new information comes up? Secondly, what are we going to do in the interim until we get these figures? From an administrative and bureaucratic standpoint we can't solve that problem. If we are agreed on the basic information we have now, I think the defect is not going to be because of the lack of information, but it is going to be because somehow our governmental and administrative processes failed, and I can't believe we are going to do it.

MR. YANTIS: Mr. Chairman, what we would be doing, this says, you take the 15 largest sources and reallocate among them without regard to any lawsuits that may occur between them how much of this resource

they can have, and then all other sources will be allocated the rest of it. There is no provision made for the industry that is not even there now. What does he do? Or the city that might need to build a new plant.

MR. STEIN: Is that a question?

MR. YANTIS: That is what it says here.

MR. STEIN: If you are asking me that question, I think this is the kind of problem we have in every place in the United States now--

MR. YANTIS: Mr. Chairman, we have--

MR. STEIN: --it is a growing economy. Now, the point is when you ask for population growth or an industry that isn't there, it seems to me that where we have water quality standards and loads, you set aside a cushion for growth and you don't let people come up to the maximum. Now, State after State and city after city has done this, and I guess whatever we decide, we are going to have to do that because we are not going to put a clamp on either population or industrial growth in the Houston area, I hope not.

MR. YANTIS: Mr. Chairman, we have got waste treatment facilities under construction, I am sure we do, I couldn't tell you which names, that are not even

finished yet. Are you saying that, as this would imply, since they were not designed on any 35,000 pounds of BOD limit, that those facilities under construction should be redesigned and rebuilt on the basis of an entirely new set of rules? This is where we are going if we follow this--

MR. STEIN: No, I don't think so.

MR. VANDERHOOF: Let me talk to that just a minute.

It is in the nature of the water pollution control facilities that you can use add-on. If they designed not to meet their allocation, add-ons can be placed on that at the end of that plan. Now, this is quite a different situation in air pollution. Fortunately in water pollution I think you don't have a problem.

MR. STEIN: Well, again I think--I hope you people are reasonably close together--that this should be put on.

In answer to your question, no. By the way, I think you people should decide this. But I am not saying this at all. What I hope we can come up with is that it would be the responsibility--if we are dealing

with water quality standards--of the State and the Federal Government to arrive at what kind of standards and an implementation plan which would indicate what kind of loading--and I don't want to define this as to BOD--would meet the standards. The allocation of these loads among the various cities and industries, it seems to me at any rate, should be the prerogative of the State of Texas or any State and it is only--

MR. YANTIS: Mr. Chairman, do you want to decide how much goes to Houston and how much goes to Pasadena and then run for public office in either city?

MR. STEIN: Well, sir, this is the problem that we have had, and I very well understand what you are saying, Mr. Yantis. I think our charm is that we are not running for public office. I think with the job that we have, if either of us were running for public office, we couldn't get elected to the lowest one because we are not very popular.

But the point is, when you talk about Federal enforcement, this in large measure is why we are here. Because the State people--if you raise this question how can we make this judgment and really survive and run for public office--if the State doesn't do this the way the

Congress has passed the law, we have a Federal responsibility and we are going to have to do it. I am going to tell you, I have no ambitions to run for public office, and if I did they would be smashed after my first case.

MR. VANDERHOOF: Mr. Stein, I can only concur. (Laughter.)

MR. YANTIS: I still say--and then if you wish we can go on to the next one--to operate on the basis of a design parameter at this point in advance of the effective guidance of the Galveston Bay study is an untenable process. And I think that the No. 10, as it is now numbered, as it was originally written gave us the freedom and the obligation to continue the program which is effectively in process and which has done a great deal of good. And as soon as the Galveston Bay study makes its final report we are committed to those things then shown to be necessary for further regulation. I think that is the basis that we should follow.

MR. VANDERHOOF: Mr. Yantis, it is my understanding that a portion of the Galveston Bay report on the channel has been completed. It has been completed for over a year now. You know what those numbers are, or reasonably close, and I can't see one reason for waiting

another 2 years to get a number that you might not believe. I think we have got to go on the 35,000 now.

MR. YANTIS: Well, I vote no, Mr. Chairman.

MR. STEIN: All right.

Do you want to continue this?

Again I would like to say for the people here that there are 11 operations, 11 suggestions, because on the eleventh with the power company there was disagreement. I think we have substantial agreement on 9, and we are just running into a problem on one other. I don't want to put batting averages out, but this is--maybe this isn't as bad as it looks.

MR. YANTIS: Mr. Chairman, I would like to point out that this hearing was held in June, we were in Denver working on this about two months ago, and only this morning did I know that there was going to be any change proposed whatever. This is not the way to resolve the problem.

MR. VANDERHOOF: I don't think this number has been changed a bit. It is a question of when to apply it and how much. I don't think anything has been changed, Hugh. Again you are twisting words.

MR. STEIN: All right, are we set? Do you have

any more to put in?

MR. VANDERHOOF: No, sir, I have No. 11 which I read, and this addresses itself to best available treatment practices and, again, allowable loads. Perhaps in this instance I would yield to Hugh, on the 2-year delay on the Galveston Bay study, because here, for those loads that are discharged into the bay proper, Hugh has a point on waiting for the Galveston Bay study. But the point is not so bad that we can't go to best available treatment right now and then adjust later with the results of Galveston Bay.

MR. STEIN: Is there any other comment?

MR. YANTIS: Whenever you say best available treatment with no definition you open that Pandora's Box again. Does this mean conventional treatment as is ordinarily built? Does it mean conventional treatment with a chemical precipitation added onto it as we have projected in Clear Lake? Does it mean a new series of construction of what you would truly call tertiary treatment? You can go on to such things as a reverse osmosis, activated carbon filtration, and actually produce drinking water. I admit that we don't have the laboratory tests to make sure whether the drinking water

you produced was really good. If you would add after the best available treatment practices "reasonably shown to be necessary" then I will agree.

MR. STEIN: How about--

MR. YANTIS: Except that I would have to talk to my staff about that date.

MR. STEIN: Yes, I was just suggesting that. Let's say treatment to meet applicable water quality standards or requirements instead of best available, what do you think of that?

MR. YANTIS: All right.

MR. STEIN: And then the date is a matter for the technical people. I believe we can get together on that, don't you?

MR. VANDERHOOF: Yes, that is reasonable.

MR. STEIN: So really, except for this, there is one area of disagreement. Again I would put this to the State of Texas people. I understand what you are saying. But the problem, I think, we are going to have is how do we begin operating the program and processing permits and evaluating what people are doing after we adjourn the conference and go on? Do we have a method of doing that for the next two years before the study is

completed?

And I am not necessarily asking for an answer now. I am just posing that as the problem that we have to face and I am trying to look for a solution.

MR. YANTIS: There is no problem. We have a monthly two-day board meeting to which your people are always invited and any problem can be discussed, anything that you would ask about can be raised. We have public hearings through an examiner system many times a month. Your people always have free access to our office with no limitation.

There is simply no problem for your people to monitor what we do. That is considerably less of a problem than for us to monitor in the field what has actually happened.

MR. STEIN: Mr. Yantis, let me try to put this, and I hoped I wouldn't have to go through this dismal litany again but I heard it just before lunch.

What happens if you don't have a figure or an objective or a criteria or a goal is, after they listen to you and you put in a piece of paper, someone comes around and says that the piece of paper is languishing for eight months because some people are saying 12-12-1-1 and other

people are saying 5-5-1-1.

Now, the point is, I think, if you give me--and I have no brief for 35,000--but if you give me any other figure, I think I can do the mathematics and know which way you are coming up. But if you don't have the figure, I would hope that we don't get into these interminable wrangles where we are going to have a field day for the bureaucrats, on whatever level, and then not get the water cleaned up.

MR. YANTIS: Mr.Chairman, let me remind you and many of the public, in December 1965, a good many years before EPA was ever heard of, the Texas Water Pollution Control Board, the predecessor to the Texas Water Quality Board, enacted an order setting forth the then adopted goals for water quality in the Houston Ship Channel and effluent qualities by industry for discharge into those same bodies of water. Are you now saying that the agency which nearly six years ago set forth a planned approach to improving the Houston Ship Channel is incapable for the next two years of continuing a rational approach to carry us to the end of the Galveston Bay study?

MR. STEIN: No, I am not--

MR. YANTIS: It sure sounds like it to me.

MR. STEIN: No, I am not saying that at all. I am saying that the agency which set these standards and had them adopted by the Federal Government had a really rational approach. Now, the technical people from that agency have come up with the best estimate of 35,000 pounds to meet those standards. Following this to its logical conclusion, what is wrong with following that arithmetic out and checking it out for the next two years until some more information comes in on which you may or may not want to base a change? The chances are you may not want to change it from what I said.

Mr. Yantis, I am not only conceding but saying that Texas has done a great job in setting the standards. What we are doing is following the arithmetic back to what the loadings have to be to meet the standards, and then following that arithmetic back still further and asking you to work with us on that and what each individual source has to do to meet that loading. These are your figures, because I can't nearly supply the figures. You people have done this, not me. I don't know about these technical people.

And what I am saying, and I hope I am saying, is let's embrace the standards that the Texas Water Quality Board has adopted and which have been approved by the Federal Government. Let's do the necessary computations and get on with the job tomorrow.

MR. VANDERHOOF: I would concur, and let's meet the water quality standards as agreed to by December 31, 1972.

MR. STEIN: All right. Well, are there any other comments on that?

Do you want to put any more State people on?

MR.YANTIS: No, I didn't propose to put on any testimony at all.

MR. STEIN: Right.

MR. YANTIS: But I would point out that if we want to follow the computer blindly and unthinkingly without checking some of the things that it says, that there is an unpleasant surprise in store for the people of Houston. Our computer tells us that practically every neighborhood treatment plant in Houston is going to have to get down to tertiary treatment instead of secondary treatment. And I am not at all sure that the proper way to accomplish on an areawide basis a major cleanup of an

area is to simply spring by surprise the fact that my computer tells me something or other which you never knew before. The computer could be wrong. The public when it looks at all its options may vote for a little bit slower approach to the problem.

But I just would like to restate that the man that runs the computer is supposed to be the boss of it and not the other way around.

MR. VANDERHOOF: I would suggest, Mr. Yantis, that you are the one who will put input. You remember, there is a saying in computer language, GIGO, garbage in garbage out. Now, it is up to you--

MR. STEIN: Well, the way we do it, garbage in clean effluent out. (Laughter and applause.)

MR. VANDERHOOF: The way to do it is to critically examine these permits, and I don't say you have to put this into the computer. Let us critically examine each permit to see what can realistically be done with the best available treatment.

I know and you may know that every waste except brines has a way of treatment, it can be treated. There is no longer any mystery about treatment of industrial wastes. Sure, some are more difficult than others. They

all don't respond to the same method. But they can be treated.

And, therefore, let us examine the permits and see what can be done. At that time then, if you wish, put it into your computer and see what the number comes out.

MR. YANTIS: Mr. Chairman, we have proposed that, we are quite willing to do that. We simply do not wish to have a mandatory 35,000 pounds of BOD limitation placed upon us at this time. We have said that we think that is about right. We have not said, though, that it is legally right.

So if you will take the mandatory provisions out of that 35,000 pounds of BOD per day and take out the numbers of how many larger sources that we shall revise the permits because we would like to revise all of them, I think if you will agree to those you are in effect already back to what we have proposed to begin with. But I think you have too much detail in something here.

MR. STEIN: Let me just ask the question, there is no argument about this December 1974 date, is there?

MR. YANTIS: You are talking about Clear Lake?

MR. STEIN: No, no.

MR. YANTIS: That is the only place it appears.

MR. STEIN: No, No. 10. I just want to know what the issues are. (Laughter.)

MR. YANTIS: All right, the issues are that instead of reviewing 15 largest sources by March 1972 and all the rest of them by June 1972 that we go back to what we originally proposed by saying that as rapidly as we can, and jointly with you, we will review all of them on the basis of the best available information but without looking at the 35,000 pounds of BOD per day as an exactly correct figure such that the words "shall not exceed" will not be the guideline which we follow.

MR. STEIN: I understand what you said there. I am referring to the last sentence. You talked about the remedial program and the schedules will include interim dates requiring all facilities to be completed not later than December 1974. Is that acceptable?

MR. YANTIS: No, it is not. I doubt very seriously if a major facility could be designed and the equipment bought, in some cases land bought, and actually finished by a 3-year period. It might be amenable, but you can't be sure. There would have to be some provision for extending the time where reasonably necessary.

MR. STEIN: In other words, you agree with the proposal, but the limitations that you have are you don't agree with the pounds that the Federal proposal wants you to get down, you don't agree with the time you can review the proposal and the interim dates, and you don't agree with the final completion date, but otherwise you are in agreement, right?

MR. YANTIS: Yes.

MR. STEIN: All right. (Laughter.) I understand you.

Are there any other comments or questions?

MR. VANDERHOOF: Yes. I would like to ask Mr. Yantis how many new permits he has issued on the Houston Ship Channel since June 1971?

MR. YANTIS: I have no idea, but I can count them if you would like.

MR. VANDERHOOF: Do I understand you have submitted or have agreed to some new loads on the already overloaded channel?

MR. YANTIS: You know, you say that as though the channel loading had not been reduced in the past three years, and I have said any number of times that we have reduced the loading on the channel in the face of

industrial and population growth.

MR. VANDERHOOF: I don't see how you can reduce and increase at the same time. It seems to me you have to have a plan.

MR. YANTIS: Mr. Chairman, do you really want to pursue this line of discussion?

MR. STEIN: No, I don't, but I don't want to cut anyone off. (Laughter.) I didn't hear any answer. The question--

MR. YANTIS: All right, the channel is overloaded--

MR. STEIN: No, that wasn't the question.

MR. YANTIS: If I followed Mr. Vanderhoof's line of thought, we would refuse to let a single new industry locate in Houston, and I think that would be criminal.

MR. VANDERHOOF: I would say you would give them some consideration to locating other than on the Ship Channel. There are certainly other areas in this vicinity.

MR. STEIN: Well, again I am--do you want to go on with this?

MR. VANDERHOOF: No, I just wanted to point

out that, gee, here we go, we don't know the number and we are still increasing it.

MR. YANTIS: Well, my arithmetic and his are not the same. I look at three years ago it was 400,000 pounds, today it is about 100,000 pounds and it is still going down, and Mr. Vanderhoof says we are increasing it. I can't debate with a man who thinks like that. (Laughter and applause.)

MR. STEIN: Are there any other comments or questions? (Laughter.)

After a short recess (laughter) we will call on witnesses, we will call on people from the audience who have indicated that they want to speak. We will take a 10-minute recess.

(RECESS)

MR. STEIN: Let's reconvene.

Keith Ozmore.

MR. YANTIS: Mr. Chairman, I did want to make a brief comment. It won't take but just a moment.

MR. STEIN: Yes.

MR. YANTIS: Most of what I have been saying is a little bit negative since I am trying to stop something bad instead of cause something good. I don't like to be

in that position.

We did speak, though, about Clear Lake and the fact that we have a disagreement as to what level of treatment should be provided for around Clear Lake.

We felt several months ago that we could resolve this if we simply had a better technical base for what Clear Lake needs. So we proposed to divert from the Galveston Bay study, which, remember, has a great deal of State funds in it, a full range of capability as far as could be spared to do some work on Clear Lake, which is, after all, within the Galveston Bay system. We would also divert from our own field staff and our staff in Austin some additional personnel to make a pretty decent study of Clear Lake, provided that the Federal Government would bring in from its own technical people in Dallas and Ada, Oklahoma, some personnel and perhaps laboratory facilities to help us do it. We thought that this would provide a technical basis for resolving the difference of opinion between the so-called 12 BOD and the 5 BOD.

We have never had a reply from the Federal Government yet as to whether they will join us in this study.

MR. VANDERHOOF: Mr. Yantis, I haven't seen that particular letter, but I will check into it immediately.

MR. STEIN: Mr. Keith Ozmore.

KEITH OZMORE, ENVIRONMENTAL ASSISTANT
TO THE HON. ROBERT C. ECKHARDT
U. S. HOUSE OF REPRESENTATIVES
WASHINGTON, D.C.

MR. OZMORE: Thank you, Mr. Chairman. Conferees.

I wanted to say that Congressman Eckhardt, I hope, will be here tomorrow. I will be in contact with him. If he is not here I expect that I will be prepared to present his statement for him.

The only other thing I would like to say, and I am sure I am speaking for the Congressman and his position, is that I would like to urge the conferees to consider that this conference hear citizens' groups before those of industry. Industry officials are paid, their public relations people are paid, their attorneys are paid, their chemists and physicists are paid. The people and citizens' groups here to testify, Mr. Chairman, are

not paid. They are taking time off from their jobs, their duties, they are losing money in many cases in order to be here to express a real earnest effort to clean up the environment in Texas, and I would respectfully request that this be considered.

Thank you. (Applause.)

MR. STEIN: Thank you, Mr. Ozmore.

Representative Rex Braun.

THE HONORABLE REX BRAUN
TEXAS HOUSE OF REPRESENTATIVES
HARRIS COUNTY, HOUSTON, TEXAS

REP. BRAUN: Mr. Chairman and conferees, I am State Representative Rex Braun. We have covered I guess, just about everything but the 14-14 tie on television last night and probably got just about as far.

I have a prepared statement I would like to read to you to be placed in the records.

This is one elected official who has served three terms in the Texas Legislature who has less confidence in the Texas Water Quality Board, less respect for any pretense it has for public interest, less tolerance for its hollow rhetoric and less patience with its

technocratic obscurantism, and less and less desire to cloud the issue by gentlemanly and restrained language than at any time in its sad and sorry history. A decent regard for the principles of candor in public life compels me to say that all of the recommendations made by the Texas Water Quality Board on the positions which the Environmental Protection Agency developed out of its enforcement conference here last June are designed to effectively gut meaningful antipollution action.

This is no bold, shoot-from-the-hip popoff statement by an isolated sorehead. Everybody in Texas who knows anything about the pollution of our waters knows that the Texas Water Quality Board is a high-class licensing agency for the industrial polluters. I say "high-class" only to describe the vocabulary and the rationalizations which accompany their pro-polluter stance.

Mr. Stein, you have only to read the attacks on the Environmental Protection Agency made by various members of the Texas Water Quality Board and its bureaucratic functionaries to appreciate the fact that the Water Quality Board is contemptuous of Federal law and of the supervisory and enforcement activities of the

technocratic obscurantism, and less and less desire to cloud the issue by gentlemanly and restrained language than at any time in its sad and sorry history. A decent regard for the principles of candor in public life compels me to say that all of the recommendations made by the Texas Water Quality Board on the positions which the Environmental Protection Agency developed out of its enforcement conference here last June are designed to effectively gut meaningful antipollution action.

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Mr. Stein, you have only to read the attacks on the Environmental Protection Agency made by various members of the Texas Water Quality Board and its bureaucratic functionaries to appreciate the fact that the Water Quality Board is contemptuous of Federal law and of the supervisory and enforcement activities of the

Federal Government.

On the other hand, I commend the Environmental Protection Agency for the splendid perspective and the totally realistic set of recommendations which came out of the June enforcement conference here in Houston. I am sorely disappointed at the signs that you have backtracked that you have given ground to the Water Quality Board, and that you have retreated from the tough proposals which you produced after the June conference.

And I would like to get down to specifics:

1) In the case of shellfish areas, you retreated from the information contained in your original report showing that the State of Texas had been sampling under conditions designed to paint a prettier picture than really exists.

2) In the area of disinfection of waste sources, the EPA called for effective disinfection of all waste sources contributing bacteriological pollution to the Galveston Bay System. The Water Quality Board proposed to continue its own policy, which is totally inadequate.

Hon. R. Braun

The Water Quality Board's position would limit effective disinfection to domestic waste sources contributing bacteriological pollution.

I hope that you of the EPA will stick by your guns. If you think that you can come up with a reasonable compromise on this, please think again. There is no reasonable compromise, only a sell-out of the public interest. The people of this area deserve the protection called for in your original position.

3) On regional planning for municipal waste collection, the EPA called for elimination of small plants, pretreatment of all industrial wastes, and centralization of treatment facilities. The EPA called for a total ban on toxic materials in the regional waste treatment system.

The public interest once again is clearly better served by adoption of the EPA position. The Texas Water Quality Board's record in this area simply provides no reason to even consider their views, much less adopt them.

4) On Review of Waste Discharge

Permits and on all the other specific proposals I concur in the excellent analysis prepared by Congressman Bob Eckhardt, which he will probably make available tomorrow, and I wholeheartedly join him in preferring the EPA position to the Water Quality Board's stand.

In short, my message to the Environmental Protection Agency is to be of stout heart. If I, as a member of the Texas House of Representatives who has been elected and twice reelected from the most heavily polluted industrial area in Texas, have nothing but contempt for the Texas Water Quality Board, and if I assure you that my constituents join me in that feeling of contempt, I see no reason why you should be compelled to regard the Texas Water Quality Board as a worthy partner in the fight against water pollution or as a public-spirited agency filled with expertise and eager to lock horns with the polluters.

I trust that the Environmental Protection Agency will have the fortitude and the intelligence and the public-spirited zeal to stand firm behind every one of the original recommendations which came out of the

June conference. Don't give an inch to the Texas Water Quality Board.

Yesterday's Wall Street Journal tells us that the EPA is capable of being tough on industrial polluters in Michigan, Wisconsin, and Minnesota. You told Reserve Mining Company, a joint venture of Armco Steel and Republic Steel, that it would have to spend $75 million to curb pollution on Lake Superior. In April of this year William Ruckelshaus served that company with a 180-day notice to halt its pollution of Lake Superior.

Well, I am here to urge Mr. Ruckelshaus and his agents to adopt a Southern Strategy. (Laughter.) We here in Texas want the same kind of tough and effective action that you ordered for Michigan, Wisconsin, and Minnesota. What's good for Armco Steel up there is certainly good for Texas here.

Gentlemen, I thank you and if you have any questions, I will try and answer them.

MR. STEIN: Thank you.

Any comments or questions?

Thank you. Some of the points have been taken care of, but Representative Braun, there was a time when Reserve Mining was before a conference like this too.

L. A. Greene, Jr.

REP. BRAUN: Yes, sir, this is what it is all about, and I hope that when it is all over with some of the industries here in this county will have to face you the same way they did and I hope you will take that tough action, Mr. Chairman.

Thank you very much.

MR. STEIN: Thank you. (Applause.)

L. A. Greene, Jr.

L. A. GREENE, JR.

VICE PRESIDENT

HELP ELIMINATE POLLUTION, INC.
HOUSTON, TEXAS

MR. GREENE: Mr. Stein, Mr. Vanderhoof, Mr. Yantis, ladies and gentlemen.

My name is L. A. Greene, Jr. I am a Vice President of Help Eliminate Pollution, Inc. About a month ago I publicly invited Mr. Yantis to join us in that ambition. We would like to repeat that request.

Mr. Stein, I do not have prepared remarks at this time written.

I really am at a complete loss at some of the things that have transpired at the head table in this afternoon session. I have somewhere a copy of the

newspaper report written by Mr. Jim Curran, who is in the audience. This report appeared in the Houston Chronicle on October 31, 1971, in reference to Galveston Bay study. I wish to read a part of that into the record.

> Thus far, he said, and this is quoting Colonel Frank Bender, the Project Director, the study group has concentrated on gathering data. He said the group hopes to complete a report on the immediate needs of the bay area by December. Bender's report says 50 dischargers, industrial and municipal, account for more than 90 percent of the total pollution load on the Galveston Bay system. The needs report, he said, will express in preliminary form the adjustments which must be made by the 50 dischargers in order to permit presently published State water standards to be met in each zone, including the Houston Ship Channel. Bender said he expects the entire bay study report to be completed in December--to be completed in 1973.

L. A. Greene, Jr.

I don't have a copy of that report. I wish I did. It seems to me, Mr. Chairman, that a number of Mr. Yantis' statements which he put forth as objections to the adoption of a maximum allowable 35,000 pounds of 5-day BOD must fall in light of the oft cited Galveston Bay report. I understand this to be accurate. Then by December of 1971 we will have the data, or at least certainly a part of it, that Mr. Yantis has repeatedly told us will not be ready for two years. Perhaps Mr. Yantis or Colonel Bender or others could shed some light on this.

Here is a copy of the article in its entirety.

I would also like to go into the issue of on what basis we came up with this 103,000 BOD figure. I have here an article from Water and Sewage Works Magazine, which is published by Dr. Roy W. Hann, Jr., who was in the audience earlier. I don't know if Dr. Hann is still here or not. I would like to read, Mr. Chairman, a portion of this article, and I would point out that Dr. Hann's studies are financed by Federal funds and by State funds and that as far as I have been able to determine he has the most data on the channel available of any group that I know of, and his position has been respected by

many, many people, State and Federal, and he seems to be the most impartial and objective one of the bunch. And I quote now, Mr. Chairman:

> Organic wastes from Houston area cities and industries which require roughly 500,000 pounds of oxygen per day for their decay are dumped into the channel daily, Dr. Hann reports. He said it is equivalent to dumping a half million pounds of sugar every day, some 91,250 tons of solid organic waste a year. The demand has so depleted the dissolved oxygen that none is found from the San Jacinto River to the Turning Basin.
>
> The oxygen replacement rate in the channel is approximately 25,000 pounds per day in summer months and up to 75,000 pounds per day during winter. This means that there is 10 to 20 times as much organic matter dumped as the system can handle, Dr. Hann said.

I see no justification, in view of Dr. Hann's

report and the other data presently available, for waiting until the Galveston Bay study report is completed to commence, and we certainly support the EPA position in establishing a mandatory number.

Mr. Chairman, I would like to comment on one thing that Mr. Yantis said, and that was some new material was brought forward to him today which he had not previously seen before and he did have a point there. I hate to see the Environmental Protection Agency give the Texas Water Quality Board any running room, any out. I think the facts speak for themselves. I don't think there is any controversy that the Houston Ship Channel is grossly overloaded. If all of the scientists that have the data say it is, then I don't understand that there is any argument there.

Mr. Yantis stated that they will continue to do--quote, We will continue to do as we are, which has proved successful, until we know what to do, then we will go and do it." He wants to wait until the Galveston Bay study is complete. He repeatedly reminds us that his agency has been in existence since 1961, or its predecessor; that the standards were adopted, I believe he stated, in 1965. Certainly we recognize that there has

been a substantial reduction in the load going into the Ship Channel. Big deal. The problem is not what has been done in the past, as I see it; the problem is what is going to be done, if anything, in the future.

Now, in June, Mr. Chairman, I expressed the fear that the Environmental Protection Agency would come down here after many years absence and would be ineffective. We expressed a fear that there might be political influence brought to bear, strong political influence brought to bear on the Agency from topside. I certainly hope that that has not happened. My group and many others still fear that this is a very strong possibility and we know that Gordon Fulcher, the Chairman of the Texas Water Quality Board, was appointed to the Water Quality Board by the then Governor Connally of Texas, who now, we all know. is a member of the Nixon Cabinet. We also know, and it is a matter of public knowledge, that before he went to become Secretary of the Treasury John Connally and Gordon Fulcher were business partners.

Incidentally, Mr. Yantis, I want the record to reflect that I are a people and you did not necessarily speak for me or state my position, and there are a lot of other people that feel the same way.

L. A. Greene, Jr.

But we are concerned about this topside political influence and we want this record to reflect that my group and many others support very strongly the Environmental Protection Agency in their constructive efforts to combat pollution.

Mr. Chairman, if you will recall, it was our group, when Gordon Fulcher left this conference in June to go testify before a congressional committee, which as we understand it was investigating the Environmental Protection Agency, we wrote, we publicly pledged support. We reaffirm that support.

We have also tried to exert some citizen influence on the Texas Water Quality Board, which has met with very little, if any, success. The Governor of this State chooses to ignore us in selecting his appointees for this or any other board and we have very little influence with them. Mr. Yantis apparently has gone on record or has indicated to us that he doesn't want our support. We want the problem solved.

I would suggest and would like to see this conference include in this permit review board input from the citizens' group, Mr. Chairman. I think we should all sit down together with the conferees, I think

the environmental groups should be represented on this, we can get you some housewives, we can get you some Ph.D.'s, and I think we should all come to Houston where the problem is, we should sit down with the conferees and that we should be listened to.

Now, Mr. Yantis goes up and I go down. I don't understand his mathematics. He stated he didn't understand Mr. Vanderhoof's. There are pending at this time, so I am told--I don't have copies of these; I haven't had a chance to get them; they are available to you, Mr. Chairman; and I am sure Mr. Yantis or his staff could fill us in on the details if there is any question about it, and if I am misinformed I would like to be so advised--but it is my understanding now that there are presently two applications pending before the Texas Water Quality Board for an increase in effluent into the Houston Ship Channel, that these applications were filed with Mr. Vanderhoof since the June conference, and furthermore it has been reported in the press that these applications for increase were made at the suggestion of the Texas Water Quality Board.

This is what Mr. Yantis tells us is decreasing the load. I would say and point out that these permits

have not been acted upon by the Board, but it seems that if the staff recommended it there must be some reason for it. We would like to know more about this and we would like to see the recommendations brought to bear on those two permits now, not after the Galveston Bay study is completed.

Mr. Vanderhoof, I have not had an opportunity to study in detail the 19 points which you say are suggestions. In listening to the presentation, many of them sounded very, very valid. Perhaps if we adopt the number 10, which seems to be highly controversial at the moment, that will materially aid in getting to the end result.

But I would like to propose that these 19 recommendations of Mr. Vanderhoof's be adopted. People in this State, or many of the people in this State, very much want to see Galveston Bay cleaned up. We are very concerned about it, and I personally am one of those, and I certainly appreciate the opportunity to speak at this time, that have taken off and are not being paid by anyone or any group for this appearance.

But I want the Environmental Protection Agency and the Texas Water Quality Board to know that although

the citizens are not as well financed as the industry that we think the wind is beginning to blow from a different direction. Right now, just today in fact, one organization, after having screened a number of candidates for city offices, has made certain endorsement of certain political candidates. Our organization is going to do the same thing on the environmental issues, and we are going to endorse political candidates. The reason for this is that we want our voice heard, we want it listened to, we want to have an opportunity in the decision-making process. This has not been afforded us and is not now being afforded us in the State of Texas, and we think this has got to change and we think that there is awfully strong support for this position.

Mr. Chairman, I have heard nothing about the Trinity River in this conference, although in your opening remarks this morning you stated that this was a conference concerning Galveston Bay and its tributaries. I still, as I stated in June, feel that you have to look at the Trinity River, which includes the Dallas-Fort Worth area, to look at Galveston Bay on an overall basis, and I think that should be included--that consideration should be given to that by the technical staff. I know

there are tremendous waste loads that are brought down the Trinity River, and I think it is a gross oversight to leave that entirely out of this Galveston Bay conference.

Mr. Chairman, we recognize that it costs money to treat wastes to the best available treatment. I think Mr. Yantis understands that term. I don't know the details, I am not an expert in that area, but I don't see the opening there for as much controversy as seems to have been injected. We fully recognize that it is going to cost money to do this.

One of our recommendations to this conference in June was that sewer and water rates be set for municipalities which don't do it themselves in order to provide the required treatment. We realize that the people that use these services are going to have to pay. We realize that for the oil companies and the refineries to clean up and treat we are going to have to pay for it down at the gas pump. We recognize that, and we are in favor of that. What we are not in favor of is more studies, more rhetoric, and continued delay.

Thank you. (Applause.)

I suggest that most of those are citizens.

(Mr. Greene also submitted the following paper:

L. A. Greene, Jr.

GALVESTON BAY PROJECT STORY

Based solely on the two measurements of water quality generally considered to be the most important indicators of the "health" of an aquatic system, the waters of the complex Galveston Bay system are enjoying continued "good health."

As measured against published standards, agreed upon at both State and Federal levels, the Galveston Bay has demonstrated remarkable recouperative powers, considering the explosive growth of its surrounding land areas, according to recent reports issued by the Galveston Bay project, a Texas Water Quality program under way since 1967.

From an historical viewpoint the dissolved oxygen and BOD, (biochemical oxygen demand) concentrations observed during the last two years appear to be equal to or better than those taken in earlier periods by the Texas State Department of Health.

In other respects however, the present situation is not so encouraging. The concentration of total coliforms in the water of some areas of the bay system have varied significantly over the last seven years. The coliform group of bacteria can originate in wastes, soil,

grain and decaying vegetation. Some bacteria of this group, which come primarily from the feces of warm blooded animals, including humans, are pathogenic, or disease carrying. They can ultimately constitute a threat to other humans who come in contact with the bacteria-laden water or who eat shellfish taken from such waters. East Bay has been the only part of the system not experiencing any coliform problem. Lower Galveston Bay, especially west of Pelican Island, produced the highest coliform concentrations. Stations in far West Bay had a steady increase in total coliforms until 1969, followed by a significant drop in 1969 and 1970. Coliform levels in Trinity Bay, especially the northern shoreline area, were above the standard 70/100ml considered suitable for shellfish harvesting. Upper Galveston Bay has experienced a coliform problem since 1963. GBP records indicate that nearly 50 percent of the total coliform analyses made in the overall Galveston Bay were in excess of the State maximum. In general about 13 of the 27 GBP stations located in the bay itself were responsible for a majority of the violations. Most of these stations are located in upper and lower Galveston Bay.

A significant increase also has been shown in phosphorus levels in the bay system since 1964. Present concentrations are roughly two to four times higher than 1964 levels. Phosphorus is a substance that stimulates the growth of algae in affected waters.

These disclosures are among the first set out as authoritative by the Galveston Bay Project, although the Project has published numerous reports following intense technological research by many agencies involved in it.

"Gradually we are beginning to understand and assemble some of the things we have to know in order to make a logical analysis of the Galveston Bay needs," Colonel Frank Bender, Project Director, said. "Many of these things require a considerable period of constant testing before anything of authoritative nature can even be approached," he said. The Project "was established to produce the data, research, and long range comprehensive planning required to place a Galveston Bay pollution abatement program into action."

Colonel Bender said that one of the most interesting phases of the Galveston Bay Project is now under way and "one which may indeed prove to be the most

controversial up to this time." He said "the project has been engaged primarily in the collection of data, information and material; and in the development of tools with which it can operate and make decisions. Numerous published technical reports represent completed sub-tasks within the project. Data and conclusions reached thus far have been used by many other agencies and individuals as inputs to other studies and programs, and of course by cooperating contractors and entities in the project itself.

"We have now started on our immediate needs report to be completed by the end of December," he said, "this report, based on the effluent quality of approximately 50 individual dischargers, both industrial and municipal, and which account for over 90 percent of the total load into the Galveston Bay system, will express in preliminary form the adjustments which must be made in order to permit presently published water quality standards to be met in each zone, including the Houston Ship Channel. One of the vital parts of the preliminary report will be the development of the total costs of these adjustments to meet required standards."

Colonel Bender said the work of the project

to the preliminary report will be completed by summer 1973. Many of the individual segments of the overall study already have been finalized, and in those cases the finished work simply has to be meshed into the studies that are still to be completed. Among the subjects already completed are the socio-economic studies related to the growth of the bay area, a shipping waste survey, a study comparing wastewater sampling techniques, an area bibliography, a determination of reaction rates for use in the modeling program, ecological studies, a land use and population study, a preliminary regional sewerage system investigation, and legal studies to determine the optimum governmental entity for unifying public power, and others.

"This is not to say that much work does not still remain to be done," Colonel Bender said. "This is the period of amalgamating past and future work, fine tuning and operating our mathematical models, continuing ecological and toxicity investigations, refining basic data through sediment and oxygenation studies. We have to acquire additional inputs from water reuse and stormwater treatment formulations and groundwater investigations, which must be updated and completed. The results

of all investigations and research will then be used in an iterative process to devise alternative solutions, and come up with recommendations as to the best management plan.

"From time to time now we will make announcements on just what the project has learned and how this knowledge may be utilized for the protection of the bay waters," he said.

MR. STEIN: Thank you, Mr. Greene.

Any comments or questions?

MR. YANTIS: I have the somewhat novel viewpoint that those industrial representatives back there and their attorneys are also citizens of this State.

MR. GREENE: Well, you didn't seem to consider us as people, but we do consider them citizens, Mr. Yantis. We just want them to treat to the best available treatment now. (Applause.)

MR. STEIN: Edward Falk.

EDWARD FALK, PRESIDENT

CLEAR CREEK BASIN AUTHORITY

PASADENA, TEXAS

MR. FALK: My name is Edward Falk. I am President of the Clear Creek Basin Authority and I spoke before the EPA conference back in June. Although with some reluctance on some of the conferees' part that we be allowed to speak, we did. I am not going to recapitulate the history of the Basin Authority at that time but just talk about what has transpired since June and make one major suggestion to the conferees at this time.

We stated at that time that the Basin Authority, which is a State agency and which is the only State authority in this area that is elected by the people directly, not appointed but elected, that we will file suits against polluters since nobody else seems to be willing to do so. Mr. Stein and Mr. Yantis, we have done so. We have joined with Harris County in a suit against Phoenix Chemical. We are preparing another suit against the city of Pasadena because of the El Carey Water District which they had the unfortunate experience to annex when they grabbed some other tax land. We have

filed a protest with the Corps of Engineers in Galveston in their desire to grant a permit to the NASA complex to dump some more of their pollutants into Clear Lake. They are doing it now, of course, without a permit and now they want the license to do so. No other agency has filed such complaints, but we have.

Phoenix Chemical was granted a permit October 15 by the Texas Water Quality Control Board to pollute into the Clear Creek Basin. There has been a tremendous discussion between the Federal and State levels as to whether the standards for BOD should be 5 or whether it should be 12. For the record, the permit is varied. They can dump anywhere from 6 point something to 8 point something. It is a step in the right direction by the Texas Water Quality Control Board but not quite fully what the EPA conference people wanted, but at least it is a step in the right direction. But they are now permitted to dump more than they were able to dump before. The previous permit was sound. This one spells out in detail what they can do and far more pollution is being dumped into the lake by Phoenix Chemical as a result of the permit. I believe the Water Quality Board should have waited until the lawsuit was finished before

this was done.

I am very pleased that the conference which includes Galveston Bay spends a great deal of time on Clear Lake, and it is in this area that I want to make one major suggestion to the conferees. The Basin Authority takes the position that at this point in time it is immaterial what the standards are. The main thrust should be what type of pollutants are going into the lake and who is doing the polluting. From there we can go forward and set a standard. There was a great deal of discussion about building a regional sewer system. I don't see how you can build a regional sewer system when you don't know what you are going to build it for.

Secondly, there are many municipalities and citizens in the area of the Basin Authority that feel that a regional sewer system is not the answer, that the cost will be phenomenal and it can be done cheaper by the smaller plants and bigness is not always greatness. I have had discussions in the past with EPA people on the phone up in Dallas at my cost, because I am also, like the gentleman from HEP, unpaid, and our Authority still does not have any funds.

However, in discussions today with Mr. Yantis

and with Mr. McFarland and a few others, the discussion that Mr. Yantis brought forth immediately prior to the introduction of the speakers that there is a proposal to study Clear Lake that has been sitting on EPA's desk for four months is a true one. Now, Mr. Yantis has said that he would be in favor of the Clear Creek Basin Authority sponsoring this study of the lake. The same is true with Mr. McFarland and other EPA people.

I think it is time we stopped creating a debating society over here. We are not here to be entertained. We are here to have the bay and the lake cleaned up, and it is time we started to do that. And I will end my remarks at this point to get this one study of Clear Lake off the ground and let this be the study to end all studies.

That is where I am going to end right here and I thank you for your time.

MR. STEIN: Thank you.

Are there any comments or questions?

If not, thank you very much, Mr. Falk. (Applause.)

MR. YANTIS: Mr. Chairman, let me correct one point. I told Mr. Falk that I thought there would be a place for a sponsorship, not the sponsorship in that

study. I did not say that he would be the sponsor. He asked whether there would be a place for them in it, and I said there would be, and of course there should be, and there will be, but not necessarily as the only sponsor.

MR. FALK: That is fine. That is more commitment than we have ever gotten in five years.

MR. STEIN: Mrs. Bruce E. Bremberg.

MRS. BRUCE E. BREMBERG
ENVIRONMENTAL QUALITY CHAIRMAN
LEAGUE OF WOMEN VOTERS
DICKINSON, TEXAS

MRS. BREMBERG: I am Mrs. Bruce E. Bremberg, Environmental Quality Chairman of the League of Women Voters of Texas.

The League, a volunteer citizen group, has been active for over 16 years in the environmental field. We are delighted to have so much company in our crusade and concern, and we are so pleased to have this opportunity to express our views.

In our opinion, there are two ways to view the recommendations of the conferees.

May I just say that I wrote this before the

morning's discussion and compromises.

(1) A script of a Medieval Morality Play or (2) a badly written soap opera. Neither is desirable and both produce an atmosphere of frustration and dismay.

As a Medieval Morality Play, the report indicates that only Texas has white plumed knights endowed with all-encompassing knowledge and skills. Like all dramatic offerings, the audience isn't supposed to be aware that the noble steed conveying our Glorious Knight is spavined, wind-blown and has cracked hooves. But you see, Ladies and Gentlemen, that although the plot may thicken or become more diluted, the script can be altered on the spot or the cast can all die from a loathsome disease. But all eyes will remain on the shining armor, the magnificent white plume, and Sir Super. Thus will virtuous thought triumph over all combatants! And so much for Morality Plays. No one in 1971 would accept such nonsense, would they? However, they might ask upon reading the recommendations, "What happened?"

What happened to:

(1) The position that waste samplings be done under all unfavorable as well as favorable conditions?

Mrs. B. E. Bremberg

(2) That effective disinfection of ALL waste sources be considered?

(3) That a clear-cut and definitive timetable and a schedule for the discharge and treatment of municipal wastes be included. Why are channel cities relieved of timetables when Atlanta, Detroit, and many other smaller cities are on a definite schedule?

(4) Why change or even consider that the precise language of waste discharge permits be changed or amended?

(5) What happened to the EPA position on costs of dredging the Ship Channel? Isn't anyone interested in recovering some monies?

(6) The proposal for fail-safe structures to prevent raw sewage from being dumped into the channel?

(7) And the plans for alternative waste disposal methods?

Although the firmness and resolve of the EPA is to be congratulated in the HLP proposal and the alert

levels for shellfish, the seeming reluctance to stand firm on its other fine recommendations is a matter that is casting serious doubts on the sincerity of the original proposals. Gentlemen, please prove us wrong! Publish the results of the second series of testing and data gathering that were conducted since the June hearing. Perhaps it is because we are an organization of women that we abhor a secret, but as an organization that has strongly and deeply informed and involved ourselves in government we feel strongly that data gathered at taxpayers' expense is in the public domain. Any other disposition of this information could be considered as Un-American, Un-Texan, or downright sneaky, to be quite blunt about the nonexistent second black book! Color it a slimy mauve, if you will, but publish!

We would again like to ask questions concerning standards for Clear Lake. These questions may not be germane for this reconvened hearing, but as they are unanswered in the final recommendations, perhaps we can be allowed a little latitude.

Concerning Clear Lake and the Galveston Bay Project:

(1) Is it not true that a specific

sum of money was allocated for establishment of quality standards for Clear Lake as a receiving body of water?

(2) Has that specific sum been expended for its intended purpose?

(3) If so, are the results available? If not, when will the proper study be undertaken?

(4) Will dynamic-flow sampling be used to gather data if the study is still to be done? And if not, why not?

Gentlemen from Texas, please realize you can continue to stand tall and proud if you cooperate with the EPA for the upgrading of our environment. The absurd posture of "We are smarter than you are" not only slows down effective improvement in water quality and the realistic enforcement of regulation, but casts you in the role of the churlish buffoon who sticks out his tongue when no one laughs at his jokes instead of writing new jokes. (Laughter.) Pause for a moment between tirades and reflect that if Deaf Smith County asks you for $500,000 to implement a feasibility study and an enhancement program you just might want to know feasible

for whom and enhancement of what before you granted the monies. Enlarge upon that premise as you, the representatives of the State of Texas, make requests for millions of dollars from the United States Government!

None of us has a perfect answer because there is no perfect question. But the proposed recommendations on the many serious environmental quality problems under consideration at this conference would lead us to say that surely they don't need to be quite so imperfect.

We beseech, implore, or beg you to strengthen the recommendations and publish the interim data. In other words, shine up your armor, gallant knights, find a reliable and sound charging steed, and do the very best job you can. Forget the real or imagined wounds to egos and get on with the joust against our deteriorating environment instead of each other.

Thank you. (Applause.)

MR. STEIN: Thank you, Mrs. Bremberg.

Are there any questions or comments?

Sharron Stewart.

S. Stewart

SHARRON STEWART

EXECUTIVE BOARD

CITIZENS SURVIVAL COMMITTEE, INC.

ANGLETON, TEXAS

MRS. STEWART: Mr. Stein, Mr. Vanderhoof, Mr. Yantis.

My name is Sharron Stewart. I am a representative of the Citizens Survival Committee, Inc. I apologize for my remarks not being written down, but having attended many State meetings we found that citizens usually finish last and, therefore, I didn't feel it would be necessary to write my remarks until tonight. My remarks are still developed out of what has happened this morning. My organization has authorized me to make my statement, so I shall.

I would like to say that the 19 recommendations that we heard this morning sound reasonable and proper, and I think it is a crying shame that No. 12 through 19 are not being considered by the conferees and I think that they ought to be.

We have already discussed in detail 1 through 11. Our organization supports the EPA positions on 1

through 11.

No. 12 on the waste effluent from U. S. Plywood, Champion Paper and Southland Paper Mills of color units no greater than 75 at pH of 7.6 also seems reasonable.

The position on Cedar Bayou seems more than reasonable, especially after what was developed at the June meeting on temperature and the discharging from the effects from one body of water into another. Why must we wait until we have irreparable damage to do something? I thought we were supposed to be trying to abate pollution sources before they occur.

No. 14 on allowable total waste discharge to the Houston Ship Channel. This point has been gone over, but since our organization has approximately 700 people and about 250 of them live in the Ship Channel area and work in Ship Channel industries I think they ought to be considered.

This magic formula of 35,000 pounds was reported in the newspaper last year after an Earth Day panel at the University of Houston. Mr. Churchwell, an environmental engineer for Tenneco, maybe he is here today, was quoted after the meeting as saying that any tenth grade biology student could figure out in a matter

of moments by the known data at that time how much BOD load Galveston Bay could assimilate. He said he could do it in about 30 seconds, which he did, and the figure which was reported in the paper was that magical number 35,000 pounds. Well, if that is what Galveston Bay can assimilate, it seems to me that a 35,000-pound load limit for the Ship Channel is still not stringent enough and that 120,000 pounds a day is ridiculous.

No. 15 I would like to read again:

> The Houston Port Authority shall implement a system of stationary and self-propelled barges to receive both liquid and solid wastes from all shipping in the Galveston system. Proper means of disposing of these waste materials satisfactory to EPA will be developed by the Port Authority.

Gentlemen, I assume this means the cleaning of barges, tankers, and all ships, and so on, that have been cleaning their bilges, and so on, in the bay and other areas. Thank goodness someone has finally said something about such an important matter. This is definitely something that should be the concern of the conferees and I hope this statement will be adopted.

No. 16 and the ban on ocean dumping. I also hope the EPA will not wait on the Texas Legislature to give the Water Quality Board the authority to act on ocean dumping. I believe that even these days in Washington they know a little bit about the laxness of the Texas Legislature. When you don't pay people properly, you end up with the quality work you deserve and Texas doesn't pay their legislators but $4,800 a year, so I guess we are getting what we deserve, unfortunately.

No. 17. The Texas Water Quality Board will immediately curtail deep well disposal of industrial wastes(excluding return of oil field brine to source formation) unless such disposal is in accordance with national policy as described by EPA.

This, gentlemen, is a point of particular interest to me because I live in an area where on the day of the Armco decision the Water Quality Board issued a permit for the sixth injection well within a two-mile radius since 1969. Four of those are within a radius of 460 feet. We are deeply concerned, especially since these permits range for 20 to 30 years, about this problem.

There is no reason why these things cannot be

treated on the surface. Mr. Vanderhoof said earlier that except for the brine there was some technology available for treatment of all waste sources. Judge Hannay's decision about injection wells I think is a telling one and ought to be adopted as a guideline, especially in the plugging of wells and the type of surveys done on this matter. I hope this recommendation will be adopted.

18. This is the one on the continuous flow bioassay tests. A year ago I had never heard of this, but it keeps coming up in Water Quality Board hearings as one of the best methods available of knowing what is going on. I believe this is the live fish test. In the recommendation it says:

> The Texas Water Quality Board will immediately begin a program of continuous flow bioassay to assure that the receiving waters of Galveston Bay and its tributaries do not contain concentrations of waste materials singly or in combination that exhibit acute or chronic toxicity to sensitive endemic aquatic species.

Isn't this what this conference is all about? I thought that is why you gentlemen were here.

S. Stewart

All toxic substances found in wastes discharged to Galveston Bay and its tributaries shall be identified and the toxicity of each waste shall be determined in accordance with procedures described in Standard Methods for the Examination of Water and Wastewater, thirteenth edition.

Again this seems only reasonable and logical.

No. 19. If, after best available treatment as described by the Environmental Protection Agency, the water quality of the Houston Ship Channel is not materially enhanced to the level projected by the Galveston Bay study, an alternative method, particularly instream aeration, will be implemented. Costs of such activity will be borne by the discharger in proportion to their pounds per day COD or T O C loading by industries and municipalities. Further, such instream treatment will be performed in cooperation with and approval by the Houston Port Authority.

It seems to me that those polluting, be they individuals, municipalities or industries, should have to

S. Stewart

pay some of the cost of cleaning up that will benefit everybody. Our environment will not go on forever without breaking down. Water is not an unlimited resource. Nature recycles water. We are breaking down that process. Galveston Bay has an important effect on the entire Gulf system and the Gulf area and Galveston Bay in particular is a breeding ground for the major portion of the world's marine supply.

It seems to me that TOC and COD should definitely be parameters. It also seems that there should be a timetable for industries as well as municipalities and that should be set by this conference here today. Timetables are the name of the game.

Again referring back to Mr. Churchwell's statement of last spring--I will bring that clipping to this conference tomorrow if we are still here and turn it in to you--he said that the total amount of money spent on the Galveston Bay studies so far was over $3 million. Now, after spending over $3 million, it is time for a little action. There is enough known to begin taking action. Study is well and good and should be continued without a doubt, but the time for just study has long since passed and if the Water Quality Board can reduce

one parameter BOD from 360,000 pounds a day to 103,000 pounds a day with pro[illegible] 90,000 pounds by the first of next year, they can reduce the other parameters as well and it is time that it be done. And our organization doesn't care whether the Water Quality Board does it, the EPA does it, or who does it. We only care that it gets done.

Thank you. (Applause.)

(Mrs. Stewart also submitted the following paper:)

Recommendations to Galveston Bay Conferees Concerning the Scope of the Enforcement Conference from the Citizens Survival Committee, Inc.

1. Complete review of the entire Trinity River Plan to insure that it will not have a detrimental effect on Galveston Bay.

2. Development of a plan to insure protection of the Neckes, upstream as well as the lower river basin.

3. A regional plan with implementation timetables for both municipal and industrial discharges into the Galveston Bay drainage area. This plan should include:

a. Elimination of all toxic or hazardous

materials.

b. Tertiary treatment, with a reasonably achievable standard set at 5 mg/l BOD 5 day, 5 mg/l suspended solids, 1 mg/l total phosphorus, and 1 mg/l residual chlorine, and nitrogen to 2 mg/l.

c. Inclusion of COD, TOC, TOD, settleable solids, floating debris, flow characteristics, change in turbidity, and the thermal effect as well as BOD, for parameters, expressed in pounds per day (where applicable).

d. The elimination of heavy metals, complex organic compounds, hydrocarbons and other potentially toxic substances at the source.

e. The inclusion of fail-safe systems to prevent raw sewage, sludge oil and grease from ultimately entering Galveston Bay.

4. Color levels for all paper companies should not exceed 75 color units at a pH of 7.6.

5. The Houston Lighting & Power Company's Cedar Bayou Plant shall return water taken from Cedar Bayou to its source. Temperature of cooling water shall be discharged at ambient temperatures.

6. The minimum standard allowable for maximum waste discharge into the Houston Ship Channel from all

RECONVENED FIRST SESSION

OF THE

C O N F E R E N C E

IN THE MATTER OF

POLLUTION OF THE NAVIGABLE WATERS OF

GALVESTON BAY AND ITS TRIBUTARIES

held at

Houston, Texas

November 2-3, 1971

TRANSCRIPT OF PROCEEDINGS

sources shall not at any time exceed 35,000 pounds BOD (5-day) per day, and that by 1974 this standard should be lowered further.

7. Cleaning of all liquid and solid wastes from shipping in the Galveston Bay system and the disposal thereof shall be developed by the Port Authorities involved and regulated by the EPA.

8. The EPA shall immediately ban ocean dumping from all Texas industries.

9. Immediate banning of all new deep well disposal of industrial wastes (excluding return of oil field brine to source formation). All permitted deep well disposal systems shall be stopped and plugged within one year, with all injected substances returned to the surface for treatment.

10. All toxic substances found in waste discharged into Galveston Bay and its tributaries, including the Inter-Coastal Canal, shall be identified in the manner suggested at this conference by the EPA conferee.

These toxic substances should then be reduced or eliminated to insure that singly, or in combination, they do not exhibit acute or chronic toxicity to sensitive, endemic aquatic species. To insure this, the EPA

and TWQB shall immediately begin a program of continuous flow bioassay tests.

11. If, after the best available treatment, the water quality of the Houston Ship Channel and Galveston Bay System is not greatly improved, additional methods, such as in-stream aeration, shall be implemented. The cost of this program will be borne by the discharger in proportion to their pounds per day of COD, TOC and TOD. This treatment shall be operated by the Port Authority involved, and regulated by the EPA.

12. No permits shall be issued under the 1899 Refuse Act without public hearings held by the EPA in the area in which the applicant is located.

13. All meetings concerning Galveston Bay shall be held in the bay area with notice being published in the local papers.

(Mrs. Stewart also submitted the following clipping:)

Cyanide wells called 'sweeping problem under rug'

4-24-71

By HAROLD SCARLETT
Post Environment Writer

Two industry spokesmen on an Earth Week panel agreed with a federal attorney Friday that deep wells are not the best way to dispose of the Armco Steel Corp's cyanide wastes.

"That's just sweeping your problem under the rug — you shouldn't do it" said H. H. (Hank) Meredith, an environmental engineer with the Humble Oil and Refining Co.

"You might possibly have to do it at times on an interim basis, but it's not a long-term solution to the problem."

A Tenneco environmental engineer, Bob Churchwell, also agreed with Assistant U.S. Atty Rex Green that the wells are unwise. Green is handling a federal water pollution suit against Armco.

Federal officials are opposing the wells, while the Texas Water Quality Board has decided they are the most feasible solution. The water board has ordered Armco to start the wells by Sunday or lose its state discharge permits.

While he found some support in industry's ranks, Green got into an exchange with another industry panelist, Charles Lanford of the Celanese Corp, on the wells.

Lanford said the federal government had usurped state powers and left Armco in the middle of a conflict of authority.

"Obviously if the effluent was cold, clean, clear water, there is no conflict," Green retorted. "The technology is there — it's just a matter of cost. Industry would never be caught in a switch like this if they would voluntarily take the least, the cleanest solution."

Pressed by Lanford on exactly what alternative disposal methods are available, Green said Armco itself had presented some in conferences on the suit, but he could not discuss them because the case is pending.

Churchwell and Meredith agreed that alternatives are available.

Green said it was probable the deep-well wastes would never infiltrate into ground water and never cause problems. But he argued there was no point in taking that chance when the wells were unnecessary. He said geology is not an exact science.

"I've invested in too many dry holes," he said wryly.

An Armco spokesman, meanwhile, said drilling on the $1.75 million wells would begin Sunday, the state's deadline day.

The panel, held at the University of Houston, also unloaded some criticism on costly engineering studies on how to solve pollution problems.

James Doxey, an assistant county attorney who handles pollution cases, waved an engineering report — which he said cost taxpayers $400,000 — on sewage problems in the Ship Channel area. The study was done by Turner, Collie & Braden along with Bernard Johnson Engineers Inc.

"Any 10th grade biology student could have done this," Doxey contended. "And $400,000 will buy a lot of enforcement."

Churchwell commented later that $5 million has been spent on the Galveston Bay Study to determine how much of a pollution load the Ship Channel can carry in terms of biochemical oxygen demand (BOD).

"I can tell you the answer in a simple calculation, based on the channel's known characteristics, in about 35 seconds," Churchwell said. "It can handle about [illegible] pounds of BOD a day."

A federal study which led last week to the calling of an enforcement conference said the channel is actually being [illegible] with about [illegible] pounds of BOD a day.

THE HOUSTON POST
SATURDAY, APRIL 24, 1971

SHIP CHANNEL
BOD

Armco asks ruling on wells

4-21-71

The Armco Steel Corp asked a federal judge Tuesday to decide whether it should obey the state or the federal government in a conflict over disposa its cyanide wastes into deep injection make members of the Texas

Attorneys for Armco filed a motion asking the court to mke members of the Texas Water Quality Board parties to a federal water pollution suit pending against Armco.

The motion in effect asks Federal Judge Allen B. Hannay to decide whether the state has the authority and jurisdiction to require the disposal wells.

Armco favors the $1.75 million wells over more costly alternative proposals.

But in pre-trial negotiations, the federal Environmental Protection Agency and the Justice Department have warned Armco not to use the wells. The federal officials fear possible contamination of ground water.

Meanwhile, Armco reported, it has moved a drilling rig onto its property to meet a Sunday deadline set by the state for starting the wells.

The water board warned Armco at its March 26 meeting that if the wells, approved in late December, were not started in a month the steel plant would lose its state permits to discharge into the Ship Channel.

Armco's president, C. William Verity, said Tuesday the company had been ready to start the wells in early January but held up because of the federal opposition.

"Failure to commence drilling these wells could have caused the board to believe that Armco was intentionally defying its order," Verity said. "Nothing could be further from our purpose."

The trial of the pollution suit is set for June 7.

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MR. STEIN: Thank you, Mrs. Stewart.

Any comments or questions?

If not, Will Taylor.

WILL TAYLOR

EXECUTIVE COMMITTEE OF THE HOUSTON GROUP OF THE LONE STAR CHAPTER OF THE SIERRA CLUB AND THE CONSERVATION COMMITTEE OF HOUSTON AUDUBON SOCIETY

MR. TAYLOR: My name is Will Taylor and I am representing the Executive Committee of the Houston Group of the Lone Star Chapter of the Sierra Club and the Conservation Committee of the Houston Audubon Society. These two organizations comprise approximately 1,200 members in the Houston area.

The first part of this testimony will critically review the recommendations contained in the "Statement of Federal-State Task Force for Galveston Bay Enforcement Conference," dated September 1971, and that is the dark blue little book that most people may have. The principal fault with these recommendations is the lack of provisions for establishing effluent standards and timetables as was done in preceding shellfish enforcement

conferences. The second part of this testimony will recommend additional items which we feel should also be considered in developing a continuing waste abatement program.

Part I Criticisms of Task Force Recommendations

Recommendation 1):

We concur with the conferees on Recommendation 1).

Recommendation 2):

We feel that sampling of shellfish to determine toxicological effects should be conducted by the Texas State Health Department in cooperation with other State and Federal agencies. The wording of the Task Force recommendation, "...as the Texas State Health Department deems appropriate..." should be deleted since it appears to give the State of Texas veto power over any participation by any agency, State or Federal, in this sampling program.

Recommendation 3):

This recommendation states that "Effective disinfection of all domestic waste sources contributing to bacteriological pollution of the Galveston Bay System

will be provided." We strongly urge that the word "domestic" be removed from this recommendation. This would generalize this recommendation to include all waste sources contributing bacterial pollution to the Galveston Bay System and thereby eliminate a legal loophole for industrial polluters.

With respect to the second paragraph of Recommendation 3), we urge that an implementation plan for the centralization of facilities and disinfection of all waste sources contributing bacterial pollution to the Galveston Bay System should be drawn up and approved by the Galveston Bay enforcement conferees by June 1, 1972. This implementation plan should have as its goal the best available treatment for municipal wastes. Such treatment is now defined by the Federal Government as 5 mg/l BOD_5, 5 mg/l settleable solids, 1 mg/l phosphate expressed as phosphorus, and 1 mg/l residual chlorine.

Recommendation 4):

We feel that the current waste source survey, utilizing grab samples at widely spaced intervals, is inadequate to define the individual effluent outfalls. We recommend that an intensive waste source survey be conducted within the following guidelines: (1) parameters

to be monitored should be determined from the nature of the industrial processes producing the effluent, (2) composite, flow proportional samples be taken, and (3) continuous sampling take place over at least a five-day period. A timetable for conducting and for reporting the results should be agreed to by the conferees within 30 days of this conference. It is further recommended that this data be made available to the public, as the self-reporting data currently is.

Recommendation 5):

We feel that "the best reasonable available treatment for waste sources" should be specified in terms of concentrations as well as absolute loads of the effluent constituents and approved by the conferees by June 1, 1972.

Recommendation 6):

We concur with this recommendation and commend the Texas Water Quality Board for their policy to prohibit dilution as a substitute for treatment in the case of amendments to existing, or new, waste control orders.

Recommendations 7, 8 and 9):

We concur with these three recommendations.

Recommendation 10:)

W. Taylor

We concur with the specified maximum waste load value of 35,000 pounds per day of 5-day BOD (biochemical oxygen demand). However, we recommend that the conferees agree on target maximum waste load values for COD (chemical oxygen demand) and settleable solids in the Houston Ship Channel and in Galveston Bay by June 1, 1972.

Recommendation 11):

We agree with the EPA recommendations on the Cedar Bayou Powerplant. We further recommend that the once-through cooling water flow for the two currently operating units now discharging into Trinity Bay at the rate of 750 cfs (cubic feet per second) be terminated and a recirculation system utilizing a 1,500-acre cooling pond, built on high ground, and makeup water from the Coastal Industrial Water Authority, be put into operation as soon as possible. We recommend that the additional three units proposed by Houston Lighting & Power utilize cooling towers or be constructed on an alternate site.

The presently planned 2,600-acre cooling pond encompasses an area including Wet Marsh Pond and results in additional estuary destruction, a chronic and growing problem in the Galveston Bay area. We object to the use of estuary areas for waste treatment ponds and urge that

the practice be stopped, beginning with the Cedar Bayou Plant.

Part II Further Recommendations.

Recommendation A:

We recommend that all Texas Water Quality Board and Galveston Bay Project reports, including those of contractors to these agencies, be distributed to at least one public or university library in Harris, Galveston and Chambers Counties to facilitate public access to this information.

Recommendation B:

We recommend modification of the current waste abatement program based on the Galveston Bay Project's Immediate Needs Report which is to be completed by year-end 1971 and that the revised abatement program be approved by the conferees by March 1, 1972. It is understood that the Immediate Needs Report is intended to provide the adjustments which must be made to the effluent quality of approximately 50 municipal and industrial discharges, which account for over 90 percent of the total load on the Galveston Bay System, in order to meet the present published water quality standards in each zone. We recommend that this report specify its

abatement strategy in terms of effluent standards and timetables for specific municipal and industrial sources.

Recommendation C:

We recommend that all data collected with reference to this enforcement conference be published and be made available as in Recommendation A. Further, we recommend that proceedings of all Texas Water Quality Board-Environmental Protection Agency meetings concerning pollution abatement in Galveston Bay be made available to the public, also as in Recommendation A.

Recommendation D:

We recommend that the Texas Water Quality Board investigate the usage of the Total Organic Carbon measurement as an alternate to the COD (chemical oxygen demand) measurement for some types of waste effluents to provide a more meaningful assessment of the actual pollutional load.

Recommendation E:

We recommend the inclusion in the Galveston Bay Project of the task to determine the freshwater inflow and distribution requirements of marine life in Galveston Bay. This task, as well as the intensive waste source survey, was an integral part of the original Work Plan

for the Galveston Bay Study developed in 1966.

Recommendation F:

We recommend the immediate formation of a Technical Advisory Group to the Galveston Bay Project, similar to the Water Resources Research Program Committee which developed the original Work Plan for the Galveston Bay Study in 1966.

Thank you.

MR. STEIN: Thank you.

Are there any comments or questions?

Thank you, Mr. Taylor. (Applause.)

MR. YANTIS: Could I have a copy of that? I would like to read it further, if I may.

MR. TAYLOR: Surely.

MR. YANTIS: Because most of them I agree with.

MR. STEIN: I have three requests for statements tomorrow. One of these is Congressman Eckhardt, Dr. Quebedeaux and Dr. Preslock. We have no more requests for speakers today. Does anyone else in the audience want to speak?

Yes. All right, I guess sometimes the machinery doesn't operate. That is why we make these announcements.

Mrs. J. Grover

MRS. JAMES GROVER

ENVIRONMENTAL QUALITY CHAIRMAN

LEAGUE OF WOMEN VOTERS OF HOUSTON

HOUSTON, TEXAS

MRS.GROVER: I am Mrs. James Grover, Chairman of the Environmental Quality Committee of the League of Women Voters of Houston.

We in the League are very happy to see the Galveston Bay enforcement conference reconvene. We anxiously waited for joint recommendations of the Environmental Protection Agency and the State of Texas on how best to improve the condition of Galveston Bay and insure its health and survival.

Before the original conference last June we received a thick book, termed the black book by Texas Water Quality Board officials, which not only explained EPA's recommendations for abating pollution of Galveston Bay but gave details which led to their recommendations. To prepare for today's hearing the public has been given five pages of recommendations with absolutely no background as to why any of these decisions were reached. After the conference in June where we all heard such

widely differing reports as to exactly what the conditions of the Houston Ship Channel and Galveston Bay are, we feel the public is entitled to hear how these recommendations were reached.

Why, for instance, are there no provisions for public disclosure of technical data and results of studies? Why did EPA abandon its original recommendations that additional costs incurred by the Corps of Engineers for dredging of the Houston Ship Channel be evaluated and an assessment of damages among the waste dischargers to the channel be made? Certainly we commend the recommendation that any amendments to existing or new Texas Water Quality Board waste control orders will prohibit dilution as a substitute for treatment, but what happened to the waste source survey and abatement schedule for the 55 waste sources discharging more than 500,000 gallons per day that EPA originally recommended?

These questions and many more have not been answered in the report issued for this conference today. The public is left with the alternative of accepting these recommendations or not accepting them on a gut reaction only. This is a condition which leads to unhappines

for all. The public feels disenchanted at once again being left out of any real decision making and the government loses valuable public support needed to carry out its programs.

Thank you for allowing me to speak to you today. (Applause.)

MR. STEIN: Thank you.

Are there any comments or questions?

Is there anyone else who wants to speak today?

Yes.

MR. YANTIS: I would like to remind most of you again that essentially every action taken by the Texas Water Quality Board is taken following a public hearing. Regretfully they are poorly attended, but they are advertised in your papers, there is a direct mail notice given, and they are public hearings--yes, ma'am, they are, and we can prove it--and the meetings to which these things come are public. And I am sorry if you are shaking your head, but it is still true and I can prove it.

MRS. GROVER: Mr. Yantis, I was not speaking of public hearings. I was speaking of this public hearing and the fact that we got no information on this

five double-spaced pages.

MR. YANTIS: Well, I will join you in that, of course, as I have said earlier.

MRS. GROVER: And also your public hearings are almost always held in Austin. It is awfully hard to get to Austin every month or two.

MR. STEIN: You know, Mrs. Grover, if you have a colloquy, why don't you come up and don't strain your voice.

MR. YANTIS: Well, I know what she said.

MR. STEIN: No. Again, we are working with a record. I understand your wish to say something, and we will be glad to put it on the record, but the reporter has to hear what you say.

MR. YANTIS: Of course the other thing is entirely different. There was some interest in barging of wastes to sea, and we share that, and we have stopped some of it coming from Texas. There is some that we have not stopped, we simply don't know about.

But I would like to ask your cooperation in stopping the disposal of wastes in the Gulf of Mexico coming from places like Ohio or Pennsylvania being barged down the Mississippi River. I don't just exactly

like that.

MR. STEIN: All right.

Now, again I will say, does anyone want to say anything?

If not, we will stand recessed until 9:30 tomorrow in this room.

(Whereupon, at 4:10 o'clock an adjournment was taken until 9:30, Wednesday, November 3, 1971.)

MORNING SESSION

WEDNESDAY, NOVEMBER 3, 1971

9:30 o'clock

MR. STEIN: Let's reconvene.

We have several people who have indicated they wanted to speak this morning, and we will listen to them first. Then we will plan an executive session among the conferees, and subsequent to the executive session I hope we will have an announcement.

Is there anything before we start?

MR. VANDERHOOF: Mr. Stein, I have a request to make.

Mr. Stein, Mr. Yantis, there have been several references to the working papers used by the Technical Task Force to arrive at their recommendations. There has also been great interest shown by the groups who spoke yesterday as to the background.

I would, therefore, like to request, Mr. Chairman, that the working papers be made available for the record of this conference.

MR. STEIN: Are there any objections?

MR. YANTIS: Mr. Chairman, I concur in that--and I spoke with some of the Federal people a few moments ago--provided that it is understood that the working

papers are not themselves the entire source of information. Much of the data is in files of various kinds, some of which has been checked for accuracy, some not.

But I am quite agreeable to the working papers being into the record with the clear acknowledgement that they do not constitute the whole body of knowledge upon which our decisions are based.

MR. STEIN: Is that agreeable?

MR. VANDERHOOF: That is agreeable.

MR. STEIN: Without objection, and with that proviso, the working papers will be entered into the record as if read.

(The above-mentioned working papers follow:)

Supplementary Report
to
Federal-State Technical Task Force
of
Galveston Bay Enforcement Conference

Working Paper Only

September 1971

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I. INTRODUCTION

The Galveston Bay Enforcement Conference was convened in Houston, Texas from June 7 through 12, 1971, under the provisions of Section 10 of the Federal Water Pollution Control Act, for the purpose of considering pollution affecting shellfish harvesting in Galveston Bay, Texas. The Conferees are the Environmental Protection Agency, representing the Federal Government, and the Texas Water Quality Board representing the State of Texas.

During the Conference, a great number of presentations were made by Federal, State and local regulatory agencies, as well as industries and private consumers and environmental groups of the Houston metropolitan area. These presentations contained an extraordinary amount of technical information concerning quantity and characteristics of waste discharges, as well as effects on receiving water quality and beneficial uses; some of which was apparently contradictory. Consequently, the Conferees decided that because of the voluminous record compiled during the six days of the Conference, it would be impossible to immediately assimilate all of the testimony presented and develop a pertinent series of recommendations concerning the conduct of the waste abatement program in the Galveston Bay and Houston Ship Channel area. Therefore, the Conferees directed that technical personnel of the Texas Water Quality Board and the Environmental Protection Agency review and update the data presented, and compile a common baseline which will permit conclusions and recommendations for developing a continuing waste abatement program.

Upon review of the testimony made at the Conference, divergencies in technical conclusions were apparent in the following categories:

1. Quality and acceptability of shellfish in Galveston Bay.

2. Actual waste discharge levels versus permitted discharge levels.

3. Waste treatment status and future needs to meet water quality standards.

4. Toxic materials contamination.

5. Discharges of oil and grease from waste effluents.

6. Possible deleterious effects of cooling water discharges from the proposed Houston Lighting and Power Company expansion of the electrical generating plant at Cedar Bayou.

The following information was prepared by the Division of Field Investigations, Denver Center, Environmental Protection Agency, from data supplied by the Texas Water Quality Board; Region VI Enforcement Office EPA, Dallas; and the Galveston Bay Field Station EPA. Additional supporting information was also provided through the facilities of the regional office of the Food and Drug Administration and the U. S. Air Force at Bergstrom Air Force Base, Texas, as well as the Harris County Pollution Control Department. Suggested recommendations are also included. It is hoped that this compilation is sufficient to permit participants in the joint Federal-State technical task force to arrive at suitable conclusions to present to the Conferees.

II. EFFECTS OF WASTE DISCHARGES ON SHELLFISH

Data were reported at the Conference concerning levels of oil and hydrocarbon residues in oysters collected from Galveston Bay during November 1970. Concentrations of oil and hydrocarbon residues from approved harvesting areas in Galveston Bay were from two to six times greater than observed in closed areas of West Falmouth Harbor, Massachusetts. West Falmouth Harbor was closed to shellfish harvesting after a September 1969 oil spill. On June 16, 1970, in a letter to the Director of Marine Fisheries, State of Massachusetts, the Director of Environmental Health, State of Massachusetts, stated that "... the area ... closed since September 18, 1969 continues to be polluted by oil deposits and that shellfish harvested from this area are unfit for food purposes and may be dangerous to public health."

This letter, together with the results of further sampling conducted by EPA in January and April 1971, in Galveston Bay, as well as a description of the analytical methodology including the preliminary results of gas chromatograph-mass spectroscopy analyses for specific compounds constituting these oil and hydrocarbon residues, were submitted for the record at the Conferees' request and will be included in the transcript of the Conference.

The results of the EPA sampling program are presented in Table II-1 and the sampling locations are shown in Figure II-1. The concentrations of hydrocarbons from five stations in approved areas during January 1971 range from 11 parts per million (ppm) to 40 ppm. Concentrations from four stations in prohibited areas ranged between 33 ppm and 159 ppm. The maximum

TABLE II-1. -- Concentrations of Hydrocarbons Separated from Galveston Bay Oysters, November 1970, January 1971, and April 1971

Station No.	Hydrocarbon Concentrations (ppm) November 1970	January 1971	April 1971
1	26	--	16
2	237	159	--
3	30	24	--
4	--	33	--
4A	23	28	--
5	--	40	--
7	--	11	--
8	--	54*	--
9	--	45	--
10	--	61	50
11	--	25	--
12	--	--	26
13	--	--	19

* - Result questionable.

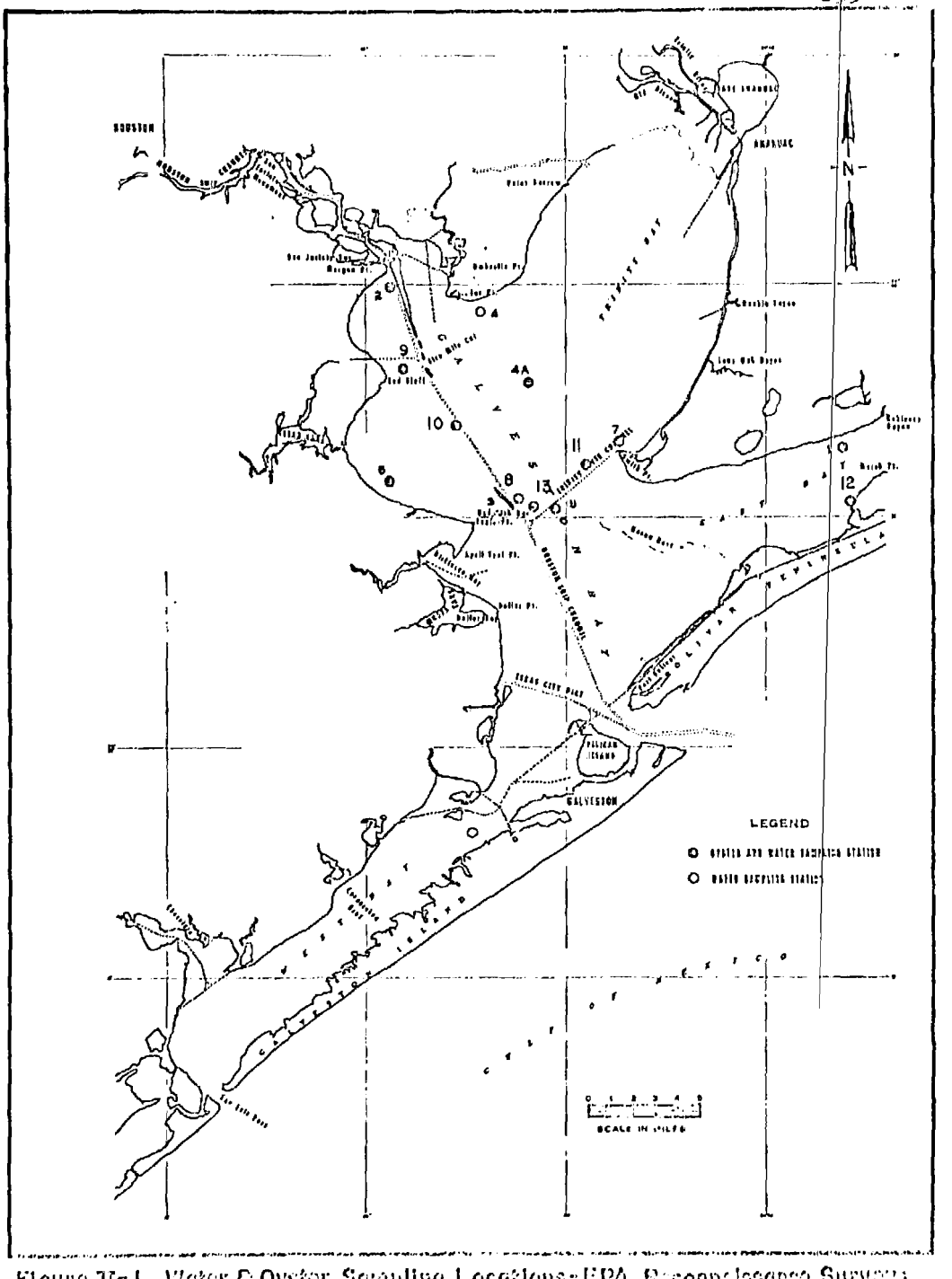

Figure II-1 Water & Oyster Sampling Locations - EPA Reconnaissance Surveys Nov. 1970, Jan. 1971, Apr. 1971.

concentration was isolated from a station near Morgan Point at the mouth of the land-locked portion of the Houston Ship Channel. The Woods Hole Oceanographic Institute has separated and identified several aromatic compounds from oysters collected at this location. These aromatic compounds include dimethyl, trimethyl, tetramethyl and biphenyl methyl fluorene in the oyster extracts. Aromatic hydrocarbons do not naturally occur in oysters. These compounds are common components of crude oils and many refinery products. Their presence in the oyster extracts clearly demonstrates contamination from petroleum products. These analyses were made on oysters taken from a presently prohibited area.

At the Conference, the Food and Drug Administration stated that present data do not show that a health hazard exists due to consumption of oysters taken from approved areas in Galveston Bay. This conclusion, by the official Federal regulatory agency for shellfish marketing, is still valid and in effect. However, the FDA has recently initiated a study of oil and hydrocarbon residues in oysters of Galveston Bay, as well as other areas throughout the country, to determine possible toxicological significance of these concentrations. Preliminary results are not yet available for distribution and publication, but the concentrations of total hydrocarbons observed are not inconsistent with EPA sampling results. Without regard to the significance the findings may have with respect to petroleum contamination, the concentrations of specific aromatic hydrocarbon compounds isolated are not presently considered significant from a toxicological standpoint to warrant necessary regulatory action. The study is continuing.

A great deal of discussion and data were presented at the Conference concerning the requirement of the National Shellfish Sanitation Program for bacteriological sampling to be conducted under the most unfavorable hydrographic and pollution conditions. After examining these data and additional information, the Food and Drug Administration has concluded that increased emphasis on regulating sampling under these conditions is necessary to insure that acceptable shellfish harvesting areas in Galveston Bay are properly classified from a bacteriological standpoint. This program has begun in cooperation with the Texas State Health Department. It should be emphasized that the increased surveillance necessitated by this action will require additional personnel and equipment for the Texas State Health Department.

The heavy metals concentrations in shellfish taken from Galveston Bay are relatively low compared to certain levels in shellfish in other southern or eastern bays. However, the major concern in presenting this information is that no official criteria are presently available for general circulation as to the significance of any level of heavy metals, or other toxic contaminants, found in oyster meat. Alert levels are now being developed by the Food and Drug Administration and will be presented at the National Shellfish Sanitation Workshop to be held in October 1971. The FDA will review these alert levels for trace metals, pesticides and various toxic hydrocarbons, as well as the technical considerations in developing them, with the Environmental Protection Agency prior to the Workshop. These levels, when adopted, will apply to Galveston Bay.

Recommendations number 1, 2 and 8 in this report, suggested for adoption by the Conferees, have been discussed with FDA. The Food and Drug Administration is in agreement with these recommendations.

III. WASTE DISCHARGES AND EFFECTS ON WATER QUALITY

Due to the many statements at the Conference taking exception to the reported 1968 effluent permit values as not being accurately reflective of present actual waste discharge quantities in the area, an examination was made of permitted waste discharges and actual quantity of effluent as determined from the system whereby permit holders submit analyses of their own effluents to the Texas Water Quality Board on a monthly basis. At the preparation of this report, data were available from about June 1970, when the system was initiated, through March 1971.* Prior to the initiation of the self-reporting system by the Texas Water Quality Board, no overall complete determination of actual quantity of waste discharges in the Galveston Bay area, based on effluent sampling, was available and total waste discharges had to be estimated from examination of receiving water quality or of applicable permit values. The Texas Water Quality Board has made these data available to other regulatory agencies and a copy of the first computer printout was delivered to the EPA Regional Office at Dallas on June 4, 1971.

The total permitted discharge of waste effluent to Galveston Bay and its tributaries as of March 1971 is approximately 804 million gallons per day (MGD), which is allowed to contain 367,000 pounds per day of suspended solids, 236,000 pounds per day of biochemical oxygen demand (B.O.D.) and 880,000 pounds per day of chemical oxygen demand (C.O.D.). Chemical oxygen demand values are listed in permits for industrial sources only.

* On July 27, 1971, self-reporting values for April and May 1971 became available. These data had not been checked for accuracy by the preparation of this report. Inspection of these data shows that the only major difference from previous results was the reduced waste load from U.S. Plywood - Champion Paper Company. These reductions are reflected in the figures quoted in this report.

Municipal waste source permits do not contain this parameter. The total number of permits issued in the Conference area is 314. Two-hundred-twenty-nine permits are issued for sources on the Houston Ship Channel and 85 are for sources in other areas of Galveston Bay. One-hundred-sixty permits are issued for municipal waste sources and 154 for industrial effluents. These municipal and industrial sources are permitted to discharge 221.0 MGD and 583.2 MGD, respectively.

The actual total waste discharge averaged from August 1970 to March 1971 for all effluent sources holding permits, exclusive of Houston Lighting and Power Company, and included in the self-reporting system, is approximately 683 MGD which contains 322,000 pounds per day of suspended solids, 244,000 pounds per day of B.O.D., and 711,000 pounds per day of C.O.D. (industrial sources only).

It is not possible to make a direct comparison of the compliance with permits by the aggregate total of waste dischargers since, in many cases, permit values were not listed in the self-reporting data. The reverse situation is also true; viz., actual discharge values, in some instances, are not reported for certain permit parameters. In general, and with the above qualifications, most sources are within permit requirements on a pounds per day effluent basis. A large number of sources exceed permit requirements on a concentration (milligrams per liter or parts per million) basis; however, the allowable waste flow is usually so much greater than actual waste flow that conversion to pounds per day brings the waste discharge under the pounds per day figure implied on the permits. The Texas Water Quality Board considers a concentration which exceeds the allowable concentration to be a violation of the permit.

A summary of permitted and actual waste discharges on a pounds per day basis is presented in Table III-1. A listing of allowable and actual effluents from each source, as of March 1971, is contained in Table III-2. The major substantial change in waste effluent since March 1971 is the installation of treatment at U.S. Plywood - Champion Paper Company. The actual effluent as reported in their statement presented to the Conference is reflected in these tables. The actual waste discharges reported are averages of the monthly values through March 1971.

Many of the industries presenting statements to the Conferees were concerned that the effluent permit figures quoted in the Federal report were not representative of waste production within their plants due to the degraded quality of the intake water. It is presumed that the self-reporting data submitted by waste dischargers to the Texas Water Quality Board take this factor into account and that all values quoted are representative of actual waste discharges.

A. HOUSTON SHIP CHANNEL

The Houston Ship Channel receives 498.2 MGD of wastes containing 144,000 pounds per day of five-day B.O.D.; 266,600 pounds per day of suspended solids; and 509,500 pounds per day of C.O.D. from industrial sources only. The Texas Water Quality Board has since noted that the reported aggregate F.O.D. value, as of the monthly report for July 1971, is about 103,000 pounds per day. The allowable effluent totals in the Texas Water Quality Board permits are 614.3 MGD containing 214,400 pounds per day of B.O.D.; 339,100 pounds per day of suspended solids and 843,900 pounds per day of C.O.D.

TABLE III-1

SUMMARY OF WASTE DISCHARGES - GALVESTON BAY AREA *

AREA	MUNICIPAL AND DOMESTIC							PETROLEUM, CHEMICAL, PLASTIC AND RUBBER INDUSTRIES									OTHER INDUSTRIAL **								
	No. of Sources	Flow MGD		S.S. 1000 Lbs/Day		B.O.D. 1000 Lbs/Day		No. of Sources	Flow MGD		S.S. 1000 Lbs/Day		B.O.D. 1000 Lbs/Day		C.O.D. 1000 Lbs/Day		No. of Sources	Flow MGD		S.S 1000 Lbs/Day		B.O.D. 1000 Lbs/Day		C.O.D. 1000 Lbs/Day	
		Perm.	Act.	Perm.	Act.	Perm.	Act.		Perm.	Act.	Perm.	Act.	Perm.	Act.	Perm.	Act.		Perm.	Act.	Perm.	Act.	Perm	Act.	Perm.	Act.
Houston Ship Channel and Tributaries	112	193.2	157.0	33.2	79.6	46.2	49.8	79	273.2	244.0	204.5	123.2	93.3	70.3	449.3	331.7	38	150.9	97.2	101.4	63.8	72.9	23.9	394.6	277.8
Galveston Bay and all other Areas*	48	30.8	24.3	5.4	9.8	5.2	4.4	31	147.0	148.9	14.0	37.1	13.9	93.4	36.1	195.8	6	12.1	11.4	8.2	8.2	0.5	2.0	—	5.2
TOTALS	160	224.0	181.3	38.6	89.4	51.4	54.2	110	420.2	392.9	218.5	160.3	111.2	163.7	485.4	527.5	44	163.0	108.6	109.6	72.0	73.4	25.9	394.6	183.0

TOTAL FROM ALL SOURCES *** Number of Sources = 314; Flow, PERMITTED = 804.2 MGD, ACTUAL = 662.7 MGD;
S.S. (1000 Lbs/Day), PERMITTED = 366.7, ACTUAL = 321.7; B.O.D. (1000 Lbs/Day), PERMITTED = 235.0, ACTUAL = 243.8
C.O.D. (1000 Lbs/Day) (Industries Only), PERMITTED = 880.0, ACTUAL = 710.5

* - Actual waste discharge data averaged from approximately August 1970 through March 1971 from self-reporting data submitted to Texas Water Quality Board.

** - U. S. Plywood - Champion Paper Co. was discharging about 81,000 lbs/day of B.O.D., 235,000 lbs/day of C.O.D., and 64,000 lbs/day of S.S. until April 1971. With the installation of new treatment, the effluent is now approximately 14,300 lbs/day of B.O.D., 101,500 lbs/day of C.O.D., and 47,600 lbs/day of S.S. according to their statement to the Conference. This Table reflects the reported reductions.

*** - Does not include Houston Light and Power Company permits for cooling water discharge.

NOTE: SUMMARIES REFLECT ONLY LISTED PERMIT VALUES

TABLE III-2-A

MUNICIPAL WASTES - PERMIT DATA
Houston Ship Channel

Name	Permit No.	Out Fall	Flow (MGD) Permit	Flow (MGD) Aver.	BOD (lb/day) Permit	BOD (lb/day) Aver.	Susp Solids (lb/day) Permit	Susp Solids (lb/day) Aver.	Chlorine Residual (mg) Permit	Chlorine Residual (mg) Aver.	Parameters in Violation	Days By-passed
Pollution, City of	10550	01	1.930	1.662	325	111	325	116	1.0	1.2	-	
Harris Co. FWSD #48, Sheldon West	10541	01	0.210	0.027	35	18	35	15	1.0	1.1	-	
Harris Co. FWSD #48, Sellinn Hills	10541	02	0.220	0.003	37	1	37	<1	1.0	1.4	-	
Harris Co. FWSD #48 - Total			0.430	0.102	72	19	72	15			-	
Harris Co. WCID #70, Plant #1	10530	01	0.050	0.004	7	<1	7	<1	0.5	1.4	-	
City of Deer Park, S. Plant	10519	01	0.700	0.641	117	147	117	131	1.0	2.1	BOD, Susp Solids	
City of Deer Park, N. Plant	10519	02	0.470	0.484	82	136	82	131	1.0	2.0	BOD, Susp Solids	
City of Deer Park - Total			1.170	1.125	199	283	199	262				
Oak Glen Dev. Co., Northline T.	10318	01	0.300	0.176	40	11	40	20	1.0	1.5	-	
City of Houston, Northside	10405	01	53.000	47.895	22935	25262	9174	29229	1.0	0	BOD, Susp Solids, Chlorine Residual	45
City of Houston, Sims Bayou	10405	02	48.000	32.344	8006	14334	8006	32153	1.0	0	BOD, Susp Solids, Chlorine Residual	20
City of Houston, Almeda Plaza	10405	03	0.072	0.065	63	23	63	09	1.0	1.2	Susp Solids	2
City of Houston, Chadwick Manor	10405	07	0.036	0.014	9	3	9	11	1.0	1.3	Susp Solids	20
City of Houston, Chatwood Place	10405	08	0.276	0.227	101	124	126	116	N.R.	1.6	BOD	7
City of Houston, Chocolate Bayou	10405	09	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-	
City of Houston, Clinton Park	10405	10	0.751	0.504	125	34	125	140	1.0	1.4	Susp Solids	
City of Houston, Cole Creek Manor	10405	11	0.200	0.233	50	13	50	27	1.0	1.1	-	
City of Houston, Fontaine Place	10405	14	0.180	0.271	135	139	163	270	N.R.	1.6	BOD, Susp Solids	1
City of Houston, FWSD #27	10405	15	0.730	0.765	125	493	494	1041	1.0	1.6	Flow, BOD, Susp Solids	1
City of Houston, FWSD #23	10405	16	1.250	1.673	209	139	209	392	1.0	1.4	Susp Solids	9
City of Houston, Gulf Meadows	10405	20	1.000	0.443	167	256	167	275	1.0	1.5	BOD, Susp Solids	17
City of Houston, Gulf Palms	10405	21	0.180	0.235	48	66	75	42	0.5	1.8	Flow, BOD	9
City of Houston, Gulf Terrace	10405	22	0.135	0.229	40	80	73	96	1.0	1.9	Susp Solids, Flow, BOD	5

TABLE III-2-A

MUNICIPAL WASTES - PERMIT DATA (Continued)
Houston Ship Channel

Name	Permit No.	Out Fall	Flow (MGD) Permit	Flow (MGD) Aver.	BOD (lb/day) Permit	BOD (lb/day) Aver.	Susp Solids (lb/day) Permit	Susp Solids (lb/day) Aver.	Chlorine Residual (ppm) Permit	Chlorine Residual (ppm) Aver.	Parameters in Violation	Days By-passed
City of Houston, New Homestead	10405	23	0.800	0.765	147	100	147	334	1.0	1.3	Susp Solids	16
City of Houston, Lake Forest	10405	25	0.175	0.114	30	35	70	37	N.R.	2.0	-	
City of Houston, Lonmwood	10405	29	0.021	0.147	4	15	4	11	1.0	2.4	Flow, BOD, Susp Solids	
City of Houston, W.C.	10405	30	6.000	7.533	1001	550	1001	1626	1.0	1.2	Flow, Susp Solids	15
City of Houston, S.W.	10405	37	15.000	15.650	2502	943	2502	1406	1.0	0.3	Flow, Chlorine Residual	15
City of Houston, WCID #20	10405	41	0.125	0.202	21	117	21	205	1.0	1.8	Flow, BOD, Susp Solids	11
City of Houston, WCID #32	10405	43	0.760	0.767	127	330	127	566	1.0	1.2	Flow, BOD, Susp Solids	7
City of Houston, WCID #34	10405	44	0.136	0.263	32	52	50	90	1.0	1.3	Flow, BOD, Susp Solids	4
City of Houston, WCID #39	10405	45	0.522	0.447	44	246	305	243	1.0	1.4	BOD	4
City of Houston, WCID #42	10405	46	0.459	0.300	262	159	469	300	1.0	1.6	-	18
City of Houston, WCID #44-1	10405	47	0.250	0.334	200	573	260	483	N.R.	1.1	Flow, BOD, Susp Solids	14
City of Houston, WCID #44-2	10405	48	0.055	0.132	15	114	17	109	N.R.	1.4	Flow, BOD, Susp Solids	20
City of Houston, WCID #44-3	10405	49	0.700	0.591	403	154	420	223	N.R.	1.2	-	15
City of Houston, WCID #47-1	10405	50	0.304	0.463	90	121	202	202	N.R.	1.6	Flow, BOD, Susp Solids	13
City of Houston, WCID #47-2	10405	51	0.304	0.485	66	214	170	109	1.0	1.4	Flow, BOD, Susp Solids	44
City of Houston, WCID #51	10405	53	1.250	1.723	200	110	200	234	1.0	1.2	Flow, Susp Solids	2
City of Houston, WCID #53	10405	55	0.368	0.435	61	156	61	186	1.0	2.0	Flow, BOD, Susp Solids	2
City of Houston, WCID #62	10405	59	0.200	0.114	47	51	47	68	1.0	2.0	BOD, Susp Solids	17
City of Houston, Northwest	10405	65	0.214	0.235	36	90	36	102	1.0	1.7	Flow, BOD, Susp Solids	
City of Houston, Clinton Drive	10405	66	0.020	1.000	N.R.	N.R.	N.R.	1431	N.R.	0.0	Flow, Susp Solids	
City of Houston, Harris Co. FWSD #1	10405	69	0.300	0.262	50	57	50	121	1.0	1.1	BOD, Susp Solids	
City of Houston, Forest W.	10405	70	0.300	0.084	50	12	50	47	1.0	1.3	-	7
City of Houston, N.W.	10405	75	4.000	1.062	667	100	667	313	1.0	1.3	-	8
City of Houston, N.E.	10405	77	2.000	0.999	334	47	N.R.	174	1.0	1.2	-	9
City of Houston, Intl. Airport	10405	78	N.R.	0.172	N.R.	23	N.R.	50	1.0	2.0	-	
City of Houston - Total			144.500	127.435	38031	45237	25957	73123				

TABLE III-2-A

MUNICIPAL WASTES - PERMIT DATA (Continued)
Houston Ship Channel

Name	Permit No.	Outfall	Flow (MGD) Permit	Flow (MGD) Aver.	BOD (lb/day) Permit	BOD (lb/day) Aver.	Susp Solids (lb/day) Permit	Susp Solids (lb/day) Aver.	Chlorine Residual (mgm) Permit	Chlorine Residual (mgm) Aver.	Parameters in Violation	Days By-passed
Galco, Utilities Co.	10453	01	0.108	0.010	18	2	18	1	1.0	1.5	-	
Harris Co., MUD #76	10431	01	0.300	0.130	40	36	40	24	1.0	1.0	-	
Hitech - Turkey Hunter	10419	01	0.250	0.131	42	19	42	23	1.0	1.1	-	
City of Baytown, N. Main Plant	10395	02	2.700	2.929	450	364	450	473	1.0	21.	Flow, Susp Solids	145
City of Baytown, Humble Creek	10395	04	0.360	0.480	93	66	N.R.	95	N.R.	1.4	-	1
City of Baytown, Garvey Drive	10395	05	0.700	0.665	117	58	N.R.	76	N.R.	1.0	-	2
City of Baytown, Graingers	10395	06	0.140	0.141	23	42	23	35	1.0	2.6	Flow, BOD, Susp Solids	
City of Baytown, East District	10395	07	1.000	1.353	167	107	167	172	1.0	2.3	Flow, Susp Solids	31
City of Baytown - Total			5.100	5.568	850	637	640	854				
City of Houston, Eastern Oaks	10336	01	1.000	0.103	167	26	N.R.	21	N.R.	2.0	-	8
Mabel G. Young	10333	01	0.098	0.013	16	0	16	6	1.0	0.5	Chlorine Residual	
City of South Houston	10287	01	1.224	1.714	204	747	204	1273	1.0	1.8	BOD, Susp Solids	20
Oakbridge Water Co.	10236	01	0.245	0.179	41	28	41	37	1.0	1.5	-	
Jacinto City	10193	01	1.250	1.014	209	28	209	37	1.0	1.5	-	
Harris Co. MUD #6	10184	01	0.062	0.032	10	6	10	4	1.0	1.8	-	
Harris Co. MUD #78	10157	01	0.150	0.058	20	20	20	26	1.0	1.5	Susp solids	
Harris Co. MUD #21	10105	01	0.850	0.654	142	179	142	530	1.0	1.6	BOD, Susp Solids	6
West University Place	10050	01	1.000	1.027	167	112	167	135	1.0	1.6	Flow	20

TABLE III-2-A

MUNICIPAL WASTES - PERMIT DATA (Continued)
Houston Ship Channel

Name	Permit No.	Out-fall	Flow (MGD) Permit	Flow (MGD) Aver.	BOD (lb/day) Permit	BOD (lb/day) Aver.	Susp Solids (lb/day) Permit	Susp Solids (lb/day) Aver.	Chlorine Residual (ppm) Permit	Chlorine Residual (ppm) Aver.	Parameters in Violation	Days By-pass
City of Pasadena N.E.	10053	01	3.000	1.104	500	201	500	201	1.0	1.4	-	27
City of Pasadena #2	10053	02	4.000	1.463	667	275	667	404	1.0	1.7	-	
City of Pasadena #3	10053	03	2.000	0.959	334	137	334	292	1.0	1.9	-	[illegible]
City of Pasadena #5	10053	05	4.000	1.104	667	309	667	413	1.0	1.5	-	27
City of Pasadena - Total			13.000	4.630	2168	1012	2168	1220				
Harris County FWSD #51	10032	01	0.700	0.344	117	63	117	49	1.0	0.9	Chlorine Residual	1
Harris County WCID #25	10012	01	0.350	0.476	58	75	58	85	1.0	1.05	Flow, BOD, Susp Solids	4
Harris County WCID #34	10133	01	0.400	0.036	67	2	67	2	1.0	1.6	-	
Sherwood Oaks Util. Inc.	10359	01	0.500	0.288	83	44	83	74	1.0	1.7	-	
Hem. Village Water Aut.	10384	01	1.500	1.048	250	48	250	320	1.0	1.8	Susp Solids	
Dayalwood M.U.D.	10608	01	0.100	0.054	17	23	17	16	1.0	1.7	BOD	
South. Sam. Corp.	10610	01	0.350	0.243	58	51	58	63	1.0	1.5	Susp Solids	
White Oaks Development	10620	01	0.050	0.120	7	13	7	11	1.0	0.7	Flow, BOD, Susp Solids, Chlorine Residual	
Harris Co. FWSD #45	10545	01	0.052	0.265	9	12	9	18	1.0	1.2	Flow, BOD, Susp Solids	
Harris Co. WCID #74	10673	01	0.750	0.355	125	137	125	215	1.0	1.03	BOD, Susp Solids	
Harris Co. FWSD #53	10663	01	0.100	0.047	17	5	17	13	1.0	1.8	-	
City of Jersey Village	10580	01	0.066	0.140	11	15	11	16	1.0	1.0	BOD, Susp Solids	

TABLE III-2-A

MUNICIPAL WASTES - PERMIT DATA (Continued)
Houston Ship Channel

Name	Permit No.	Outfall	Flow (MGD) Permit	Flow (MGD) Aver.	BOD (lb/day) Permit	BOD (lb/day) Aver.	Susp Solids (lb/day) Permit	Susp Solids (lb/day) Aver.	Chlorine Residual (ppm) Permit	Chlorine Residual (ppm) Aver.	Parameters in Violation	Days By-passed
Jetero Lumber & Bldg.	10004	01	0.012	0.072	2	5	2	7	1.0	1.8	Flow, BOD, Susp Solids	
Mayflower Inv. Co.	10499	01	0.500	0.202	83	73	83	19	1.0	1.8	-	
City of Katy	10705	01	0.750	0.428	125	63	125	264	1.0	2.0	Flow, BOD	
City of South Side Place	10716	01	0.216	0.133	36	41	36	38	1.0	2.6	BOD, Susp Solids	
Harris Co. MUD #69	10737	01	0.563	0.349	94	74	94	27	1.0	0.3	Chlorine Residual	
Deerfield Improvement Dist.	10756	01	0.300	0.104	50	9	50	10	1.0	2.0	-	
Harris Co. MUD #22	10762	01	0.700	0.251	117	21	117	49	1.0	2.3	-	
City of Morgans Point	10779	01	0.100	0.040	17	6	17	8	1.0	1.6	-	
Harris Co. MUD #47	10794	01	0.600	0.313	100	28	100	45	1.0	2.2	-	
Harris Co. MUD #95	10800	01	0.200	0.240	33	22	33	21	1.0	1.8	Flow	
West Road Imp. Dist.	10809	01	1.550	0.199	259	24	259	23	1.0	1.6	-	
Chatwood Place Inc.	10812	01	1.000	0.113	167	7	167	8	1.0	1.6	-	
Turkey Imp. Dist.	10819	01	0.750	0.354	125	35	125	40	1.0	1.8	-	
City of Galena Park	10831	01	0.700	0.349	117	53	117	120	1.0	1.9	Susp Solids	
City of Galena Park	10831	02	0.100	0.045	17	7	17	15	1.0	1.7	-	
City of Galena Park - Total			0.800	0.394	134	60	134	135				

TABLE III-2-A

MUNICIPAL WASTES - PERMIT DATA (Continued)
Houston Ship Channel

Name	Permit No.	Out-Fall	Flow (MGD) Permit	Flow (MGD) Aver.	BOD (lb/day) Permit	BOD (lb/day) Aver.	Susp Solids (lb/day) Permit	Susp Solids (lb/day) Aver.	Chlorine Residual (ppm) Permit	Chlorine Residual (ppm) Aver.	Parameters in Violation	Days By-passed
Harris Co. MUD #90	10332	01	0.550	0.215	92	15	92	21	1.0	1.8	-	
Harris Co. FWSD #61	10375	01	0.300	0.023	50	2	50	2	1.0	2.4	-	
North Forest M.U.D.	10905	01	0.300	0.015	50	1	50	1	1.0	3.8	-	
Park Glen M.U.D.	10906	01	1.200	0.072	200	8	200	12	1.0	1.6	-	
Westheimer Rd. M.U.D.	10912	01	0.400	0.006	67	1	67	1	1.0	1.7	-	
Mayfair Park M.U.D.	10934	01	0.400	0.125	67	6	67	12	1.0	1.9	-	
Sheldon ISD	11004	01	0.025	0.014	4	1	4	1	1.0	1.2	-	
W. Montgomery Util. Co.	11005	01	0.200	0.054	47	9	47	10	1.0	2.1	-	
Shell Oil	00403	07	0.216	0.065	36	9	36	28	N.R.	0	-	
Dresser Systems	00447	01	0.105	0.054	18	15	18	4	1.0	1.2	-	
Armco Steel Co.	00509	03	0.300	0.187	50	7	50	19	1.0	1.9	-	
Goodyear Tire & Rubber	00520	01	0.035	0.015	6	2	6	3	1.0	2.0	-	
Phillips Petroleum	00315	01	0.020	0.040	3	1	3	7	1.0	2.9	Flow, Susp Solids	
Plastic Applicators, Inc.	01153	02	0.002	0.001	>1	>1	N.R.	1	N.R.	1.2	-	
Todd Shipyards	01152	01	0.008	0.013	N.R.	5	N.R.	2	N.R.	0	Flow	
Dorwid Div. - Nat'l Lead	01196	02	0.002	0.0016	>1	>1	>1	>1	N.R.	4.1	-	

TABLE III-2-A

MUNICIPAL WASTES - PERMIT DATA (Continued)
Houston Ship Channel

Name	Permit No.	Outfall	Flow (MGD)		BOD (lb/day)		Susp Solids (lb/day)		Chlorine Residual (ppm)		Parameters in Violation	Days By-passed
			Permit	Aver.	Permit	Aver.	Permit	Aver.	Permit	Aver.		
Union Equity Corp.	01335	01	0.001	0.240	>1	33	>1	62	1.0	1.5	Flow, BOD, Susp Solids	
Texas Harbor, Inc.	01365	01	0.250	0.024	4	5	4	7	N.R.	1.9	BOD, Susp Solids	

NOTE: N.R. = No data given for these parameters

TABLE III-2-B

INDUSTRIAL WASTES - PERMIT DATA
Houston Ship Channel

Name	Permit No.	Out-fall	Flow (MGD) Permit	Flow (MGD) Aver.	BOD (lb/day) Permit	BOD (lb/day) Aver.	Susp Solids (lb/day) Permit	Susp Solids (lb/day) Aver.	COD (lb/day) Permit	COD (lb/day) Aver.	Parameters in Violation
Tenneco Chemicals, Inc.	00002	01	1.000	0.640	834	200	500	384	2335	937	-
Diamond Shamrock Corp.	00305	01	3.800	6.494	634	378	6338	1720	4754	4913	Flow, COD
Diamond Shamrock Corp.	00305	02	98.000	73.512	16346	2736	81732	32345	122598	62833	-
Diamond Shamrock Corp.	00305	03	42.000	26.037	17514	3274	35028	10832	70056	27601	-
Diamond Shamrock Corp.	00305	04	0.650	0.223	163	63	342	49	1620	146	-
Diamond Shamrock Corp.	00305	05	4.300	2.548	800	2696	4003	1596	12010	14094	BOD, COD
Diamond Shamrock Corp. - Total		5	149.250	114.434	35457	9147	127643	46590	211044	109592	
Diamond Shamrock Corp.	01000	01	0.158	0.147	26	5	40	47	132	29	Susp Solids
Petrolite Corp.	02347	01	0.001	0.005	1	17	<1	1	3	27	Flow, BOD, Susp Solids, COD
U.S. Gypsum Co.	00353	01	0.500	0.242	417	1121	417	625	1668	3529	BOD, Susp Solids, COD
U.S. Gypsum Co.	00353	02	0.706	0.024	3474	4	2797	<1	8544	15	-
U.S. Gypsum Co. - Total		2	1.206	0.266	3891	1125	3214	625	10212	3544	
Cameron Iron Works	00357	01	0.036	0.086	N.R.1/	6	44	26	363	70	Flow
Sinclair Petrochemicals, Inc.	00391	01	2.660	1.762	1109	1031	1553	402	4437	2521	-
Atlantic Richfield Co.	00392	01	1.440	1.187	961	697	516	947	N.R.1/	2700	Susp Solids
Atlantic Richfield Co.	00392	02	6.192	5.519	6455	6041	N.R.1/	4378	N.R.	20861	BOD
Atlantic Richfield Co.	00392	03	1.224	5.625	1839	8133	521	3562	N.R.	23219	Flow, BOD, Susp Solids
Atlantic Richfield Co.	00392	04	0.021	0.061	32	6	9	22	N.R.	32	Flow, Susp Solids
Atlantic Richfield Co.	00392	05	N.R.1/	1.370	N.R.1/	779	N.R.1/	892	N.R.	5192	-
Atlantic Richfield Co.	00392	06	0.028	0.148	2[illegible]	19	5[illegible]	716	N.R.	207	Flow, BOD, Susp Solids
Atlantic Richfield Co.	00392	08	N.R.1/	1.422	N.R.1/	746	N.R.1/	1229	N.R.	3293	-
Atlantic Richfield Co.	00392	10	N.R.	0.290	N.R.	23	N.R.	744	N.R.	382	-
Atlantic Richfield Co. - Total		8	8.905 2/	15.632	9338 2/	17244	1031 2/	12500		55802	

TABLE III-2-3

INDUSTRIAL WASTES - PERMIT DATA (Continued)
Houston Ship Channel

Name	Permit No.	Outfall	Flow (MGD) Permit	Flow (MGD) Aver.	BOD (lb/day) Permit	BOD (lb/day) Aver.	Susp Solids (lb/day) Permit	Susp Solids (lb/day) Aver.	COD (lb/day) Permit	COD (lb/day) Aver.	Parameters in Violation
Sinclair Coppers Chemical Co.	00393	01	0.550	0.795	459	1573	413	544	1376	5115	Flow, BOD, Susp Solids COD
Shell Chemical Co.	00402	01	6.100	5.955	5087	3888	15262	10361	50874	29818	-
Shell Oil Co.	00403	01	1.440	0.979	120	24	300	77	480	131	-
Shell Oil Co.	00403	03	0.144	0.182	24	69	69	54	72	148	Flow, BOD, COD
Shell Oil Co.	00403	04	0.576	0.411	48	35	240	90	192	133	-
Shell Oil Co.	00403	06	0.040	0.062	3	1	10	4	17	11	Flow
Shell Oil Co.	00403	09	0.266	0.200	44	12	44	18	166	100	-
Shell Oil Co.	00403	10	4.752	4.471	1189	1094	1982	1130	11890	4417	-
Shell Oil Co.	00403	12	N.R.[1]	0.691	N.R.[1]	139	N.R.[1]	119	N.R.[1]	720	-
Shell Oil Co.	00403	13	2.664	0.963	1111	324	1666	377	6665	1192	-
Shell Oil Co. - Total		8	9.832[2]	7.959	2539[2]	1718	4293[2]	1849	19482[2]	6832	
Texaco, Inc.	00413	01	0.020	0.170	7	1	13	5	40	12	-
Texaco, Inc.	00413	02	0.008	0.003	3	<1	5	1	16	1	-
Texaco, Inc.	00413	03	0.008	0.014	3	1	5	9	16	13	Flow, Susp Solids
Texaco, Inc.	00413	04	0.030	0.016	10	2	20	4	60	5	-
Texaco, Inc. - Total		4	0.066	0.203	23	4	43	19	132	31	
Cook Paint & Varnish Co.	00427	01	0.080	0.241	N.R.[1]	69	4	31	N.R.[1]	136	Flow, Susp Solids
Pennzoil Chemical Corp.	00445	01	0.200	0.100	83	20	50	12	250	53	-
Dohm & Haas Co.	00455	01	1.739	2.400	1441	7664	5765	8273	10809	26295	Flow, BOD, Susp Solids, COD
Dohm & Haas Co.	00455	02	0.072	0.135	48	191	24	33	120	339	Flow, BOD, Susp Solids, COD
Dohm & Haas Co. - Total		2	1.811	2.535	1489	7855	5789	8306	10929	26634	

TABLE III-2-B

INDUSTRIAL WASTES - PERMIT DATA (Continued)
Houston Ship Channel

Name	Permit No.	Out-Fall	Flow (MGD) Permit	Flow (MGD) Aver.	BOD (lb/day) Permit	BOD (lb/day) Aver.	Susp Solids (lb/day) Permit	Susp Solids (lb/day) Aver.	COD (lb/day) Permit	COD (lb/day) Aver.	Parameters in Violation
E. I. Dupont	00474	01	8.000	6.400	3336	3983	3336	2222	13344	7774	BOD
Harris County FWSD #63	00477	01	0.170	0.130	28	20	28	64	279	103	Susp Solids
Merichem Co.	00485	01	0.230	0.020	94	11	141	6	563	27	-
Ethyl Corp.	00492	01	3.680	3.510	6752 1/	5135	1535 1/	1685	9207 1/	7768	Susp Solids
Ethyl Corp.	00492	02	4.750	4.510	N.R. 1/	332	N.R. 1/	1713	N.R. 1/	3822	-
Ethyl Corp.	00492	03	8.00	8.100	N.R. 1/	372	N.R. 1/	3729	N.R. 1/	6479	Flow
Ethyl Corp. - Total		3	16.430	16.120	6752 2/	5839	1535 2/	7157	9207 2/	18019	-
Armco Steel Corp.	00509	01	0.720	0.780	60	22	360	164	300	156	Flow
Armco Steel Corp.	00509	05	4.[illegible]	1.930	1021	37	4003	303	9007	254	-
Armco Steel Corp.	00509	08	35.000	30.800	3211	1783	10216	7568	43785	2424	-
Armco Steel Corp.	00509	09	0.720	0.680	400	42	600	322	2402	560	-
Armco Steel Corp.	00509	11	2.600	1.600	2166	2062	2168	599	8674	7731	BOD
Armco Steel Corp.	00509	15	1.060	2.750	223	193	901	1582	450	852	FLOW, Susp Solids, COD
Armco Steel Corp. - Total		6	44.020	40.240	8226	4049	18248	10738	64618	33867	
Goodyear Tire & Rubber Co.	00520	02	2.500	2.520	1251	416	1564	661	3128	5792	Flow, COD
U.S. Indiana Chemical Co.	00534	01	0.970	0.970	18	84	525	219	751	383	Flow
U.S. Indiana Chemical Co.	00534	02	0.430	0.150	143	81	215	115	717	209	-
U.S. Indiana Chemical Co. - Total		2	1.330	1.120	151	165	740	334	1468	592	-
Charter International Oil Co.	00535	01	2.200	1.290	901	1100	1351	518	7206	3328	BOD

TABLE III-2-B

INDUSTRIAL WASTES - PERMIT DATA (Continued)
Houston Ship Channel

Name	Permit No.	Out-fall	Flow (MGD) Permit	Flow (MGD) Aver.	BOD (lb/day) Permit	BOD (lb/day) Aver.	Susp Solids (lb/day) Permit	Susp Solids (lb/day) Aver.	COD (lb/day) Permit	COD (lb/day) Aver.	Parameters in Violation
Stauffer Chemical Co.	00541	01	1.130	0.660	188	48	469	199	188	87	-
Stauffer Chemical Co.	00541	02	0.045	0.031	8	1	19	41	8	4	Susp Solids
Stauffer Chemical Co. - Total		2	1.175	0.691	196	49	488	240	196	91	
Stauffer Chemical Co.	00542	01	1.000	1.300	167	216	417	785	667	689	Flow, BOD, Susp Solids, COD
Celanese Plastics Co.	00544	01	0.425	0.338	53	18	213	83	195	110	-
Ashland Chemical Co.	00549	01	1.350	0.580	576	263	806	47	2302	1331	-
Crown Central Petroleum Corp.	00574	01	4.000	1.600	4170	2967	3336	851	13344	7301	-
Crown Central Petroleum Corp.	00574	02	0.064	0.475	901	357	721	297	2882	1319	-
Crown Central Petroleum Corp. - Total		2	4.063	2.075	5071	3324	4057	1148	16226	8620	
Lone Star Cement Corp.	00580	01	0.0005	0.0014	<1	<1	<1	1	<1	<1	Flow, BOD, Susp Solids, COD
Lone Star Cement Corp.	00580	02	0.150	0.040	13	2	125	24	63	50	-
Lone Star Cement Corp. - Total		2	0.151	0.041	13	2	125	25	63	50	
Petro Tex Chemical Corp.	00587	01	1.000	0.330	209	10	334	71	1668	105	-
Petro Tex Chemical Corp.	00587	02	6.250	4.410	5213	2965	5213	3306	20850	15594	-
Petro Tex Chemical Corp.	00587	03	0.900	0.386	263	83	751	193	2252	388	-
Petro Tex Chemical Corp. - Total		3	8.150	5.126	5685	3053	6798	3470	24770	16087	
Humble Oil & Refining Co.	00592	02	25.000	19.300	10425	4016	14595	4307	41700	18025	-

TABLE III-2-B

INDUSTRIAL WASTES - PERMIT DATA (Continued)
Houston Ship Channel

Name	Permit No.	Out-Fall	Flow (MGD) Permit	Flow (MGD) Aver.	BOD (lb/day) Permit	BOD (lb/day) Aver.	Susp Solids (lb/day) Permit	Susp Solids (lb/day) Aver.	COD (lb/day) Permit	COD (lb/day) Aver.	Parameters in Violation
Enjay Chemical Co.	00610	01	0.200	0.180	150	96	150	11	584	231	-
Petroleum & Mining Div.	00635	01	0.720	1.070	361	79	482	236	2108	831	Flow
Lubrizol Corp.	00639	01	1.000	0.583	834	1964	834	1681	3336	6870	BOD, Susp Solids, COD
U.S. Plywood - Champion Paper	00640	01	44.000	38.600	18348	14600	36696	47600	146784	101500	Susp Solids
Olin-Mathieson Chemical Corp.	00649	01	7.200	10.300	601	N.R.[1/]	3002	6365	6605	N.R.[1/]	Flow, Susp Solids
Olin-Mathieson Chemical Corp.	00649	03	1.260	0.060	163	N.R.	817	620	1962	N.R.	
Olin-Mathieson Chemical Corp.	00649	05	6.600	5.000	1104	N.R.	3521	8122	8282	N.R.	Susp Solids
Olin-Mathieson Chemical Corp.	00649	06	0.216	0.213	9	N.R.	34	32	36	N.R.	
Olin-Mathieson Chemical Corp.	00649	07	0.270	0.730	61	N.R.	61	845	244	N.R.	Flow, Susp Solids
Olin-Mathieson Chemical Corp. - Total		5	16.046	18.103	1938		9455	15887	17129		
Philip Carey Manufacturing Co.	00660	01	0.040	0.060	7	9	5	9	67	27	Flow, BOD, Susp Solids
Tejas Co.	00663	01	0.580	0.830	242	691	339	855	967	1734	Flow, BOD, Susp Solids, COD
A.O. Smith Corp. of Texas	00672	01	0.850	0.390	355	89	425	131	1418	710	-
Porter & Porter, Inc.	00693	01	0.005	0.263	N.R.[1/]	N.R.[1/]	1	40	N.R.[1/]	N.R.[1/]	Flow, Susp Solids
Porter & Porter, Inc.	00332	01	0.002	1.100	1	N.R.[1/]	1	155	N.R.[1/]	N.R.[1/]	Flow, Susp Solids
Phillips Petroleum Co.	00775	01	0.100	0.160	2	3	8	15	13	16	Flow, BOD, Susp Solids, COD
Phillips Petroleum Co.	01031	01	0.020	0.030	2	1	8	6	11	3	-
Synthesis Chemical Div.	00761	01	0.0003	0.0105	<1	3	<1	<1	<1	13	Flow, BOD, Susp Solids, COD
Chemical Exchange Prod. Co.	00765	01	0.144	0.031	120	10	120	9	480	26	-

TABLE III-2-B

INDUSTRIAL WASTES - PERMIT DATA (Continued)
Houston Ship Channel

Name	Permit No.	Outfall	Flow (MGD) Permit	Flow (MGD) Aver.	BOD (lb/day) Permit	BOD (lb/day) Aver.	Susp Solids (lb/day) Permit	Susp Solids (lb/day) Aver.	COD (lb/day) Permit	COD (lb/day) Aver.	Parameters in Violation
Parker Brothers Co., Inc.	00797	01	0.002	0.001	N.R.[1/]	N.R.[1/]	N.R.[1/]	<1	N.R.[1/]	N.R.[1/]	-
Parker Brothers Co., Inc.	03506	01	0.0003	0.001	N.R.	N.R.	<1	3	N.R.	N.R.	Flow, Susp Solids
Eddy Refining Co.	01015	01	0.0002	0.001	<1	1	<1	<1	<1	2	Flow, BOD, Susp Solids, COD
Gulf Coast Portland Cement	01021	01	0.250	0.020	31	<1	209	4	104	3	-
Lone Products Co., Inc.	01020	01	0.035	0.001	3	<1	6	<1	20	<1	-
Keeper Co., Inc.	01034	01	0.008	0.004	3	177	3	17	13	350	Flow, BOD, Susp Solids, COD
National Supply Division	01036	01	0.112	0.067	19	3	14	12	140	25	-
Premier Petrochemical Co.	01045	01	0.150	0.170	123	200	63	126	500	467	Flow, BOD, Susp Solids
Durbin Tool Co.	01046	01	0.104	0.104	17	3	13	5	69	23	-
Durbin Tool Co.	01046	02	0.002	0.002	15	5	15	3	61	19	-
Durbin Tool Co.	01046	03	0.207	0.207	17	6	17	10	69	38	-
Durbin Tool Co.	01046	04	0.037	0.497	73	105	98	65	302	248	BOD
Durbin Tool Co.	01046	05	N.R.[1/]	0.001	N.R.[1/]	3	N.R.[1/]	4	N.R.[1/]	25	-
Durbin Tool Co. - Total		5	0.390[2/]	0.801	122[2/]	122	143[2/]	87[2/]	591[2/]	373	
Gulf State Asphalt Co., Inc.	01035	01	0.150	14.225	13	1676	25	1867	50	2667	Flow, BOD, Susp Solids, COD
S.M.D. Industries	01092	01	0.112	0.110	48	26	67	44	192	89	-
Electric Applicators, Inc.	01130	01	0.028	0.015	2	5	N.R.[1/]	8	0	19	BOD, COD
Southland Paper Mills	01150	01	50.000	11.790	41700	3141	41700	2849	166800	35921	-

INDUSTRIAL WASTES - PERMIT DATA (CONTINUED)
Houston Ship Channel

Name	Permit No.	Out-Fall	Flow (MGD) Permit	Flow (MGD) Aver.	BOD (lb/day) Permit	BOD (lb/day) Aver.	Susp Solids (lb/day) Permit	Susp Solids (lb/day) Aver.	COD (lb/day) Permit	COD (lb/day) Aver.	Parameters in Violation
Anchor Hocking Glass Corp.	01170	01	0.038	0.178	5	55	5	47	47	235	Flow, BOD, Susp Solids, COD
Union Carbide Chemical Co.	01173	01	0.144	0.139	24	10	60	34	120	82	-
Southern Pacific Co.	01180	01	0.011	0.093	2	2	2	2	18	6	BOD, Susp Solids
Southern Pacific Co.	01181	01	0.015	1.675	3	4	5	1034	25	14	Flow, BOD, Susp Solids
Phosphate Chemicals, Inc.	01194	01	0.360	0.216	150	10	210	87	1501	39	-
Phosphate Chemicals, Inc.	01194	02	0.075	0.029	40	1	8	4	396	5	-
Phosphate Chemicals, Inc. - Total		2	0.435	0.245	190	11	218	91	1897	44	
Grief Brothers Coop. Corp.	01217	01	0.004	0.030	1	2	<1	3	7	8	Flow, BOD, Susp Solids, COD
PPG Industries	01224	01	0.060	0.187	5	2	5	13	20	9	Flow, Susp Solids
PPG Industries	01224	02	0.100	0.170	8	215	8	5	33	370	Flow, BOD, COD
PPG Industries - Total		2	0.160	0.357	13	217	13	18	53	379	-
Texas Instruments, Inc.	01225	01	0.640	0.420	107	37	107	60	1074	151	-
Southwest Chemical & Plastics	01229	01	0.004	0.006	<1	1	1	1	2	2	Flow, BOD, Susp Solids, COD
Hammett Copper Corp.	01260	01	0.030	0.120	45	<5	135	18	450	17	-
Air Products & Chemicals, Inc.	01300	01	0.043	0.097	4	11	4	14	18	143	Flow, BOD, Susp Solids, COD
Southern Petrochemical Corp.	01310	01	0.030	0.140	25	17	25	37	100	29	Flow, Susp Solids

1/ Data not reported
2/ Total excluding non-reported data

TABLE III-3-C

MUNICIPAL WASTES - PERMIT DATA
Galveston Bay and All Other Areas

Name	Permit No.	Out-fall	Flow (MGD) Permit	Flow (MGD) Aver.	BOD (lb/day) Permit	BOD (lb/day) Aver.	Susp Solids (lb/day) Permit	Susp Solids (lb/day) Aver.	Chlorine Residual (ppm) Permit	Chlorine Residual (ppm) Aver.	Parameters in Violation	Day By-pas
City of Alvin	10205	01	N.R.	1.422	N.R.1/	161	N.R.1/	150	N.R.1/	1.1	-	1
City of Angleton	10340	01	1.000	0.849	167	97	167	60	1.0	1.1	-	1
Bellaire M.U.D.	10607	01	1.000	0.193	167	8	167	10	1.0	1.1	-	
Bayview M.U.D.	10773	01	0.250	0.068	42	2	42	3	0.5	1.7	-	
City of Clear Lake Water Auth.	10929	01	2.250	1.199	375	44	375	145	1.0	1.7	-	
Golden Wave M.U.D.	10921	01	0.625	0.016	105	1	105	1	1.0	1.4	-	
Community Utilities Inc.	10474	01	0.045	0.036	8	11	8	37	0.5	0.9	Flow, BOD, Susp Solids	
Fort Bend Util Co	10256	01	0.750	0.245	125	80	125	138	1.0	0.2	Susp Solids, Chlorine Residual	7
Fort Bend Util Co	10264	02	0.050	0.078	7	13	7	76	N.R.1/	1.3	Flow, BOD, Susp Solids	
Fort Bend - Total		2	0.800	0.323	132	93	132	214				
City of Friendswood	10175	01	0.070	0.201	12	20	12	29	1.0	1.8	Flow, BOD, Susp Solids	
City of Friendswood	10175	02	0.750	0.256	125	25	125	25	1.0	1.7	-	
City of Friendswood - Total		2	0.820	0.457	137	54	137	54				
City of Galveston	10683	01	0.260	4.027	60	1104	60	4586	1.0	1.2	Flow, BOD, Susp Solids	26
City of Galveston	10683	02	0.260	0.245	60	420	60	545	1.0	1.03	Flow, BOD, Susp Solids	
City of Galveston	10683	03	0.050	0.032	8	4	8	9	0.5	1.7	Susp Solids	
City of Galveston - Total		3	0.770	3.305	128	1608	128	5140				

TABLE III-2-C

MUNICIPAL WASTES - PERMIT DATA (Continued)
Galveston Bay and All Other Areas

Name	Permit No.	Out-Fall	Flow (MGD) Permit	Flow (MGD) Aver.	BOD (lb/day) Permit	BOD (lb/day) Aver.	Susp Solids (lb/day) Permit	Susp Solids (lb/day) Aver.	Chlorine Residual (ppm) Permit	Chlorine Residual (ppm) Aver.	Parameters in Violation	Days By-passe
Galveston Co. WCID 1 Plt. #1	10173	01	1.200	0.717	200	119	200	194	N.R.1/	1.7	-	3
Galveston Co. WCID 1 Plt. #2	10173	02	0.500	0.276	83	137	83	49	N.R.1/	1.6	BOD	9
Galveston Co. WCID 1 - Total		2	1.700	0.993	283	256	283	243				
Galveston Co. WCID 12	10029	01	0.425	0.213	71	23	71	22	1.0	3.4	-	
Galveston Co. WCID 8	10174	01	0.040	0.134	7	17	7	10	N.R.1/	0.8	Flow, BOD, Susp Solids	
Galveston Co. WCID Glen Cove	10524	01	0.150	0.309	25	222	25	262	1.0	2.0	Flow, BOD, Susp Solids	
Harris Co., Clearwoods L.D.	10550	01	0.500	0.002	83	1	83	3	1.0	1.5	-	
Harris Co. WCID #89, Mi Lago	10243	03	0.500	0.271	83	15	83	20	1.0	2.2	-	
Harris Co. WCID #75	10266	01	0.150	0.080	25	6	25	10	1.0	1.8	-	
City of Hitchcock	10602	01	0.300	0.252	50	22	50	19	0.5	0.9	-	23
Jamaica Corp.	10570	01	0.070	0.001	12	<1	12	<1	1.0	4.5	-	
City of La Marque	10410	01	1.900	1.693	317	202	555	383	N.R.1/	1.4	-	56
Lagoon Util. Co.	10576	01	0.070	0.059	12	7	12	17	1.0	2.4	Flow, Susp Solids	
Swan Lagoon, City of Lake Jackson	10577	01	0.070	0.044	9	5	12	4	0.5	1.2	-	
City of League	10595	01	1.500	0.763	250	20	250	84	1.0	1.7	-	
League, City of - Glen Cove	10595	02	0.150	0.399	25	222	N.R.1/	262	1.0	1.7	Flow, BOD	
City of League - Total		2	1.650	1.162	275	242	250	346				

TABLE III-2-C

MUNICIPAL WASTES - PERMIT DATA (Continued)
Galveston Bay and All Other Areas

Name	Permit No.	Out-Fall	Flow (MGD) Permit	Flow (MGD) Aver.	BOD (lb/day) Permit	BOD (lb/day) Aver.	Susp Solids (lb/day) Permit	Susp Solids (lb/day) Aver.	Chlorine Residual (ppm) Permit	Chlorine Residual (ppm) Aver.	Parameters in Violation	Days By-passed
City of Nassau Bay	10526	01	1.250	0.436	225	26	225	72	1.0	2.2	-	
City of Pearland, Plant #2	10134	02	1.000	0.626	167	19	167	41	N.R.[2/]	0.9	-	
City of Pearland, Plant #3	10134	03	0.500	0.301	83	10	83	41	N.R.[2/]	0.4	-	
City of Pearland - Total		2	1.500	0.927	250	29	250	82				
San Jacinto J.C. Dist.	10272	01	0.127	0.075	21	3	21	6	1.0	1.9	-	
City of Seabrook	10571	01	2.500	0.332	417	27	417	30	1.0	1.5	-	
Shell Oil Co.	10231	01	0.001	0.001	<1	1	<1	10	1.0	3.3	BOD, Susp Solids	
City of Shores Acres	10759	01	0.234	0.220	39	40	39	39	1.0	2.2	BOD	
City of Texas City Plant #1	10375	01	5.000	3.359	834	603	834	556	1.0	1.4	-	22
City of Texas City Plant #2	10375	02	1.600	0.945	400	391	400	985	1.0	1.2	-	13
City of Texas City - Total		2	6.600	4.304	1234	994	1234	1541				35
Texas Dept. of Corrections Center No. 2	10967	01	0.072	0.049	12	21	12	38	1.0	1.2	BOD, Susp Solids	4
City of Webster	10528	01	N.R.[1/]	0.228	N.R.[1/]	9	N.R.[1/]	22	N.R.[1/]	1.7	-	24
Chambers Co. WCID #1	10400	01	0.030	0.063	6	16	5	45	N.R.[1/]	1.1	Flow, BOD, Susp Solids	
Forest Cove M.U.D.	10807	01	0.500	0.297	83	13	83	50	5.0	6.8	-	
Montgomery Co. WCID #1	10857	01	0.300	0.026	50	2	50	1	5.0	2.4	Chlorine Residual	

TABLE III-2-C

MUNICIPAL WASTES - PERMIT DATA (Continued)
Galveston Bay and All Other Areas

Name	Permit No.	Outfall	Flow (MGD) Permit	Flow (MGD) Aver.	BOD (lb/day) Permit	BOD (lb/day) Aver.	Susp Solids (lb/day) Permit	Susp Solids (lb/day) Aver.	Chlorine Residual (ppm) Permit	Chlorine Residual (ppm) Aver.	Parameters in Violation	Day By-pass
City of Tomball	10016	01	0.212	0.215	35	68	33	176	N.R.	5.0	Flow, BOD, Susp Solids	1
Beaumont Nat. Util. Dist.	10325	01	2.000	0.769	334	42	334	36	1.0	2.7	-	1
Monsanto Chemical Co.	00575	01	0.270	0.105	N.R.1/	5	N.R.1/	49	N.R.1/	0.0	-	
Houston Light & Power Co.	01044	02	0.001	0.0212	<1	<1	<1	<1	0.5	0.9	-	
Texas State Yards Co.	00772	01	0.022	0.017	N.R.1/	30	N.R.1/	3	N.R.1/	6.0	-	

1/ N.R. = No data reported for this parameter

TABLE III-2-D

INDUSTRIAL WASTES - PERMIT DATA
Galveston Bay and All Other Areas

Name	Permit No.	Out-Fall	Flow (MGD) Permit	Flow (MGD) Aver.	BOD (lb/day) Permit	BOD (lb/day) Aver.	Susp Solids (lb/day) Permit	Susp Solids (lb/day) Aver.	COD (lb/day) Permit	COD (lb/day) Aver.	Parameters in Violation
Arco Chemical Corp.	01333	01	1.400	0.230	234	8	467	40	2335	74	-
Arco Chemical Corp.	00451	01	0.370	0.255	156	46	216	105	617	258	-
Arco Chemical Corp.	00452	01	3.000	0.707	1251	195	1751	292	5004	644	-
American Oil Co.	00443	01	13.000	14.631	9649	15527	3686	4215	N.R.[1/]	22025	Flow, BOD, Susp. Solids
Atchison, Topeka & Santa Fe	00742	01	0.002	0.004	N.R.[1/]	<1	N.R.[1/]	1	N.R.[1/]	5	Flow
Chemetron Chemical	01220	01	0.144	0.071	24	14	24	15	96	84	-
CAF Corp.	01203	01	0.380	0.309	158	334	158	78	634	833	Flow, BOD, COD
Imperial Sugar Co.	00442	02	0.020	0.057	<1	2	<1	17	N.R.[1/]	7	BOD, Flow, Susp Solids
Imperial Sugar Co.	00442	03	12.000	10.172	500	1926	8207	7824	N.R.[1/]	4838	BOD
Imperial Sugar Co. - Total		2	12.008	10.229	500	1928	8207	7841		4895	
Marathon Oil Co.	00290	01	1.350	1.210	450	612	450	803	3096	2364	BOD, Susp Solids
Mineral Oil Refining	00377	01	0.150	0.120	25	117	35	25	250	246	BOD
Monsanto Chemical Co.	00301	01	2.000	4.320	726	517	N.R.[1/]	1949	N.R.[1/]	3786	Flow
Monsanto Chemical Co.	00375	02	25.250	58.830	N.R.[1/]	23014	N.R.	5397	N.R.	40084	Flow
Monsanto Chemical Co.	00375	03	16.000	15.200	N.R.	250	N.R.	2644	N.R.	910	-
Monsanto Chemical Co.	00375	04	62.700	27.260	N.R.	769	N.R.	13673	N.R.	6928	-
Monsanto Chemical Co.	00375	05	4.780	0.645	N.R.	129	N.R.	268	N.R.	513	-
Monsanto Chemical Co. - Total		4	108.730	101.930		24161		21982		48435	

TABLE III-2-D

INDUSTRIAL WASTES - PERMIT DATA (Continued)
Galveston Bay and All Other Areas

Name	Permit No.	Out-Fall	Flow (MGD) Permit	Flow (MGD) Aver.	BOD (lb/day) Permit	BOD (lb/day) Aver.	Susp Solids (lb/day) Permit	Susp Solids (lb/day) Aver.	COD (lb/day) Permit	COD (lb/day) Aver.	Parameters in Violation
Pan American Pet. Corp.	01257	01	0.420	0.461	67	256	67	122	1334	729	Flow, BOD, Susp. Solids
Reagent Chemical & Research	01396	01	0.040	0.012	7	73	3	3	23	297	BOD, COD
Southwest Chemical	01028	01	0.043	0.160	N.R.1/	14	N.R.1/	18	N.R.1/	40	Flow
Texas City Refining	00449	01	1.440	1.050	290	362	60	257	1200	1529	BOD, Susp Solids, COD
Union Carbide Chemical	00448	01	N.R.1/	10.697	N.R.1/	47233	N.R.1/	3764	N.R.1/	99082	-
Union Carbide Chemical	00448	02	N.R.	0.151	N.R.	20	N.R.	273	N.R.	87	-
Union Carbide Chemical	00448	03	N.R.	0.153	N.R.	N.R.1/	N.R.	330	N.R.	670	-
Union Carbide Chemical	00448	04	N.R.	0.016	N.R.	5	N.R.	19	N.R.	33	-
Union Carbide Chemical	00448	05	N.R.	0.103	N.R.	16	N.R.	19	N.R.	56	-
Union Carbide Chemical	00448	06	N.R.	0.014	N.R.	5	N.R.	7	N.R.	52	-
Union Carbide Chemical	00448	12	N.R.	0.354	N.R.	1924	N.R.	797	N.R.	3232	-
Union Carbide Chemical - Total		7		11.403		49203		5200		103212	
Wah Chang Corp.	01040	01	0.010	0.472	N.R.1/	19	N.R.1/	178	N.R.1/	75	Flow
Wah Chang Corp.	01040	02	0.100	0.343	N.R.1/	45	N.R.1/	98	N.R.1/	80	Flow
Wah Chang Corp. - Total		2	0.110	0.815		64		276		155	
Gulf Oil Co.	01006	01	1.040	1.165	173	116	174	197	1735	634	Flow, Susp Solids
Valmerick & Parme, Inc.	01385	01	0.006	0.006	1	22	1	40	3	110	Flow, BOD, Susp Solids, COD
Huber, J. M. Corp.	00737	01	0.100	0.070	79	19	111	19	317	38	-
Huber, J. M. Corp.	00737	02	0.030	0.051	13	11	18	8	50	32	Flow
Huber, J. M. Corp. - Total		2	0.130	0.121	92	30	129	27	367	70	-

TABLE III-2-D

INDUSTRIAL WASTES - PERMIT DATA (Continued)
Galveston Bay and All Other Areas

Name	Permit No.	Outfall	Flow (MGD) Permit	Flow (MGD) Aver.	BOD (lb/day) Permit	BOD (lb/day) Aver.	Susp Solids (lb/day) Permit	Susp Solids (lb/day) Aver.	COD (lb/day) Permit	COD (lb/day) Aver.	Parameters in Violation
Humble Oil & Refining	01354	01	N.R.[1/]	3.990	N.R.[1/]	328	N.R.[1/]	567	N.R.[1/]	1384	-
Humble Oil & Refining	01354	02	9.000	4.463	1501	375	5254	318	15012	1021	-
Humble Oil & Refining - Total		2	9.000[2/]	8.333	1501[2/]	703	5254[2/]	885	15012[2/]	2405	
Phoenix Chemical Co.	00951	01	0.726	0.417	N.R.[1/]	22	N.R.[1/]	17	N.R.[1/]	75.	-
Sinclair Petrochemical	00391	01	2.660	1.762	1109	1091	1553	402	4437	2521	-

1/ Data not reported
2/ Total excluding non-reported data

The largest waste dischargers to the Houston Ship Channel are listed in Table III-3. These 12 sources discharge a total of 360.7 MGD containing 94,198 pounds per day of five-day B.O.D.; 217,223 pounds per day of suspended solids and 380,170 pounds per day of C.O.D., exclusive of the two municipal sources. These figures compare with respective permit totals of 466.5 MGD; 155,199 pounds per day of B.O.D.; 290,908 pounds per day of suspended solids; and 729,354 pounds per day of C.O.D. These sources account for 72.5 percent of the actual waste flow discharged; 65.5 percent of the B.O.D.; 81.5 percent of the suspended solids; and 75 percent of the C.O.D.

There are 112 sources of domestic waste permitted to discharge to the Houston Ship Channel amounting to 157 MGD. Of this total, 37 sources or 33 percent, are in violation of B.O.D. permit requirements; 47 sources, or 42 percent, are in violation of suspended solids permit requirements; and seven sources, or 6 percent, do not provide effective disinfection as required. Municipal wastes account for 31.5 percent of the actual waste flow to the Channel; 34.5 percent of the actual B.O.D. load; and 29.8 percent of the suspended solids load.

The City of Houston Northside and Sims Bayou municipal waste treatment plants discharge effluent which is in substantial non-compliance with permit requirements. These two plants account for 39,596 pounds per day of B.O.D. (28 percent greater than permitted); and 61,452 pounds per day of suspended solids (258 percent greater than permitted). Furthermore, neither of these effluents, accounting for 55.5 percent of the domestic waste flow, were receiving effective disinfection through July 1971. Although a form of chlorination was installed at the Northside Plant during June 1971, the system has not been operating for much of the time

TABLE III-3

LARGEST WASTE DISCHARGERS - HOUSTON SHIP CHANNEL

Source	FLOW		BOD		S.S.		COD	
	Perm.	Act.	Perm.	Act.	Perm.	Act.	Perm.	Act.
Industrial Sources								
Ethyl Corporation	16.4	16.1	N.R.	5839	N.R.	7157	N.R.	18019
Diamond Shamrock Corporation	149.3	114.4	33456	9147	127643	46588	211043	109589
Shell Chemical Company	6.1	6.0	5100	3900	15300	10400	50900	29800
Shell Oil Company	9.9	8.0	2537	1712	4301	1846	19480	6849
Rohm and Haas Corporation	1.8	2.5	1490	7700	5790	8300	10900	26600
Armco Steel Corporation	44.9	36.7	7263	4847	18248	10738	64618	33867
U.S. Plywood-Champion Paper Company*	44.0	38.6	18348	14300	36696	47600	146784	101500
Humble Oil and Refining Co.	25.0	19.3	10425	4016	14595	4307	41700	18025
Olin Corporation	16.1	18.1	1937	N.R.	9455	15986	17129	N.R.
Southland Paper Company	50.0	11.8	41700	3141	41700	2849	166800	35921
Municipal Treatment Plants								
Sims Bayou (City of Houston)	48.0	39.3	[illegible]	14334	8006	32153	Cl_2Res.	-0-
Northside (City of Houston)	55.0	47.9	229[illegible]	25262	9174	29299	Cl_2Res.	-0-
Totals	466.5	360.7	155199	94198	290908	217223	729354	380170
Totals (Municipal Only)	103.0	87.2	30941	39596	17180	61452	-	-

*Actual values represent treated effluent as delineated. U.S. Plywood-Champion Paper Company statement to the Conferees.

due to maintenance problems. The Houston Ship Channel is the major source of bacteriological pollution contaminating shellfish harvesting areas in Galveston Bay. Improperly disinfected domestic sewage effluents from the Houston Northside and Sims Bayou plants are the principal sources of excessive bacteriological contamination in the Houston Ship Channel. Neither of the plants is obtaining the waste removal efficiencies for which they are designed.

An accurate inventory of industrial waste discharges to the Houston sewerage system is not available at this time. Mercury is also discharged by both the Sims Bayou and Northside plants, totalling 1.4 pounds per day. However, the concentration of mercury in both effluents is less than the recommended guideline of 5 parts per billion. The data were determined from composite samples collected by EPA in March 1971.

Measurements made by EPA in May 1971 indicate that Buffalo Bayou is covered with sludge from the effluent of the Northside plant, for 2000 feet downstream of the outfall. The depth of this sludge blanket was conservatively estimated at six inches. This sludge accounts for approximately 13 percent of the total volume of material dredged in the Bayou during May and June 1971.

There are 117 sources of industrial waste to the Houston Ship Channel, amounting to 341.2 MGD. Of this total, 34 sources, or 29 percent, are in violation of B.O.D. requirements; 43 sources, or 36.7 percent, are in violation of suspended solids requirements; and 23 sources, or 19.7 percent, are in violation of C.O.D. requirements. Of the major industrial sources listed (Table III-3), two, Rohm and Haas and the Olin Corporation, are presently in violation of permits on a pound's per day basis.

The ten industries listed in Table III-3 account for 58 percent of the actual B.O.D. discharged; 83 percent of the suspended solids and 75 percent of the B.O.D. from all industrial sources to the Houston Ship Channel.

The summary of actual discharges from the self-reporting data, amounting to 144,000 pounds per day of B.O.D. presently being discharged to the Houston Ship Channel, represents a substantial decrease from estimates of 363,000 pounds per day made from examination of receiving water quality in 1969. This reflects considerable progress in overall waste control and abatement as regulated by the Texas Water Quality Board.

To meet the minimum dissolved oxygen criterion of 1.5 milligrams per liter (mg/l) as established in official State-Federal water quality standards for the Houston Ship Channel, it is generally agreed by most researchers, from consideration of pertinent data and development of applicable mathematical models, that the five-day B.O.D. discharged from all waste sources should not exceed 35,000 pounds per day. This would represent an overall reduction of about 95 percent from the estimated original untreated waste load of the early and middle 1960's. If additional waste discharging industries are to be located on the Houston Ship Channel in the future, the removal efficiencies would have to be proportionately higher to maintain the 35,000 pounds per day limit. An additional 76 percent reduction is required from present waste dischargers to meet the 35,000 pounds per day limit.

Presumably, the ongoing Galveston Bay Study is to develop the procedures and mechanisms necessary to meet water quality standards in the Houston Ship Channel. This study, to be completed in 1973, will doubtless

consider various alternatives and combinations of alternatives for adequate waste control including physical-chemical treatment methods; additional in-plant process control; diversion of effluents from the Channel and in-stream aeration. In any case, extraordinary waste removal efficiencies will be required of all present and potential waste sources on the Houston Ship Channel if presently established official Federal-State water quality criteria are to be met. It is technically feasible to attain these levels of waste reduction. A firm implementation schedule to secure compliance with these standards should be established.

As was stated in the Federal report to the Conference, five-day B.O.D. is not a satisfactory indicator of the potential effect on water quality of the Galveston Bay system since the toxicity or growth limiting action of many of the industrial wastes entering Galveston Bay and its tributaries tends to inhibit oxidation of organic material. This is particularly true of petrochemical effluents due to the large number of complex waste compounds not immediately susceptible to biological degradation.

The chemical oxygen demand figures from the waste effluents illustrate this problem. Although the B.O.D. which accounts only for that organic material which will be oxidized in five days amounts to 144,000 pounds per day, the C.O.D., which is a measure of practically all the oxidizable material discharged from all waste sources, is nearly 510,000 pounds per day, or more than 3.5 times greater than the B.O.D. Most of this C.O.D. represents complex compounds and refractory organics, many of which are toxic or growth inhibiting, and which exercise their ultimate organic demand in Galveston Bay. Because of the slow degradation of this material, some of it becomes incorporated into the ecological food chain of Galveston Bay,

which is demonstrated by the presence of hydrocarbons in shellfish. Physical-chemical methods of waste treatment, in addition to increasing removal efficiencies for five-day B.O.D., greatly reduce the slowly degrading organic compounds reflected by the C.O.D., whereas conventional biological methods of treatment remove only a minor fraction of these compounds.

As an example of this situation, four samples from the Houston Ship Channel collected on June 23, 1971, were analyzed by gas chromatograph-mass spectroscopy for presence of complex organics. These four samples -- mile point 0 at Morgan Point; mile 5; mile 12; and mile 18 -- contained essentially the same compounds varying only in different amounts. These compounds are predominantly hydrocarbons and the concentration increases with the relative distance upstream from Morgan Point. The results of oil and grease extraction from bottom sediments in the Houston Ship Channel are shown in Table III-4. The samples from Sims Bayou and Buffalo Bayou downstream of the municipal treatment plants contained the highest concentrations of extractable oil and grease. The next highest concentration is at mile 20. From this point, levels of oil and grease steadily decrease proceeding down the Channel, except at mile 6. At Morgan Point, the concentration of oil and grease in the bottom sediment is 645 parts per million. Results of volatile solids analysis indicate highly organic sludge deposits at nearly all locations examined.

Three aerial reconnaissance missions were flown over the Houston Ship Channel on July 1, 1971; July 2, 1971; and July 12, 1971. The report of this reconnaissance is contained as Appendix A. During the July 1, 1971, flight, eight separate oil discharges were observed and recorded. Several

TABLE III-4

OIL AND GREASE EXTRACTS FROM BOTTOM SEDIMENTS
HOUSTON SHIP CHANNEL

Station	Date/Time	Oil & Grease (μg/g)	% Volatile Solid
5 Mile Cut	6/23, 0855	570	3.55
Mile 0, Morgan Point	6/23, 0935	645	3.94
Mile 4, Left Side	6/23, —	841	3.48
Mile 4, Center	6/23, 1035	645	3.36
Mile 6	6/23, 1105	2740	5.72
Mile 8	6/23, 1130	1400	4.36
Mile 10	6/23, 1155	1460	3.13
Mile 14	6/24, 1210	1260	1.98
Mile 16	6/23, 1335	3160	4.63
Mile 18	6/23, 1355	4360	3.43
Mile 20	6/23, 1420	8500	5.42
Mile 22	6/23, 1435	5220	6.92
Mile 24	6/23, 1505	4940	2.99
Buffalo Bayou, Hirchs Br.	6/23, 2020	2970	2.71
Buffalo Bayou, Wayside Street Bridge	6/25, 1000	21,800	5.94
Sims Bayou, Landa Bridge	6/25, 1100	57,800	9.99
9th Street	6/24, 1055	1960	3.72

discolored effluents, the chemical composition of which was not verified at the time of the flight, were also observed. These overflights will be continued at varying intervals to better define the oil discharge problem in the Houston Ship Channel.

Texas Water Quality Board permits allow an aggregate total of about 50,000 pounds per day of oil and grease to be discharged to the Ship Channel. This constitutes a flow of approximately 6,300 gallons per day. The allowable oil and grease discharge permits are summarized in Table III-5. In May 1971, the Texas Water Quality Board collected grab samples for oil and grease analysis from 18 petroleum industry plants on the Houston Ship Channel. Fifty percent of the volume actually sampled had concentrations less than 3.6 mg/l and 83 percent of the volume sampled had concentrations of less than 30 mg/l. The total amount of oil and grease, both permitted to be discharged and actually discharged to the Houston Ship Channel, is substantial and the effect on water quality is demonstrated from the presence of hydrocarbons in both water and sediment. Oil and grease concentration in the effluent is not one of the parameters required in the self-reporting system. The representative contribution from each waste source cannot be definitely established at this time.

Many of the industries named as dischargers of heavy metals and toxic materials, based on February 1969 grab sampling, stated that the figures cited were grossly in error due to not subtracting the high concentrations present in the intake process and cooling water. Samples were collected from the Houston Ship Channel in late June 1971, and analyzed for zinc, lead, copper, chromium, cadmium, mercury and cyanide. These data are presented as Appendix B. A summary of these data is contained in Table III-6.

TABLE III-5

PERMITTED DISCHARGES ON OIL AND GREASE
HOUSTON SHIP CHANNEL

Industry	mg/l	Lb./Day
Arco Chemical	20	440
Armco Steel No. 1*	20	30
No. 11	25	540
No. 15	25	180
No. 56	20	800
No. 92	25	150
Total		1,700
Ashland Chemical	20	230
Atlantic Richfield No. 1	28	340
No. 2	135	6,970
Total		7,310
Baroid Div.	10	40
Celanese Plastics	5	20
Crown Central Petroleum No. 1	25	160
No. 2	25	180
Total		340
Diamond Shamrock No. 1	10	320
No. 2	10	8,170
No. 3	10	3,500
No. 4	10	50
No. 5	10	400
Total		12,440
DuPont (La Porte)	20	720
Enjoy Chemical	20	30
Ethyl Corp.	3	90
Goodyear Tire	25	520
Gulf Coast Portland Cement	25	50
Gulf Oil	5	40
Gulf States Asphalt	15	20
Hess Terminals	25	20
Houston Natural Gas	1	10
J. M. Huber	10	20
Hughes Tool	15	120
Humble Oil	20	4,200

*Armco No. 91, 70% of total flow, has no specific oil and grease restrictions.

TABLE III-5 (Continued)

PERMITTED DISCHARGES OF OIL AND GREASE
HOUSTON SHIP CHANNEL

Industry	mg/l	Lb./Day
Ideal Cement No. 1	15	60
No. 2	15	10
Total		70
Kennecott Copper	2	20
Lone Star Cement	10	10
Lubrizol Corp.	25	210
Merichem	20	40
Murphy Industries	25	150
Olin Corp No. 1	25	1,510
No. 3	5	80
No. 5	5	30
No. 7	25	150
Total		1,770
Penwalt Chemicals	50	80
Petro-Tex Chemicals No. 1	10	30
No. 2	25	790
No. 3	15	80
Total		900
Phillips Pet. (Adams Term.)		
No. 2 & 4	10	160
No. 3	41	40
Total		200
Phosphate Chemicals	20	60
Pittsburg Plate Glass	15	10
Premier Petrochemical	10	10
Rohm & Haas No. 1	25	360
No. 2	25	20
Total		380
Shell Chemical	25	1,270
Shell Oil No. 1	10	120
No. 2	15	40
No. 3	10	10
No. 4	10	50
No. 9	10	20
No. 10	20	790
No. 13	25	560
Total		1,590
Signal Oil (Charter) No. 1	25	450
No. 2	25	150
Total		600

TABLE III-5 (Continued)

PERMITTED DISCHARGES OF OIL AND GREASE
HOUSTON SHIP CHANNEL

Industry	mg/L	Lb./Day
Sinclair Koppers	20	80
A. O. Smith Corp.	25	180
SMS Industries	20	20
Southland Papers (HSC)	10	4,000
Stauffer Chem. (Greens Bayou)	10	90
Stauffer Chem. (Manchester)	25	210
Tenneco Chemical (Pasadena)	20	170
Texaco (Galena Park)	20	10
Union Carbide (Deer Park)	20	20
U. S. Gypsum	25	100
Upjohn Co.	15	70
U. S. Ind. Chem. No. 1	40	300
No. 2	15	50
Total		350
U. S. Plywood-Champion Paper Company	25	9,200
Velsicol (Chem. Exch. Co.)	25	30
GRAND TOTAL		50,260

TABLE III-6

CONCENTRATIONS OF HEAVY METALS
HOUSTON SHIP CHANNEL

JUNE 1971

Parameter	Average Observed Concentrations in µg/l*		Average Mass Quantity in Pounds Per Day**	
	Upper Channel	Lower Channel	Upper Channel	Lower Channel***
Zinc	54	43	166	290
Lead	172	206	530	1,390
Copper	52	75	160	506
Chromium	29	49	89	331
Cadmium	32	37	98	250
Mercury	< 0.2	< 0.2	< 0.6	< 1.4
Cyanide	26	< 23	80	<155

* Micrograms per liter

** Based on 50 Percent probability of occurrence of stated flow for June

Upper Channel - Flow = 570 cfs. Lower Channel - Flow = 1,250 cfs.
Reference - Table 2, Technical Report No. 11, Completely Mixed Model of the Houston Ship Channel by Kramer and Hann, Texas A&M University.

*** Upper Channel = Mile 24 to Mile 10
Lower Channel = Mile 10 to Mile 0 (Morgan Point)

All of these concentrations, with the exception of cadmium and possibly mercury, are many times in excess of background concentrations in natural seawater. The background concentration of cyanide in natural seawater was not listed. Table III-7 details the concentrations of lead and mercury in sediment samples. These results do indicate contamination of the Houston Ship Channel from waste sources containing metals and toxic contaminants, which could be contained in the intake water. However, except in the case of those industries which stated the metals concentrations in their effluents as a result of plant production, no aggregate total of heavy metals or other toxic substances presently discharged to the Channel from waste sources is available. Nor, again excepting the appropriate industries, is it presently possible to assess the representative contribution from each waste source. Heavy metals, and other toxic substances, are not regularly required parameters in the self-reporting system.

There has been a reduction of five-day B.O.D. discharged to the Houston Ship Channel since the mid-1960's of approximately 80 percent, largely through the regulatory efforts of the Texas Water Quality Board. The total discharge averaged through March 1971 was about 144,000 pounds per day. To meet the official minimum dissolved oxygen criterion in the Ship Channel, no more than 35,000 pounds per day of B.O.D. can be discharged from all sources.

Concomitant reductions in complex, slowly degrading compounds; other refractory organics; oil and grease; and heavy metals and toxic substances are not reflected by the B.O.D. reductions. Very little data are available on representative levels of these materials in individual waste discharges, although they do deleteriously affect water quality in the Houston Ship

TABLE III-7

HEAVY METALS IN SEDIMENT
HOUSTON SHIP CHANNEL

JUNE 1971

Location	Concentration in ppb*			
	Lead		Mercury	
	Top	Bottom	Top	Bottom**
Morgan Point	20	< 20	500	300
Five Mile Cut	< 20	< 20	< 30	< 20
Mile 11	40	80	5,000	5,400
Mile 15	150	460	600	3,300
Mile 24	340	210	1,100	800

* Parts per Billion

** Refers to Top and Bottom of Core Samples

Channel and Galveston Bay. A waste source survey characterizing these substances is required and a regular reporting obligation should be instituted. Adequate abatement measures consistent with the best available technology is necessary.

B. GALVESTON BAY AND ALL OTHER AREAS

Galveston Bay and all other tributary areas receive 184.6 MGD of wastes containing 99,800 pounds per day of B.O.D.; 55,100 pounds per day of suspended solids; and 201,000 pounds per day of C.O.D. from industrial sources only. The allowable effluent totals in the Texas Water Quality Board permits are not meaningful for purposes of comparison since the figures permitted for the largest dischargers, except for flow, are not recorded in the self-reporting data. The permitted total flow is 189.9 MGD.

There are 85 sources permitted to discharge wastes to the Galveston Bay system, exclusive of the Houston Ship Channel. There are 48 sources of domestic waste, 12 of which, or 25 percent, are in violation of flow requirements; 14, or 29 percent, are exceeding B.O.D. requirements; and 16, or 33 percent, do not meet suspended solids requirements. Municipal wastes constitute 13 percent of the actual waste flow; 4.4 percent of the B.O.D.; and 17.8 percent of the suspended solids.

There are 37 sources of industrial waste discharging a total of 160.[illegible] MGD containing 95,400 pounds per day of B.O.D.; 45,300 pounds per day of suspended solids and 201,000 pounds per day of C.O.D.

The largest waste dischargers are listed in Table III-8. These four sources discharge a total of 137 MGD containing 90,593 pounds per day of B.O.D.; 34,391 pounds per day of suspended solids and 182,458 pounds per

TABLE III-8

LARGEST WASTE DISCHARGERS
GALVESTON BAY AND ALL OTHER AREAS

Source	Flow M.G.D.		B.O.D. LBS./DAY		S.S. LBS./DAY		C.O.D. LBS./DAY	
	Perm.	Act.	Perm.	Act.	Perm.	Act.	Perm.	Act.
Monsanto Chemical	95.7	106.2	N.R.	24,678	N.R.	23,931	N.R.	52,22
Union Carbide Chemical	N.R.	11.3	N.R.	49,203	N.R.	5,200	N.R.	108,21
American Oil Company	13.0	14.6	9,649	15,527	3,686	4,715	N.R.	22,02
Galveston (10,688)	0.36	4.9	60	1,185	60	54	----	----
TOTALS	--	137.0	--	90,593	--	34,39	--	182,45

N.R. = NOT RECORDED

day of C.O.D., accounting for 74 percent of the actual flow, 91 percent of the B.O.D.; 62.5 percent of the suspended solids; and 91 percent of the C.O.D. Union Carbide is the largest discharger of B.O.D. and C.O.D. from all sources. Monsanto discharges 43.5 percent of the suspended solids from all sources. American Oil Company is in violation of its permit for flow, B.O.D. and suspended solids. No representative data are available on discharge of complex organics, oil, heavy metals or other toxic substances from these sources.

Inspection of the permit values recorded with the self-reporting data for all sources discharging to the Galveston Bay system indicates that, in many cases, waste flow allowed to be discharged is substantially greater than the actual waste flow. This, in effect, allows the discharge of a larger pounds-per-day of pollutant than is necessary. The suspended solids permitted also appear to be greater than is warranted, particularly in light of the sludge deposits in the Houston Ship Channel. For instance, on the average, each effluent to the Channel could discharge about 66 mg/l of suspended solids. The waste source contribution to the sludge deposits should be materially reduced. From inspection of the industrial statements and the results of the grab samples collected by the Texas Water Quality Board, oil and grease permitted to be discharged also appears to be greater than necessary. It is also noted that some of the waste sources do not report their effluent values regularly on a monthly basis. In fact, the Olin Corporation has never submitted data according to the computer printouts received.

V. CEDAR BAYOU POWER PLANT - HOUSTON LIGHTING AND POWER COMPANY

The Houston Lighting and Power Company is developing, in stages, a 5,000 MW electrical power plant at Cedar Bayou which, as now designed, will eventually require about 5,000 cubic feet per second (cfs) of once-through cooling water. The intake water will come from upper Cedar Bayou, Tabbs Bay, Houston Ship Channel, and upper Galveston Bay. The intake water will be heated 20° F. during maximum plant operation. The heated water, as presently projected by the Company, will be discharged to a six-mile canal into a 2,600-acre pond for approximately 55 percent removal of the heat load before final discharge into Trinity Bay. The final operating plant will consist of six units (four 750 MW and two 1,000 MW units). As of this date (July 1971), unit 1 (750 MW) is complete and operational, although not operating at this time because of mechanical difficulties. Unit 2 (750 MW) is more than 75 percent complete and is expected to be operational by November 1971. The pad has been poured for Unit 3 (750 MW) for completion by 1974, and Unit 4 (750 MW) has been ordered for 1976. The entire facility is presently scheduled to be operational as early as 1978.

The residual heat discharged to Trinity Bay in the ultimate 5,000 cfs (3.22 billion gallons per day) cooling water effluent will still be sufficient to significantly increase the surface temperature of several square miles of the Bay. The National Technical Advisory Committee on Water Quality Criteria has recommended that the monthly mean of the maximum daily water temperatures should not be increased by more than 1.5° F. by the artificial addition of heat during June, July and August, nor more

than 4° F. during the remainder of the year. The Texas Water Quality Requirements specify that a 1.5° F. rise in the representative temperature above natural conditions is not to be exceeded during the summer, nor more than 4° F. during fall, winter, and spring. The area of the zone which will exceed the 1.5° F. limit when the plant is in full operation is controversial, but is estimated to be in the range of 600 to 2,200 acres. The impact of the expected water temperature increase on the shrimp nursery and other aquatic life of Trinity Bay is also a controversial subject. Increased water temperatures have been found to be beneficial to some stages of shrimp development and detrimental to other stages.

The Houston Lighting and Power Company contends that the present proposal for discharge to Trinity Bay is the only economically acceptable alternative and will entail no irreparable damage to the biological life of Trinity Bay. This conclusion is based on evaluations conducted on mobile aquatic species in the cooling water effluent from the Robinson plant further south on Galveston Bay, and in Trinity Bay while the first unit for Cedar Bayou has been operating. These studies evaluated the effects of heated effluent on adult fish, shrimp and crustaceans which, due to the nature of their life stage, can tolerate increased heat and can avoid extreme conditions. If damage is shown to occur as the result of the Company's continuing ecological studies as new units are placed into operation, Houston Lighting and Power Company will take immediate steps to correct the situation. The Texas Water Quality Board has accepted this program and granted a permit covering the discharge of 1,500 cfs (970 MGD) of cooling water from the first two units and has recently granted waste

discharge permits to cover the ultimate 5,000 cfs discharge.

The Environmental Protection Agency has also conducted an evaluation of the proposed cooling system for the Cedar Bayou plant. Withdrawal of large quantities of cooling water from Cedar Bayou is expected to increase the dispersion of Houston Ship Channel pollution into Tabbs Bay with attendant water quality degradation. The water in Cedar Bayou is presently of poorer quality than Trinity Bay, the discharge receiving water, due to excessive brine concentrations resulting from discharges from storage caverns, municipal waste discharges (Baytown S.T.P.), industrial waste discharges, and possible agricultural runoff. With the once-through cooling proposed by Houston Lighting and Power Company at the Cedar Bayou plant, all wastes discharged to Cedar Bayou plus water of poor quality from the Houston Ship Channel and upper Galveston Bay would be heated and discharged into Trinity Bay. U.S. Army Corps of Engineers model studies have shown that relative concentrations of conservative pollutants would increase by as much as 600 percent in portions of upper Trinity Bay during low flow conditions. Flow-through time in the cooling water system is less than four days, indicating that the concentrations of slowly degrading refractory organics, such as are found in the Houston Ship Channel, would also increase substantially in Trinity Bay.

Because of the higher salinity levels in Cedar Bayou and Tabbs Bay due to the brine discharges; the probability of further increased salinities due to evaporation in the cooling system; and the reduction in fresh water inflow from the Trinity River due to Wallisville Dam, salinity levels will be increased in Trinity Bay. Since Trinity Bay is a prime shrimp nursery area and shrimp propagation is particularly sensitive to salinity levels,

the potential for damage to the valuable shrimp harvest in Galveston Bay and offshore areas is substantial.

The Environmental Protection Agency opposes any discharge of once through cooling water from the Cedar Bayou power plant to Trinity Bay. E.P.A. recommends that cooling water from Units 1 and 2 use a 1,500 acre cooling pond, preferably located in the high land area near the plant. This pond could be employed, either as a recirculating system with makeup water of approximately 45 cfs taken from the present Coastal Industrial Water Authority fresh water canal and/or Cedar Bayou with blowdown water returned to Cedar Bayou, or once through cooling to near ambient conditions with discharge to Cedar Bayou. A new discharge canal to Cedar Bayou would be required.

For the remaining units, a fresh water system utilizing mechanical draft cooling towers should be investigated. Sufficient makeup water (105 cfs) should be available for purchase from the City of Houston as part of the projected water supply diversion from Wallisville and Livingston Reservoirs. The total daily requirement is 140 cfs (90 MGD) for makeup water under the most unfavorable operating conditions. Under projected normal operating conditions, the total fresh water makeup requirement for the four additional units is approximately 90 cfs (58 MGD). This is about 60 percent of the ultimate daily requirement (100 MGD) by the year 2000 for the closed recirculating cooling system operated by the U. S. Steel Corporation mill adjacent to the power plant. The U. S. Steel system is partially in operation. Under more probable operating conditions, the total fresh water makeup requirement for the Cedar Bayou power plant would approximate ~~135~~ 90 cfs (~~85~~ 58 MGD). The feasibility of relocation of future units to mutually agreeable alternate sites should also be investigated.

V. SUGGESTED RECOMMENDATIONS

1) The Food and Drug Administration, in cooperation with appropriate State regulatory agencies, continue their recently initiated study of oil and hydrocarbon residues in oysters taken from Galveston Bay with the objective of determining toxicological effects, if any, of such concentrations. These data, and any evaluations, shall be made available to the Conferees of the Galveston Bay Enforcement Conference.

2) To insure that approved shellfish harvesting areas are properly classified at all times, sampling for determining bacteriological acceptability of areas for shellfish harvesting in Galveston Bay shall emphasize the most unfavorable hydrographic and pollution conditions. The most unfavorable hydrographic and pollution conditions will be determined by technical personnel of the Texas State Health Department, in cooperation with the Food and Drug Administration and other appropriate State and Federal agencies.

3) Effective disinfection of all waste sources contributing bacteriological pollution to Galveston Bay shall be provided. A program of centralization of treatment facilities shall be continued to assure the best available treatment for domestic sewage. An implementation schedule for this program shall be made available to the Conferees of the Galveston Bay Enforcement Conference.

4) A joint waste source survey shall be conducted by the Texas Water Quality Board, in cooperation with the Environmental Protection Agency, on all sources of municipal and industrial wastes permitted by the Texas Water Quality Board to discharge effluent to Galveston Bay and its tributaries. These examinations shall emphasize determination of complex

organic compounds, heavy metals and other potentially toxic substances, and oil and grease from each waste source. Recommendations and scheduling of necessary abatement will be provided to the Conferees as soon as they become available. The Texas Water Quality Board permits and self-reporting data system should be amended, as necessary, to reflect the recommendations of this waste source survey.

5) The Texas Water Quality Board will review the permits of each waste source discharging to Galveston Bay and its tributaries, and will amend them as necessary to insure that the best available treatment is provided such that discharges of oil and grease from any source will not exceed 5 mg/l. As technology improves, this requirement will be regularly reviewed and readjusted to a lower figure.

6) The Texas Water Quality Board will review and amend the permits as necessary for Galveston Bay waste sources such that the quantity of wastes permitted to be discharged is sufficiently representative of the actual amount of waste to be discharged after required treatment. This review shall particularly emphasize the waste flow permitted as well as the quantity of allowable suspended solids to reduce, as far as possible, the contribution from artificial waste sources to organic sludge deposits in the receiving waters.

7) A characterization and evaluation of the water quality significance of materials contained in the organic sludge dredged from the Houston Ship Channel shall be conducted. Based on the results of this evaluation, and examination of present spoil disposal areas, recommendations will be made by the Texas Water Quality Board and the Environmental Protection Agency on location of suitable spoil disposal areas to minimize or eliminate deleterious effects on water quality.

8) Alert levels for acute and chronically toxic or growth inhibiting parameters shall be developed by the Food and Drug Administration for shellfish from all approved growing waters, including Galveston Bay. These alert levels will be discussed with technical personnel of the Environmental Protection Agency and will be presented at the Seventh National Shellfish Sanitation Workshop sponsored by the Food and Drug Administration. The Environmental Protection Agency, in cooperation with the Food and Drug Administration, and other appropriate State and Federal agencies, shall develop parameters for the same characteristics in waters approved for shellfish harvesting.

9) Color of the waste effluent from U. S. Plywood - Champion Paper Company and Southland Paper Mills shall be reduced to natural background occurring in uncontaminated area waters.

10) To meet official State-Federal water quality standards established for the Houston Ship Channel, the maximum waste load discharged from all sources shall not exceed 35,000 pounds per day of five-day B.O.D. including projected future development. This requirement can be accomplished by use of the best available waste treatment practices consistent with present and future technology development as well as the consideration of other waste disposal alternatives to discharge to the Houston Ship Channel.

The following recommendation was not susceptible to joint agreement by the technical Task Force and both versions are presented for the Conferees' consideration:

11) re: Houston Lighting and Power Cedar Bayou Power Plant

(a) Texas Water Quality Board recommendation: -- the once through cooling system, with discharge to Trinity Bay,

proposed for the Cedar Bayou plant shall be carefully monitored to determine whether irreparable damage to aquatic life is occurring and/or water quality is being deleteriously affected. If such effects are shown, Houston Lighting and Power Company will take immediate steps to correct the situation.

(b) Environmental Protection Agency recommendation:--no discharge of cooling water from the Cedar Bayou plant to Trinity Bay shall be permitted. The Houston Lighting and Power Company shall be required to abate the waste heat load by incorporation of a system utilizing recirculation and reuse of cooling water for all units at the Cedar Bayou plant or return of used cooling water to Tabbs Bay or location of additional units at suitable alternative sites.

APPENDIX A

AERIAL RECONNAISSANCE OF THE HOUSTON SHIP CHANNEL and GALVESTON BAY, TEXAS

July 1971

An aerial reconnaissance program was conducted in July 1971 over the Houston Ship Channel from the Turning Basin to the Channel's outflow into Galveston Bay by the U.S. Air Force at the request of the Environmental Protection Agency. The expressed purpose of this program was to establish the following:

(a) the presence of oil/grease on the Channel waters,

(b) locate, to the extent possible, the oil and grease discharge(s),

(c) locate as many industrial, public works, and shipboard effluents as practicable, and

(d) record the effluent dispersion patterns in the Channel waters.

The flights were conducted continuously between the Turning Basin and Morgans Point. The chronological details of the flights are given as follows:

(a)	1 July 1971	Time over target of 14:30 hours CDT
(b)	2 July 1971	Time over target of 10:30 hours CDT
(c)	12 July 1971	Time over target of 11:30 hours CDT

The reconnaissance data were recorded aboard two high performance aircraft. Each aircraft contained three (3) freeing cameras and an

infrared line scanner (IRLS). The cameras were mounted in the vertical position coincident with aircraft nadir. Each of the cameras was uploaded with different film/optical filter combinations. They were capable of recording the presence of optical energy within the following bands of the optical spectrum:

(a) near ultraviolet resulting in a black-and-white negative,

(b) visible region of spectrum resulting in an Ektachrome positive transparency,

(c) near infrared resulting in an Ektachrome false color (rendition) transparency.

The IRLS is a cryogenic device capable of detecting passive electromagnetic energy resulting from target thermal emissions in the infrared band from 8 to 14 microns (1 micron equals 10^{-6} meters). An example of this type of electromagnetic emission is the human body. Its characteristic body temperature is 98.6°F. The respective emitted characteristic wavelength is 9.35 microns which is within the bandwidth of the IRLS. This unit is capable of detecting and resolving (as a target) the presence of the human body at relatively short ranges.

The first two photographic media discussed above were chosen expressly for their capability of recording the presence of oil and grease. Oils are known to be fluorescent compounds (A fluorescent compound absorbs incident radiation and re-emits energy at a longer wavelength than that of the incident. If the re-emitted energy wavelength is equal to that of the incident radiation, this is called resonance or resonant fluorescence.) and have a characteristic wavelength, in the near ultraviolet region, of approximately 0.38 microns. The black-and-white film is capable of

recording this fluorescent radiation in the near ultraviolet band. The true-color transparencies are used to provide correct color rendition(s) of targets in question and are extensively used in location and target identification work.

Reconnaissance Data Presentation

This section describes the reduction, explanation and presentation of the reconnaissance data obtained during the three (3) days' missions. The discussions are catalogued chronologically. The photographic evidence is on file at the Denver Field Investigations Center. The photo interpretation was made by DFIC personnel with assistance from the Galveston Bay Field Station EPA

Section A - 1 July 1971, 14:30 hours

(1) A discharge of an unknown substance was located at the apex of the Turning Basin. The substance was dispersing toward the center of the Basin.

(2) A minor oil spill was in progress, during the mission, at the Atlantic-Richfield (Sinclair) dock. The dock position is the second loading station inland from the Channel. A barge was docked at this station.

(3) The location and dispersal pattern of the submerged outflow from the U. S. Plywood-Champion Paper Company, located on the Channel's southern shore east of Vince Bayou, was clearly visible during this mission. The chemical substance of the outflow, which appeared as yellowish-brown in color, was not known.

(4) The location and effect of an intermediate oil spill in progress was recorded at the Crown Central Petroleum Corporation dock area. Several barges were docked at the facility at that time. The oil slick, for the most part, followed the southern Channel shoreline downstream for approximately one-half mile. Small portions

of the slick drifted across the Channel and were clinging to the northern Channel shore. A sample was taken during the time of the mission and subsequently verified as oil.

(5) The location and dispersal pattern of Armco Steel Corporation discharges were recorded. There was an oil discharge that had produced a slick across the complete width of the Channel near the source. It was approximately 1.33 miles long. The location of the source was in the immediate vicinity of the waste treatment facility. There was a strong effluent of an orange substance being dispersed into the Channel for nearly half its width. The location of this effluent is approximately 370 feet downstream from the oil effluent. This substance, being discharged into the Channel waters, was assumed to be ferric oxide. The third Armco Steel effluent was that of a charcoal-colored substance being dispersed into the Channel. Its source location was immediately adjacent to the orange effluent. The chemical nature of this substance being discharged is unknown. The fourth effluent, of a lesser magnitude, was located approximately 205 feet upstream from the oil discharge point. This effluent appeared to be originating from the aforementioned waste treatment plant. Its chemical nature is unknown.

(6) A minor oil spill occurred during the time of the mission at the docks of Warren Petroleum Corporation. Two of the oil discharge sources were located at the dock positions in the mouth of Hunting Bayou. The remainder of the oil sources were located along the docking area on the Channel's northern shore immediately downstream from Hunting Bayou.

(7) A discharge of a yellowish substance was located in an indentation in the Channel's southern shoreline. The point of discharge was approximately 420 feet downstream from the Olin Corporation's main dock and well within this company's industrial complex. The elevation of this outflow appeared to be at the Channel water's surface. The chemical constituency of the effluent is unknown.

(8) A small waterway projects southward from the Channel located between the complexes of Phosphate Chemical Corporation and Phillips Chemical Corporation. An overhead pipeline passes over this waterway near its mouth and connects Phosphate Chemical's complex to Adams Terminal. A yellowish brown substance was being discharged into this waterway and subsequently into the Ship Channel. The chemical nature of this substance is not known.

(9) An oil spill emanated from a ship being docked directly opposite the Todd Ship Yard across Greens Bayou. The slick was dispersing into the Ship Channel. This dock belongs to the Navigational District.

(10) Two oil effluents were located 467 and 1790 feet, respectively, downstream in the Channel from the mouth of Greens Bayou (southernmost point on eastern Bayou shoreline). The source of these effluents cannot be established as a result of this mission.

(11) During this mission, a moderate effluent flowed from Ethyl Corporation's skimming pond which is located adjacent to the Channel's southern shoreline. The land separation between these two respective waters varies from 46 to 62 feet. The effluent plume extended approximately 230 feet into the Channel from the pond's skimming weir. The chemical nature of this effluent is not known.

(12) Oil was being discharged from a barge-manufacturing dock located along the northern shore of the Channel, approximately 0.6 miles downstream from the mouth of Greens Bayou. The discharge appeared to be emanating from four separate locations within the Port Houston Ship Yard, Incorporated.

(13) Oil was being spilled from the dock area in Boggy Bayou Basin. The dock is operated by the Shell Oil Company. The slick was proceeding down the Channel from the Basin. Its length was approximately 1590 feet and its width approximately 46 feet.

In analyzing the imagery obtained from Shell Oil Company's waste treatment facility, it was noted that the trickling filter had no surface layer biological growth. The absence of such growth greatly reduces the effectiveness of the treatment unit.

The outflow from the clarifier was clearly recorded. The discharge from the two stabilization ponds was passing through skimming weirs and was channeled directly to the Ship Channel waters.

Shell's oxidation pond, located on the land adjacent to the Channel's southern shore and the western bank of Patrick Bayou, was exhibiting some algal growth along its banks. There was a small outflow from this area into Patrick Bayou.

(14) Oil was being discharged from a ship tied at the Cargill dock area, which is located across the Channel from the mouth of Patrick Bayou. The slick extended down the Channel for approximately 1400 feet and was clinging to the northern shore.

(15) The small trickling filter in Humble Oil Company's waste treatment facility exhibited no zoogleal growth, and therefore could not be considered to be effective as a biological treatment unit.

(16) Three large settling ponds are located in a row parallel to the southern bank of the Texas City Canal. The pond closest to the Galveston Bay western shore was discharging a blood-red substance into the Bay waters. The chemical nature of this outflow is unknown.

Section B - 2 July 1971, 10:30 hours

(1) The outfall, located at the apex of the Turning Basin, was discharging into the Basin at the time of this mission. It was rapidly dispersing into the Channel waters. The length of the plume (elongated dimension of the effluent) was approximately 235 feet. The chemical constituency of the discharge is not known.

(2) A substance of unknown constituency was being discharged from the western bank of the Turning Basin where five (5) small barges were docked. It was dispersing toward the center of the Basin.

(3) An oil slick on the Channel waters, located where the Turning Basin and the Channel merge, was recorded. The oil was being dumped from two of the four ships that were washing out at the time. The slick was 1120 feet long and traversed the entire width of the Ship Channel.

(4) Another separate oil slick was located approximately 470 feet down-channel from the end of the slick mentioned above. It was 935 feet long and traversed the entire width of the Channel. The source of the spill causing the slick could not be identified. Most of the slick had collected around two (2) ships docked across the Channel from Armour Agricultural Chemical Company.

(5) A minor oil slick was located near two (2) ships that were docked adjacent to Building #21 (Navigational District Public Wharves) across the Channel from the main terminal of Houston Compress Company. The source of the oil could not be positively identified.

(6) A ship, docked at Building #28 (Navigational District Public Wharves) directly across the Channel from the mouth of Brays Bayou, was discharging water containing foam-producing material. The foam floated upstream for approximately 330 feet.

(7) An oil discharge was emanating from a ship docked at National Molasses Company. It was drifting downstream. Its length was 930 feet and its width approximately 90 feet.

(8) A discharge containing water and oil was recorded emanating from the outflow of Charter International Corporation. The slick was narrow and extended downstream approximately 514 feet. The thermal data indicated that this effluent was significantly warmer than the ambient temperature of the Channel waters.

(9) A submerged outfall from Gulf Compress Company was discharging a yellowish substance into the Channel waters. This outfall was located approximately 33 feet from the northeastern shore of the Channel, 1450 feet upstream from the peninsular tip of Sims Bayou, and directly across the Channel from Manchester Terminal Corporation. The chemical constituency of this outflow is not known.

(10) The U. S. Gypsum Company was discharging a yellowish-brown substance into the Channel waters. The point of discharge was 600 feet across the Channel from the peninsular tip of Sims Bayou and 130 feet downstream from the Company's largest docking terminal.

(11) A ship, docked at the Atlantic-Richfield Terminal along the western bank of the Sims Bayou Turning Basin, was washing out. It was discharging what appeared to be detergent-laden water. Foam was forming on the water's surface, and was clearly visible over an area of approximately 225 feet by 120 feet.

(12) The U. S. Gypsum Company was discharging a yellowish-brown substance from the western bank of a small waterway located north across the Channel from Sims Bayou Turning Basin and directly across this waterway (west) from Goodpasture Grain and Milling Company. A retainer extends into this waterway, forming a pond adjacent to the shore. This pond is approximately 318 feet long and 37 feet wide. The discharge originated at the boundary of the retainer.

(13) There were three oil discharges at the terminal belonging to Atlantic-Richfield Refining Company. They were located along the southern shore of the Ship Channel, immediately downstream from the Sims Bayou Turning Basin.

(14) Texaco, Incorporated, was discharging a yellowish substance into a small waterway located directly across the Channel (north) from Houston Lighting and Power Company. The point of discharge was on the eastern bank of this waterway. The discharged substance dispersed very near the source.

A darker substance (darker in appearance than that of the Channel waters) was being discharged into Texaco's slip, located directly across the Channel from Vince Bayou. The discharge was not oil, and no dispersion into the Ship Channel was recorded.

(15) The Houston Lighting and Power Company was discharging water into Vince Bayou, and in turn into the Ship Channel, whose temperature was significantly warmer than the ambient temperature of the Channel waters at the time of this mission.

(16) The U. S. Plywood-Champion Paper Company was discharging a reddish-brown substance into the Channel waters from a submerged outfall. This outfall was physically located approximately 948 feet from the eastern crown of Vince Bayou, 341 feet from the pipes connecting the dock to the land facility and 19 feet into the water from the Channel's southern bank. The discharged material was floating on the water's surface across the entire width of the Channel. It was easily traced downstream for a mile. The IRLS indicated that this outflow was slightly warmer than the ambient temperature of the Channel waters.

(17) An oil spill was in progress at the Crown Central Petroleum Corporation's dock area. One large barge and one small barge were docked at that time. The resulting oil slick followed the southern portion of the Channel downstream for one-third mile.

(18) The easternmost arm of Warren Petroleum Corporation's main dock was discharging oil. This dock is located in the mouth of Hunting Bayou. The oil slick associated with this spill was confined to this area, being approximately 537 feet long and averaging 47 feet wide.

(19) There were four separate and distinct outflows from within the complex of Olin Corporation. Their locations were as follows:

a) The most upstream outfall was 1160 feet from the main dock and is further identified by a small building on the dock. The elevation of the outflow was at the water's surface.

b) A second outfall was 102 feet upstream from the main dock. It was located approximately halfway between the two largest docking areas. The elevation of this discharge point was slightly above the water surface.

c) The third outflow was located in an indentation of the southern shoreline approximately 420 feet downstream from the main dock. The elevation of the discharge point was at the water's surface.

d) The fourth outflow was located 770 feet downstream from the main dock. It was on the shoreline within another docking area. The source of this outflow appeared to be the five (5) storage tanks configured in a row parallel to the Channel's shoreline.

The thermal imagery of the IRLS indicated that the third outflow was somewhat warmer than the ambient temperature of the Channel water.

All of the effluents except the second consisted of yellow-brown substances which were being discharged into the Channel waters. The third (c, above) was the largest effluent in terms of volume discharge recorded during this mission. The outflow pipes (two pipes) at the second location were not discharging during this mission. They were clearly visible and were positioned above the water's surface. The chemical constituency of these effluents was not determined at the time of flight.

(20) Four effluents were detected within the complex of Armco Steel Corporation at the time of this mission. (Three of the four were detected during the previous day's mission.) The first was a small oil discharge whose source was located on the Channel's northern shore at surface level adjacent to the waste treatment plant. The second effluent was an orange substance, assumed to be ferric oxide, located approximately 370 feet downstream from the oil outflow. The dispersion pattern extended one-third of the way across the Channel and could be traced downstream for approximately 1030 feet. The third effluent was a charcoal-colored substance, and was being discharged immediately downstream of the orange effluent. This dark substance was assumed to be a coke residue and was completely dispersed 210 feet away from the source. The fourth discharge was located 1810 feet downstream from the orange outflow source and consisted of a dark substance being discharged near the surface. This material floated on the water's surface along the northern shore and extended downstream 2900 feet before completely dispersing. The chemical constituency of the substance was not determined at the time of this mission.

Several oxidation and stabilization ponds were positioned along a trench located near the boundary between Warren Petroleum Corporation and Armco Steel Corporation. Although no trace of any substance was recorded during this mission, there is a possibility that this trench may serve as a discharge conduit for these ponds and other sources.

The northern two quadrants of the oxidation pond of Armco Steel Corporation's waste treatment facility contained a significant amount of algal growth.

(21) The small waterway, located between the complexes of Phosphate Chemical Corporation and Phillips Chemical Corporation, was serving as a conduit for the discharge of a yellowish-brown substance into the Channel waters. This substance traveled 980 feet down-channel before completely dispersing. The chemical nature of this substance was not determined at the time of the flight.

(22) A minor oil spill, from a ship docked at the terminal located on the eastern boundary of Phillips Chemical Corporation, was recorded. The resultant slick was narrow and 230 feet long.

(23) A small amount of oil was being discharged from a ship docked at the westernmost terminal of the Todd Shipyard Corporation. The resulting slick was 325 feet long and quite narrow.

(24) Oil was being discharged from a ship docked along the eastern bank of the mouth of Greens Bayou. The slick remained between the ship and shore for a length of approximately 234 feet. This complex is the property of the Navigational District.

(25) Greens Bayou and the Ship Channel displayed remarkably different color renditions at their confluence, which is indicative of distinctive water quality variations. In the true-color frame (transparency) of this area, the water in the mouth of Greens Bayou photographed a very dark grayish-brown. The Ship Channel photographed in a yellowish-brown rendition immediately upstream from Greens Bayou, directly south from the main channel docks of Todd Ship Yards. At

the confluence a definite color boundary appeared which traversed across the mouth of the Bayou and extended down-channel for a distance of approximately 1400 feet. At this point, the dispersion pattern of the waters could be seen as they mixed.

(26) In the lower region of Greens Bayou, only one significant effluent was recorded. A yellowish-brown substance flowed into a rectangular barge-docking area which was 148 feet wide and 588 feet in length. This rectangle was approximately 228 feet upstream from the western boundary of Todd Ship Yards. The effluent followed the eastern side of this area and then flowed out into Greens Bayou. The source of this outflow was traced from the rectangular waterway along a trench to a settling pond about 140 feet in diameter. The edge of the pond was 336 feet southwest of the waterway, and photographed almost black in color.

The infrared imagery did not show any degradation to vegetation along the trench, but there was virtually no plant life around the pond. The thermal imagery obtained by the IRLS indicates that the pond is quite warm, significantly higher than the ambient temperature of the surroundings.

(27) There was a very large effluent emanating from a point on the northern shore of the Ship Channel. Its location is fixed upon a very small land projection which was 2160 feet downstream from the peninsular tip of the eastern bank of Greens Bayou and 1430 feet upstream from the main dock of the Port Houston Ship Yard. This effluent photographed very dark brown, nearly black.

The substance in this effluent extended nearly one-half mile down the Channel before dispersing. In addition to the aforementioned effluent, an oil effluent was being discharged from the same point. The source of these discharges was isolated to a small building, measuring 12 feet by 20 feet, which extended roughly one-half its length into the Channel water. The oil slick could be easily traced to points downstream beyond the Port Houston Ship Yard. The overall length of the slick was about one mile. The outfalls appeared to be submerged and under discharge pressure. In an attempt to isolate the source(s) of these wastes, the thermal imagery from the IRLS was carefully examined for clues. It could be seen in these data that there were several underground pipes leading to the above-mentioned building. These pipes were traced in a northerly direction from the Channel to the area occupied by Southland Paper Company (Figure B-4). It was not possible to discern if all of the pipes lead to the paper company's complex. Moreover, the classic paper industry discharge does not contain the quantity of oil comprising the above-mentioned slick. The conclusion to be drawn is that another industry may have been discharging oil at the outfall location previously described. Ground investigations must be carried out in order to locate the sources of these effluents. The chemical constituency of the black substance was not determined at the time of this mission.

(28) A moderate discharge was recorded, emanating from Ethyl Corporation's skimming pond, located adjacent to the Channel's southern shore. The effluent extended nearly 700 feet into the Channel from the pond's skimming weir. The thermal data from the IRLS show that this effluent

was somewhat warmer than the Channel's ambient temperature. The substance had traveled downstream from the weir approximately 1000 feet before it had cooled to ambient.

(29) Oil discharges from the Port Houston Ship Yard were observed during the previous mission. Because of the oil spill, discussed in Section B(27) above, positive verification of any oil discharges from this facility could not be made.

(30) An oil slick extended, in mid-channel, from Tenneco Chemical Company's dock downstream to a point near upper Boggy Bayou. The slick did not originate from the above-mentioned facility. It was approximately 4350 feet long and 160 feet at its widest point.

(31) There was a very small oil slick present at the time of flight in the lower section of the Boggy Bayou Basin adjacent to Shell Oil Company's dock.

An oil spill of larger proportion was emanating from Shell's docking complex in Boggy Bayou Basin immediately adjacent to the Channel. The resultant slick followed the Channel's southern shoreline downstream for approximately 4100 feet.

The trickling filter in Shell Oil Company's waste treatment facility, located near Boggy Bayou Basin, had no zoogleal growth on the surface layer growth, indicating less than optimum treatment.

Shell's oxidation pond, located adjacent to the Channel's southern shore and the western bank of Patrick Bayou, contained some algal growth on the water's surface and around the entire periphery. There was a small outflow from this area into Patrick Bayou.

(32) Oil was being discharged from a ship docked at Cargill, located across the Channel from the mouth of Patrick Bayou. The resultant oil slick extended down the Channel for approximately 1820 feet.

(33) The water in the lower region of Patrick Bayou was significantly warmer than the ambient temperature of the Channel waters. The warm water flowed out into the Channel and the thermal plume extended 2800 feet down-channel from the peninsular tip at the mouth of the Bayou before achieving thermal equilibrium. Nearly all of the settling ponds operated by Diamond Shamrock Company were discharging into Patrick Bayou and at the point where the Bayou joins the Ship Channel. The source (two outflows) of the warm discharge was located within the above-mentioned company's complex. These outflows were located 2300 feet and 3000 feet respectively upstream from the Bayou's right angle bend.

(34) An outflow was located downstream 1300 feet from the peninsular tip of Patrick Bayou, on the Channel's southern shoreline, discharging a very dark substance into the Channel. The source was a settling pond adjacent to the shore. The effluent was traveling along the southern shoreline downstream approximately 500 feet before finally dispersing. This outflow was established to be that of the Rohm and Haas Company.

(35) A small oil slick was detected at Humble Oil Company's facility between the innermost dock and shore. It was 370 feet long and 23 feet at the widest point, and appeared to be flowing from a barge tied at the main section of the above-mentioned dock.

(36) An oil slick was observed directly beneath the power lines and towers which cross the Channel approximately one-third mile upstream from Barbour Cut. The slick was 1540 feet long and 330 feet wide. The source of the oil could not be determined.

Section C - 12 July 1971, 11:30 hours

(1) A ship, docked at Building No. 10 of the Navigational District Public Wharves, was discharging a black substance into the Turning Basin. The black substance was floating and was not dispersing into the water. The chemical constituency of this substance was not determined at the time of this flight.

(2) A yellowish-brown substance of unknown chemical nature was observed to be floating on the surface of the Channel waters from the Turning Basin downstream beyond the mouth of Sims Bayou.

(3) A ship which was docked at the Ship Channel Compress Company's complex was washing out into the Channel waters. The substance forming on the surface of the water indicated a high concentration of detergent or similar material. A small oil slick floated near the bow of the ship. Another ship, docked further down in this complex, was discharging water containing oil. The resultant slick covered the entire width of the Channel and was approximately 1400 feet in length.

(4) A yellowish-gray effluent was being discharged at two points in the waterway downstream from Harrison Road and to the east of Brady Island. The location of the source of these effluents was Stauffer Chemical Company. One discharge point was above the water surface and the other appeared to be submerged.

(5) Small, scattered oil slicks were observed around the bend in the Channel adjacent to Charter International Company. The source of the oil could not be established.

(6) One continuous oil slick was observed in the Channel waters extending from U.S. Steel Corporation's warehouse downstream beyond the complex of Gulf Compress Company.

(7) There was a yellowish-brown substance being discharged from an enclosed barge which was tied to a dock on the northern shore of the Channel approximately 890 feet upstream from the U.S. Steel warehouse. The chemical constituency of this outflow was not determined at the time of flight.

(8) A small, concentrated oil slick was observed along the shoreline of the Channel immediately downstream from Charter International's dock adjacent to the Manchester Terminal. The slick was 230 feet long and 140 feet wide.

(9) A brown-gray substance was being discharged from Manchester Terminal Corporation's complex at the point where Sims Bayou and the Channel converge. It was subsequently dispersing into the Channel's waters. The chemical nature of this substance was not determined at the time of flight.

(10) The water in the lower region of Sims Bayou was heavily covered with a yellowish-brown substance and had numerous oil slicks. The source(s) of these pollutants could not be established.

(11) Oil was being discharged from a submerged outflow located on the southeastern portion of Sims Bayou Turning Basin. The outfall was in the complex of Atlantic-Richfield Refining Company, 140 feet west of

their main dock area. This slick covered most of the Sims Bayou Turning Basin.

(12) Oil was being discharged from five separate locations along the southern shore of the Ship Channel. This area is within the Atlantic-Richfield Refining Company complex. Four of the five sources of oil were seen to be from discharge points on the Channel shoreline. Another was flowing from a barge docked at this facility. These oil slicks traversed the entire width of the Channel. The discharge positions are at the crown of Sims Bayou Turning Basin, 1,100 feet, 1,565 feet, 1,705 feet, 2,265 feet from the crown of the Turning Basin, respectively.

(13) Oil was being discharged from the apex of the Texaco, Incorporated slip and at the peninsular projection directly across the Channel from the mouth of Vince Bayou. The oil in the slip did not appear to be dispersing into the Channel waters. The oil slick emanating from the peninsular projection extended across two-thirds of the width of the Channel and downstream for approximately 930 feet.

(14) The U.S. Plywood-Champion Paper Company's submerged outfall was clearly visible. The quantity of the discharge of the reddish-brown substance into the Channel waters was not as great as recorded in previous flights.

(15) There were numerous small oil slicks across the entire Channel from Texaco's facility downstream to the lower boundary of U.S. Plywood-Champion Paper Company's facility.

(16) The Crown Central Petroleum Corporation was discharging large quantities

of oil from two shoreline positions and from its slip. The two shoreline oil outfalls were 70 feet and 80 feet downstream, respectively, from the eastern bank of the slip. The resultant oil slick traversed the entire width of the Channel and extended downstream for 6,400 feet before showing signs of dispersion.

(17) An oil discharge was observed in Cottonpatch Bayou adjacent to the complex of Horton and Horton, Incorporated. The entire barge-docking area was covered with an oil slick. The slick was dispersing into the Channel waters and was clinging to the southern shoreline.

(18) Three oil discharges were observed emanating from the Warren Petroleum Corporation. One was from the right arm of the Corporation's main dock within the mouth of Hunting Bayou. The other two discharges were emanating from shoreline effluent points. These sources are located 655 feet and 2,380 feet respectively down-channel from the eastern tip of the mouth of Hunting Bayou. These slicks appeared to be stationary and covered most of the width of the Channel (Figure C-8).

(19) Three of the four outfalls whose locations within Olin Corporation's complex are given in paragraphs a, c and d below, were discharging yellowish-brown substances into the Channel waters. The locations of the outflow positions are given as follows:

a) The most upstream position was 1160 feet from the main dock, and was further identified as being near a small building on the dock. The elevation of the outflow was located at the water's surface (Figure C-8).

b) The second outflow was 302 feet upstream from the main dock. It was located approximately halfway between the two largest docking

areas. The elevation of this discharge point was slightly above the water surface.

c) The third outflow was located in an indentation in the southern shoreline approximately 420 feet downstream from the main dock. The discharge elevation was at the water's surface.

d) The fourth outflow was located 770 feet downstream from the main dock, on the shoreline within a large docking area. The source of this outflow appeared to be the five storage tanks configured in a row parallel to the Channel's shoreline.

(20) At the time of this mission, seven discharges were detected within the complex of Armco Steel Corporation. The first was a small oil discharge from a small trench which is common to the boundary between Armco Steel and Warren Petroleum Corporation. A discharge from within the Armco Steel complex to the trench was recorded. The second outflow was also a small oil discharge whose source is located on the Channel's northern shore at surface level, adjacent to the waste treatment plant. The third effluent was quite small during this mission. It was located approximately 370 feet downstream from the second outflow. The material discharged was an orange substance which was assumed to be ferric oxide. The fourth effluent was an oil discharge, emanating from a submerged outfall. The position of this outfall was 1,025 feet downstream from the third discharge. The fifth outflow was also oil and was located 200 feet downstream from the fourth. The sixth outflow was a larger discharge of oil, located 2,000 feet downstream from the fifth. This discharge resulted in an oil slick that extended

550 feet south into the Adams Terminal Basin. The seventh effluent was a brownish-red substance being discharged into the Channel. Its source was immediately adjacent to the sixth. This substance is assumed to be ferric oxide.

(21) A small waterway projecting southward from the Channel is located between the complexes of Phosphate Chemical Corporation and Phillips Chemical Corporation. An overhead pipeline passes over this waterway near its mouth and connects Phosphate Chemical's complex to Adams Terminal. A yellowish-brown substance was being discharged into this waterway and subsequently into the Ship Channel. The chemical nature of this substance was not determined at the time of this mission.

(22) Two ships were docked at the terminal on the eastern boundary of Phillips Chemical Corporation (east of Adams Terminal). Both were discharging oil into the Channel. The resulting slicks covered one-half the western shore of the waterway adjacent to the complex and two-thirds of the Channel's width, respectively.

(23) Two ships were discharging oil within the docking terminal of Todd Ship Yards. The resulting slicks were localized and appeared not to be dispersing into the Channel.

(24) The large effluent observed earlier to be emanating from a point on the northern shore of the Ship Channel, 2160 feet downstream from the peninsular tip of the eastern bank of Greens Bayou, was not present during this day's flight. A very small effluent, not oil as previously observed, was emanating from this point.

This effluent was dispersing into the Channel in a long ribbon-

like configuration extending approximately halfway across the Channel. The chemical nature of this substance was not determined at the time of flight.

(25) A large effluent was recorded, emanating from Ethyl Corporation's skimming pond. This pond was located adjacent to the Channel's southern shore. The effluent consisted of a yellowish-brown substance which traversed the entire width of the Channel and extended approximately one-third mile downstream before it began to disperse into the Channel waters. The thermal imagery from the IRLS indicated that this effluent had a characteristic temperature greater than the ambient temperature of the Channel waters.

(26) There was a small oil slick observed along the southern shore of the Channel just downstream from the main dock of Tenneco Chemical Corporation. The source of the oil was an outflow located 180 feet downstream from Tenneco Chemical Corporation's main dock. The resulting slick was 185 feet wide and 375 feet long.

A discharge of a grayish-black substance flowed from a small dock area located 1,030 feet downstream from Tenneco Chemical Corporation's main dock. This substance had drifted across the Channel and, at the time of flight, appeared to be stationary. The chemical nature of this substance was not determined at the time of flight.

(27) Two skimming ponds located between the main docking area of Tenneco Chemical Corporation and Peggy Lynn contained large quantities of oil. These ponds were observed to be discharging into the Channel. These discharges were virtually free of oil at the time of the flight.

(28) A moderate discharge of oil was recorded at the outfall on the southern shoreline of the Ship Channel immediately downstream from the Shell Oil Company docks, located in the Boggy Bayou Basin. The resulting oil slick was ribbon-like in width and extended down the Channel nearly one-third of a mile.

(29) The thermal imagery recorded by the IRLS indicated that the outflow from Patrick Bayou into the Channel was again warmer than the ambient temperature of the Channel waters. The data also indicated that the warmer water cooled quickly, once it entered the Channel.

(30) An oil discharge was observed, emanating from the outer docking complex of the Humble Oil Company. The resulting oil slick, approximately 935 feet long and with an average width of 185 feet, was floating toward the dock closest to shore. A small barge, docked at this facility, appeared to be discharging a small amount of oil.

(31) A ship was observed discharging oil in the docking area, located between Tucker Bayou and Phillips Petroleum complex, on the southern shoreline of the Ship Channel. The resulting oil slick appeared to be remaining in the docking area and did not disperse into the Channel waters.

(32) An oil slick 1-1/3 miles long, located two-thirds mile downstream from the Baytown Tunnel, covered approximately one-third the width of the Channel. The source of this oil spill could not be established, due to its remote location in the Channel. There were numerous other small slicks in this reach of the Ship Channel.

APPENDIX B

HEAVY METALS - HOUSTON SHIP CHANNEL - JUNE 1971

Location	Zn mg/l	Pb mg/l	Cu mg/l	Cr mg/l	Cd mg/l	Hg µg/l
Samples collected at Morgans Point June 23						
Mile 0						
Surface	< .15	.23	.08	.03	.06	0.4
1/3	< .05	.23	.07	.03	.04	< .2
2/3	< .05	.24	.08	.02	.05	< .2
Bottom	< .05	.27	.10	.03	.06	< .2
Mile 2						
Surface	< .05	.21	.07	.02	.04	< .2
1/3	< .05	.24	.08	.03	.04	< .2
2/3	< .10	.24	.08	.03	.05	< .2
Bottom	< .05	.23	.10	.03	.06	< .2
Mile 4						
Surface	< .05	.31	.07	.02	.05	< .2
1/3	< .05	.20	.07	.02	.06	< .2
2/3	< .05	.16	.06	.02	.05	< .2
Bottom	< .05	.19	.07	.03	.07	< .2
5 Mile Cut						
Surface	< .05	.26	.08	.02	.05	< .2
1/3	< .05	.27	.08	.02	.04	< .2
2/3	< .05	.25	.08	.02	.06	< .2
Bottom	< .10	.34	.17	.03	.06	< .2
Mile 6						
Surface	< .05	.15	.06	.01	.04	< .2
1/3	< .05	.21	.06	.01	.06	< .2
2/3	< .05	.22	.05	.01	.06	< .2
Bottom	< .05	.25	.09	.02	.05	< .2
Mile 8						
Surface	< .05	.19	.06	.03	.03	< .2
1/3	< .05	.15	.06	.03	.03	< .2
2/3	< .05	.22	.06	.04	.04	< .2
Bottom	< .05	.24	.07	.04	.03	< .2
Mile 10						
Surface	< .05	.15	.06	.03	.03	< .2
1/3	< .05	.17	.04	.04	.04	< .2
2/3	< .05	.18	.06	.04	.06	< .2
Bottom	.05	.24	.07	.07	.03	< .2
Mile 12						
Surface	< .05	.13	.05	.03	.03	< .2
1/3	< .05	.16	.06	.02	.03	< .2
2/3	< .05	.18	.07	.02	.04	< .2
Bottom	< .05	.21	.07	.02	.05	< .2

APPENDIX B (Continued)

HEAVY METALS - HOUSTON SHIP CHANNEL - JUNE 1971

Location	Zn mg/l	Pb mg/l	Cu mg/l	Cr mg/l	Cd mg/l	Hg µg/l
Mile 14						
Surface	< .05	.12	.06	.02	.04	< .2
1/3	< .05	.15	.05	.02	.04	< .2
2/3	< .05	.19	.04	.03	.06	< .5
Bottom	< .05	.24	.04	.04	.06	< .5
Mile 16						
Surface	< .05	.11	.04	.02	.04	< .5
1/3	< .05	.13	.03	.03	.06	< .5
2/3	< .05	.16	.05	.03	.06	< .5
Bottom	< .05	.21	.06	.02	.06	< .5
Mile 18						
Surface	< .05	.10	.02	.02	.03	< .5
1/3	< .05	.14	.04	.03	.02	< .5
2/3	< .05	.18	.05	.03	.03	< .5
Bottom	< .05	.22	.05	.04	.05	< .5
Mile 20						
Surface	< .05	.10	.04	.02	.03	< .5
1/3	< .05	.13	.03	.02	.02	< .5
2/3	< .50	.18	.04	.02	.03	< .5
Bottom	< .05	.24	.07	.02	.06	< .5
Mile 22						
Surface	< .05	.11	.03	.01	.02	< .5
1/3	< .05	.12	.02	.02	.03	< .5
2/3	< .05	.17	.03	.02	.05	< .5
Bottom	< .05	.23	.05	.02	.06	< .5
Mile 24						
Surface	< .05	.10	.07	.01	.02	2.0
1/3	< .05	.13	.02	.02	.03	< .5
2/3	< .05	.12	.02	.02	.04	< .5
Bottom	< .05	.28	.03	.02	.06	< .5
Hirsch St. Bridge	< .20	.19	.03	.01	.02	< .5
Sims Bayou Hwy 225 Br	.07	< .02	.02	.13	< .01	< .5
Samples collected at Morgans Point June 24						
Mile 1						
Surface	.04	.18	.06	.07	.03	< .5
1/3	.04	.18	.06	.07	.03	< .5
2/3	.05	.20	.03	.06	.03	< .5
Bottom	03	.24	.17	.09	.04	< .5

APPENDIX B (Continued)

HEAVY METALS - HOUSTON SHIP CHANNEL - JUNE 1971

Location	Zn mg/l	Pb mg/l	Cu mg/l	Cr mg/l	Cd mg/l	Hg µg/l
Mile 2						
Surface	.04	.19	.06	.09	.03	< .5
1/3	.05	.19	.08	.09	.03	< .5
2/3	.05	.25	.08	.09	.03	< .5
Bottom	.06	.31	.08	.10	.04	< .5
Mile 4						
Surface	.04	.21	.05	.09	.03	< .5
1/3	.04	.20	.06	.09	.02	< .5
2/3	.05	.19	.10	.08	.03	< .5
Bottom	.06	.22	.08	.06	.03	< .5
5 Mile Cut						
Surface	.06	.22	.08	.06	.03	< .5
1/3	.06	.24	.08	.06	.04	< .2
2/3	.06	.22	.10	.07	.04	< .2
Bottom	.04	.24	.18	.08	.04	< .2
Mile 6						
Surface	.02	.14	.06	.06	.02	< .2
1/3	.04	.15	.06	.05	.02	< .2
2/3	.05	.23	.08	.06	.03	< .2
Bottom	.05	.26	.08	.06	.04	< .2
Mile 8						
Surface	.05	.20	.06	.04	.02	< .2
1/3	.05	.20	.06	.04	.02	< .2
2/3	.05	.19	.05	.05	.03	< .2
Bottom	.05	.18	.08	.07	.03	< .2
9 S. J.						
Surface	.03	.11	.05	.06	.02	< .2
1/2	.03	.14	.05	.06	.02	< .2
Bottom	.04	.11	.05	.06	.02	< .2
Mile 10						
Surface	.03	.08	.05	.06	.02	< .2
1/3	.03	.08	.05	.06	.02	< .2
2/3	.02	.11	.06	.07	.02	< .2
Bottom	.03	.16	.07	.07	.03	< .2
Mile 12						
Surface	.03	.16	.04	.06	.02	< .2
1/3	.04	.15	.05	.04	.02	< .2
2/3	.04	.19	.06	.02	.02	< .2
Bottom	.04	.22	.07	.03	.03	< .2

APPENDIX B (Continued)

HEAVY METALS - HOUSTON SHIP CHANNEL - JUNE 1971

Location	Zn mg/l	Pb mg/l	Cu mg/l	Cr mg/l	Cd mg/l	Hg µg/l
Mile 14						
Surface	.13	.12	.05	.02	.02	< .2
1/3	.04	.14	.06	.03	.02	< .2
2/3	.02	.16	.06	.04	.02	< .2
Bottom	.02	.22	.06	.05	.03	< .2
Mile 16						
Surface	.02	.16	.03	.04	.02	< .2
1/3	.03	.17	.07	.04	.02	< .2
2/3	.04	.13	.10	.03	.02	< .2
Bottom	.02	.25	.07	.04	.03	< .2
Mile 18						
Surface	.02	.16	.05	.02	.02	< .2
1/3	.02	.16	.07	.02	.02	< .2
2/3	.04	.20	.11	.03	.02	< .2
Bottom	.05	.24	.19	.04	.03	< .2
Mile 20						
Surface	.04	.18	.06	.03	.02	< .2
1/3	.03	.16	.05	.03	.02	< .2
2/3	.03	.20	.08	.04	.02	< .2
Bottom	.06	.20	.14	.05	.03	< .2
Mile 22						
Surface	.02	.14	.04	.04	.02	0.5
1/3	.01	.16	.06	.02	.02	< .2
2/3	.02	.22	.06	.03	.03	< .2
Bottom	.03	.26	.08	.03	.03	< .2
Mile 24						
Surface	.02	.20	.04	.02	.02	< .2
1/3	.02	.21	.05	.02	.02	< .2
2/3	.03	.26	.06	.02	.02	< .2
Bottom	.04	.30	.05	.02	.03	< .2
Buffalo Bayou Wayside St. Br.	.03	.17	.07	.02	< .01	1.3
Buffalo Bayou Beruh St.,	.16	.13	.01	.02	< .01	< .2
Sims Bayou Hwy 225 Bridge	.25	.15	.02	.02	< .01	1.5
Sims Bayou Hwy 225 Bridge	.24	.12	.02	.03	< .01	0.7
Sims Bayou Lawndale St. Br.	.10	.10	.02	.06	< .01	0.2

CYANIDE - HOUSTON SHIP CHANNEL - JUNE 1971

Date	Location	CN mg/l
6/23	5 mile Cut surface, Morgan's Point	< .02
6/23	Mile 0	< .02
6/23	Mile 2	< .02
6/23	Mile 4	< .02
6/23	Mile 6	.02
6/23	Mile 8	.02
6/23	Mile 10	.04
6/23	Mile 12	.02
6/23	Mile 14	.03
6/23	Mile 16	.03
6/23	Mile 18	.02
6/24	Mile 10	< .02
6/24	Mile 12	.02
6/24	Mile 14	< .02
6/24	Mile 16	.03
6/24	Mile18	.02

Dr. J. Preslock

MR. STEIN: Dr. Preslock, is he here this morning?

DR. JAMES PRESLOCK, CHAIRMAN
WATER QUALITY CONTROL COMMITTEE
FOR HELP ELIMINATE POLLUTION, INC.
HOUSTON, TEXAS

DR. PRESLOCK: Thank you, Mr. Chairman.

Conferees, ladies and gentlemen.

My name is Dr. James Preslock. I am Chairman of the Water Quality Control Committee for Help Eliminate Pollution, Inc. I have my Ph.D in the biomedical sciences and I am actively engaged in research in this area.

We of HEP are an organization of voluntary citizens consisting of industrialists, housewives, attorneys, scientists, secretaries, and other disciplines, all striving for a common cause, the eradication of pollution in the Houston metropolitan area in which we live.

Ladies and gentlemen, we at HEP are very disturbed at the secretive atmosphere which was evident in drafting the recommendations of the Federal-State task force for the Galveston Bay enforcement conference. We are also disturbed that there were no representatives of

citizens' environmental groups allowed to participate in the proceedings and that the meetings were not held here in Houston, where, if they were open, we could have had access to these meetings.

We, firstly as citizens and secondly as environmentalists, want voting representation on both the Texas Water Quality Board and the Environmental Protection Agency so that our views will be heard in the drafting of recommendations such as have been proposed. To have open meetings is not enough. We want and must have voting representation. We, the citizens, are directly affected by the degradation of water and air resources and the concerned citizens want to and must be allowed to participate in the decisions made affecting the environment in which we live.

The closed door strategy now practiced by governmental agencies in determining environmental practices, such as these revised recommendations of the EPA, must end. Furthermore, all results from all studies concerning the environment and effects of pollution upon the environment and upon the quality of life must be made available to the general public and not withheld. Special reference in this regard is made to the

Dr. J. Preslock

supplementary report prepared by the Environmental Protection Agency for this reconvened session.

The first "Report on Pollution Affecting Shellfish Harvesting in Galveston Bay, Texas," was compiled and then made public. The supplementary report, however, which was published in September 1971 was not made public nor the proceedings of the technical committee which resulted in the supplementary report and these present recommendations open to the public. We at HEP feel that this is a serious abridgement of governmental responsibility to citizens. We feel that only in matters of national security should such procedures be permitted, and this certainly is not the case here. We urge that this type of policy be ended by responsible representatives.

However, although I condemn the EPA and the Texas Water Quality Board, if warranted, for the suppressed supplementary report, I would also like to highly commend the EPA for the two subsequent documents which were introduced yesterday. We certainly feel that the introduction of more specific criteria such as timetables is a significant improvement over the original recommendations. However, we feel that the long-term

recommendations for the Galveston Bay enforcement conference for Region VI, EPA, is what we as environmentalists will strive for and will work for with the EPA to achieve as standards here in Houston. Until further notice, at this point I will be referring only to the recommendations, which I guess I will kind of call Blue Book I, which were originally under consideration by the conferees for this conference today.

The revised recommendations submitted by the EPA and under consideration by this conference have, in our opinion, only proposed to continue the Galveston Bay study essentially as it is under the direction of the Texas Water Quality Board, with little or no direction from the EPA, but with some assistance on some aspects from the FDA and the Texas Health Department, with progress reports to be made at some times specified and otherwise unspecified intervals.

As we know, the Galveston Bay study was initiated in 1967 for initial completion in 1971 at an estimated cost of $3.5 million. The original and initial time limit for specific recommendations from the study has arrived, but yet the recommendations for the reconvened conference propose to continue the study, the very

implementation of which is open to severe criticism.

Now we are asked to wait at least two more years for results of a study the conduct of which is open to criticism. This controversy surrounding the conduct of the Galveston Bay study certainly will only tend to make the conclusions themselves controversial and not definitive. But in the meantime, industry and municipalities will continue to discharge into the bay.

We are, however, anxiously awaiting for the release of specific aspects of the study which will be available in December and which will inform us that the water of the bay is, and I quote, in good health, unquote. Any final conclusions will, however, await critical analysis and confirmation of the available data by independent studies.

We at HEP believe that it is necessary to conduct an additional study of Galveston Bay. This new study, an intensive waste source survey, should be conducted in a concerted effort by the EPA, the Texas Water Quality Board, and volunteer technical staff of citizen environmental groups to insure that valid, meaningful data is obtained. The Galveston Bay study should not be part of this survey. The study must include determination

of the nature and amounts of both industrial and municipal waste sources at the point of discharge and the effects of these discharges upon Galveston Bay waters and commercially important marine species, such as oysters and shrimp, which habitate these waters. This study must emphasize the effects upon water quality and marine life of discharges of bacteria and viruses from waste treatment plants, complex organic compounds such as oil and grease from petrochemical plants; inorganic heavy metals such as mercury, lead and chromium; colored discharges from paper plants and steel mills; thermal discharges from power generating plants and any other compounds discharged from municipal or industrial sources which are considered by the participants as potentially harmful to human or marine life. A progress report on results of the study should be made to the conferees within six months of the reconvened session.

It is evident from the quality of the water in the Houston Ship Channel and Galveston Bay that the present levels of industrial and municipal discharges permitted by the Texas Water Quality Board will not result in any improvement of water quality in Galveston Bay. Texas Water Quality Board reports that industry

generally is in compliance with permitted levels, yet the ship channel, an anaerobic cesspool, and the bay remain in a seriously degraded condition. Fifty percent of the bay is closed to shellfish harvesting. Oil and hydrocarbons in high amounts nave been found in oysters.

However, the permitted levels of discharges by industrial and municipal sources were ill conceived, in our opinion. The polluting industries simply reported what effluent standards they needed to operate. These permitted levels were adopted by the Board and since have been adjusted upward to meet individual industrial demands. For instance, E. I. duPont waste control orders, March 29, 1967, as compared to March 6, 1971, Waste Control Order 474:

Volume monthly average 4,300,000 gallons per day, March 1967. March 6, 1971, monthly volume 9,500,000 gallons.

Total suspended solids, 1967, 35 mg/l; 1971, 50 mg/l.

However, BOD, COD, oil and grease did not change in relative concentrations.

However, in terms of pounds per day, the data demonstrates:

Dr. J. Preslock

Total suspended solids in 1967 were 1,257 pounds per day. In 1971 they are now 3,950 pounds per day.

BOD was 1,795 pounds per day, is now 3,970 pounds per day.

COD was 7,192 pounds per day in 1967, is now 15,900 pounds per day.

Now, we have heard the contention that BOD in the channel has decreased from estimates of 363,000 pounds per day in 1969 to 144,000 pounds per day presently, with July 1971 levels at 103,000 pounds per day.

BOD has been defined as, and I quote, "that organic carbon converted to microbial cells or to carbon dioxide by biological metabolism, due to the microbial species present, in the time interval allowed under specific test conditions."

The BOD_5 test is intended to:

1) Measure biodegradable carbon in oxygen equivalents;

2) Define process performance in terms of BOD_5 removal;

3) Predict oxygen requirements for the process performance;

Dr. J. Preslock

4) To provide rate data of significance to process design and to effect of waste discharge on a receiving stream.

Needless to say, these are ambitious goals for a test procedure which frequently is conducted using organisms not remotely related to those required for or capable of degrading the waste substances in question.

As was stated in the Federal report to the conferees, the 5-day BOD is not a satisfactory indicator of the potential effect on water quality of the Galveston Bay system since the toxicity or growth limiting action of many of the industrial wastes entering Galveston Bay and its tributaries tend to inhibit oxidation of organic material. This is particularly true of petrochemical effluents due to the large number of complex waste compounds not immediately susceptible to biological degradation.

So it is possible that the reduced BOD levels which we have heard so much about actually reflect an increase of petrochemical and related effluents in the Houston Ship Channel and not any decrease in pollution, per se.

Dr. J. Preslock

Since we have heard so much about the lower BOD levels as a justification for increasing permitted discharges and since BOD is such an unreliable and misleading parameter, what of other parameters such as COD, suspended solids, oil and hydrocarbons, mercury, cyanide, cadmium, coliform, salmonella, total organic determinations, dissolved oxygen, and ferric oxides, which are all parameters which we should look at before we determine whether the channel is getting cleaner or not? So until all of these parameters have been determined in a valid scientific manner, the claim that the Ship Channel is getting cleaner really is not relevant.

Let us propose that BOD and COD be dropped, be discontinued as parameters, and instead a total organic determination, TOD, which involves infrared spectroscopy, be substituted as a more valid and meaningful method of monitoring pollution levels.

The self-reporting system initiated by the Texas Water Quality Board to assist in the Galveston Bay study has been helpful in that the industries report to the State what they are discharging into the channel and bay and in what amounts in order to determine whether they are in compliance with the Texas Water Quality Board

permitted levels. This agreement was reached between the Texas Water Quality Board and the polluting industries by the Texas Water Quality Board promising the Ship Channel industries that the data would not be identified for specific plants and would not be used for enforcement purposes, and I have quoted this almost verbatim from Science magazine, February 1970. This system has revealed a significant noncompliance by industry and municipalities of existing permit levels for specific effluents in that by merely reporting its discharges a significant number of industries and municipalities are discharging in excess of permitted levels with impunity.

However, the permitted levels themselves are inadequate, are much too high, which really makes compliance or noncompliance a moot point. In fact, in some instances permitted levels are three to four times as high as actual levels being discharged, thus demonstrating that permitted levels must be greatly tightened.

For example, Southland Paper Company permitted COD levels, 166,800 pounds per day. Actual reported levels, 35,921.

For Southland Paper Company, BOD permitted levels 41,700 pounds per day. Actual reported levels

3,141 pounds per day.

Humble Oil & Refining Company BOD permitted discharge, 10,425 pounds per day. Actual discharge, 4,016 pounds per day.

COD permitted discharge, 41,700 pounds per day by Humble Oil & Refining. Actual reported release, 18,025 pounds per day.

These are a five times, a fourteen times, a two and a half times and a two and a half times greater permitted levels than reported discharges. These are just a few of examples. The list does go on. Also there are values reported by industry under the self-reporting system with no enforcement procedures in effect.

The intensive waste source survey we propose as environmentalists should result in a new set of permitted effluent standards which will achieve adequate water quality in Galveston Bay along with abatement procedures and precise timetables to meet these revised effluent standards. A 90 percent reduction from present levels may very well be necessary to achieve water quality in the Houston Ship Channel and Galveston Bay. In the meantime, the present permits should be tightened to more accurately reflect effluent levels necessary for

desired water quality.

This situation of self-reporting and impunity must be brought to an immediate end. The Texas Water Quality Board and Environmental Protection Agency must initiate enforcement procedures which will involve the monitoring of effluents from specific industries and municipalities at frequent unannounced intervals. Special emphasis should be placed on the larger industries which are the greatest dischargers. In fact, great emphasis should be placed on all industrial sources, since they are responsible for nearly 75 percent of all pollution in Galveston Bay and the Houston Ship Channel.

When industries and municipalities are found to be in excess of their permitted levels, immediate legal action should be taken against them to bring them into compliance with their new permitted levels determined by the intensive waste source survey. Serious consideration should be given to an immediate cessation of all industrial plant activities if deemed necessary by enforcement officials. The enforcement personnel for such procedures should be made available by increased State and Federal expenditures. The self-reporting system as such should be maintained with the data made public. Industries which

are exceeding their permitted levels and those which are exceeding their reported levels as determined by enforcement procedures must be subject to immediate abatement and prosecution.

It is apparent from the original and revised recommendations that the condition of oysters from Galveston Bay in regards to suitability for human consumption is in question. It is one of the reasons that we are here. The EPA studies have demonstrated that oysters taken from Galveston Bay are high in oil and hydrocarbon content from industrial sources.

It is our position that the study to determine oil and hydrocarbon residues in oysters and the bacteriological and viral acceptability of shellfish harvesting areas be conducted by the EPA in conjunction with the FDA, the Texas State Health Department and the Texas Water Quality Board, along with technical staff from local citizens and environmental groups. The study should include the determination of oil and hydrocarbon residues along with bacteriological and viral levels of both oysters and the waters which they habitate.

The sampling should be conducted throughout the year at a minimum of twice weekly for all designated

locations, with special emphasis placed on obtaining oyster and water samples from open shellfish areas under the most unfavorable hydrographic and pollution conditions. These conditions should be defined as that period of time during or following strong north or northwesterly winds and/or during or following heavy rainfall on the north and/or westerly shore of Galveston Bay. The methodology and criteria used to determine oil and hydrocarbon levels and bacteriological and viral toxicity of oysters and waters should be made available to the public. Progress reports, including dates and recommendations--including data--should be made public within six months of this reconvened session.

Once alert levels for acute and chronically toxic or growth-inhibiting parameters are set by the Food and Drug Administration, a continuous monitoring of oysters and shellfish from Galveston Bay should be conducted by the FDA, the EPA, and the Texas State Health Department to insure the public of the edibility of bay oysters and shellfish.

The effective disinfection of all domestic waste sources should be conducted in a joint effort of the EPA, the Texas Water Quality Board and technical

staff of citizens' environmental groups. The Texas Water Quality Board policy of centralization, whenever possible, should be implemented, with the participants determining when it is possible to centralize. Effective disinfection should include a minimum of primary and secondary treatments with water reuse for agricultural and industrial purposes. An implementation schedule for effective disinfection should be made available within six months of this reconvened conference.

Special note here is made of the city of Houston's inadequate waste treatment program. The city should implement an immediate plan for effective disinfection of all waste sources, with consideration being given to a sewer tax based on the rate of water use to finance such a plan.

The cost of dredging the Houston Ship Channel by the Army Corps of Engineers, estimated by EPA as nearly $3 million per year, should be passed on to the industrial and municipal plants responsible for the organic and inorganic sludge. These plants should pay for this dredging on a prorated basis according to the nature and amount of their discharge. The dredge material should be disposed of in suitable landfill areas,

with special emphasis placed on preserving the natural ecology of the landfilled areas.

Chemical constituents causing color and odor in waste effluents, such as those from pulp and paper mills, should be reduced to natural background occurring in uncontaminated water areas. A report on feasible processes to accomplish this recommendation should be submitted to the conferees within six months.

No discharge--although this is not something being considered by the conferees, I am still going to bring it up, since evidently the Houston Lighting & Power controversy is now going to go to Washington where we will not have direct access to it. I am still going to state our position on the Houston Lighting & Power controversy.

We feel that no discharge of cooling water from Tabbs Bay into Trinity Bay by the Cedar Bayou plant of Houston Lighting & Power should be permitted. Instead, Houston Lighting & Power should be required to abate the waste heat load by incorporation of a system utilizing recirculation and reuse of cooling water for all units at the Cedar Bayou plant, as recommended by the Environmental Protection Agency. However, Houston Lighting & Power

should not--and we feel very strongly about this--Houston Lighting & Power should not be made a scapegoat by the Environmental Protection Agency and as such be the only polluter on the Ship Channel against whom the EPA takes a strong position. The EPA should also take strong positions against other Ship Channel industries who are discharging toxic or potentially toxic substances such as oil, grease, and other complex hydrocarbons, heavy metals and suspended solids, and against municipal waste treatment plants which are discharging heavy concentrations of bacteria and viruses into the channel and Galveston Bay.

We propose that a study be initiated to study the feasibility of storing and treating water from storm sewers and bayous. The dirt, oil and grease on city streets and highways are washed into the bay through the storm sewer system following periods of heavy rainfall. Immediate consideration should be given to the construction of storage and treatment facilities for processing this waste effluent.

At this point I would like to depart from the original recommendations for which this conference was convened. Now I would like to discuss the two subsequent

documents made available by the Environmental Protection Agency at yesterday's conference.

We agree and we strongly agree that the revised recommendations of the EPA which are currently being discussed certainly is a marked improvement over the original recommendations for which this conference was convened. The timetables and BOD levels stipulated are commendatory. However, we believe that the long-range proposals suggested by the EPA are what should be adopted by this conference. I will take selected recommendations as examples and present available evidence from the September 1971 supplemental report as to why these recommendations should be adopted.

Recommendation No. 1, the long-term range proposals. The Food and Drug Administration, in cooperation with appropriate State regulatory agencies, continue their recently initiated study of oil and hydrocarbon residues in oysters taken from Galveston Bay with the objective of determining toxicological effects, if any, of such concentrations. These data and any evaluations shall be made available to the conferees of the Galveston Bay enforcement conference.

It is our position that it is important to note

in the supplementary report that FDA's preliminary results are not inconsistent with that reported earlier by EPA in regards to the concentration of hydrocarbons in oysters. It appears that the concentrations in oysters may range from 11 ppm to 40 ppm in approved areas and 33 ppm to 159 ppm in prohibited areas. These values are from two to six times higher than levels in oysters from West Falmouth Harbor, Massachusetts, which was closed to shellfish harvesting by that State.

The present FDA position is that a health hazard does not exist in consumption of oysters taken from approved areas in Galveston Bay. The report states, and I quote, "Without regard to the significance the findings may have with respect to petroleum contamination, the concentrations of specific aromatic hydrocarbon compounds isolated are not presently considered significant from a toxicological standpoint to warrant necessary regulatory action. The study is continuing." And I end quote.

These aromatic hydrocarbons, dimethyl, trimethyl, tetramethyl, biphenyl methyl fluorene, do not naturally occur in oysters and are common components of crude oil and many refinery products.

I further quote from the report:

"The heavy metals concentrations in shellfish taken from Galveston Bay are relatively low compared to certain levels in shellfish in other southern or eastern bays. However, the major concern in presenting this information is that no official criteria are presently available for general circulation as to the significance of any levels of heavy metals or other toxic contaminants found in oyster meat. Alert levels are now being developed by the Food and Drug Administration and have been presented, I understand, at the National Shellfish Sanitation Workshop," which was held last month.

MR. STEIN: Dr. Preslock, do you have another copy of that statement?

DR. PRESLOCK: No, sir, it is kind of all written up in--

MR. STEIN: All right, go ahead.

DR. PRESLOCK: I will have it typed.

MR. STEIN: It is kind of a long one, and if you ever have a copy it should be given to the reporter.

DR. PRESLOCK: Yes, I will have one available for you.

MR. STEIN: All right, continue.

DR. PRESLOCK: It is just that I wrote it last night after looking at your recommendations and had to make quite a few changes.

MR. STEIN: I saw her working so hard, I had hoped you would have a copy.

DR. PRESLOCK: Yes, sir, I will gladly provide you with a copy as soon as possible.

MR. STEIN: All right, thank you.

DR. PRESLOCK: Let's see, where am I?

"The heavy metals concentrations in shellfish taken from Galveston Bay are relatively low compared to certain levels in shellfish in other southern or eastern bays. However, the major concern of presenting this information is that no official criteria are presently available," and I believe I have already discussed this material.

I will take up with saying, "The FDA will review these alert levels for trace metals, pesticides and various toxic hydrocarbons, as well as the technical considerations in developing them, with the Environmental Protection Agency prior to the workshop. These levels, when adopted, will apply to Galveston Bay."

I would like to know if anyone from FDA can

tell us if these criteria have yet as of this point been developed and established? And, if not, when do you expect to have them and if you do, do you have any considerations or any conjecture as to how the Galveston Bay oysters will fit into your criteria?

If not, I will go on.

I am now referring to Recommendation 3 of the long-range proposal.

Effective disinfection of all waste sources contributing bacteriological pollution to the Galveston Bay System shall be provided.

I am also referring in my data reported to numbers 3, 4 and 5. I am not going to read them because most of you have copies of them and to do so would be redundant. However, I am going to once again quote from the supplemental report.

> There are 112 sources of domestic waste permitted to discharge to the Houston Ship Channel amounting to 157 mgd. Of this total, 37 sources or 33 percent are in violation of BOD permit requirements; 47 sources or 42 percent are in violation of suspended solids permit requirements; and seven sources or 6

percent do not provide effective disinfection as required. Municipal wastes account for 31.5 percent of the actual waste flow to the channel; 34.5 percent of the actual BOD load; and 29.8 percent of the suspended solids load.

The city of Houston's Northside and Sims Bayou municipal waste treatment plants discharge effluent which is in substantial--I repeat substantial--noncompliance with Texas Water Quality Board permits. These two plants account for 39,596 pounds per day of BOD (28 percent greater than permitted); and 61,452 pounds per day of suspended solids (258 percent greater than permitted). Furthermore, neither of these effluents, accounting for 55.5 percent of the domestic waste flow, were receiving effective disinfection through July 1971. Although a form of chlorination was installed at the Northside plant during June 1971, the system has not been operating for much of the time due to maintenance problems (according to the September 1971 report). The Houston Ship Channel is the major source

of bacteriological pollution contaminating shellfish harvesting areas in Galveston Bay. Improperly disinfected domestic sewage effluents from the Northside and Sims Bayou plants are the principal sources of excessive bacteriological contamination in the Houston Ship Channel. Neither of the plants is obtaining the waste removal efficiencies for which they are designed.

Measurements made by the EPA in May 1971 indicate that Buffalo Bayou is covered with sludge from the effluent of the Northside plant for 2,000 feet downstream at the outfall. The depth of this sludge blanket was conservatively estimated at 6 inches. This sludge accounts for approximately 13 percent of the total volume of material dredged in the bayou during May and June 1971.

I would now like to go to industrial sources. I am now referring to Recommendation No. 6.

A joint waste source survey shall be conducted by the Texas Water Quality Board in cooperation with EPA, and I will not repeat any more of it. Most of

you, I am sure, have copies of it.

I would also like to refer to No. 7, No. 8, No. 9, No. 10, and No. 12. And these, of course, I am referring to are the long-range goals of the Environmental Protection Agency, as we were told yesterday.

Once again I quote from the supplementary report:

> There are 117 sources of industrial waste to the Houston Ship Channel, amounting to 341.2 mgd. Of this total, 34 sources, or 29 percent, are in violation of BOD requirements; 43 sources, or 36.7 percent, are in violation of suspended solids requirements; and 23 sources, or 19.7 percent, are in violation of COD requirements. Of the major industrial sources listed, two, Rohm and Hass and the Olin Corporation, are presently in violation of permits on a pounds per day basis.

If this since has been changed, please feel free to correct me.

Now I would like to mention that the largest waste dischargers for the Houston Ship Channel have been mentioned in the report.

Dr. J. Preslock

I would now like to read to you these 12 largest dischargers and enter it into the public record of this conference.

These largest dischargers as reported by the Environmental Protection Agency in their report are the Ethyl Corporation, Diamond Shamrock Corporation, Shell Chemical Company, Shell Oil Company, Rohm and Hass, Armco Steel Corporation, U. S. Plywood-Champion Paper Company, Humble Oil & Refining Company, Olin Corporation, Southland Paper Company. Of the municipal waste treatment plants, Sims Bayou and Northside Bayou.

The 10 industries I have just listed account for 58 percent of the actual BOD discharged, 83 percent of the suspended solids, and 75 percent of the BOD from all industrial sources to the Houston Ship Channel.

(The table referred to above follows:)

TABLE III-3

LARGEST WASTE DISCHARGERS - HOUSTON SHIP CHANNEL

Source	FLOW (MGD) Perm.	FLOW (MGD) Act.	BOD lbs/DAY Perm.	BOD lbs/DAY Act.	S.S. lbs/DAY Perm.	S.S. lbs/DAY Act.	COD lbs/DAY Perm.	COD lbs/DAY Act.
Industrial Sources								
Ethyl Corporation	16.4	16.1	N.R.	5839	N.R.	7157	N.R.	18019
Diamond Shamrock Corporation	149.3	114.4	35456	9147	127643	46588	211043	109589
Shell Chemical Company	6.1	6.0	5100	3900	15300	10400	50900	29800
Shell Oil Company	9.9	8.0	2537	1712	4301	1846	19480	6849
Rohm and Haas Corporation	1.8	2.5	1490	7700	5790	8300	10900	26600
Armco Steel Corporation	44.9	38.7	7265	4847	18248	10738	64618	33867
U.S. Plywood-Champion Paper Company*	44.0	38.6	18348	14300	36696	47600	146784	101500
Humble Oil and Refining Co.	25.0	19.3	10425	4016	14595	4307	41700	18025
Olin Corporation	16.1	18.1	1937	N.R.	9455	15986	17129	N.R.
Southland Paper Company	50.0	11.8	41700	3141	41700	2849	166800	35921
Municipal Treatment Plants								
Sims Bayou (City of Houston)	48.0	39.3	8006	14334	8006	32153	Cl_2Res.	-0-
Northside (City of Houston)	55.0	47.9	22935	25262	9174	29299	Cl_2Res.	-0-
Totals	466.5	360.7	155199	94198	290908	217223	729354	380170
Totals (Municipal Only)	103.0	87.2	30941	39596	17180	61452	-	-

*Actual values represent treated effluent as delineated in U.S. Plywood-Champion Paper Company statement to the Conferees.

Dr. J. Preslock

DR. PRESLOCK: Concerning actual waste effluents with permitted levels the report states:

> It is not possible to make a direct comparison of the compliance with permits by the aggregate total of waste dischargers since, in many cases, permit values were not listed in the self-reporting data. The reverse situation is also true; that is, actual discharge values in some instances are not reported for certain permit parameters. In general, and with the above qualifications, most sources are within permit requirements on a pounds per day effluent basis. A large number of sources exceed permit requirements on a concentration (mg/l or ppm) basis; however, the allowable waste flow is usually so much greater than actual waste flow that conversion to pounds per day brings the waste discharge under the pounds per day figure implied on the permits. The Texas Water Quality Board considers the concentration which exceeds the allowable concentration to be a violation of the permit. And I end quote.

So waste sources at this time are permitted to decrease concentration through dilution techniques. We

are very encouraged to see in the present recommendations that dilution will be prohibited as a method of decreasing at least BOD. But on the other hand, what of COD, TOD, dissolved oxygen and other such parameters?

I realistically could go on and on. I certainly have much more data that I would like to report. I think I have pretty well covered what I want to say without belaboring the point.

Gentlemen, we have a big job ahead of us. Let's stop the rhetoric, let's stop playing games, let's get down to serious business. Of course my speech here or my talk to you here is somewhat anticlimatic because I am sure that most of you have read this morning's paper and know that the United States Senate just passed the Muskie Water Pollution Control Bill yesterday.

So we must live in this light. We have to get down to work here; we have to clean up the Ship Channel; we have to clean up the bay; we have to clean up the air in the city, and let's once again make Houston a beautiful city in which to live.

Thank you.

MR. STEIN: Thank you. (Applause.)

MR. VANDERHOOF: Mr. Stein, I would like to

commend Dr. Preslock for a well thought out and critical and accurate statement. I thank you, sir.

DR. PRESLOCK: Thank you.

MR. STEIN: Mr.Yantis.

MR. YANTIS: Well, I guess I could spend several hours challenging in part some of the word "accurate." I do think that the Doctor put a great deal of thought on it, but there is a great deal of misinformation in the paper.

DR. PRESLOCK: Sir, I stand corrected at any time.

MR. YANTIS: It could be discussed for hours, and I really see no point in boring you with all of it.

But I simply would like for the record to show that just because the paper is not discussed in detail does not necessarily mean that we concur with all of it. The paper or the remarks do include a great deal of personal opinion about the way government should be carried out, the way representation should be provided for. Yes, you did put a great deal of thought on it, but it does not mean that all of your facts are correct or that the interpretations all are correct either.

Beyond that, unless we want to spend days and

days, I don't really see any merit in trying to discuss it a point at a time.

MR. STEIN: Are there any other comments or questions?

If not, let's go on.

R. C. Sutter.

R. C. SUTTER

VICE PRESIDENT OF TECHNOLOGY

DIAMOND SHAMROCK CHEMICAL COMPANY

CLEVELAND, OHIO

MR. SUTTER: Don't worry, I am not going to read all of this.

Mr. Stein, Mr. Vanderhoof and Mr. Yantis.

I find myself in a somewhat--

MR. STEIN: Why don't you identify yourself first.

MR. SUTTER: I am Mr. R. C. Sutter, Vice President of Technology, Diamond Shamrock Chemical Company.

I find myself in a somewhat ambigous position commenting on something that has not been presented to the conferees. I will explain this in a minute.

R. C. Sutter

I must further apologize to the Chairman for not having a typed copy of my statement, which I will be happy to provide later. The fact of the matter is that I came to the conference with no intentions to speak, but the developments of yesterday prompted me to change my mind.

We came to this conference with only the statement and recommendations of the Federal-State Technical Task Force, which was mailed to all who had participated in the June conference. We thought it reasonable to assume that this statement set forth the consensus of opinion between the Federal and State conferees and was a reflection on the agreed facts of the situation. We felt further that this program would result in the continuing improvement of the Ship Channel and the Galveston Bay and saw no reason at all to repeat our previous statement.

I'm mindful of the Chairman's suggestion that we not plow old ground. However, when one finds that he has done a poor job of plowing, he hasn't much choice but to do the job over.

Much to my surprise, and I guess to the surprise of many others here, the Federal conferee stated

that the recommendations didn't reflect his position and proceeded to read into the record recommendations or suggestions to the Texas Water Quality Board as well as revisions to the recommendations of the Federal-State Technical Task Force. Mr. Vanderhoof alluded at the same time to a summary report dated August 1971 which confirmed the EPA earlier report discussed at the June conference. No such report was made available to those of us attending the conference nor, to my knowledge, to the Chairman and the State conferee, and I understand by this morning's action this has now been corrected.

I did note, however, that the report was distributed to th news media and elected officials present yesterday. If my memory serves me correctly, this was the way the June report was originally distributed. And it is about this report that I wish to comment.

I was first curious about the method of release or the lack thereof. I managed last night to secure a copy of the report, which is titled, "Supplementary Report to Federal-State Technical Task Force of Galveston Bay Enforcement Conference-Working Paper Only," which is dated September 1971. This report purports to update the data presented in the original Federal paper.

R. C. Sutter

I think many attending this conference will find this report interesting reading. I noted with some interest that the only concession made to my earlier statement about the basic and serious error in analysis of the earlier data was the following statement, quote:

> Many of the industries presenting statements to the conference were concerned that the effluent figures quoted in the Federal report were not representative of waste production within their plants due to the degraded quality of the intake water. It is presumed that the self-reporting data submitted by waste dischargers to the Texas Water Quality Board take this factor into account and that all values quoted are representative of actual waste discharges. Unquote.

Now, I thought I had been quite clear and quite specific in my earlier statement that the data did not take into account the quality of the intake water. The information is available to the EPA and data as recent as April 1971 is a matter of the record of this conference.

In the case of Diamond Shamrock at Deer Park, we use approximately 150 mgd of water, 95 percent of which

is once-through channel water used for cooling. This quantity of water represents close to 25 percent of the total wastewater flow into the channel, and the erroneous assumption that the total content of this water represents waste discharge by Diamond Shamrock completely invalidates the conclusions that are based on this assumption concerning waste loadings in the channel. This is the point made in June, and I now find that the same error is perpetuated in the supplementary report given yesterday to the news media.

Also, Mr. Stein, you may be personally interested in some of the data related to mercury. The report states that the Sims Bayou and Northside municipal sewage disposal plants are discharging 1.4 pounds of mercury per day. As you know, there is no chloralkali plant in the Nation discharging this quantity of mercury. You may also be interested in the fact that analysis of the lower reaches of the channel, that is from mile 10 to mile zero, shows less than 1.4 pounds per day of mercury and a concentration of less than 0.2 $\mu g/l$, that is ppb, which is pretty close to natural background in sea water, and drinking water standards, as you know, are 5 ppb.

I was particularly humbled and at the same time

enlightened yesterday by the intemperate attack on Mr. Yantis and his staff and the Texas Water Quality Board. There have been times when I have felt the same way, not because I felt the Texas staff was too lenient and flexible but because I thought the staff was unreasonable and rigid. Like all such questions, there is probably a little truth in all positions, and in all positions they are taken sincerely. But the enlightening part of the episode, however, should be the realization that the Texas Water Quality Board has a dual function--to protect and improve the quality of the waters in the State and do it in a healthy economic climate. Whose interest is being served by the Board if they are successful in this dual objective and who is hurt if the Board fails in either objective? All of us, industry and citizen groups alike.

Thank you. (Applause.)

MR. STEIN: Thank you, Mr. Sutter.

Are there any comments or questions?

I do believe, Mr. Sutter, you have raised one question that is a national question. That is on mercury, and as always I think you have been very perceptive on these matters.

We have had a program wherein I think chlor-alkali

industries in other plants have reduced their mercury discharges in a really dramatic manner, generally down to around 0.1 of a pound per day. However, we do find below major cities throughout the country contents of mercury in terms of what we found here--1.4 to 2 pounds a day or something of that kind. The problem may be that we are getting that from many diffuse sources in a city, and this continues to be a problem. I would point out that I don't think this is unusual in relating to municipal wastes in this area, as compared to other analyses of municipal wastes we have done throughout the country. I think it is something we have to face up to.

I think I may have done this last time, but I would also like to point out that when we had the mercury problem we had full cooperation from Diamond Shamrock. In working out the program we may have had some philosophic differences which we resolved, but we really didn't have any differences on data and what the facts were. We arrived at a program, which I hope was satisfactory to the industry and the States concerned, in which Diamond Shamrock and other companies had their plants located--and I don't want to indicate by any means that they weren't one among many who were discharging to streams

or that that was satisfactory to all.

Now, again I think we have said many, many times, and I hope the schedules reflect this, that anyone can clean up pollution by shutting down an industry or putting a padlock on the city hall. You don't need specialists or experts or people like we have here to do that. The challenge is to keep the cities in a situation where they can grow and to keep industry in a competitive position where industry can grow and flourish and still have clean waters, and this takes some doing. And I would say with a lot of the people here, this is what happens, I guess, when you are in public life--people have different views on various sides. But as far as I am concerned, what we are doing is we are dealing with professionals in the States, in the industries, and I think in EPA, and more and more we are dealing with a professional expertise from the citizens groups. I do think we have to find some way where this is going to work out.

Now, I may have a little different view, Mr. Sutter, than you on the manifestation of some of the statements here. Because I think when we get the Federal and State people or, as you indicated, Federal, State and

industry people or citizen groups together, there tends to be a certain amount of tension. If that tension is not present, then I look to see what is wrong. In our kind of open society, tension is present between and among various groups, and that well may indicate things are normal. You can't expect us all to have the same point of view. So, in a way, I look at that as a healthy sign.

Some of you may recall that at the last meeting there was a representative here from a company on the Ship Channel who used to work in the Federal Government with me and was, in fact, my boss. A report came out of which he and I had personal knowledge, and certainly in our view the report was untrue. I asked him about that and he said, "You know, some people asked me to sue for libel, but my reply was, when you are in public life, this is something you have to expect and you have to live with." I think we have to approach conferences of this type with that spirit or else we are not going to make it.

Thank you, Mr. Sutter.

May we go on and hear from Mr. Keith Ozmore.

Hon. Bob Eckhardt

THE HONORABLE BOB ECKHARDT

U. S. HOUSE OF REPRESENTATIVES

WASHINGTON, D. C.

(Read by Keith Ozmore, Environmental Assistant)

MR. OZMORE: Thank you, Mr. Chairman.

First I want to introduce myself. Coming on the heels of a spokesman for a Ship Channel plant, I want to make it absolutely clear to anyone here that I am not an industry spokesman and I think after my statement that fact will be abundantly clear.

I am Keith Ozmore, Environmental Assistant to Congressman Bob Eckhardt of the Eighth District, which at the present time extends to the Houston Ship Channel and beginning the next term it will include the entire Ship Channel from the Turning Basin to Morgan's Point.

I want to express the Congressman's regrets that he could not be here. I think those of you who know him know that he would be here if he could be here, but there are important matters on the floor of the House this morning, including a hearing on a cancer control bill, which I know you will agree is very important.

MR. ECKHARDT'S STATEMENT IS AS FOLLOWS:

Chairman Stein and other conferees, I first

want to thank you for the opportunity to present a statement at this reconvening of the Galveston Bay pollution enforcement conference. Since I could not be here in person, I made my views known to Mr. William D. Ruckelshaus, Administrator of the Environmental Protection Agency, in a letter dated October 19, 1971. I did not intend to comment further, but situations have arisen which call for further comment.

Just 12 days ago I learned that a supplemental report on Galveston Bay and Houston Ship Channel pollution had been made by the EPA and that this information had not been released to the public. This data, prepared almost two months before the reconvening of this conference, contains much information which would have been extremely helpful to environmentalists and citizens' groups. Withholding of this information distresses me deeply, since I cannot see how such citizen groups can take a knowledgeable position on this problem unless such data is released to them.

I also was told that neither the Texas Water Quality Board nor the EPA intended to release this information. I believe this report to be true, since the only way in which these groups were able to get this data was

as the result of a letter from me to Mr. Bill McFarland, Acting Regional Administrator of the EPA in Dallas. I received this supplementary report on Friday, October 29, just four calendar days before the reconvening of this conference.

Mr. Chairman, failure to release this information was a disservice to those citizens on the Texas Gulf Coast who have worked so hard and yearned so long for a cleanup of the Ship Channel and Galveston Bay. These waters are not the exclusive property of the Texas Water Quality Board, its Chairman or its Executive Director. They are not the exclusive property of the EPA nor the Federal Government. They are the property of those citizens who live and work on the Texas Gulf Coast, the citizens of all Texas, and indeed of all Americans. They have every right to know governmental agencies' findings regarding pollution and what actions might be proposed to abate that pollution. I also would like to suggest that this supplemental report be included as a part of these proceedings.

MR. STEIN: That has been done.

MR. OZMORE: Thank you, Mr. Chairman.

Secondly, let me refer to a position I took at

the June conference. At that time I said that press reports indicated that the EPA might be considering a, quote, soft touch, unquote, approach toward industrial polluters. Mr. John Quarles, an Assistant Administrator of the EPA, commented on my statement and assured me that this was not the case at all. However, if the recommendations of the technical committee of the conference are adopted as they are now written there can be no doubt in the minds of millions of Gulf Coast residents that EPA is actually taking this "soft touch" approach. How else can one explain the lack of enforcement action toward industries?

I want to repeat a statement that I made in my letter to Administrator Ruckelshaus: The whole scope of these proposed recommendations is aimed at municipal polluters and Ship Channel industries are gleefully chuckling at being able to hoodwink the Federal Agency. And later I will show that there is evidence in your own supplementary report supporting this.

At this point, I would like to speak briefly of the relationship between the EPA and the Texas Water Quality Board. First, it was evident from the start that the State of Texas intended to participate in the June

conference with a chip on its shoulder, an attitude that has persisted since the first water pollution control board was authorized in 1961--the attitude that the Federal Government has no business meddling in Texas affairs and that the State agency was taking appropriate action to abate pollution. This attitude has continued and is borne out by testimony of Texas Water Quality Board officials before both the Senate Public Works Committee and the House Public Works Committee which held hearings this past summer on new Federal water pollution control legislation.

The State of Texas did not come into this pollution conference to cooperate and work out a program to abate water pollution. It came into this conference defiant and determined to sabotage any meaningful efforts to curb pollution. And if you adopt these proposed recommendations, it will have succeeded. If there is any doubt in the minds of any Federal official here today as to the attitude and position of State officials, let me cite to you remarks by the Texas Water Quality Board's Executive Director, Mr. Hugh Yantis, delivered for the Chairman, Mr. Gordon Fulcher, at an industry-laden pollution conference in Houston just last week. Mr. Yantis

said these things:

1) The EPA assumes that all industries are flagrant and wilful polluters.

2) The EPA assumes that State programs have not coped with industrial pollution.

3) The EPA assumes that only the Federal Government holds the solution to our problems.

I do not believe that the EPA assumes that all industries are flagrant and wilful polluters and I do not think they are, but certainly the records of many industries in my bailiwick certainly do not present much evidence that these industries have willingly done much to control and abate pollution.

If the second assertion Mr. Yantis made as to the EPA's assumptions is correct, I tend to agree with that assumption as regards Texas. Our State program has not coped with industrial pollution. The State of Texas has granted such "balloon" permits that it is indeed hard for an industry to violate those permits, and I am told that when an industry goes to the Texas Water Quality Board and complains that the rigid heavy metal regulations adopted by the State are too restrictive, the State amends its permit to conform to the industry's

desire.

Another case in point is this: Dr. Quebedeaux tells me that there have been times when he has prepared a pollution case against an industry and notified the State, as he is required to do, and that the Texas Water Quality Board then amends its permit so that the industry will not be in violation.

On point No. 3, I do not agree that only the Federal Government holds the solution to our problems. Certainly there are knowledgeable and dedicated people in Texas who could do the job. They are simply not permitted to do so under present legislation which preempts authority for the State Water Quality Board. So, the residents of Texas have only one effective avenue of relief: To seek Federal Control of effluents and Federal application of ambient water standards.

I could say more, but to conserve time I should like to refer to my paper entitled "How We Got the Dirtiest Stream in America" in the summer issue of the Texas International Law Journal, which has been made a part of the proceedings of this conference. Also, the State Attorney General's office supports my position that the Texas Water Qualtiy Board has defaulted in this effort.

Hon. Bob Eckhardt

On the other hand, the EPA is moving in the right direction. Mr. Yantis, in his presentation last week, was sharply critical of the EPA for its delay in action on the Clear Lake problem. I think all of us must realize that the EPA is a brand-new concept in environmental control and that the task of bringing five different agencies under one umbrella is a difficult task. I do not think that we can expect magical results within an 11-month period. the length of time that EPA has been operating. On the other hand, Texas has had a so-called water pollution control agency for 10 years and there is little evidence that it has done very much in that decade

I would like to publicly commend the EPA and the U. S. Attorney's Office for the Southern District of Texas for the extremely competent job they did in the prosecution of the Armco Steel case. The decision by Judge Allen Hannay ordering Armco to desist from discharging almost 1,000 pounds of lethal cyanide into the Ship Channel daily is the greatest court victory that the people of the Texas Gulf Coast have ever achieved in pollution control.

Now, let me direct some remarks to the information contained in the "Supplementary Report to the Federal-

State Technical Task Force of the Galveston Bay Enforcement Conference." First, I challenge another statement in Mr. Fulcher's presentation last week insofar as the Texas Gulf Coast is concerned. He said that municipalities are the worst polluters in Texas. This is not borne out by this supplementary report. Its Table III-1, dealing with discharges into the Houston Ship Channel, shows that municipalities are responsible for only 157 million gallons of flow, as compared with 349.9 million for industries; 79,600 pounds of suspended solids for municipalities, as compared with 187,000 pounds for industries; 49,800 pounds of biochemical oxygen demand discharged by municipalities, as compared with 94,200 pounds discharged by industries; and, of course, 509,500 pounds of chemical oxygen demand discharged by industries alone. Does this sound like our principal problem is with municipalities?

The report also shows that there are 112 sources of domestic waste permitted to discharge into the Ship Channel, 33 percent of which are in violation of BOD requirements; 42 percent in violation of suspended solids requirements; and 6 percent which do not provide adequate disinfection as required. On the other hand, there are 117 sources of industrial waste. Of these, 29 percent

are in violation of BOD requirements; 36.7 percent in violation of suspended solids requirements; and 19.7 percent in violation of chemical oxygen demand requirements. You can readily see that, because of the big difference in the amount of pollutants discharged, these violations by industry certainly contribute mightily to the waste load in the Houston Ship Channel. And I emphasize that these are violations of extremely lenient permits issued by the Texas Water Quality Board. If these permits were tightened up as they should be, then even more industries would possibly be in violation.

Now I would like to mention oil and grease discharges. As I noted in my earlier comments to Mr. Ruckelshaus, the original EPA recommendation regarding this pollution was emasculated. Yet the supplementary report indicates that Texas Water Quality Board permits allow industries to discharge 50,000 pounds of oil and grease per day into the Ship Channel and that these pollutants are primarily responsible for the oil and hydrocarbon residues found in oysters. The recommendations of the technical committee have dropped the original EPA requirement that the best treatment available be required by industry and that industry be permitted to discharge no

more than 5 mg/l.

I also note, on Page III-42, the supplemental report indicates that inspection of the industrial statements and of grab samples, the amount of oil and grease permitted to be discharged appears to be greater than necessary. Furthermore, oil and grease are not included among parameters in the State's self-reporting system, a system about which, incidentally, I have grave reservations and of which I shall have more to say later.

As I indicated in my letter to Administrator Ruckelshaus, it seems to me that attention is being focused upon municipal pollution and the industrial polluters are laughing up their sleeves. I think the failure of these recommendations to deal with the chemical oxygen demand bears out my charges. Not one recommendation deals with this problem, yet your supplementary report indicates, on Page III-30, that industries are discharging daily some 510,000 pounds of COD into the Galveston Bay System. While admittedly, slashing the BOD load may be more important than decreasing the COD, it seems to me to be a vital part of the problem and one that has not been dealt with. The report indicates that because of the slow degradation of such material some of

it becomes incorporated into the ecological food chain of Galveston Bay.

Now, I want to comment on what I consider to be the most important recommendation made by EPA in the beginning--the Intensive Waste Source Survey. To emphasize the importance of this survey, we need only to look at the detailed reconnaissance data presentation, which pinpoints discharges by industry along the Ship Channel. I am not going to list them item by item, but there are several worthy of comment:

a) A yellowish-brown emission from U. S. Plywood-Champion Paper Company.

b) Intermediate oil spill at Crown Central Petroleum Corporation dock area. The oil slick followed the southern channel shoreline for one-half mile.

c) Location and dispersal of Armco Steel Corporation discharges were recorded. An oil discharge the complete width of the channel and approximately 1.33 miles long. A strong effluent of an orange color being dispersed into the channel for nearly half its width. This substance was assumed to be ferric acid. The third Armco effluent was that of a charcoal colored substance. Chemical nature of this effluent unknown.

d) A discharge of a yellowish substance well within Olin Corporation's industrial complex. Chemical constituency of this effluent unknown.

e) Moderate effluent from Ethyl Corporation's skimming pond. Plume extended 280 feet into the channel.

There are many, many more, including various oil spills from plants and discharges from ships. There is no point in enumerating them all, but this data and evidence strongly support my position that the Intensive Waste Source Survey is absolutely necessary if we are to abate this pollution. I do not believe that we can depend upon the self-reporting system, since I have never seen a traffic speeder stop an officer on the street and say: "Hey, give me a ticket. I violated the speed law back down the road."

While many of the industries may be law-abiding and public-spirited, I believe there are many others who will continue to try to get by without spending the funds entailed in cleaning up their effluent. To support my contention, your own supplementary report on Page III-42 notes that some of the waste sources do not report their effluent values regularly on a monthly basis and that one, the Olin Corporation, has never submitted data. With cooperation such as this, the Intensive Waste Source Survey is absolutely necessary.

Finally, on page III-30, your report recommends

as follows, quote:

> A firm implementation schedule to secure compliance with these standards should be established. End quote.

Mr. Chairman, I cannot find a single recommendation among those made by the technical committee that would set a timetable, an acceptable ambient water quality or an effluent quality that will achieve this goal.

I would like to turn briefly to some recommendations made yesterday by Mr. Richard A. Vanderhoof, Acting Director of the Enforcement Division of the EPA in Dallas. I want to commend highly the new set of proposals set forth by Mr. Vanderhoof and the militant position he took in support of them.

I would like to comment specifically on Proposal No. 10, the only one with any teeth at all as far as reducing pollution caused by industrial sources. As I stated earlier, no meaningful recommendation had been made aimed at industries, but if this proposal is accepted as presented by Mr. Vanderhoof, I am convinced that it will help to bring about abatement. It is commendable to set a goal of 35,000 pounds of BOD per day maximum discharge, and even the State has agreed that

this should be the goal. But I notice that the State is balking at enforcement measures and timetables necessary to achieve that goal.

It is interesting to note that Mr. Hugh Yantis readily acquiesced when timetables were adopted relative to effluent treatment by municipalities, but filibustered for an hour and a half against acceptance of any meaningful timetables and wasteload parameters for the Houston Ship Channel industries.

Finally, Mr. Chairman, I would like to recommend that all the proposals relating to the Ship Channel advanced by Mr. Vanderhoof be adopted, with one exception. That exception is that the Environmental Protection Agency refuse to participate in or further finance the Galveston Bay Study until a meaningful Intensive Waste Source Survey is included in the recommendations. (Applause.)

I agree wholeheartedly with Mr. Vanderhoof's statement yesterday that Mr. Yantis is not speaking for the people of Texas, and that a vast majority of citizens on the Texas Gulf Coast have given up all hope of ever achieving a quality environment. Our only hope is that we can achieve it through the Federal Government, through enforcement of the Shellfish Clause and the Refuse

Act of 1899, and, hopefully, through passage of pending Federal water quality legislation with real teeth in it, as the Senate did yesterday.

Again, thank you for the opportunity to present this statement. (Applause.)

MR. STEIN: Thank you, Mr. Ozmore, and our thanks to Congressman Bob Eckhardt.

Are there any comments or questions?

MR. VANDERHOOF: Just my thanks.

MR. STEIN: Thank you very much, sir.

MR. OZMORE: Thank you, Mr. Chairman.

MR. STEIN: We will now have a very brief 10-minute recess.

(RECESS)

MR. STEIN: Let's reconvene.

Dr. Walter Quebedeaux.

DR. WALTER A. QUEBEDEAUX, JR., DIRECTOR
HARRIS COUNTY POLLUTION CONTROL DEPARTMENT
PASADENA, TEXAS

DR. QUEBEDEAUX: That pronunciation is close enough.

MR. STEIN: Yes. You know, if I come down here

a few more times, I'll be able to say your name right.

DR. QUEBEDEAUX: Well, don't bank on it, because there are people who have lived here as long as I have been here and still don't do it.

MR. STEIN: I am going to listen to you carefully this time and see if I can pick it up.

DR. QUEBEDEAUX: Well, I call it Quebedeaux.

My name is Walter Quebedeaux. I am Director of the Harris County Pollution Control Department. We used to be in the Health Department, but last February it was taken out and made a separate department.

I think first I would like to go through this supplementary report, or if you will prefer to call it the white paper, which most of us didn't get until yesterday. And on page II-1 they talk about description of the analytical methodology that includes some of the preliminary results of the analyses. When will that be available to us, Mr. Stein?

MR. STEIN: Would you care to try to answer that, Mr. Vanderhoof? We should be able to have an answer to that.

MR. VANDERHOOF: I believe tomorrow.

MR. STEIN: Mr. Gallagher isn't in the room just

now, but as soon as he comes in, maybe we can find him. We will provide you with the answer to that.

DR. QUEBEDEAUX: Well, since it is Mr. Gallagher's report, let me go on to something else, because I would like to have him here when I do--as Hugh suggested yesterday--cut his throat. (Laughter.)

MR. YANTIS: He is not wearing his red shirt today.

DR. QUEBEDEAUX: It will still show.

Marked as the Federal-State Technical Task Force--

MR. STEIN: Here is Mr. Gallagher. Don't interrupt yourself in stride here. You can go right ahead.

Tom, Mr. Quebedeaux has a question for you. I am glad you came.

MR. GALLAGHER: Thank you.

DR. QUEBEDEAUX: I was asking when the report of the analytical methodology and the preliminary results of your analyses for the oil and hydrocarbon residues will be available.

MR. GALLAGHER: As I understand it, Dr. Quebedeaux, the analytical methodology was contained in

the June 1971 report and is also available through the Food and Drug Administration Dallas Regional Office and through the reports that were referenced in the June 1971 report.

DR. QUEBEDEAUX: Then we write Food and Drug in Dallas to get it?

MR. GALLAGHER: You don't even have to do that. It is pub--excuse me.

MR. STEIN: Talk into the microphone.

MR. GALLAGHER: I don't think you even have to do that. It has been published several places before and referenced in the June 1971 report and in several references quoted in the June 1971 report.

MR. STEIN: Let me ask you, Tom, do we have a copy of that methodology here?

MR. GALLAGHER: I am not sure, Mr. Stein. I would have to check the notes, but if we do not I will make sure that Dr. Quebedeaux gets one before--

MR. STEIN: We should be able to get one sent out to him within a day or so?

MR. GALLAGHER: Yes.

MR. STEIN: All right.

DR. QUEBEDEAUX: All right, let's go over to the

Dr. W. A. Quebedeaux, Jr.

Table II-1 and it shows the concentration of the hydrocarbon separated from Galveston Bay oysters. I think it is interesting to note that in 38 percent of these stations the conclusion is drawn on only two samples and on the other 62 percent single samples were used to base your conclusions on. I find it extremely hazardous any time to base any conclusion on that few number of samples, and with something as important as what we are presumably discussing today, I think that there should be more information before we start throwing out some conclusions and some suggestions. For any kind of enforcement, we ought to know where we are.

Then I come to Page II-3. That is really interesting and Mr. Gallagher's statement, and I quote, "These aromatic compounds include dimethyl, trimethyl, tetramethyl, and biphenyl methyl fluorene..."

No. 1, the first three, the dimethyl, the trimethyl and the tetramethyl are organic radicals, they aren't compounds, unless you intend to assume that they are fluorenes too.

And then the next statement is one of the most far wrong ones that I know of. That statement is, "These compounds are common components of crude oils..." In my

research in petroleum chemistry and working for petroleum companies I have never found fluorenes in crude oil anywhere. Now, I have, therefore, some considerable doubt as to what is meant. I suspect that what was meant was that these particular configurations, structural configurations, of the organic compounds showed up as peaks and that someone assumed that when they said that they had a dimethyl peak on a gas chromatograph that that was a compound. Well, nothing could be farther from the truth. And to put this in a report of this nature is awfully bad.

Now, you also note that none of the samples that these things supposedly were found in were taken at any place other than prohibited areas. My question is, now, what happens using the same procedure? Do you find these same compounds from oysters in approved areas? Without that kind of comparison I don't think you can draw any kind of data at all.

I have never been able to understand why EPA wishes to insist upon the most unfavorable hydrographic and pollution conditions. My feeling is that you should have a mixture of all of them to get some indication of exactly what is going on and not just take your numbers so that your conclusions are in effect skewed. That is

very bad practice, at least in writing a technical report.

Now, still on Page II-4, I come down to a rather odd statement. It says, "No official criteria are presently available for general circulation as to the significance of any level of heavy metals, or other toxic materials found in oyster meat." Well, in connection with oyster meat that may be true, but certainly there are levels that your organization has published. I believe the copy of the book I have, which has a hardback green binding on it, does give some of this information. I can only ask whether we aren't embarking on another witch hunt. We had one, you remember, some years ago when the cranberry industry was caused to lose an immense amount of money and suddenly they found out that the cranberries weren't affected. We have had another one just recently in the phosphate detergent field. Suddenly EPA comes out and says, "We were wrong, there was no detrimental effect."

So is this another witch hunt that we are looking at or do we really have reliable data?

Then the next two words cover something that was tried to be defined yesterday, those words "alert level." I just don't know what an alert level means in

the context that it was used by the conferees. To me an alert level means a point at which something starts action. If you are talking about civil defense you have several alert levels. But apparently this is being used in the context that the presence of an indicator will alert someone to the bad treatment of some discharge.

Now, I cannot understand why the statement is made in III that no overall complete determination of actual quantity of waste discharges into Galveston Bay based on effluent samples was available. Now, if you take it apart, overall you are probably right, but as far as Harris County is concerned, and at the last meeting, I offered to give you any information we had in our file, and we have records of what these waste discharges have been throughout the years. But I find, unfortunately, that when EPA personnel and their predecessors--they are no different from those--don't want to be informed they just don't go to the right place to ask the question, and then you can come up with a statement that says nothing is available. Well, it certainly is available for Harris County and I will offer it again to you.

In all the time that your local agency has been here I think I have seen your personnel twice. Mr.

Dr. W. A. Quebedeaux, Jr.

Gallagher came out there just after the last meeting and there was one other time that we have seen your people. If you don't want the information, say so and I won't bore you with offering it again.

I cannot see why on Page III-2 it is necessary to make a statement, "It is not possible to make a direct comparison of the compliance with permits." Well, certainly the reason was that it wasn't listed on the voluntary self-reporting data.

Well, obviously you were in the files of the Water Quality Board and if you had wanted to find out what the permit data was, that would have certainly been available to you. As a matter of fact, it is on a computer printout if you want it. I have seen books this thick on it, about two inches thick, on a complete data printout, and certainly you can have that. As far as permits go or self-reporting system, I believe Mr. Teller has told Senator Schwartz that there were at least a dozen different types of printouts that you could get. So I can't see why that wasn't available to you.

Now we will go over to this Table III-1. You start talking about the totals from all sources. Well, the minute you start talking about total discharges you

immediately allow one flagrant violator to be hid among his neighbors that might be doing an acceptable job and that is something that we don't like to see. We will like to evaluate the various effluents individually. I did not go through the following tables carefully, but I do find some areas that you find just plain wrong.

For instance, if you go over to III-2-C and look under the city of Clear Lake, you show an average chlorine residual for 1970, I presume, of 1.70. Well, that can't really be when you had at least three zeros in that list. There is no logical reason for averaging the zeros and even though they might have 5 ppm at other times. Then you come over to El Lago, look under the flow. Well, that average flow that you show of .271 is different from the information that I received from the plant itself. Now, while this may be reported flows, that doesn't necessarily mean that the self-reporting system information is correct.

Go down to NASA Bay, you have the same situation. I believe last time, Mr. Stein, didn't I give you a copy of the 1970 results from the sewage treatment plants in this county?

MR. STEIN: Yes, you did.

Dr. W. A. Quebedeaux, Jr.

DR. QUEBEDEAUX: Well, if you will check that table against the figures here, I think you will find many more fallacies than I have pointed out today.

To get down to the song and dance about the Houston Ship Channel as a major source of bacteriological pollution contaminating shellfish, I don't believe there is any information that exists where you can show that. Now, you might be able to show that there is some bacteriological contamination in the shellfish themselves, but I don't believe they carry a tag as to whether they came from the Houston Ship Channel, Trinity River Basin or from the city of Galveston or Texas City and I don't think that you can flat make that statement.

There is no doubt but what we do have improperly disinfected municipal sewage plants. I think you will find, particularly at Sims Bayou, there is a lift station just before it enters the plant. There are five big collector lines that go into it. One of them is 48, there is two 42-inch, one 36, and I don't know what the fifth one is, it is one that has been built recently that goes up Brays Bayou.

But just taking the discharge that comes out of the plant, you have no way of knowing the quantity that

goes out of these lift stations. You may think it odd, but going from that lift station into the plant itself you only have a 42-inch--one 42-inch line.

Now, how can that handle five collector lines? I don't think that mass disappears or disintegrates, and if you want to go back to a case on that problem, the Milby Estates won back the north half of Milby Park some years ago because of this same situation and the untreated sewage discharged into Plum Creek. When that park was given to the city it was under the understanding that the city would maintain it in a healthful condition and the court found that it had not done so, so they gave the north half of the park back.

Since that time, and I sent Mr. Yantis a copy of this picture, sent one to Mayor Welch, that lift station had a crack in the bottom and was leaking right out into Sims Bayou and there was a big puddle of septic sewage which now has been filled in. But all of these unauthorized locations of discharges should be stopped. I am well in agreement with Mr. Vanderhoof that we should not permit the discharge of materials of this nature except through a place that we know it is going to be.

I found another situation on III-32. Mr. Stein,

I don't know whether you have ever seen this thing or not. I sent a copy up to the Dallas Office. It is the analytical report that we made on the portion of a sampling run right after the last meeting. We were not permitted to go on the others and for some reason, well, the boat did lose both its engines at 23-1/2 mile point. But the interesting part on this same date, which is 6-25, on this table that you have you show that there was a sample taken at Buffalo Bayou Wayside Street Bridge, and another one at Sims Bayou Lander Bridge on the same date that that boat stopped there by Brady Island, and the men that were on it were exposed to the sulfurdioxide coming from the plant that is located there. We might be using them for witnesses sometime later, but I would like to put this in the record for you.

MR. STEIN: We will accept that as an exhibit.

(The above-mentioned exhibit, Exhibit 1, is on file at Headquarters, EPA, Washington, D. C., and Region VI, Dallas, Texas.)

DR. QUEBEDEAUX: Now, for you to better find out what we are talking about by the mile post, I had one of your small drawings blown up, and I will let you have this one. The odd thing on that exhibit is that you

skipped and took about every other place. You didn't take them in sequence. But it does indicate that there is something more needs to be done. As far as I know, and while you promised me at the last meeting that all of us up and down the line would be aware of the analytical results, I have never seen any results that your lab ran, and that was promised to me. You did overrule me when I stated that I felt under the case decisions here that the county of Harris was eligible to be one of the conferees, and for your information that is one reason that I asked that this podium be placed on this floor, because I wanted to stay within your ruling. I didn't want to be on the same podium.

They say it is much easier for you to stand off and really be in opposition to those if you are not just standing right beside them.

There is one other question in this report. You have something about some air flights. My question to you gentlemen is after these were reported, what did you do with them. Apparently they were sent up to Denver to Mr. Gallagher and just listed. Well, that is no way to get enforcement. If your people made these observations, and I see no reason to doubt that they did, why

didn't they call us so we could go down there immediately and take samples of it? After all, this is supposed to be a cooperative effort. I really have to, oh, I don't know, take a little bit of pleasure, maybe, in Mr. Teller's statement that was reported by Mr. Scarlett, I guess it was Monday or Tuesday, that he was objecting to the lack of being able to see these reports which were being presented to the conferees yesterday. His statement was that if that is cooperation, why, he didn't want any part of it. Well, gentlemen, that is what I have been getting for 10 years. His hide is just not thick enough, that is the only trouble.

But I still think that if all of us cooperate we can get this thing on the road and get more done. But throwing these reports out like you did yesterday is not the way to do it. I thoroughly agree with what Mr. Ozmore stated in Bob Eckhardt's speech, that we need to get the show on the road, but we have to have information and this information that is contained in this white paper is just about as bad as what we had in the so-called black paper last time. It just isn't there.

I don't see any need to go through the statement of the Federal-State Technical Task Force. I have

Dr. W. A. Quebedeaux, Jr.

to agree with some of the prior speakers that this is a very watered-down situation and that there is not much of a real enforcement nature in it, but I would like to go to the one which was thrown out on the table by Mr. Vanderhoof and then quickly withdrawn and then paraphrased in what he called official position. If he doesn't think enough of this Region VI recommendations that he made, why even present it? That should be his official position. But right now I am at a loss to know exactly which recommendations you all are considering. You have got at least four sets.

If we are going to Mr. Vanderhoof's Region VI recommendations, in No. 2 you talk about "The most unfavorable hydrographic and pollution conditions will be determined by technical personnel of the Texas State Department of Health, in cooperation with the Food and Drug Administration and other appropriate State and Federal agencies." Well, my question is now, who is calling the shots? You have got to have a boss. And how are you going to get all these people together on a specific day in order to determine whether it is the most unfavorable? It just isn't going to be done.

Then you talk about in No. 3 effective

disinfection of all waste sources. Now, when you use the word "all" that means everything. Currently the Water Quality Board permits allow a relatively small flow of sewage to go in with industrial wastes without disinfection. Now, are you going to disinfect it at that point or as it leaves the pipe and enters the channel? I think that there should be a little bit more explanation as to what you are talking about.

Then we come to No. 4, talking about a regional plan and for collection and treatment of all municipal wastes. Again that word "all." That sticks in my throat. How far does this regional plan--how far is it expected to extend?

The last time I attended a Water Quality Board meeting I heard three developers come up and with pitiful stories and crocodile tears telling that they could not afford to stay in business if the Water Quality Board didn't allow them to build their small plants. Now, that isn't getting away from proliferation.

And then we get down to this last sentence:

"No toxic or hazardous materials will be permitted to enter the regional system." Now, who is going to determine it and how is it going to be done? I know

that the Water Quality Board looks to the Gulf Coast Waste Disposal Authority that we have here now to be their little brother down here, but after some two years, why, that hasn't gotten very far, at least as far as these recommendations seem to imply.

Then in No. 5 we have a flat statement that says, "The regional plan shall require the best available treatment." Now, that is a lot different from actually setting guidelines. And it goes on and says, "such treatment is now defined." Well, who is the one now defining it? Is that EPA or do you have information that these levels that you have picked, the 5-5-1-1, are actually the ones that we should be looking at? I haven't seen any information. Or are they numbers out of a hat? You might wonder if the EPA is hopefully trying to reduce pollution by just changing their definitions on us.

On this joint waste survey, that is your No. 6, there again I offered to supply you that, at least for Harris County, and as far as Harris County is concerned we have it in the file. The water board has it in their files too. Maybe you didn't pick it up. Maybe that is like some of these other things that you didn't know what you were going to look for.

Dr. W. A. Quebedeaux, Jr.

Then we come to the last sentence on that page, "Recommendations and scheduling of best available treatment will be provided to the conferees within six months."

Gentlemen, the only thing I can say about that, who is going to look in which crystal ball? The Feds seem to think implementation plans can be dreamed up and followed without any basis in fact, and that is something that I can't quite agree with.

Now, then, on page 3 you are talking about the Texas Water Quality Board permits and self-reporting data system should be amended. Now, gentlemen, how do you amend a self-reporting system which is voluntary in the first place? I don't know that you can. At least it wouldn't be a volunteer reporting system if you are going to set it down by rule. Now, I can't quite buy it, because I know what happens when those reports get up there, I know how some of them are made out, and they are not anywhere near to the true state of affairs that are going on in the plants.

In my own little city some year and a half ago they sent up a self-reporting report and it showed that they were on stream for the whole month. Well, I know for a fact that they were bypassing for 20 days out of

that month. It didn't show up on the self-reporting system, though. And that is just one instance.

I was a member of a Chamber of Commerce committee when I worked for the paper mill and charged with responsibility of getting an estimate from the various plants of their air pollution. Well, what was turned in was not what was actually going out. I knew that much from the work I had done in the various industries the year before. As a matter of fact, my own mill took the true results and divided them by three and then reported them.

Well, Mr. Yantis tells us that self-reporting is now mandatory by law and Board order. All right, I will stand corrected. Then you can amend it by going to the legislature. That would be the preferable way of doing it.

I don't--

MR. YANTIS: Walter, I do agree with nearly everything else you have said, though, so far, so go ahead.

DR. QUEBEDEAUX: Well, that is unusual, Mr. Yantis. (Laughter.) Maybe if I was reading your report and tearing it apart, it might be different.

MR. STEIN: Maybe you want to terminate your speech so you can keep your perfect record. (Laughter.)

DR. QUEBEDEAUX: I don't care--

MR. YANTIS: No, it sounds good. Keep on going. (Laughter.)

DR. QUEBEDEAUX: I can't agree that the use of the label pounds per day for any parameter is a good way to look at pollution. I think that you have to have some parameter that defines the amount of water that that particular contaminant is dissolved in in order to give you a better picture. Obviously if you have a plant that discharges a million gallons of waste per day and you have, say, 100 pounds of contamination, before the 100 pounds has completely left the plant most of it will be pretty far down the river, because you can't stack it up all in one pile and then suddenly get all of the 100 pounds drop out at once. You just don't do that unless I was misinformed when I studied water flow in school. But apparently EPA likes to work with these numbers. It makes them a little more obscure and really nobody can really understand them.

Then we come down to No. 9. You are talking about characterization and evaluation of the water quality

significance of the materials contained in the organic sludge dredged from the Houston Ship Channel. Gentlemen, I can conceive of that only as being a chemist's nightmare. That is one of the silliest things I have ever heard, other than one other thing which I would at this point like to give you.

While that deals with air pollution, the city of Paris is putting up those towers and they hope to collect 80 pounds of particulates per day drawn through that filter system. Eighty pounds per day when you have a plant putting out something like 80,000 pounds, you are just begging the question. And this is the same feeling that I have for this No. 9.

Surely with that sludge you can identify some of them. You can quite possibly find a fingerprint in it where you can show that in this county there might be only three or four plants capable of producing it. Then you have something. But for the way this wording is, and then this No. 10 is much the same, you are going to core the sludge for the purpose of determining the exact source of the settleable solids. Well, anybody that has ever tried any analysis ought to know better than that, and it sounds to me like it is some of our civil engineer friends talking

about something that they really don't know anything about.

But anyway, I can't see any reason. I certainly would agree with you that we ought to examine it, but for the purpose of determining the exact source, that's wild.

And then this 10-A. The only ones you are going to restrict are the earthmovers. Well, I don't know of any earthmoving equipment along the channel unless you have a plant that is putting in a holding pond. And certainly any development will be far enough from the channel so it won't be getting into the channel. But the only thing that you want, "develop legislation restricting earthmovers' work for development of land to prevent erosion of sediments into the Ship Channel." Well, that is a lot of pretty words.

Now, Mr. Vanderhoof, what is a fail-safe structure. And then you come right up, "such as holding ponds." Well, a holding pond isn't fail-safe. In fact, we have got one right now that the Water Board and I have in suit and we just made a survey of it and we find that the material behind those dikes is in ditches all around and is getting into the San Jacinto River. They

are under injunction, but a holding pond, that certainly isn't a fail-safe. The only thing I know fail-safe would be a steel tank and I don't think you have that meaning here or have that in mind. But a holding pond--

Then we come down to No. 12. Apparently the man that wrote this must have been a city boy all his life. He talks about the color of the waste effluent from the paper mills. Well, let's assume that you are going to put a regulation on it at 75 color units at pH 7.6 All right, now, which scale are you going to use? There are about three or four different methods of measuring color. And going farther than that, if you had been a country boy, you would know that in your own experience that you would have had natural streams with leaves in them that have much more color than what you are looking for here. I really can't see that there is any information, I haven't seen any, that color in itself is a detriment.

Now, of course, aesthetically there is sometimes color coming out of a sewage treatment plant, people don't like the aesthetic point of view. But we are talking about water quality. I don't know that color from a paper mill is something that of necessity needs to be

corrected.

Then we get down to I believe this is 13. There were two of them, I think, 13(a) and (b). Well, the statement of the EPA in 13(b) is probably, in my mind, better than the statement recommended by the Water Quality Board, because the Water Quality Board statement, they are just going to monitor.

Mr. Stein, for your information, I have in my files at least 30 different surveys on the Houston Ship Channel. They started back in about 1940 and have come forward about every three or four years to have another survey. It is time to quit that business.

Then we get down to this 14(a) and (b). That was the big argument yesterday on whether 35,000 pounds per day of 5-day BOD or 120,000 pounds. Well, I don't really care what the numbers are. I don't think that you can take the numbers and subtract it by the number of industries involved and subtract a few percent for a cushion, as you stated, that should be left, because what you are in effect doing, you are making a man that is treating his waste properly and in good workmanlike manner and doesn't have the amount present that you have allocated to him, why take that cushion, take that, and

put it as a cushion.

I think you are going to have to look at these effluent by effluent. I think that is the only way you can do it. And when we quit worrying about what happens 40 foot deep in the middle of the Houston Ship Channel, or right above it, for that matter, some of your--in your white paper you mentioned some slicks going a half mile or two miles down the shore. You'll have them go that way if it's all, I've seen them, and sampling out in the middle of the stream is not going to give you any valid answers.

And here again we come to this fail-safe, although I do like your nonbypassing devices, but then you end up, "such as holding ponds," Mr. Vanderhoof. That holding pond deal, that is one of the worst gimmicks that we have got around here. We have got too many of them now.

No. 15, Mr. Stein, as an attorney, you are talking about the EPA directing the Port Authority to do something. Well, I haven't seen any of their representatives here. You are talking about a third party not present. Certainly they ought to be present and give their viewpoint. While it is true, I have been for years

trying to get the Port to implement a system of barges. There is one company that now has them operating on the channel and do, do exactly what this recommendation does. Now, the Port Authority could very easily do it and just add $5 to their dock fee per day to pay for it if they want to do it that way, but without their representation I don't think EPA, in this conference anyway, can tell them what to do.

And then we have this No. 16. That is really one that reaches far back. It says, "The Texas Water Quality Board will immediately ban the ocean dumping of any wastes from Texas industries unless such disposal is in accordance with national policy." Well, what is national policy? You have never had it. In 1959 we had to beat you over the head in the AEC to stop dumping of atomic wastes out there. Now, does this national policy just apply to here or does it apply to the Pacific and the Atlantic too where a lot of materials are going out? I don't know what that national policy is. If there is going to be one, let's stop them all.

Some of these materials that are going out I really can't see any harm in it. But when you get to radioactive materials, I can certainly see that harm,

particularly when all you have to do to change a license is just to have it advertised in the Federal Register and then you have got your license. It took two years in Boston for you to get up to an unlimited number of tons per month allowed and also an unlimited amount of radiation allowed and added to that plus special reactor products. Well, I asked the Director of the Research and Development of AEC what reactor products was in the Texas Medical Association and he couldn't tell me, but he had written a paper for the Third International Conference on Atomic Energy in which he said that sea dumpage should never be done. But then I heard him about a year later before a congressional committee and he says, entirely safe.

Well, what is our policy? I don't think that anybody really knows. Maybe it is dictated by the Great White Father.

And then you are asking the Water Quality Board to do something that once you get out of the 10-mile limit they have no authority and it is doubtful that you do, because quite often when they want to take these materials out it is very difficult to even pin down a Federal Agency for permission to let them do it. And

certainly the Water Quality Board doesn't have any authority to do that type of banning.

Then No. 17, Water Quality Board--we are talking about deep wells. Here again, "in accordance with national policy as described by EPA." Here again, what is it? Are you banning deep well disposal or aren't you? I know your position in the steel plant situation was that you were against it. Well, is that the same all over?

I remember a meeting that we had out at the airport. The one thing that has continually worried me that Mr. Vanderhoof opened the conference with--of course I think Mr. Teller and I were entirely in the right when we both refused to take part in it if the news media were not present. You may not know it, but we have an open meetings law in this State and Mr. Teller and I would not take part in it until the EPA and the Federal District Attorney agreed to let the news media in. But Mr. Vanderhoof's statement was that this is an example of the new Federalism. Well, from what I have seen of the new Federalism, I can't help but not like it, and I guess I am too much of a rebel still at heart to like the Federal Agencies coming in and telling a State

agency or a local agency what they must do, and that is what is happening.

Now, on No. 18, "All toxic substances found in wastes discharged to Galveston Bay and its tributaries shall be identified... Gentlemen, how much money have you got to throw down that rat hole? You could spend a lifetime identifying some of those and then not get it all finished.

And then you say that "the toxicity of each waste will be determined in accordance with procedures described in Standard Methods for the Examination of Water and Wastewater, 13th edition. That is the poorest reference I have ever seen. For instance, with cyanide, if you follow that one, why, you will get 20 percent recovery on a known standard.

We wrote your chemist in Cincinnati about his cyanide procedure and asked him exactly what he did, and the succinct sentence that came back, "We look to see in any reference book if there is any method that we can use and reproduce. If not, then we devise our own."

But to follow a single book, and I was told by some of your Federal boys that they couldn't pick samples up because they had to follow this particular volume.

Dr. W. A. Quebedeaux, Jr.

Well, if you don't have any leniency or leeway in the laboratory, certainly Standard Methods hasn't really contemplated the extensive use of some of the equipment that is now available and that is much better test available than was published here in the 13th edition. But to use that as the standard, heaven forbid.

And then in No. 19 I come up against another alternative. I hear it about every year and a half or two years, and I have done that for about the last 20, on this instream aeration. Usually it is brought forward by a civil engineer or a consulting engineer that wants to make a lot of money on designing the program or putting in the pipes. It is just about as bad as that situation where you put collector lines on each side of the channel and then take it out into the Gulf and discharge it. Can you imagine the size of those pipes you are going to need, the size of the air compressers you are going to need, to do any appreciable instream aeration?

Now, one thing you, Mr. Stein, had some comment about the lousy 2 ppm dissolved oxygen. Well, in air conditioning work you only cool that area of the room, regardless of how tall the ceiling is, in which the

people are going to be. The same can be true in the Houston Ship Channel. Just keep oxygen along the surface. You don't really care what has happened down below, because as it comes upward you are going to get some deterioration, you are going to get anaerobic condition, and it is going to be used up.

I think Mr. Yantis was perfectly right when he tried to point out to you yesterday that not all of the BOD that comes out, or suspended solids, of these plants ever gets to Morgan's Point or ever gets to Galveston Bay. It certainly doesn't. I think somebody read an excerpt here from this white paper about a sludge blanket on the bottom of the channel extending from the Northside treatment plant some two miles, I think, or whatever it was. But anyway, it drops out. That doesn't mean it is completely treated. But it doesn't get down to Galveston Bay. That is a long way from it.

Apparently there was some flurry in the Dallas Office when I informed the Commissioner's Court of a study that had been made under interagency contract from the Water Quality Board. I understand that they now have a copy of this report, which is the reaction rates of the Houston Ship Channel waters. It was performed by Dr.

Tom Reynolds for Professor Eckenfelder and dated March 1970. I don't know why he didn't find it. Maybe he didn't ask for it. Maybe he didn't ask Mr. Yantis staff about reports, what reports do we have on the Houston Ship Channel? If he had, why, maybe Mr. Gallagher's job would have been a little easier on the black paper because apparently what you handed him was a set of uncorrelated facts and said these are the conclusions we want you to get. And he dutifully got them.

Now, there is another report, I think this was done by Dr. Hann and was used as an exhibit in your steel company suit. Actually it is Plaintiff's Exhibit No. 15. This is Selected Houston Ship Channel Studies, Contract 68-01-0080. Now, if you are looking for studies, I don't know how many more there are. I don't have any access to the number of these contracts that have been let, but I will wager that there are considerably more than have been brought to the surface.

Now, some of the previous witnesses have stated about the compliance or noncompliance of sewage treatment plants. I didn't have time last night to get it typed, but I did photostat it for you. This shows that in the city of Houston, using the BOD parameter and

there are 42 plants, only 19 percent of them are in compliance with their permit, using suspended solids parameter only 7 percent in compliance with their parameter, using the residual chlorine parameter only 7 percent are in compliance with their parameter. So those last two parameters, 93 of them are out of line, and if you look at that report I submitted to you last time, why, I think that is where I got these figures from.

In Harris County, outside the city of Houston, there are 110 plants. Using a BOD parameter we only have 35.5 which are in compliance. Using the suspended solids we only have 25.5 which are in compliance. And using the residual chlorine, we only have 7 percent which are in compliance. Gentlemen, one of the first places for us to start is to get these sewage plants and industrial plants or what-have-you in compliance with their permits. And I will give you this copy, submit it for your record.

(The above-mentioned table follows:)

City of Houston — 42 plants

Parameter	Compliance		Non-Compliance	
	Number of Plants	%	Number of Plants	%
BOD	8	19.	34	81.
Susp. Solids	3	7.0	39	93.
Residual Chlorine	3	7.0	39	93.

Permit Requirements: 20 ppm BOD - 30 ppm Susp. Solids - 1 ppm Residual Cl

Harris County — 110 Plants

Parameter	Compliance		Non Compliance	
	Number of Plants	%	Number of Plants	%
BOD	39	35.5	71	64.5
Susp. Solids	28	25.5	82	74.5
Residual Chlorine	8	7.0	102	93.
21	New Plants — not operating			

Dr. W. A. Quebedeaux, Jr.

DR. QUEBEDEAUX: Now, Mr. Yantis, you were awful kind a while ago, so I was just holding you until last.

This is a public hearing notice and it is going to consider proposed revisions of rules for the Texas Water Quality Board. I have marked areas in these two proposals. Now, if you read them carefully you will find that under that first proposal, 510.6, you are talking about all parties desiring to be heard shall notify the executive director that he wants to make his presentation. That is kind of hard, because a lot of times when you go up to Austin or even to a public hearing you don't really know until you get there and see what is proposed by the other side whether you want to make a statement or oppose it or agree with it. You don't know which way to go until you get there.

Now, this second one is a little sneaky. Right in the middle you have got a new section. I have marked it "new" on your copy. That is dealing that "unless authorized by majority vote of the decision-making body no evidence will be received or heard by the decision-making body except that which is necessary to correct or review a summary of the evidence." Well, gentlemen, that

is a real neat way of ruling out argument. And up above that I have underlined "a review of the evidence." That is part of what the hearing examiner is supposed to give you. Well, just a review of the evidence slanted in the manner in which the particular writer wants it slanted is not a transcript and doesn't give you much to go on if that is all you have got to read. You have got to read the slanted version, just like you have got to read the white paper and the black paper. They're slanted for EPA's benefit.

Just for your record, Mr. Stein, here is a letter that I wrote Mr. Harrison. He had written me asking me about additions to the record for the last meeting. Incidentally, did I understand you to say that that would be made available to us?

MR. STEIN: The transcript?

DR. QUEBEDEAUX: Yes, sir.

MR. STEIN: Yes.

DR. QUEBEDEAUX: Well, is it out?

MR. STEIN: I will have to check.

Is it out yet?

No. I guess, you know, the longer the transcript is the longer it takes to get out. (Laughter.)

DR. QUEBEDEAUX: Well, Mr. Harrison's letter said it was supposed to go to the printer on the 20th of last month.

MR. STEIN: Well--

DR. QUEBEDEAUX: So I was just curious if your printer was lagging behind.

But anyway, in this I have a complaint about you, Mr. Stein. (Laughter.)

MR. STEIN: That's why I'm here. (Laughter.)

DR. QUEBEDEAUX: I said, we were talking about your ruling that you did "extract from Mr. Yantis a promise that we would be kept informed of the analytical results and any conferences which were to be held between the EPA and the TWQB. Under those circumstances, I told Mr. Stein that I could accept his ruling; however, this office has not been informed of any analytical results, nor given any indication as to what took place at conferences which have been held. From past experience with the state staff, I had no illusions as to whether they would honor their commitments, but I was perfectly willing to believe that Mr. Stein would. It seems that I was wrong in this instance also."

Now, I sent this to the Dallas Office and

then there is a companion letter sent to Mr. Ruckelshaus. I think the last paragraph is really the one that is pertinent. I say in this letter, "We might compare our present situation to the comment prevalent in the 1930's, which when paraphrased becomes, 'The Texas Water Quality Board (like the Lodges) speaks only to the Environmental Protection Agency (or the Cabots), and the EPA speaks only to God.'" (Laughter.) "If this is the situation that must be followed, the cause of environmental pollution has taken a forty-year backward step."

(The above-mentioned letters follow:)

W. A. QUEBEDEAUX, JR., PH.D.
DIRECTOR

HARRIS COUNTY POLLUTION CONTROL DEPARTMENT
107 NORTH MUNGER • BOX 6031
PHONE (713) 228-8311, EXT. 681
PASADENA, TEXAS 77502

October 15, 1971

Mr. William D. Ruckelshaus
Environmental Protection Agency
1626 K Street, N.W.
Washington D.C. 20460

Dear Mr. Ruckelshaus:

I am enclosing a letter which I have submitted to your Dallas office for inclusion in the record of the enforcement conference held in June of this year in Houston. As I stated in my presentation, it seems unrealistic for the federal agency to have conferences and talk only with the Texas Water Quality Board staff when there is a viable local agency, which is older than either of the above ones, with full knowledge of the situation in that local jurisdiction.

We might compare our present situation to the comment prevalent in the 1930's, which when paraphrased becomes, "The Texas Water Quality Board (like the Lodges) speaks only to the Environmental Protection Agency (or the Cabots), and the E.P.A. speaks only to God." If this is the situation which must be followed, the cause of environmental pollution control has just taken a forty-year backward step.

Sincerely yours,

W. A. Quebedeaux, Jr., Ph.D.
Director

WAQ/pl

Enclosures

W. A. QUEBEDEAUX, JR., PH.D.
DIRECTOR

HARRIS COUNTY POLLUTION CONTROL DEPARTMENT
107 NORTH MUNGER • BOX 6031
PHONE (713) 228-8311, EXT. 681
PASADENA, TEXAS 77502

October 15, 1971

Mr. Thomas P. Harrison, II
Acting Chief, Enforcement Branch
Environmental Protection Agency, Region VI
1402 Elm Street
Dallas, Texas 75202

Dear Mr. Harrison:

I was rather surprised to receive your letter of October 8 inquiring about additional exhibits. If you will read the record, you will find that the Hearing Examiner, Mr. Murray Stain, had promised that all agencies would be kept informed as to the analytical results of the three ship channel surveys performed immediately after the hearing. While he did say that he felt that the federal statute under which he operated prevented a local agency from being considered a conferee, he did extract from Mr. Yantis a promise that we would be kept informed of the analytical results and any conferences which were to be held between the E.P.A. and the T.W.C.B. Under those circumstances, I told Mr. Stain that I could accept his ruling; however, this office has not been informed of any analytical results, nor given any indication as to what took place at conferences which have been held. From past experience with the state staff, I had no illusions as to whether they would honor their commitments, but I was perfectly willing to believe that Mr. Stain would. It seems that I was wrong in this instance also.

I am enclosing a copy of the analytical results which we obtained from a portion of the samples collected during one of the ship channel runs with the E.P.A. I had previously given your local representative, Mr. Kallus, a copy of these results and was promised to have copies of those the E.P.A. obtained. We have not received these.

In my opinion, it would have been better if your local representative had allowed us to use our boat in conjunction with the one E.P.A. used,

so that samples from those industries along the shore line could be obtained at the same time that samples were being made in the middle of the channel, approximately 100 yards away. Your representative did not allow us to do that, and we attempted to forecast the time of day at which our boat would be at any particular milepost. I had assigned one man on either side of the channel to collect effluent samples from the shore line industries. Unfortunately, we were able to obtain only six. The results of these tests are shown alongside the appropriate mile post samples.

We would appreciate receiving the results of the E.P.A. samples prior to the reconvening of the enforcement conference, in order to be in a better position to evaluate what needs to be done from our level of government.

I am informed that your office already has a copy of the report prepared by Dr. Tom D. Reynolds and Professor W. Wesley Eckenfelder, under Interagency Contracts IAC (68-69)-237 (University of Texas) and IAC (68-69)-244 (Texas A&M University). If you do not have a copy of this report, I would like to submit one for the record, if you will so advise. The second sentence in the introduction on page 1 of this report states, "During many times of the year, fish kills have occurred in the receiving body of water, Galveston Bay, and the oyster, shrimp and fish harvest in the Bay has been limited because of the pollution problem." Obviously, such a statement in a report done under contract and paid for by the Texas Water Quality Board is an admission against their interest and the position which they attempted to maintain during the enforcement hearing. The one question which remains in my mind is: how many other such reports detrimental to the Water Quality Board's position are in existence but were not made available to the E.P.A?

I might suggest that you check with the office of Governor Smith to determine all of the interagency contracts which have been performed. Under our statute, these contracts should be approved by the Governor's office, and it might prove to be a veritable gold mine of information for your consideration.

Sincerely yours,

W. A. Quebedeaux, Jr., Ph.D.,
Director

WAQ:pl
Enclosure

cc: William D. Ruckelshaus
Attorney General of Texas

Dr. W. A. Quebedeaux, Jr.

DR. QUEBEDEAUX: Well, I really meant it when I told you at the last conference a fie on all three of your houses. Now, two of them appeared here. I haven't heard any of the cheering section, industrial cheering section, representing support for the Texas Water Quality Board. So that might be changed to fie on both of them now instead of three.

Now, in your report I well agree with you that the BOD is not a good parameter for industrial wastes. It is a rather minimum test of questionable validity sometimes for sewage treatment plant, but that was what it was designed for. But industrial waste is a different horse, a different ball game, and that kind of parameter on an industrial waste permit I well agree with you is out of place.

Now, the suggestion of Mr. Vanderhoof of the COD or the TOC, well, they might show a little bit more. I still like the biowaste assay method better. And I was really surprised yesterday when Mr. Yantis did finally admit that in the late 1950's that we did have fish in the Houston Ship Channel, and it was much better than it is today, although it probably had a much higher BOD load. I know that to be a fact. From 1955 until 1961 until the

Water Quality Board Act was first passed I did have fish in that bayou except for one mile and that mile was--in the middle of it was a plant that had been able to win an appeal on a suit that I had filed. But the law has changed now and there is no reason why by taking care of the effluents, the inputs to that channel, if we have those so that they will allow marine life to live, within two years that channel will have life in it too.

I think Mr. Greene was talking about two permits which came up for hearing in the last week or so. One of them was Sinclair Koppers. And as he said, the manager of Sinclair Koppers got up and stated that he had talked with the State staff and they had suggested that he put in that permit amendment. Well, the permit amendment was raising everything by about 3 over what he had, with one exception. That exception, he already had a total solids of 60,000 ppm on his old one. Well, they dropped that to 5,000. That is the only difference.

Sinclair Koppers hasn't been passed by the Board. I hope it isn't. I did get the manager finally to admit that the only reason he had put it in was to be in a position so he could not be prosecuted in the interim for the permit values that he had had under the

Water Quality Board Act was first passed I did have fish in that bayou except for one mile and that mile was--in the middle of it was a plant that had been able to win an appeal on a suit that I had filed. But the law has changed now and there is no reason why by taking care of the effluents, the inputs to that channel, if we have those so that they will allow marine life to live, within two years that channel will have life in it too.

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Sinclair Koppers hasn't been passed by the Board. I hope it isn't. I did get the manager finally to admit that the only reason he had put it in was to be in a position so he could not be prosecuted in the interim for the permit values that he had had under the

old permit and which he was exceeding. To me that is real poor practice and a real step backwards.

The permit for Phoenix Chemical was given by the board. I think it is awful bad practice on our part when there is a suit in progress to amend any permit. It is just like changing the rules of the baseball game when you are halfway through it, or a football game. Once it is under the jurisdiction of the court I don't think the board should take part any farther. Now, of course, that is where Mr. Yantis and I disagree, but that is not the only place.

Thank you, gentlemen, for hearing me out. I don't think I was quite as long as I was last time. We will be glad to help you or work with you, but at least we would like to be kept informed.

MR. STEIN: Thank you for your comprehensive statement.

You know, sometimes I wish they would release these tall silent Texans from the movies and let them come to the conferences. (Laughter.)

I think that concludes the public statements. We have no more requests. And we indicated last time that we would have an executive session, but we also

indicated that we would do that with the public present--if the public wanted to be here--unless we got a request otherwise. I have no request for a private session of the executive session. And let me tell you how we do this so we can proceed.

The public presentations here are completed now. You are entirely welcome to watch us in the executive session when we reconvene. But just imagine that there is a glass wall in front of us, that you can hear us but we can't hear you. Now, we may have some discussions among the conferees where you might get very excited, like a spectator at a football or a baseball game. And while we would like to hear about that, at the executive session we are going to have to make the ground rule that the only ones who are going to speak are the conferees and their technical staffs. We will be glad to hear this later because this is the--we have to get into the working session so everyone will see how this will be done.

When would you like to reconvene? Shall we say a quarter after 2?

MR. VANDERHOOF: That will be fine.

MR. STEIN: Is that all right, Mr. Yantis?

MR. YANTIS: Yes. And my technical staff will

Mrs. D. Cherry

be present. It will include Dr. Quebedeaux; it will include anyone else in the audience with whom I feel that I should communicate.

MR. STEIN: Very well. All right.

Are there any other questions or comments?

If not, we will stand recessed until a quarter after 2.

(The following letter was submitted for the record as if read:)

November 3, 1971

The League of Women Voters of the Bay Area wishes to go on record as supporting the long range 19-point recommendations as put forth by R. A. Vanderhoof, Acting Director of EPA, Dallas Office. We strongly urge that the EPA not compromise on these particular recommendations.

We heartily agree with those citizens organizations who suggested that representatives from these groups be included as members of the Technical Task Force, official boards and committees for new studies made of Galveston Bay and tributaries.

Mrs. Donald Cherry, President

(NOON RECESS)

AFTERNOON SESSION

WEDNESDAY, NOVEMBER 3, 1971

2:15 o'clock

EXECUTIVE SESSION

MR. STEIN: Let's reconvere.

I would like to read from the statute because I think we have a task to devote ourselves to first which was required by statute. It says:

"Following this conference, the Administrator shall prepare and forward to all the water pollution control agencies attending the conference a summary of conference discussions including (A) occurrence of pollution of interstate or navigable waters subject to abatement under this Act"--that is the Federal Water Pollution Control Act--"(B) adequacy of measures taken toward abatement of the pollution; and (C) nature of delays, if any, being encountered in abating the pollution."

These generally are considered the boilerplate conclusions of the conference, and the Administrator has to send these forward. I would like to have suggestions or recommendations on these points.

Let's start with 1, the "occurrence of pollution

of interstate or navigable waters subject to abatement under this Act."

MR. YANTIS: Mr. Stein, excuse me, but would you go back still further? The conference was called under a provision relating to the hindrance of the sale of shellfish in interstate commerce.

MR. STEIN: That is correct.

MR. YANTIS: I wish you would read that so we would have that clearly in mind.

MR. STEIN: "The Administrator shall also call such a conference whenever, on the basis of reports, surveys, or studies, he has reason to believe that any pollution referred to in subsection (a)," which says pollution which endangers the health or welfare of any persons, "...is occurring or he finds that substantial economic injury results from the inability to market shellfish or shellfish products in interstate commerce because of pollution referred to in subsection (a) and action of Federal, State or local authorities."

Are there any suggestions on that first provision?

MR. VANDERHOOF: I would like to address that point, Mr. Stein.

Executive Session

I believe it is abundantly clear that there is pollution caused by municipalities and industries which are subject to abatement under the Federal Water Pollution Control Act, and this pollution is occurring in the conference area.

MR. STEIN: Yes.

MR. YANTIS: Mr. Stein, this is either a statement or a question.

According to my memory, the conference was called because the Secretary or the Administrator felt that he had information that there had been substantial economic injury in the sale of shellfish in interstate commerce. I don't believe that there was any other basis for the conference. If I am wrong, please correct me.

MR. STEIN: That is right.

MR. YANTIS: Now, there was testimony shown not so much as to the total size of the oyster industry from Galveston Bay or the oyster industry in Texas as a whole, but it was shown that the economic injury complained about was somewhat less than $20,000, of which some was recovered because of the ability to transplant oysters to other areas. And this did not include the cost of harvesting, which would have reduced the value of the oysters.

I am speaking from memory, but the facts are in the record. And I please want all of us to remember the facts that were laid out in June, not just the information which you have heard since or read since.

But I would hold that on balance the kind of injury spoken of is not substantial economic injury. It was shown that not only were the oysters from approved areas satisfactory for sale to the agencies having legal jurisdiction, despite the agreed-upon need for further research, but the areas that are closed have relatively few oysters, though there are some; and some of the pollution is not necessarily preventable, certainly not rapidly. And I believe, and the Water Quality Board so stated, that the original calling of the conference was improper. We do not make any claim that there is not pollution, that there are not things that need to be corrected, that harm has not been done. But the body of law set out rather specifically that we were to prove that there had been substantial economic injury to the interstate shellfish industry and it was not proved.

So I hold on that basis that there ought to be a finding of fact that the pollution disclosed should be abated, but not as a result of a finding of substantial

economic injury to shellfish.

MR. STEIN: Do you agree with that, Mr. Vanderhoof?

MR. VANDERHOOF: No, I don't. I don't believe the finding of this conference is a proper subject of debate. The Administrator has already found that there is reason to believe there is substantial economic damage in the shellfish arena, and therefore he chose to call this conference. That is the end of the subject as far as I am concerned.

MR. STEIN: All right. Let me try to summarize this because I am not sure we can get an agreement.

The Federal conferee said that "there is occurrence of pollution of interstate or navigable waters due to discharges from municipal and industrial sources subject to abatement under the Federal Act."

The State conferee states that "this conference was called under the shellfish provisions of the Act and that while there is pollution occurring in the waters covered by the conference that it has not been demonstrated that there are substantial damages to shellfish shipped in interstate commerce."

MR. YANTIS: Mr. Chairman, that is essentially

my position. But I would like to add editorially, we are fully aware of the grossness of pollution throughout the area, of the public interest in it, the fact that it should be abated; it is being abated. We make no claim that all of the actions taken by our board are adequate or any of those things. We know this.

We are saying that the basis upon which the conference was called was inadequate then, it is inadequate now, and the charges were not proved.

MR. STEIN: I understand that.

All right, I think we have gotten the positions. We are setting up a summary, and we will forward this to the Administrator. He will have your views and the Federal conferee's views and will send a recommendation to you based on these views.

MR. YANTIS: Thank you, Mr. Chairman. That is all we ask.

MR. STEIN: All right.

Now, the second point I have, and again I want to make my point that these are required by statute.

"Adequacy of measures taken toward the abatement of the pollution." Does anyone have a suggestion on that?

MR. VANDERHOOF: I have, Mr. Stein.

"While measures have been taken to reduce such pollution, that is municipal and industrial discharges, they are not yet adequate."

MR. YANTIS: Mr. Chairman, I agree fully with that. I would put it in this context, however, that remembering the presentations made by industry, by my own staff, by some members of the Federal Government, we fully agree to the finding of pollution in many places. We fully agree that actions have not yet abated this pollution. To this extent they are not yet adequate. But I think that you should not assume that the State and local government will not take further actions, that we are not moving in the direction which will insure success.

I would say that not only is there room for activity by the State but by the local government, by many levels of local government, by private citizens, and by the Federal Government. On a cooperative basis we welcome the help, we need the help, we need the resources of the Federal Government. But we would not agree to a finding that the State and local actions are necessarily in the future to be inadequate. We think that the genius of our country is that people can govern themselves at the local level. We think there is a proper

role for the Federal Government and we want it, but to imply that absent Federal pressure there would be an inadequate local and State response we believe is not correct nor has it been shown.

MR. STEIN: Did you mean to imply that by your finding?

MR. VANDERHOOF: Mr. Stein, I make no implications other than stated in these rather simple words: "While measures have been taken to reduce such pollution, they are not yet adequate." I think that is as clear as I can state it.

MR. STEIN: All right. Now, let's try to get that.

I think Mr. Yantis indicated he agreed with this. I believe you did use the word "Federal" at one point, and I am not sure you didn't mean "local." But I assume that you meant State and local rather than State and Federal.

The conferees are agreed on this, but the conferee of Texas says that he does not mean this to imply that State or local action in the future will not be adequate to abate the pollution.

Is that agreeable?

MR. YANTIS: I think that is very close.

MR. STEIN: Go ahead.

MR. YANTIS: I perhaps would say "more nearly adequate" if we want to be precise.

MR. STEIN: All right, say "more."

MR. YANTIS: Another way of saying is there is plenty of work for all of us, it has to be done, we welcome your help, but we would not want an implication that we have any intention, either State or locally, of stopping where we are.

MR. STEIN: All right. And I think we should say, "nor is there any intention, either State or locally, of the pollution abatement program stopping where it is." O. K.?

MR. YANTIS: Yes.

MR. VANDERHOOF: I will concur, then.

MR. STEIN: All right.

Now, third, "nature of delays, if any, being encountered in abating the pollution."

MR. VANDERHOOF: I will make this statement, Mr. Stein. Delays have been caused by the complexity of the problem. Now, the word "complexity" has many ramifications, including enormity of the task as well as the

complexity.

MR. YANTIS: Mr. Chairman, I agree with that fully, and I must editorialize. The public has never fully understood in the past the problem that had to be met. Many governments, including the Federal Government, did not always understand in years past the problem to be solved. Funds have never been available in the past, either locally, State or national. Taxpayers have not always eagerly run down to pay taxes or to vote for bond issues.

So in summary, I agree absolutely with what Mr. Vanderhoof said, it is an enormous problem, it is a complex problem, it needs public support, it needs governmental support, and it is worthy of the best efforts of all of us.

MR. STEIN: Can we summarize by saying, "Delays have been due to the enormity and complexity of the problem"? Will that be all right?

MR.YANTIS: Yes, all right.

MR. VANDERHOOF: That will be satisfactory.

MR. STEIN: All right.

These conclude what the Chair has to say. From now on the conferees are on their own. You have satisfied

the statutory requirements as far as I am concerned, and if you have any other suggestions, you can make them.

MR. YANTIS: Mr. Chairman, I would like to restate this, because people quite often misunderstand words and they say, "Well, that is just semantics." Nearly everything is.

We want the Houston Ship Channel and Galveston Bay cleaned up, kept clean and preserved. We know that the city of Houston has a problem, as do all of the cities down here have problems; so do the industries.

When I say that we did not show substantial harm to the interstate sale of shellfish, I do acknowledge the problem overall. I am simply falling back on the provision of the law under which this conference is called. The law says so-and-so and the law didn't prove it.

So we object to a finding on that point of law which is basically all that is before us. Everything else that has been said about pollution and the need to control it is absolutely true, probably far more than most of you know. Please remember, when most of you were in a panic about mercury, none of you were in a panic about cadmium; you had simply never heard of it.

So there are many pollution problems, some known, some not known, but they do need to be solved.

MR. STEIN: Thank you.

Your views on the adequacy of the provision of the law and the findings calling the conference will be reflected in the summary and I am sure the record here will speak for itself.

MR. VANDERHOOF: Mr. Stein, do I need to put in any more words to support the Administrator in calling--

MR. STEIN: No.

MR. VANDERHOOF: Very good.

MR. STEIN: No, you stated your position, and I think the positions of each of you are very clear. The function that we have in the summary, and I would like to point this out, is just to report what your positions are on this, and I think the positions you have both stated are abundantly clear.

O. K. Are there any other recommendations?

MR. YANTIS: Mr. Chairman, not on those three points.

MR. STEIN: Not on these points.

MR. YANTIS: Of course we have the other material still before us.

Executive Session

MR. STEIN: The other material, that is what I mean. And I suggest, we had possibly 11 recommendations. As far as I can see we are pretty much in agreement, I would hope, and we had better go through those to be sure. We have got it on 10 of those.

MR. YANTIS: Mr. Chairman, if I may dispose of one of them.

MR. STEIN: All right.

MR. YANTIS: You read at the beginning of the conference or had Mr. Brown of Houston Lighting & Power Company read a motion that that problem be severed from this conference and settled in some other forum. And I would like to restate that there are other forums that do not lessen in any sense the control or the interest of local, State or Federal Government.

They do, however, get it out of this, what I believe the Supreme Court once called an impenetrable thicket; they do get it out of the thicket of being dealt with along with so many other things. But every citizen, every level of government will have as much right to speak or to intervene as it ever had. We simply talk about that subject all by itself instead of with a few hundred other subjects.

Executive Session

The motion was not discussed and, therefore, I think the record is completely silent. I would like to suggest that it is my position as the State conferee that it is proper to sever that matter and deal with it in the forum of the Corps of Engineers 1899 Refuse Act permit, the environmental impact statements, and so on. But I do concur in having that issue removed from this particular agenda.

MR. STEIN: I have indicated, as Mr. Brown said, I will take your view and Mr. Brown's view to the Administrator. I think since he called the conference, told us what we had to cover, it is beyond our jurisdiction to remove anything here or add anything here. But I will take these views back to the Administrator for such action as he may want to give it.

Do you have any comment on that?

MR. VANDERHOOF: My only comment, Mr. Stein, is that I believe there is enough information provided in the several documents to afford the Administrator a good overview of the situation on which he can make up his own mind on whether to sever or not to sever this subject from the conference.

MR. STEIN: Right. Well, you will have to make

a determination when we get to that last recommendation, and if we are going to proceed in that order, whether you want to state the Federal or State views or not on that power company situation.

I would suggest, and I am just saying this to save time, Mr. Vanderhoof, do you have the recommendations which have been modified in accordance with conference discussions?

MR. VANDERHOOF: I believe I do have. There may be one or two words--

MR. STEIN: Yes. Well, that is what I want to make clear. I think it might be, if this is appropriate, Mr. Yantis, if you have a copy of that, because I am not sure I do--

MR. YANTIS: I don't have one right here.

MR. STEIN: Yes. That you might want to read that and let's see if we can go--

Why don't you go down one at a time? Because we have been through this before and this should proceed rather rapidly. Why don't you read them as amended?

MR. VANDERHOOF: All right.

MR. STEIN: O. K.? And if there are any further amendments we will take them up as they come.

Executive Session

This will be Finding No. 3.

MR. VANDERHOOF: All right.

MR. STEIN: We have three already. I mean this will be Finding No. 4 or Conclusion No. 4.

MR. YANTIS: Mr. Chairman, please understand that in holding to the view that the interference with shellfish is not gross economic harm, we fully support the development by this conference of a series of steps which should be taken by local, State, and Federal Government, and by the public to bring about an improved climate in which the solution can be attained of the problems we have. So the mere fact that we don't think that the shellfish problem is gross does not mean that we are not quite willing to work on the rest of the problem. We are.

MR. STEIN: Right.

MR. YANTIS: We are even eager to.

MR. STEIN: I recognize your position, Mr. Yantis. I should indicate that the words of the statute are not "gross economic harm" but "substantial economic injury", and whether you think there is a difference or not, I think we should follow the words of the statute.

MR. YANTIS: Mr. Chairman, simply ascribe it to my bad memory.

Executive Session

MR. STEIN: All right.

Go ahead.

MR. VANDERHOOF: "No. 4. The Food and Drug Administration, in cooperation with appropriate State regulatory agencies, continue their recently initiated national study of oil and hydrocarbon residues in oysters, including those taken from Galveston Bay, with the objective of determining toxical--"

MR. STEIN: Toxicological.

MR. VANDERHOOF: --t-o-x-i-c-o-l-o-g-i-c-a-l--

MR. YANTIS: Any way you pronounce it, it is still bad.

MR. STEIN: Well, you know, I can spell Quebedeaux, too, but I can't say it. (Laughter.)

MR. VANDERHOOF: "--effects, if any, of such concentrations. These data, and any evaluations, will be made available to the conferees of the Galveston Bay Enforcement Conference."

MR. STEIN: I have but one editorial suggestion. Food and Drug Administration continue "its" rather than "their."

MR. YANTIS: Well, Mr. Chairman, if we want to be real editorializing, when we write orders or statutes

in Texas we normally say "a particular agency or its successor agency." Now, that is nitpicking, but sometimes an agency simply goes out of business and someone else takes it up and if you have not provided for that there is a loss of continuity.

But however you word the paragraph, we subscribe to it fully.

MR. STEIN: You know, the Food and Drug Administration has been around for a long time. I will put my money on it that there isn't going to be a successor.

But my problem with this is that, I don't know, maybe I went to school many years ago, but if we have to have the Administrator sign this, I think that at least, unless the rules of grammar have changed, we should try to keep it--

MR. YANTIS: Mr. Chairman, I would like to point out most forcefully that the chairman of the Texas Water Quality Board is an old newspaper man, he is a grammarian from way back, and he would take some hide off of a lot of us if we wrote some stuff that was not grammatically correct.

MR. STEIN: Well, with that amendment let's go

on. How about No. 2? I am glad you are agreed on one of them.

MR. YANTIS: That was No. 4, I thought. But what happened to 1, 2 and 3?

MR. STEIN: We are doing non-Euclidean mathematics. (Laughter.)

MR. YANTIS: O. K. Gad, you are educated.

MR. VANDERHOOF: Gentlemen, I can pronounce toxicology, but I have a difficult time with this other word.

"No. 5. To insure that approved shellfish harvesting areas are properly classified at all times, sampling for determining bacteriological acceptability of areas for shellfish harvesting in Galveston Bay shall continue to emphasize the most unfavorable hydrographic and pollution conditions. The most unfavorable hydrographic and pollution conditions will be determined by technical personnel of the Texas State Health Department, in cooperation with the Food and Drug Administration and other State and Federal agencies."

MR. YANTIS: Mr. Chairman, could I add one thing there, purely for completion. Let's say "other State, Federal and local agencies."

MR. STEIN: Is that agreeable?

MR. YANTIS: Admittedly counties and other things are subdivisions of the State, but I would not want for them to feel that their assistance was not welcome.

Most of us forget, but Galveston Bay is actually in a county. Most of it is in Chambers County, not all of it. And when you get out there you think of the county as just being the land, but this is not so.

The County Commissioners Court does have a governmental interest in the bay itself and I would like to say, "State, Federal and local agencies."

MR. STEIN: Is that agreeable?

MR. VANDERHOOF: That is agreeable.

MR. STEIN: Fine.

Let's go on to 6.

MR. VANDERHOOF: "Effective disinfection of all waste sources contributing bacteriological pollution to the Galveston Bay system will be provided. The Texas Water Quality Board policy to this effect shall continue to be implemented. Where effective disinfection is not presently being accomplished, it is recognized that adequate measures are under way to secure that disinfection.

MR. STEIN: Is that agreeable?

MR. YANTIS: Admittedly counties and other things are subdivisions of the State, but I would not want for them to feel that their assistance was not welcome.

Most of us forget, but Galveston Bay is actually in a county. Most of it is in Chambers County, not all of it. And when you get out there you think of the county as just being the land, but this is not so.

The County Commissioners Court does have a governmental interest in the bay itself and I would like to say, "State, Federal and local agencies."

MR. STEIN: Is that agreeable?

MR. VANDERHOOF: That is agreeable.

MR. STEIN: Fine.

Let's go on to 6.

MR. VANDERHOOF: "Effective disinfection of all waste sources contributing bacteriological pollution to the Galveston Bay system will be provided. The Texas Water Quality Board policy to this effect shall continue to be implemented. Where effective disinfection is not presently being accomplished, it is recognized that adequate measures are under way to secure that disinfection.

These measures shall be in effect by December 31, 1971. The Texas Water Quality Board will continue to implement its policy requiring the elimination of small plants. The centralization of facilities wherever possible and the halt or proliferation of small plants will continue, consistent with existing appropriate procedures. The implementation schedule for this program as initiated by the Texas Water Quality Board will be made available to the conferees of the Galveston Bay Enforcement Conference not later than April 1, 1972."

MR. YANTIS: Mr. Chairman, we concur in that, think it is a good statement. We did, though, have one suggestion, which I thought had already been put into it. Wherever you have a completion date, as here you have December--what--31, 1971, that is only a couple of months away. Now, chlorination is important. We have required chlorination in Texas long before many other States did. We do believe in it. But it does take time to buy and install and build chlorination equipment. It cannot always be done by this date. However, any extension of time should be fully justified.

So I think, though, we should add on that date that "or such other time as may be required by a properly

pursued construction program."

MR. STEIN: Mr. Vanderhoof?

MR. VANDERHOOF: I recognize the rationale behind Mr. Yantis's statement and admittedly December 31, 1972--1971--

MR. STEIN: Let me just--

MR. YANTIS: That is just two months away, see.

MR. STEIN: Yes. Let me just raise the question. I think we discussed this before. Didn't we come to some agreement on this?

MR. YANTIS: Yes, we did. I thought that the phrase that I suggested or something like it, which was--

MR. STEIN: If we came to an agreement before, I would suggest--and no one is held at the Executive Session by anything we discussed before, but I wonder if we did or we didn't.

MR. YANTIS: Mr. Chairman, all we are trying to say is that if in the minds of any severe but reasonable person an additional period of time is required to properly complete a chlorination facility that that additional period of time within reason should be granted. As written there really is no acknowledgement that there might be a period of time beyond that date which reasonably

could be needed. I simply want to provide that it could be granted upon the showing of provable need, and that is the entire thrust of my comment.

MR. STEIN: Well--

MR. YANTIS: The language in which it is stated I have no particular interest in.

MR. STEIN: What do you want?

I seem to recollect the situation here. Now, I am not sure that all of the municipal waste in Houston is being disinfected now. Is that correct?

MR. VANDERHOOF: That is correct.

MR. STEIN: All right. Now, if you put this in effect by December 31, 1971, according to the statement as I read it there is very little likelihood that a big city like Houston is going to have disinfection facilities, and they are going to be in violation come the first of the year. Do you want to provide a provision on that to enable them to proceed at all possible speed or not? And I think this is the issue and this was noted before. I think we are going over the same ground, I don't know.

Could we have a resolution of that, if possible?

MR. VANDERHOOF: Well, I will concur, then, with Mr. Yantis, provided that whoever the violator may

be provide proper justification to the Texas Water Quality Board, and the citizens of the area in which this facility is located will be notified by a newspaper announcement.

MR. YANTIS: That is quite satisfactory.

MR. STEIN: All right.

MR. YANTIS: And we will notify interested governments too. This is fine.

MR. STEIN: All right, may we go on?

MR. VANDERHOOF: "No. 7. The Environmental Protection Agency and the Texas Water Quality Board will cooperate in a study of Galveston Bay. This study is presently being conducted by the Texas Water Quality Board on all sources of municipal and industrial wastes permitted by the Texas Water Quality Board to discharge effluent to Galveston Bay and its tributaries. These examinations shall emphasize determination of complex organic compounds, heavy metals, and other potential toxic substances as well as oil and grease from each waste source. Recommendations and scheduling of necessary abatement will be provided to the conferees as soon as they become available. The Texas Water Quality Board permits and self-reporting data system should be amended

as necessary to reflect the recommendations of this waste source survey. A progress report on results of this study will be made to the conferees within six months of the date of the reconvened session of the Galveston Bay Enforcement Conference."

MR. STEIN: May I make one suggestion?

Where you have that "should", how about making that "will"?

MR. YANTIS: If you are trying to make it mandatory I think it would be "shall," wouldn't it?

MR. STEIN: No, I am not saying it should be mandatory.

MR. YANTIS: All right.

MR. STEIN: I am trying to make it declarative--

MR. YANTIS: Yes, O. K.

MR. STEIN: --rather than mandatory because "should" means you can take it or leave it. Largely I am talking in terms of style.

MR. YANTIS: Yes. What you are saying is when somebody says consideration should be given to so-and-so, the guy says, well, I considered it and I rejected it?

MR. STEIN: Yes.

MR. YANTIS: O. K. I agree with you.

MR. STEIN: All right. So we will strike that "should" and make it "will." I think that is consistent with the rest of the grammar. O. K.?

MR. VANDERHOOF: All right. Now, to make sure I have this sentence correct, Mr. Stein:

"The Texas Water Quality Board permits and self-reporting data system will be amended as necessary--"

MR. STEIN: "--to reflect the recommendations of this waste source survey.' I think that is what is intended.

Are there any other comments?

MR. YANTIS: It is all right.

MR. VANDERHOOF: "No. 8. The Texas Water Quality Board will continue its review of each waste source discharging to Galveston Bay and its tributaries and will amend these permits--amend those permits as necessary to insure that the best reasonable available treatment is provided relative to discharges of oil and grease. The Texas Water Quality Board will cooperate with EPA in determining what treatment is the best reasonable available treatment. It is recognized that improvements in technology will be incorporated into future permit revisions. A progress report will be made to the

conferees within six months of the date of the reconvened session of the Galveston Bay Enforcement Conference."

MR. YANTIS: This is completely all right. I do have a similar thought to what I had earlier. Let's have "The Texas Water Quality Board—" in determining what this type of treatment is"—cooperate with EPA and local governments."

MR. STEIN: "...will cooperate with EPA and local governments." O. K.?

MR. YANTIS: I am sure that Walter Quebedeaux would like to have some input. It is all right.

MR. VANDERHOOF: Yes, that is agreeable.

MR. STEIN: O. K., let's go on.

MR. YANTIS: I would even add the United Nations except for their recent activities. (Laughter.)

MR. STEIN: I thought you specialized in red shirts. (Laughter.)

MR. YANTIS: But not red flags.

MR. VANDERHOOF: "No. 9. The ongoing review and amendment by the Texas Water Quality Board of existing permits recognizes that greater reduction of wastes will be required of waste dischargers to the Galveston Bay system to meet water quality standards. The conferees

note that in the past three years the organic waste load being discharged into the Houston Ship Channel has been lowered from about 430,000 pounds per day of BOD to 103,000 pounds per day of BOD. Any amendments to existing or new Texas Water Quality Board waste control orders as a result of this program will prohibit dilution as a substitute for treatment. A progress report on continuing reduction of waste loads will be provided to the conferees within six months of the date of the reconvened session of the Galveston Bay Enforcement Conference."

MR. YANTIS: This is all right. As a matter of fact, I was thinking about commenting. Someone earlier in speaking drew attention to that paragraph and the nature of their comment was that they thought that this was something that the Federal Government had required of the State. Well, it is not. This is something that the State itself has required for a long period of time, and I personally wrote that sentence into that paragraph.

Why I think you should know this I don't really know, except that we just ain't all bad.

MR. STEIN: Are we in agreement on that?

MR. YANTIS: Yes, yes.

MR. STEIN: All right, let's move to 10.

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MR. VANDERHOOF: "No. 10. A characterization and evaluation of the water quality significance of materials from pollution sources contained in the organic sludge dredged from the Houston Ship Channel shall be conducted. Based on the results of this evaluation and examination of present spoil disposal areas, recommendations will be made by the Texas Water Quality Board and the Environmental Protection Agency on locations of suitable spoil disposal areas and other appropriate action to minimize or eliminate deleterious effects on water quality."

MR. YANTIS: Mr. Chairman, we agree with that. We also agree with Dr. Quebedeaux' earlier comments about the difficulty of analyzing sludges for certain things. We have, however, both EPA and the State, for quite sometime been requiring that where major dredging was involved--and someone said we would like to know where to put the spoil, including the Corps of Engineers--we ask the question, "Well, what is in it?" Because the sludges and muds that can be moved around can be, of course, grossly polluted with all manner of things. So to a degree this particular recommendation is something already being done. But we concur in it as stated.

MR. STEIN: All right, let's go on to 11.

Executive Session

MR. YANTIS: I am still wondering what happened to 1, 2 and 3. I mean is there some reason for taking them out of sequence?

MR. STEIN: No.

MR. YANTIS: Maybe I was asleep, but we started with No. 4, I thought.

MR. STEIN: No, we went to 1, 2 and 3, and now we are up to 11.

MR. VANDERHOOF: 1, 2 and 3--

MR. STEIN: Now I am using ordinal numbers throughout.

MR. YANTIS: Well, I am kind of a cardinal number man myself.

MR. STEIN: I know, you can't get off those red shirts.

MR. YANTIS: When did we deal with 1, 2 and 3?

MR. STEIN: At the beginning.

MR. VANDERHOOF: On page 25 of the Federal law there were several requirements, three to be precise, that the Chairman must require.

MR. YANTIS: Yes, but that doesn't have anything to do with the paragraphs that we had written, the 10 or 11.

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MR. STEIN: No, it is just a numbering system.

MR. YANTIS: Oh, I am with you now. You are talking about (4)(A), (B), (C), and so forth.

MR. STEIN: Right.

MR. YANTIS: O. K. I am with you.

MR. STEIN: All right. Go on.

MR. VANDERHOOF: No. 11.

MR. STEIN: Now, we changed that.

MR. YANTIS: Which one?

MR. STEIN: What he is reading now.

MR. VANDERHOOF: "Alert levels for acute and chronically toxic or growth-inhibiting parameters are being developed by the Food and Drug Administration for shellfish from all approved national growing waters, including Galveston Bay. These alert levels will be discussed with technical personnel of the Environmental Protection Agency and were presented at the Seventh National Shellfish Sanitation Workshop sponsored by the Food and Drug Administration. The Environmental Protection Agency, in cooperation with the Food and Drug Administration and other appropriate State and Federal agencies--"

MR. STEIN: I tell you what I am going to do,

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I am going to recess this until we get copies in front of us. I don't have a copy. We changed that and I don't know what the point is in reading stuff that we changed.

We will recess for 10 minutes and I hope someone will get the Chair a copy of this so I can follow it.

(RECESS)

MR. STEIN: Let's reconvene.

MR. VANDERHOOF: Mr. Stein, I was reading No. 11.

MR. STEIN: Yes.

MR. VANDERHOOF: Recorder, I will start over on No. 11.

"Alert levels for acute and chronically toxic or growth-inhibiting parameters are being developed by the Food and Drug Administration for shellfish from all approved national growing waters, including Galveston Bay. These alert levels will be discussed with technical personnel of the Environmental Protection Agency and were presented at the Seventh National Shellfish Sanitation Workshop sponsored by the Food and Drug Administration. The Environmental Protection Agency, in cooperation with the Food and Drug Administration and other appropriate State and Federal agencies, will work to

develop parameters for the same characteristics in waters approved for shellfish harvesting."

MR. STEIN: Mr. Yantis?

MR. YANTIS: Mr. Chairman, I will have to ask for an amendment of that.

There is no agreement among scientists as to exactly what an alert level is. I think we all understand what we are trying to do, but I don't think we have agreed whether it can be done or whether it would do what we hope for it to do. It was presented at that conference and either the details or the concept were rejected, or at least nothing was approved.

I think we should insert in there some language not that we will do something with alert levels, but that if alert levels are developed and approved in the proper forum that we will then seek to do the same thing within the confines of the rest of the paragraph.

But I think there is an implication which is actually not correct that all scientists have bought the idea yet. Apparently they have not.

MR. VANDERHOOF: Mr. Stein, as I recall at this point, we had called Mr. Tom Gallagher to the podium to again give us detail on what did go on and what the Food

and Drug Administration is going to do. I believe we should recall Mr. Gallagher at this time.

MR. STEIN: Well, I have no objection to that. I think I recall this.

Do you have any objection to what Mr. Yantis has said? As I recall, this is substantially the conversation we had before.

Here, let me try this. I know I used this on you before. Let me try it again.

We say "if"--let's start it this way:

"If alert levels for acute and chronically toxic or growth-inhibiting"--and I just can't say this "parameters" because I don't understand it the way you people do. "If alert levels for acute and chronically toxic or growth-inhibiting factors are developed by the Food and Drug Administration for shellfish for approved growing areas, including Galveston Bay, the Texas Water Quality Board and the Environmental Protection Agency, in cooperation with other appropriate State, Federal and local agencies, will work to develop requirements for the same characteristics in waters approved for shellfish harvesting." It is understood that these alert levels--and that is all.

In other words, what I would say, and this is what I understand we agreed to before, that if these are developed that "...the Texas Water Control Board and the Environmental Protection Agency, in cooperation with the Food and Drug and other appropriate agencies, will work to develop requirements for the same characteristics" in the areas approved here. And that does not say they are going to be developed or not.

MR. YANTIS: This is all right.

MR. STEIN: This is my understanding of what we said before. Now, let me again give you my candid view on this.

This is not an operating regulatory requirement at the present time. What we are saying is that if this concept is developed by Food and Drug Administration the Texas authorities and EPA will work to put these requirements in effect on the waters covered by this conference as we will with the other States. Isn't--

MR. VANDERHOOF: Sure.

MR. STEIN: Isn't that what we--

MR. YANTIS: That's right, that's reasonable.

MR. STEIN: All right.

MR. YANTIS: Except that I would like to add

one thought.

MR. STEIN: All right.

MR. YANTIS: We cannot, as the Texas Water Quality Board, preempt the work of, say, some other State agency that by the Legislature has responsibility. Probably most of the responsibility in this particular field is with the Texas State Department of Health. I would suggest that you either say, "The Texas State Department of Health and the Texas Water Quality Board" will do so-and-so or "The Texas State agency designated by law" will do so-and-so.

MR. STEIN: All right.

MR. YANTIS: But we cannot simply move in on a Public Health, Food and Drug matter. We don't have that statutory power.

MR. STEIN: Can we say, "The appropriate Texas agencies and the Environmental Protection Agency"?

MR. YANTIS: That is fine with me.

MR. STEIN: So we can get around that. I think we have the same situation, Mr. Yantis. I think the prime mover in this is going to be the Food and Drug Administration for the Federal establishment.

MR. YANTIS: This is all right with me.

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MR. STEIN: O. K.

May we go on to the next?

MR. VANDERHOOF: "No. 12. Chemical constituents causing color and waste effluents such as those from pulp and paper mills shall be reduced to natural background in area waters as soon as practicable as stated in existing Texas Water Quality Board waste control orders. A report on feasible processes to accomplish this recommendation shall be submitted to the conferees within 5 months of the reconvened session of the Galveston Bay Enforcement Conference."

MR. YANTIS: This is all right. And remembering the discussions that have taken place, there is no showing that the color in and of itself is harmful, certainly not to shellfish. It is aesthetically harmful and I think aesthetics is a valid part of a water pollution control program.

I agree with what Dr. Quebedeaux said earlier about not getting all shook up over color. In the purely public health sense I agree, but we have made some comments in the Texas Water Quality Board permits about color. We think it ought to be removed when it can be removed. So I would buy this as you have read it.

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MR. STEIN: Right. I would like to make a comment on that.

I think at least the Champion paper representative indicated that they were not successful in removing color, but that they, as I recall their testimony, were certainly amenable to removing the color if a method could be developed which was feasible. We have several Federal grants to paper companies for removing color. I pointed out one to them in Georgia and the Southland Paper and I think Cham--at least Southland indicated that they had all that swamp area to put their wastes and they could do it. But that wouldn't be possibly applicable here. But since then another major paper company with a plant in Maine has indicated that they have a successful way of removing color which wouldn't require all this space, and this might be looked into.

In other words, I would like to associate myself with what Mr. Yantis said and Dr. Quebedeaux on this. I don't think this question of color from the pulp and paper process is a public health problem, but it certainly is an aesthetic problem that I know we get a lot of complaints about. If the reports from some of these paper companies which claim they have successfully removed color

are valid, we may be on the verge of being able to give a technology to the industry to remove this color.

I don't know if the people in the audience recognize this, but this color is not the kind of color that you would think of in dyeing paper or in paperboard. It comes from the pulping process. It is not something like red, blue or green. It is a kind of a black-looking thing when the light hits the receiving waters in a certain way. When some of the people go down for recreation at waters and they see these waters, whether they are inland waters or coastal waters, and get this color, they don't find it very attractive.

I think we have all recognized this problem, and I would agree completely with Mr. Yantis that the deleterious effects of this, if any, are aesthetic in nature.

MR. YANTIS: Mr. Chairman, let me add one more comment.

MR. STEIN: All right.

MR. YANTIS: Of course the color material is primarily simply the sap that has been soaked out of the wood. There are a few other things in it, but they all were just dissolved out of the wood. To the extent that

they are sugars and things like that they are, of course, biologically treatable.

But some of those things, what people call lignin, are not biologically treatable, bacteria simply don't eat them, but they are not things that have been introduced into the waters in the sense of chemicals. They are just the coloring material soaked out of a piece of wood.

When he said it was black, I was thinking some people call it light black. I don't know exactly what color that is. (Laughter.) Actually it is more of an amber or brown, it depends on a number of things. We have actually had people come into our office in years past, not lately, and if I was to show them a glass full of a paper mill waste, as far as color is concerned, and say,"Well, now, would you be happy if the waste were this color?" "And the guy would say, "Well, yes, if it is that color, I will be real happy."

What he didn't know was, he was looking at what he called black water in a glass, because there is really not very much of it. It can, in many cases, look almost clear. The problem is when you look straight down at it through 10 feet it looks as black as ink. It isn't real

dark; it simply looks dark in the stream, which, since this is what we are talking about, if it looks dark it is dark no matter what the laboratory says.

But anyhow, I did want to stress the fact that it is not any different from the dark water in an east Texas swamp. It is the same material, the same thing. It is ugly if you don't like it. If you were reared on it, you don't even see it.

MR. STEIN: I think we are in agreement, Mr. Yantis. I thought perhaps we might have been in disagreement, but--

MR. YANTIS: I am not defending it. I am simply trying to put it in its proper perspective.

MR. STEIN: Right.

MR. YANTIS: As soon as we can take it out--

MR. STEIN: When I said black and you said light tan or amber, but when you worked it around to real dark jet black I figured we were pretty close together. (Laughter.)

MR. YANTIS: Yes. Well, we still want it taken out as soon as it can be done in a reasonable sense. We don't like it either.

MR. STEIN: Yes.

I think this is the important point, and I know Mr. Yantis said this, but let me tell you this again. I think this is right, if you look at it in a glass of water you won't see it. However, if you get a relatively deep stream and you look at that, that water in appearance as you look at the stream might be, as he said, jet black. Yet if you dipped a glass in that water and picked it up and tried to reproduce that jet black in looking at the glass holding it up to the sky, you might see just a tinge of amber in it.

We have a very difficult kind of constituent of waste to get out of water in this, is the point, because, as you can see, it is in there in very dilute quantities, and the offense it has is just to the eye when you look at it in deep water.

MR. YANTIS: Murray, let's not keep on saying too many nice things about it. We are going to have people demanding that we put it in the water if we don't watch out. (Laughter.)

MR. STEIN: I haven't heard that yet.

All right, let's go to 13, our lucky number.

MR. VANDERHOOF: "To meet present official State-Federal water quality standards established for dissolved

oxygen in the Houston Ship Channel, it is expected that the maximum waste load discharged from all sources will be about 35,000 pounds per day of 5-day BOD, including projected future development. The Texas Water Quality Board, in cooperation with technical personnel of the EPA, shall review existing waste discharge orders with the objective of allocating allowable 5-day BOD waste loads for sources discharging to the Houston Ship Channel such that the probable 35,000 pounds per day maximum shall not be exceeded. A report will be made to the conferees on the results of this review by April 1, 1972. The allocation for each waste source as determined by the Texas Water Quality Board, in cooperation with the EPA, shall be obtained by December 31, 1974. Interim dates to determine progress toward compliance with the assigned allocation shall be established for each waste source by May 1, 1972. The conferees also recognize that discharge of other waste constituents, such as, but not limited to, chemical oxygen demand, suspended solids, complex organics and other toxic materials also contribute to the pollution of Galveston Bay and its tributaries. An allocation of allowable waste discharges for these pertinent parameters from each waste source will be established by technical

personnel of the Texas Water Quality Board and the Environmental Protection Agency consistent with best available treatment practices and such allocation will be reported to the conferees by September 1, 1972. The conferees recognize that technical consideration may require a reassessment of this schedule in the case of some of the municipal and industrial waste sources to be considered. These necessary reassessments will be determined by technical personnel of the Texas Water Quality Board and the Environmental Protection Agency and recommendations concerning schedule changes will be made to the conferees at 6 months intervals.

MR. STEIN: Any comment?

MR. VANDERHOOF: I am not finished.

MR. STEIN: No?

MR. VANDERHOOF: "The foregoing recommendation shall not be construed as in any way foreclosing or interfering with Federal, State, or local statutory proceedings relating to the authorization, amendment or revocation of Federal or State waste discharge permits or orders, nor shall such recommendations operate to delay or prevent the creation or operation of regional waste disposal systems such as the contemplated Gulf Coast Waste Disposal

Authority."

MR. STEIN: Any comments?

MR. YANTIS: Yes, we adopt it, but I think there are some things that should be said about it. One of them is technical and the other one is simply procedural or legal.

We ourself in several matters came up with the estimate that BOD, 5-day BOD, that 35,000 pounds per day is probably all that the Ship Channel can stand. But I would like to express again, as I have, this is as much a guess as it is a calculation.

First let me tell many of you what BOD actually is. It is a measure of the organic food available primarily to bacteria so that as the bacteria eat and grow they remove oxygen from the water. For the most part the oxygen came from the atmosphere. In a sense, it is simply a measure, then, of organic matter as opposed to mineral matter that might be in the water.

You could take a shovelful, let's say, of sugar and pour it in water and as the bacteria grew you would remove oxygen from the water. On the other hand, remember that oxygen is always going back into the water from the air. If there is enough water along with the

organic matter, then actually nothing happens because of the dilution. For instance, remember that if someone wants to limit a waste purely upon the pounds per day of anything, you can simply pump seawater into a pipe and out the other end, and the pounds per day of dissolved minerals going out your pipe will be fantastic but you haven't done anything, really, except circulate seawater. So there is a factor which the computer does not necessarily take into account properly as to the concentration of the organic matter you have. Neither does your computer always take into account whether a particular organic matter is readily available for bacterial food or available with difficulty.

So I would like to stress there is a great uncertainty as to the 35,000 BOD. It is usable with intelligence, with reservations, as a design parameter. The correct number, if there is one at all, might be 10,000, it could be 100,000, it is not likely because we are down to that almost now, but it could be 50,000 or 60,000 as well as 35,000.

Now, despite our reservations that it is a very solid figure, we are willing to try very hard to see if we can revise all of the waste discharge permits using

this limitation as a guide. Very likely we can do it, but whether it will be successful or practical in my opinion is open to question, but we will try.

Now, the other point that we have added--and we have had any number of coffee-cup conversations about it--this conference, important though it is, interesting though it is, and sometimes emotional though it is, is limited in the legal things which it can require. It does not set aside Federal law, it does not set aside State law. The person who suffers from pollution has certain legal rights, and you can philosophize on that for a long time. But the person who has a waste to discharge has certain legal rights too. You can wrap all of this up in what is called due process. Everybody agrees with due process of law for people who agree with you, but it is rather hard to agree with it--to want due process--for people that you don't agree with. But the law says you have got to, and there are many Supreme Court decisions on that issue.

We hold, and this is why that last paragraph was added, that there are certain requirements of Texas law that have to be followed. We have to have public hearings--even if we are improving a waste we usually

have public hearings, though not always--but we do have to have public hearings, reports written and invoked by our board so that not only is the public protected but the rights of the person with a discharge are protected. We cannot do away with these procedures just because we are trying to reallocate the waste-receiving resource of the area. The Federal Government without going through a court proceeding cannot set aside these State laws either.

Now, we on our part cannot set aside Federal law. So we have simply tried to say that whatever the State law requires that the Water Quality Board do, the things that we do will be done according to those laws. Whatever the Federal Agency does, it will do it according to the Federal laws. We will each be very law-abiding citizens, which will upon occasion make some of you uncomfortable, because people who very passionately hold that a certain goal should be reached quite often are impatient with laws which appear to prevent them from reaching what they think is a proper goal. It may be a proper goal, but there is a proper way to get there too.

So we agree to this paragraph which has been rewritten for about the twentieth time, with the

understanding that technically it is a good thing to try, with no guarantee actually that it will work, and the safeguards and provisions of State-Federal laws will all be followed, even though it sometimes slows things down.

With that understanding, we vote for it.

MR. STEIN: Are there any other comments?

MR. VANDERHOOF: No other comment.

MR. STEIN: Well, I am glad you arrived at an agreement. I think maybe this was our lucky 13. This very well may be the crucial hurdle for this conference we had to get over. And since you arrived at agreement I wouldn't even suggest changing a comma, although you have enshrined a wonderful literary gem like "pertinent parameters" in here, which I think is just wonderful, but I understand what it means.

Can we go on to 14?

MR. VANDERHOOF: Right.

"All waste sources which discharge directly to Galveston Bay and other tributary areas, including Clear Lake, shall have allowable waste loads allocated by June 30, 1972, consistent with best available treatment practices. This allocation shall include interim dates for accomplishment of required waste treatment and/or waste

treatment facilities will be in operation by December 31, 1974."

MR. STEIN: Any comments?

MR. YANTIS: Yes. I am trying to decide how to phrase them.

The word "best," the word "available" are almost undefinable. If you take them out people wonder what you are trying to do. If you put them in, you wonder what is it that you really mean.

Now, please remember that any level of waste treatment can be done. There is essentially no limitation. We can put out pure distilled water. It is not particularly hard to do. It is expensive to do and you have a real problem of finding competent operators for 3-shift 7-day-a-week operation. If you are thinking about viruses, you have even more trouble finding laboratory techniques to prove that you did produce the quality of water that you think you were working toward.

So when someone says "best available treatment," you have not said where do you stop. It might be 5 BOD, it might be 20, it might be zero BOD. For myself, and I will admit the word is also vague, I like to add such things as "shown to be necessary" or "reasonable" or "as

required by circumstances." There simply, in my mind, needs to be a definer as to just what is best available treatment.

I know you don't mean, because we have talked about it, this so-called distilled water concept. I don't know, though, whether we mean 5 BOD as we have debated, whether we mean 12, as we have laid out, whether we are talking about removing BOD or nutrients or both or removing viruses or any of a number of other things. Now, remember, you can have so-called tertiary treatment, advanced waste treatment, and still not take out the mercury if there is any there.

So I would like to suggest that we try to find some word which will modify "best available;" whether you want to put in "reasonable" or "shown to be necessary" or "feasible," I do not know, but I think we need an understanding of where do we stop when we say "best."

MR. VANDERHOOF: Mr. Yantis, I refer you to No. 8, and let me read the language of No. 8:

"The Texas Water Quality Board will cooperate with EPA and local governments in determining what treatment is the best reasonable available treatment."

Would this language satisfy you?

MR. YANTIS: Yes.

MR. STEIN: Where are you going to put that, at the end?

MR. YANTIS: Are we at the end?

MR. STEIN: No, at the end of that 13. I wonder where he wants to put that sentence.

MR. YANTIS: Wherever, it doesn't matter.

MR. VANDERHOOF: Let us tack it right on the end of No. 14, which previously stopped with December 31, 1974.

MR. STEIN: All right, that is great.

Is that agreeable?

MR. YANTIS: Yes.

MR. STEIN: All right. Let's go on to 15.

MR. VANDERHOOF: Your recording secretary is all thumbs. Wait a minute.

MR. YANTIS: Excuse me. I think my deputy has an idea.

What Mr. Teller is concerned about--and I think properly, I mean this was partly in the back of my mind--is that we have debated and commented on several occasions in the program for Clear Lake or Clear Creek Basin where we went through a series of hearings and

things and came up with 12 BOD, plus some other requirements, knowing that it is at least technically possible to go to 5 or 2 or 1. There has not been a showing, however, that it is necessary at this point, especially if some alternate waste disposal method will later be available.

In agreeing to the situation here and the addition of the word about best available treatment, the additional phrase which you read, that the Texas Water Quality Board will join with somebody and somebody in determining what best available means, does not mean that we automatically give up our feeling that 12 BOD is the proper figure and automatically accept 5 BOD.

Is this understood?

MR. STEIN: Mr. Vanderhoof?

MR. VANDERHOOF: Your recording secretary is slow.

MR. STEIN: Did you hear Mr. Yantis?

MR. VANDERHOOF: Yes, I heard Mr. Yantis, and I would like a conference with my own technical staff.

MR. STEIN: Here, let me say,I think if you fellows think you are going to resolve that 12 and 5 at this meeting, I am going to give you a-- I think that

what we have agreed to is you are going to get together and talk about it. If you think you are going to resolve it here, I would like to go through and leave you to yourselves because I don't think I can spend the time in Houston until you are going to resolve that.

MR. VANDERHOOF: I believe that issue of resolving the 5 and 12 should be in another forum than that of a conference.

MR. STEIN: Right.

MR.YANTIS: Well, I think so too. And remember, we have stated--and you know, if you use the right semantics, which people have ridiculed on occasion, you can lock a guy in a corner. It is awful hard to justify doing something that is not necessary.

So what we have stated is that we will support any level of waste treatment for Clear Lake that is shown to be necessary. If it is shown to be necessary, we support it. We think 12 is enough. However, we would far rather--because this is largely a judgment decision, it is kind of an arbitrary decision, we make no claim as to its scientific validity--we would like to see some type of an investigation of Clear Lake which would include many things besides just water science to help pin

down what they ought to do. And as soon as we can pin down what they ought to do, we will require it. But if it ought to be 20, then it ought to be 20. If it ought to be 5, it ought to be 5.

But I think it is a fact question more than an opinion question, and if you will agree that the statement as you and I have just read it does not attempt to predict the answer in the Clear Lake watershed, then I think that statement ought to stand. I do think that the further discussion of that one issue ought to be in another forum with more facts and more staff time and things like this.

MR. STEIN: Is that agreeable?

MR. VANDERHOOF: It is my understanding that there will be a meeting this Thursday with the Texas Water Quality Board and the Environmental Protection Agency concerning the interim plan for waste treatment facilities in the Clear Lake area, and perhaps this issue ought to be taken up there.

MR. STEIN: Well, here--

MR. YANTIS: This is all right with me. I simply want to make sure that we do not interpret the paragraph we just read as saying we have already agreed

that it is going to be 5. We do not read that into the paragraph.

MR. STEIN: Do you agree with that?

MR. VANDERHOOF: As long as Mr. Yantis agrees that I haven't agreed to 12. (Laughter.)

MR. STEIN: Well, I think we were at that. Now, my suggestion here is, if I thought I could get you fellows any closer together, like 7 and 11, I would try it, but I don't think I can. So let's leave it as it is and go on to the next one. O. K.?

MR. VANDERHOOF: No. 15 is the last one and it concerns the Houston Lighting & Power Company proposal.

"No. 15. The following recommendation was not susceptible to joint agreement by the Technical Task Force and both versions are presented for the conferees' consideration. This concerns the Housting Lighting & Power Cedar Bayou Powerplant.

"A. The Texas Water Quality Board recommendation: The once-through cooling system, with discharge to Trinity Bay, proposed for the Cedar Bayou plant shall be carefully monitored to determine whether irreparable damage to aquatic life is occurring and/or water quality is being deleteriously affected. If such effects are

shown, Houston Lighting & Power Company will take immediate steps to correct the situation.

"B. Environmental Protection Agency recommendation: No discharge of cooling water from the Cedar Bayou plant to Trinity Bay shall be permitted. The Houston Lighting & Power Company shall be required to abate the waste heat load by incorporation of a system utilizing recirculation and reuse of cooling water to Tabbs Bay and adjacent waters or location of additional units at suitable alternative sites."

Mr. Stein, obviously the Federal conferee goes with 15-B, and I presume the State conferee goes with A according to their own technical people.

MR. STEIN: All right.

MR. YANTIS: I do need, though, to add a very small postscript and ask for the change of one word, although we, I think, helped write this. Actually, we read it; someone else wrote it, I believe.

I would like to delete the word "irreparable," when we talk about irreparable harm. In a bay system, I am thinking primarily of hot water, it is almost impossible to cause irreparable harm. You can cause harm, real harm, but if you stop the damaging action, the recovery

will immediately occur. It is, therefore, not irreparable. There is an implication here that that which we would do cannot be undone, which is, of course, not the case. And I think nearly all biologists will agree to that.

The other thing that I think should be added, and whether it is to ours only or to both of them, this is a very brief summary extract of documents that would stack up a good many inches thick, and any time you extract something from that many papers the brevity leads to misinterpretation, even though the thrust of what you say is correct. I think you should say, the position of the Federal conferee and the position of the State conferee are more fully described in the files of those agencies, because I think it is an injustice not to let it be known that there is a vast record beyond these three little sentences or whatever they are.

MR. STEIN: Is that agreeable?

I have several changes that are largely literary for the purpose of getting it.

I think we have two recommendations here. The way I would suggest, it would read:

"The following recommendations were not

susceptible to joint agreement by the conferees re Houston Lighting & Power Cedar Bayou Powerplant." And then I have it here, "Texas Water Quality Board recommendation," and then for Mr. Vanderhoof rather than for the EPA, because it is not that; it is "Federal conferee."

Now, do you want to put "Texas Water Quality Board" or "Texas State conferee"?

MR. YANTIS: Either one. I will buy either one.

MR. STEIN: I think it might be better, unless you want to put it for the board.

I would suggest--

MR. YANTIS: Make it for the conferee, but remember--

MR. STEIN: Yes, "Texas conferee" and the "Federal conferee."

MR. YANTIS: That is all right.

MR. STEIN: So it will be co-equal. And how about that last sentence? Isn't that agreeable?

MR. VANDERHOOF: Yes.

MR. STEIN: O. K.

MR. VANDERHOOF: I have lost it. I hope the recorder picked it up.

MR. STEIN: Do you have that?

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MR. YANTIS: Well, I simply said that the position of the Federal conferee and the position of the State conferee are more fully described in the files of those agencies.

MR. STEIN: All right.

All right. Now, this concludes the recommendations and conclusions of the conferees. Is there anything extra you want to add or anything you want to say? Because I think we have about wrapped this up.

MR. VANDERHOOF: Well, at the next meeting of the conferees of the Galveston Bay conference I would strongly recommend that it be done in the atmosphere as it is today, that is in public.

MR. STEIN: You know, I am always in favor of a public meeting. Dick, I have learned several things in--maybe not several things--I have learned one thing being around Government for about 30 years, and that is I have seen a lot of people try this, but no one has indicated who his successor is going to be--very often they haven't. But even if they have, they can't tell what they are going to do. And I don't know, 1) whether you are going to have another meeting, or 2) what people are going to be at the next meeting, but I will tell you if I am at

the next meeting, if there is a next meeting, as I have been in past meetings, I will be one who wants to do things in public.

But I think it would be foolhardy for us to sit here and set down a rule of what someone coming after us is going to do one way or the other. I don't know, maybe you feel better if you are going to do that, but I never see that that is going to work.

MR. YANTIS: Well, Mr. Chairman, I tend to agree with you. People who have great faith in, let's say, open meetings laws and public hearings, carrying this too far, and some people do, feel that you should not even have a man come to your office and talk to him because you are doing this secretly, there is nobody else there, and of course it is ridiculous to carry it that far.

Even during this conference, which is basically a public conference, people have been in and out of my room practically constantly. We eat together, we have coffee together, we talk together all the time. You really cannot limit yourself in your so-called personal contacts. You cannot simply stop speaking just because you are not in public. And yet there are people who

severely criticize us for having a meeting in our office and not inviting all the press in. If the press wants to come in, I for one almost never care, but still and all there is a normal work-a-day meeting of people of all kinds together, with or without notice, which does not violate any right of the public to have information. We go to Dallas, you come to Houston, we go to Denver. That is where people work, that is where they are. And I think there should be no feeling that we are restricted from communicating. There has also been quite a bit said about the failure to publish information.

Let me talk about the word "publish" as opposed to the word "release." If you would realize that the water quality data available fills vast file cabinets full and that you get the equivalent of a Sears and Roebuck catalogue every month, so to speak, you cannot publish all of it. You simply don't have the money, you don't have the budget. And I don't care how many people are interested, the biggest part of them would never read it, and if they read it wouldn't understand it. It does not mean it should not be available to the public, but you can only realistically make it available by telling people, "If you want to come to the office, our office

his office, Dr. Quebedeaux's office, our office in this area, and look through the files, have at it to your heart's content. But you simply cannot print everything and publish it like a book." There is too much of it and it changes too fast and a great deal of it is not checked or audited and is correct--and is incorrect. Once it is out people take it as gospel and it isn't always.

So please understand that information is freely available. No one is ever restricted in our office from looking at anything they want to, but we simply don't run around publishing it.

MR. VANDERHOOF: Mr. Stein and Mr. Yantis, my position is that it would have been preferable had we met here--I would say I was prepared to spend a week here if necessary, and certainly there would have to be frequent recesses where certainly we couldn't possibly agree upon language of certain items. My point is that the people have a right to see the decision-making process and some of the stumbling blocks that we encounter and how we resolve them. I think it was pretty apparent here that there were outside meetings, we did have outside contact to concur or agree upon wording, no doubt of that, but I think it would have been healthier to have done it in an

atmosphere where we say, "Well, we have got to go back here and talk with our technical staffs to agree upon something, let the technical staffs talk to each other and agree upon something and then come back and let us hassle."

MR. STEIN: I wanted to say something on this when some of the citizens were talking. From a practical viewpoint, you can speak in pious platitudes about decision-making process. There are two words of cant that I have trouble with in modern terminology. One of them is "parameter," and the other is the "decision-making process." They are great, but I don't know what they mean.

I do know with the enforcement technique that we operate under, and in other provisions of the law, we have very detailed provisions of law that we have to go through before we can make a determination. If "decision-making process" means anything, it means just that. It means that at the Federal level, to me, and I am sure Mr. Yantis, in speaking about his State hearings and his orders, has the same problems.

Now, let me try to put this in perspective as regards citizens saying they are not in on the decision-making process. I have the same feeling, in a sense,

that Mr. Yantis does about this material. My door is always open, and I would like to invite any or all of you citizens to use it. We accept calls, even collect calls, if you feel that you have a problem that warrants our attention. You may not always be able to get me, because I am not always my own man, but Mrs. Piere is there, and you will be able to talk to her. She will know where I am.

I wish you could sit with me in my office for about a week--and I suspect Mr. Yantis and Mr. Vanderhoof may have the same problem--and see the load of paper that comes across my desk. I don't have the problem of people trying to keep information from me; they seem to be inundating me with it. (Laughter.) They wheel it in by the truckload. As a matter of fact, it often requires several secretaries and professionals to go through and weed it out. Because all one does all day is try to read this material.

Now, we have this material available in the office. We also have material from technical and other meetings. In dealing with Mr. Yantis and Mr. Vanderhoof, I would say that they do not have what you would call secret meetings, in that they say something in private

that they don't say in public. I met with these gentlemen in private, and they are no different in private than they are in public.

But if a member of a citizens group says that he was not made part of the decision-making process, it seems to me he has a right and an obligation--if you want to say that--to go on his own initiative, ask for the information, scout it out for himself, make the appointment and follow through. Then if he is not given this information or is not brought in, then he is not part of that decision-making process. But this would be similar to my saying, "You didn't invite me to X meeting or you didn't invite me to this technical meeting in Austin or in Denver or what-have-you." This happens to me every day in the week.

Now, when you talk about the decision-making process--and I don't want to start anything in a partisan way again--but what would you think if I were to come down here with the enforcement staff and say to Mr. Yantis, with all the things he has got to do, "You didn't give me the information, say, on the Houston Ship Channel or any other waters we were interested in. Therefore, you didn't bring me into this operation to find out what I had to do

under the Federal law." Now, I will say to you, if I want to find out about the waters of Texas, I think my obligation is to first go to Mr. Yantis and ask him for such information. Then if I don't get that information or am turned down--I don't say either one happens because their files are open--then I have to send our people out to get it. But I am sure you would think I was a damned poor public servant if I were to just wait for a handout.

Now, the point is we are running as open an operation as we know how to. You must look at this question from various angles. Right now while I am lining this up, I am also carrying on a negotiation to go up to Seattle on a case. I really mean this. You can't expect us to have the obligation to recognize every interested citizen who may have an interest this week and come into the fore only to drop out next week. I think the citizens must recognize that if they want to be part of what they call the "decision-making process," they have to take upon themselves the correlative responsibility of keeping track of their bureaucrats, asking for the information and searching it out, because this is not a self-starting operation. You just have to do it.

With that, we will have a better knowledge.

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I have heard statement after statement on this, and I can understand the citizens complaint. But looking at it from the other side--as the insane bureaucratic wretch or the worm's eye point of view--there is no conspiracy to keep this information away from anyone.

The point is, if we would even attempt to get this out in a broadside manner, we would be trebling--trebling--we would be increasing to the nth power those piles of paper that I get coming across my desk every day. To most people that we would send this material to, this would be the equivalent of junk mail. They wouldn't look at it; they would dump it right in the wastebasket, all at the expense of the taxpayer.

So again, remember this, there are no automatic starters in this business. You have to be your own self-starter. You have to come out of this, you have to apply yourself to this. Then you will get the information.

I know we have gotten a lot from the people here, and I appreciate that information. We hope we continue to hear from you. I would like to say that both the Federal and the State people have laid a program on

the line as to what we are going to do and the dates we are going to do it. This is open for all to see. You are going to be able to judge it, but in order to judge it you are just going to have to do a little bit of homework and that is to remember what those dates are and to see if we have met the dates. If you do that you will be a part of the decision-making process.

Are there any other comments?

MR. YANTIS: Murray, let me add something here which has troubled me for a long time.

A few years ago, probably three, because we did want to communicate with the public, we required that all of our field offices one day a week, on a day which would be known to the public, stay open until 9 o'clock so that the people who couldn't come to the office by 5 could come. And we have 10 or 12 offices around the State. As far as I know, nobody ever came and we finally gave it up. I have never heard of any case where anybody came because of that invitation to discuss a problem with the field office.

The other thing we did, we wrote a letter to every newspaper in Texas, every county judge, the mayors of some of the big cities, to every organization that we

could find in any of the telephone books, Boy Scouts, Girl Scouts, Camp Fire Girls, the Farm Bureau, the conservation clubs, all of them. There were probably 2,000 letters, I guess, maybe more, inviting them to come to our field offices, told them where they were, ride with our people, see what they saw, see how they did it, as though they were one of our staff. Nobody ever did it.

Now, when the public takes that attitude, it is very hard to communicate with the public. If we did that today we might get a different response. But when thousands of letters are sent out and say, "Please come see us, please ride with us," and nobody comes, it just makes you wonder what kind of interest there really is out there.

MR. STEIN: Well, you know, Mr. Yantis--

MR. YANTIS: You didn't even exist in those days. Your organization isn't that old, I don't believe. (Laughter.)

MR. STEIN: We have predecessor organizations. We have been around since the early 1950's.

But let me say I want to give Mr. Yantis the last word. I have to align myself with that, and we are talking to the public here. Last time we were in Houston we held one of these conference sessions on a

Saturday. And I am not pointing a finger at Houston, because I have had similar experiences all over.

Recently we went out to a conference on Pearl Harbor. There was a load of sentiment to hold a session at night so the citizens could get there. We had a room about this size, and I would say roughly we had the same amount of people or a few more. We held that night session. We were speaking to ourselves.

MR. YANTIS: You had it on bowling night. (Laughter.)

MR. STEIN: Well, bowling night, I don't know how they--I could tell you one thing, if I were in Honolulu and someone told me to go to a night session like this, I know we couldn't compete.

But this is the situation that the people have. I will say this on the record. I have come to the reluctant conclusion that despite the protestations of holding these sessions when the public can get there, we have the best participation and the most active discussion when we hold them during normal business hours. Goodness knows we have tried the other. If someone can explain to me the psyche of the American people and why, when we make an effort to hold these sessions in the

evening or on Saturdays or on days when they are off from work, we get such poor attendance, I would like to know. I guess I do know, in a sense it is what we are competing with. It is like the fellow who was selling these cold breakfast cereals was saying--the hardest job he has in selling one of these breakfast cereals is competing against no breakfast at all. That is a hard thing to compete against.

So again, let me join with Mr. Yantis on this plea. We welcome your participation. We would love to have everyone in this decision-making process. But I think in order to do it you have to follow the procedure and you have to come and you have to put yourself forward.

Mr. Yantis, anything more?

How about you?

I would like to thank you all for coming. I do think we have followed this through a very difficult course. We have had to deal with a complicated factual situation, at least as complicated as most in the country. We have had to deal with an ever-changing situation in dealing with an active State and local program as well as an active Federal program. We have had to deal with

different groups looking at data perhaps in different ways, and with Federal, State, industrial, and local groups having perhaps different philosophies. But the magic of the American system is that when you can get together in public, invite the public in, and use the techniques we have in our open society, while we certainly cannot resolve the philosophic difficulties, we can come to an accommodation on a particular situation. We can come to an agreement on how to go forward. I think we have done that.

I would like to extend my thanks to the people of the area, to the industrial representatives, to the local officials, to our regional office and to the State of Texas officials who have participated. At least speaking for myself, I have heard a lot of kind words here and a lot of harsh words here, but I believe that all the people I have talked about, as far as I am concerned, conducted themselves in a thoroughly professional manner throughout these proceedings and I am indeed grateful for that.

And with that we stand adjourned.

(Whereupon, at 4:15 o'clock the conference was adjourned.)