NEW YORK STATE : DEPARTMENT OF HEALTH

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IN THE MATTER

OF

MEETING

CONCERNING

Determination of criteria and strategy having to do with habitability of Love Canal, Niagara Falls, New York.

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MINUTES OF MEETING held at the Red Jacket Inn, Niagara Falls, New York, on Thursday, May 3, 1984, commencing at 8:30 a.m.

CHAIRMAN: DR. THOMAS WELTY.

PANEL MEMBERS:
DEVRA LEE DAVIS, Ph.D.
THOMAS CHALMERS, Ph.D.
MARTHA R. FOWLKES, Ph.D.
PATRICIA MILLER, Ph.D.
FREDERICK G. POHLAND, Ph.D.
I. GLENN SIPES, Ph.D.
JAN A. STOLWIJK, Ph.D.
DANIEL VANDERMEER, Ph.D.
MICHAEL STOLINE, Ph.D.

CHAIRMAN WELTY: I would like to just start off the morning to review the make-up of the consultants that we have here. There are a couple of consultants that are not here, Dr. Upton and Dr. Silbergeld and Dr. Winkelstein were unable to attend today. They were on the previous list and I think most of you know that since the last time we have added two new consultants, one is Dr. Stoline from Michigan and the other is Dr. Joe Highland, who could not be here today. These two consultants were added at the suggestion of the local community here, nominated by the local community here to serve as consultants to this group. So, we welcome you and---

DR. STOLINE: Glad to be here.

CHAIRMAN WELTY: And we will welcome Dr. Highland in the future if he is able to come.

To start off the day's meeting, I would just like to review with the consultants the charge of each one of you and if you happen to have with you the strategy in the letter of March 20th, I think I will be referring to those two documents. If you don't have those with you, I made copies for you. They are both together there. It's nothing

new but just in case you don't have your copy with you.

I want to clarify the role of the consultants. You are all hired as individual consultants and we are soliciting your individual opinions primarily because we are constrained with regard to the Federal Committees Act which makes it very difficult for us to form a committee. So, I just want to clarify the fact that you are being hired as individual consultants. That does not preclude having a consensus or having a collective opinion about habitability criteria as long as you all sign it and agree to it and certainly I have been pleased with the way the consultants have utilized their collective expertise in the deliberations so far and would encourage that today and in the future as well.

The New York State Department of Health and CDC prepared the strategy for determining habitability charge that we sent out to you initially when you agreed to serve as consultants and I just would like to go through that again at the beginning of today's session so that you will be able to keep in mind what your charge is and that

hopefully will guide the discussion throughout the day.

The most basic question is, is it possible to establish habitability criterion and certainly I would like all of you to give that as much thought as possible. If it's not possible to set up such a criteria, we might as well all go home. We could end our meeting today and go home. If it is possible to establish criteria, we need--- well, if it's not possible to establish criteria, I shouldn't say we could go home so quickly, we would also want to consider what other uses might be made of the EDA other than a residential area. So, that would be a charge to the consultants. If it's not possible to establish habitability criteria, is it possible to establish criteria for ultimate land uses.

In terms of the options, we have gone over the options at the first meeting and we came up with two additional options besides the ones that are outlined in this document and those were Item A on the March 20th letter and Item E. Item A briefly was measurement of levels of contamination over time, to evaluate the effects of remediation

and in reviewing the data that we have, it's apparent that there is no data at the present time to monitor the levels over time, at least I'm not aware of that and I don't think such data exists, but that still is within the purview of the consultants in terms of recommending that such measurements be made in the future.

In terms of Item C, comparison of Love Canal after remediation with the state of the art dump site, apparently there are certain criteria for such dump sites. We have not been able to determine the adequacy of Love Canal in terms of these criteria or whether or not it's even possible to make that determination, but we will try to identify those criteria and see if Item E is a feasible alternative.

DR. STOLWIJK: Could I ask, there are obviously standards for the operation of dump sites. Are there observations that have been made around such dump sites that would provide data with which Love Canal could be compared? I am not aware of any but---

CHAIRMAN WELTY: I asked EPA and I asked Bob and we are not aware of any such monitoring

programs around dump sites. I think the types of standards that exist are what kind of a bottom does the dump site need, technical things rather than monitoring the levels of chemicals around the dump sites. So, those are the kinds of standards that we feel exist.

Dan, do you want to comment anymore on those standards?

DR. STOLWIJK: They are functional standards, design standards.

DR. VANDERMEER: That is right. The law that governs the operation of such dump sites and the closing of active dump sites is up for reauthorization and several of the reauthorization bills calls for that kind of monitoring, both environmental and health monitoring around the so-called RECRA sites.

DR. STOLWIJK: So, what is anticipated is that the kind of radiological monitoring that now occurs around nuclear installations would be foreseen for dump sites if one of these things passes?

DR. VANDERMEER: If they are adopted, yes.

DR. POHLAND: Here, I think we need to

separate them between old sites and new sites. The new sites, of course, do have monitoring.

CHAIRMAN WELTY: So at any rate, we will follow up on that and try to provide you with any standards that exist as soon as we can identify those.

DR. CHALMERS: Also, experiences that exist, in other words, if new sites have been built and monitoring has been going on, we would like to know what the monitoring has uncovered.

DR. STOLWIJK: I think there are probably very few new sites that have been authorized and started up since RECRA was adopted, is that correct? I mean, I don't know of any of those either.

DR. VANDERMEER: I am not an expert on RECRA but---

DR. POHLAND: There are hazardous waste sites but secure landfills and so forth, all of which have these kinds of requirements and---

DR. STOLWIJK: But most of them have been grandfathered in and adopted and built before RECRA was adopted. I don't know of any new ones that have been started since then and opened up and are in operation.

DR. POHLAND: Yes. In my area there aren't but--

DR. CHALMERS: Are you saying RECRA isn't monitoring old sites?

DR. STOLWIJK: There is always a distinction between bringing into conformity of existing sites and what new sites are going to have to conform to and I think new sites are required to have monitoring, all sites.

DR. CHALMERS: I can't understand not starting with monitoring old sites so that you can tell what you are looking for in the new sites.

DR. POHLAND: Well, a part of the Superfund investigations require this, once a site is identified.

DR. STOLWIJK: As a problem site.

DR. POHLAND: As a problem site.

DR. CHALMERS: So, there must be some data being gathered.

DR. VANDERMEER: Yes. Those are for Superfund which are a different law. That is a different case.

DR. STOLWIJK: And their protocol is not described. It just says that monitoring shall be

done.

DR. VANDERMEER: That is right.

DR. STOLWIJK: There is no prescribed protocol as to how that is to be done.

DR. POHLAND: It is site specific.

CHAIRMAN WELTY: We will try to provide you with what limited information exists on this topic.

In terms of the application of the criteria, Item 4, we do want you to consider application of the criteria, whether they are applicable to the EDA as a whole or to be applied area by area or house by house. Ultimately I am sure the decision will be made house by house but I think the criteria that you develop might also be applied either on the EDA as a whole or applied area by area. So, I would like you to consider that carefully.

Then on Item 5 on this handout is the consideration of environmental and human health studies. We spent considerable time and you received a considerable amount of information. It's obviously not as much information as we would like and there is additional information that exists. I

think Dr. Huffaker has made a gallant effort in trying to be selective and pick out those items he felt that would be most pertinent to your work. Certainly there are other documents that exist and they are available and one of the things we need to consider today is how much of the additional information do you want to see. Do you want to see it all, part of it and specifically how we use the information in coming up with your criteria. Those are the crucial questions I think in this regard.

DR. POHLAND: Are you soliciting discussion as you go through these?

CHAIRMAN WELTY: No. I would like to go through the whole thing first and then in that way give us a full range of what is needed and then we can go back and discuss each item.

Further testing. One of the most important parts of the habitability issue is monitoring of the EDA to insure that the levels are going down and I would think that this needs to be planned very carefully in terms of a protocol that is reviewed and again, we would welcome your input in how to monitor and also, are there additional tests that need to be done before the habitability

criteria can be established.

The list of chemicals that is attached to this was developed by the State of New York and they seem reasonable to me but there may be additional chemicals that need to be monitored or perhaps some of the ones on that list we could delete. Again, your thoughts on those chemicals would be appreciated.

So, in a nutshell, that is what the charge to the consultants is and it's a lot.

The letter of March 20th requested your opinions on which of the five strategies might be most applicable and also if you needed any additional information or had any suggestions for the agenda. We received some comments back and it seemed like most of the people felt that the comparative approach, in other words, comparing the environmental testing that has been done in the EDA with other control areas or normal areas would be the most practical approach to establishing habitability criteria. We haven't heard from everybody and certainly that would be another thing that we need to go into today. Even if we do the comparative approach, there may be situations where

chemicals are present in the EDA and not present in the normal or control area. In that case I think we would be faced with at least some degree of risk assessment that we have to do in order to handle those specific cases where certain chemicals are nondetected in the normal area or control area and are found in low levels or even higher levels in the EDA.

The next thing I would like to go through and then we can go back and discuss these various points within the document, is the schedule that has been established by the Technical Review Committee in terms of the habitability determination and how it will be approached and I think it's important for you to know this so that you will know how your work fits in with the work of the Technical Review Committee.

Just to review again the Technical Review Committee, consists of representatives from the governmental agencies that are charged with the responsibility of monitoring and remediating Love Canal. They include the Center for Disease Control, the State Department of Health, the Environmental Protection Agency and the State Department of

Environmental Conservation. The EPA is the lead agency in this committee and they have been charged with scheduling the meetings and so on.

The meetings have been held at least for the past several months in Niagara Falls and we have made a special effort to keep the community involved, to solicit their input and I hope that we have been successful in that regard. We definitely have made a sincere effort to be responsive to the community's needs.

The schedule that has been outlined by the Committee, I will just use this board here to outline this for your review. The habitability criteria, this is what you are charged with providing us and we had initially felt that this could be accomplished from March to July of 1984 and you will have to give us feedback on whether or not this is realistic. We still hope that that could be accomplished.

In addition to the criteria, this would also include the methodology of application. In other words, will it be for the entire EDA or for area by area or house by house? Ultimately, as the Commissioner said yesterday, the determination will

be applied house by house.

In addition to this, there is a whole other issue on the QA/QC of the data. This is the existing data and one of the criticisms of the previous decision that was made by EPA and the Department of Health and Human Services was that the quality control of the EPA environmental monitoring study of 1980 was inadequate. This is the main reason that we are taking another look at this and we met here on Tuesday with a group of people to begin looking at the issue of the QA/QC of the EPA data and this group will consist of, again, CDC, Department of Health, EPA and who else, Dan?

DR. VANDERMEER: DEC.

CHAIRMAN WELTY: The Department of Environmental Conservation and we are also inviting the National Bureau of Standards to participate. The contractor is charged with developing the criteria for accepting or rejecting the data based on a QA/QC.

MR. HOFFMAN: I think, Tom, I think it's important to point out that it is not a black and white accepting or rejecting. It's more of a range,

a spectrum.

DR. STOLWIJK: A weighting of data.

MR. HOFFMAN: There is really good data and there is really bad data and some gradations in between.

DR. WELTY: At this point we should be able to combine these two.

DR. STOLWIJK: Could I ask a question on that? Is that determination going to be made solely on the basis of the accuracy and reliability, the quality of the data, or is that determination also going to be made on the basis of the utility of the data in the question in hand? There are two separate considerations. You could have technically awfully qualified data that don't mean anything because you can't apply them, you can't compare them, you can't derive anything out of them. There is an important determination that somebody needs to make that looks at the data in great detail.

CHAIRMAN WELTY: In response to that, one of the questions that we asked was, is there any value in doing this for the data pertaining to Love Canal or should we limit our efforts to the data

that has been collected for the EDA and that would be one thing that would be of interest, is what your thoughts are on that. Should we expend our effort and look at all of the data or should we focus our efforts on the data that just pertains to the EDA.

DR. STOLWIJK: I think my feeling about that, I don't know how the others would feel, is that the sheer volume of observations which were made is pretty overwhelming and some consideration and some selection or some marking up of all that data needs to be made in terms of its comparability to other data that are in the same set that are also available. Its ability to be used in determination of time trends makes one piece of data very much more valuable than another piece of data if it's helpful in establishing a time frame. That piece is much more valuable even if it's a little bit shakier in terms of its absolute quality than another piece that is absolutely correct but doesn't relate to anything else.

MR. HOFFMAN: Our intent right now is not to rule out any piece of data.

DR. STOLWIJK: I am not asking for that.

I am asking either in the weighting of the data, ultimately you will be producing data sets, readable data sets on the raw data I assume. It is I think very important to prioritize that effort in such a way as to first work on those data that actually lead somewhere or are likely to lead somewhere and you can leave even very high quality data that doesn't relate to anything and so, keep that out of the consideration at the moment because the priority becomes very low.

MR. HOFFMAN: From your perspective, what is the data that leads somewhere? I heard that used, things that lead toward time trends.

CHAIRMAN WELTY: One of the data sources we talked about on the bus coming up here, for instance, is air monitoring in homes that are still existing, not the homes that were torn down, where you can go back and then re-monitor those homes and see if there has been any improvement or any change in the levels of contaminants within those homes. I think that would be one example.

DR. STOLWIJK: Any soil samples that were taken by different agencies at different times in what looks like the same location could become a

treasure trove that otherwise would be, in isolation, would be not very significant or not very usable. You see, for our purposes, I am sure you understand that anything that can be used by us to establish something that couldn't be established out of the individual data because there was never a design that said we are going to look for time trends in anything because everything was reactive to something or other and there wasn't a time to actually establish an overall strategy.

DR. STOLINE: Are you looking for specifically the EPA data or are you looking for all data?

DR. STOLWIJK: I don't care where the data came from. I don't think we have the luxury of saying we like this or we like that. I think we have to take anything that is there because it suddenly almost accidentally could become much more valuable than some other piece of data.

MR. HOFFMAN: I am just looking for, I mean, that information and the way that you prioritize it for your use has a lot to do with how you are going to make your decision and what your criteria and methodology are going to be and

the better that you can define that, the better we can prioritize how we go after it.

DR. STOLWIJK: You will have to recognize that we will at best be groping for anything that we can hang our hat on and I think that if you help us within our groping efforts, that that would be very helpful. If we have to do that from where we sit as outside consultants, essentially not able to read everything that we have, let alone the raw data, or go back and relate on a map where locations were and the raw data, of course, that we have or the data that we have does not identify the stuff that you have, hopefully at least in some circumstances it does identify locations and if you have locations and times of sampling and protocols of sampling, you are in a much better position to guide us as to where there is any kind of longitudinal data but I think longitudinality is extremely important to us and to the resolution of the whole effort.

CHAIRMAN WELTY: At this point, in using the present timetable, these two items in combination would be then peer reviewed. The work of you as consultants and the protocol for QA/QC would

undergo a peer review and EPA is presently advertising in the Commerce Business Daily, this advertisement has not yet come out.

DR. STOLWIJK: Is the QA/QC under the same schedule, March to July?

CHAIRMAN WELTY: Yes.

MR. HOFFMAN: Actually it lags the habitability criteria because we would like it about one month's time, Tom, to allow us to, once we see what the final criteria are, to make the final adjustment on the QA/QC.

DR. STOLWIJK: You will also understand our desire to be able to anticipate what there is in terms of usable data before we actually define our criteria. So, we have a chicken and egg problem.

MR. HOFFMAN: Well, we are trying to move ahead on that. The decision we had on Tuesday was that there was a level of QA/QC that had to be done, no matter what, and that we are trying to move ahead on that.

DR. CHALMERS: Have we received a document describing the QA/QC methodology?

CHAIRMAN WELTY: That is described somewhat

in Volume 1 of the EPA report. Do you want to comment on the QA/QC in the EPA data?

MR. BLACK: In what way? I mean, other than what I said yesterday?

MR. HOFFMAN: There is a GCA report that we were just talking about that describes how the QA/QC was done on the EPA data.

MR. BLACK: But what happened was the GCA Corporation in Bedford, Mass. was a prime contractor and they audited all the laboratories. They contracted for the laboratories to do the analyses and they used the same methodologies on their analysis. They received this data at the same time that I did, at least for the soil and sediment data, and they verified the data and made sure that the laboratories had used the right fraction procedures and if they had calibrated their DCMS each day and that they had run blanks and calibration check standards and then they notified me that this was a verified set of data and then I validated it based on the laboratory control standard analyses and the surrogate standard analysis.

DR. CHALMERS: I guess I didn't make my

question clear. I didn't mean what had gone on in the past. I meant that we are contemplating the gathering of any new data, is there a protocol for the QA/QC on future gathering of data?

DR. POHLAND: There is a QA/QC document that was put out by the EPA.

MR. HOFFMAN: I think there was in the discussions on Tuesday, it was recognized that this QA/QC thing had kind of two pieces to it, one was how to deal with existing data and then if it's determined that new data is needed, then there would be a second function which is to develop the QA/QC for that needs to go on there at least.

DR. CHALMERS: Let me be specific about what concerns me. There are standard methods of looking at how laboratories operate and seeing whether they use the normal standards and check on their accuracy but most of the time the data that are presented to groups such as us are deficient in giving us an idea of the routine duplicate variability, not the duplicate variability determined because you are looking at the quality of that laboratory, but you send in two specimens and you send in two specimens from the same source

and you blind them so that the laboratory doesn't know it's dealing with the same source and if you are only getting a few determinations, you do that in every test. If you are getting a lot of determinations, you do it in a randomly selected test but it means much more to me, especially when dealing with things I don't know anything about the variability of, to look at two blind randomized pairs and which the lab didn't know which one went with which. So,they don't have an opportunity to throw out the course error but they send it back to the receivers as specimen number 124, as specimen number 118 and they don't know that the two go together.

DR. STOLWIJK: That is precisely what they do.

DR. CHALMERS: And then we get both of them but nowhere do we see both of them.

DR. STOLWIJK: We just get it described, the process that they follow.

DR. CHALMERS: But I think if we are going to look at the figure and we are going to say this figure is of interest or lack of interest, I would like to look at both figures.

DR. STOLINE: The problem, though, with the EPA report, I may be wrong on this, but it's something approaching 150,000 individual data.

DR. CHALMERS: Well, random samples.

DR. STOLINE: That is a lot of numbers to look at.

DR. CHALMERS: But we are given one number or twenty numbers and in those twenty numbers that we are given, I would like to see a couple of blind duplicates randomly selected and totally reported so that one can see how much variability is in the laboratory, how much opportunity for bias there is in the selection of the data. I would like to see the laboratory not know which one is from Love Canal and which is a control taken from somewhere else so that it comes back to us as not only blind as to source but blind as to which is a duplicate specimen.

DR. BLACK: That is summarized in the figure called the precision of analysis which gave the duplicate line sampling and if you have a precision analysis, you don't need to see both samples.

CHAIRMAN WELTY: Is that available

in Volume 1, that particular figure?

DR. BLACK: Yes. It is in appendices C and D.

DR. CHALMERS: That is my point because that is determined at a time when people know there is a precision analysis going on.

DR. BLACK: No. The laboratories do not know. They were blind samples.

DR. CHALMERS: But in the future I would like to see the data.

DR. STOLWIJK: I think there is a report on the conformity of the double replicate sample and the blind samples. There are some numbers in the report that actually indicate the specific numbers, what they were, and I think it's a standard part of a QA/QC now to provide that.

CHAIRMAN WELTY: Just to try to refocus this discussion a little bit, I would hope that, you know, this group could deal primarily with this in terms of habitability criteria. I realize you will need a lot of data and a lot of other information including some QA/QC but just keep in mind there is another group that is addressing the issue of QA/QC of the data and I am not sure that you have

the time or that it would be wise for you to spend a lot of time on going into the details of the QA/QC.

DR. CHALMERS: Let me say again, though, if you give us a figure and then we don't have to go back to some previous report six months before to find out what the variability in the laboratory or in the ground that figure is each time. There is no point in giving us data without available evidence of the variability we can expect and sometimes it will be plus or minus 1 percent and sometimes it will be plus or minus 100 percent.

CHAIRMAN WELTY: See, this is exactly, that kind of compilation is not now existing conveniently so that is why CH_2M Hill is---you see, that is not going to be available for you to make these determinations, unfortunately.

DR. CHALMERS: Well, we are asking for some new data. Can we get that new data reported to us in the form of the blind variability data that would accompany the data as we look at it and not be somewhere published where we could go back and find it if we wanted to?

DR. HUFFAKER: I think that if you look

at some of the EPA data, you will find that it has been done for you accidentally, serendipitously. What he did was go back to the same house week after week or every ten days, something like that, and take the same measurements and so, you get a series of measurements of the same chemicals in the same house and this gives you, if you like, a standard deviation so that maybe the values actually changed in the house.

DR. CHALMERS: That is important data and I may have missed it in the pile.

DR. HUFFAKER: You didn't get that. This is in those three volumes that everybody was talking about.

DR. STOLINE: The time trend would be over a two and a half month period because the first data was reflected in August.

DR. CHALMERS: I am asking that we not have to dig for quality control data.

DR. DAVIS: I would second that. I would like that follow up. I have a feeling it's very confusing and I would appreciate an index of all of the existing data. I would like to know what data exists. We don't have all the data that

exists. Last night and early this morning I was reading these reports from the EPA that establish indoor air, outside air, drinking water, human blood and serum levels in 1978 in persons and their habitats and areas which are, most of which are on the Superfund list of the 100 top priorities abandoned hazardous waste sites. Now, that data was gathered in 1978 and on some of the same individuals, you know, what was in their indoor air, what was in their outside air, what was in their blood, what was in their serum. This is a great loss to epidemiology if those individuals aren't followed up, really, to see what is happening. Some of those samples were done in Niagara Falls and some of them were done in Buffalo. Some of them were done in Kinbuck, New Jersey, Addison, New Jersey and some in Houston, Texas, all around different abandoned hazardous waste sites and it would be extremely important for us at least to have some idea of how much data exists. We don't even know what exists. Every time we ask a question, we find out, well, we have this data or we have that data and it's very hard to know what is the known universe.

CHAIRMAN WELTY: We discussed this last night and I think the question is, do you want everything sent to you that exists?

DR. DAVIS: No. I would like a listing of all that exists and then we can study it.

CHAIRMAN WELTY: Well, the listing was sent.

DR. DAVIS: That is not a listing of all that exists. We find out now about every three months or maybe every six months that there is a measurement of ground water and there is no real schedule for it.

CHAIRMAN WELTY: It is not a complete list but I think you have to give CH_2M Hill credit, they are just starting on this.

DR. DAVIS: I am not faulting them at all.

CHAIRMAN WELTY: They are trying to compile a list.

DR. DAVIS: I am not faulting CH_2M Hill in the least. I am saying there is no clear master list. We have federal monitoring, there is state monitoring. We don't know when it's being done. We don't know when it's next scheduled to be done. We don't know whether it's on ground water or in

drinking water or soil or air. We need to have a kind of index and then we can say, well, here is the universe and here is what we need to look at.

CHAIRMAN WELTY: How much additional information other than what is on the list are we aware of?

DR. STOLWIJK: What it amounts to, Tom, is that every time we ask a specific question from our point of view, from our perspective, it turns out that there is some data around that nobody thought would be relevant to this, that is somewhere and what I think Devra is pointing out is that we feel that every time we listen and ask questions, that there is available further data that is indicated, all of which is not surprising because we do in the normal course of events gather observations and data. Joe was telling us that he has what may turn out to be at some point a very valuable set of data in just his notes as he was trenching. You know, that is probably the one, single record that we have that ultimately would make it possible to determine whether there was any migration or not. That data was collected because he is a good professional and he knows that he

should record what he sees when he undertakes a large project. The availability of that data, of course, is never recorded for other purposes because it was taken from his point of view.

We need all of this, we all need this, you do also, to uncover that data and the data that was taken in the context of large projects we already know about and usually that is not taken from the point of view of a design that was behind a grand design that was behind the data. The data is flawed but for our purpose, in very many different ways, we have to see whether we can rescue out of that tremendous mass, those parts that are relevant to our particular considerations.

CHAIRMAN WELTY: Well, I think you can appreciate the difficulty of this task in terms of getting the data and the list together and I can only reassure you that that is the intent of the contact with CH_2M Hill and that they will make every effort to get the information and the things that were not included, it was inadvertent rather than---

DR. STOLWIJK: Nobody is saying to anybody else that they haven't done their job right. What

I think all of us are saying is that we need data in a context and with a value attached to them that is different from any value that was attached at the time the data was taken.

CHAIRMAN WELTY: But I am sure that this list will change over time and that you will be receiving updated copies periodically and---

DR. STOLWIJK: We are just trying to do our particular job the best way we know how, using it with data resources of opportunity that happen to be around so as to minimize the new data and the time delay that is going to be implied in having to take new data. That is what it really amounts to.

DR. STOLINE: Just as a follow up on that one point, talking with some individuals last night, I think there may exist the possibility of some data sets that are tied up in court proceedings.

CHAIRMAN WELTY: We discussed that yesterday and there will be an effort made to release that information.

DR. STOLINE: I must have missed that discussion.

DR. POHLAND: Let me follow up with what

John said about our perspective. After these deliberations, now, I get the feeling that the data collection process for our purpose is being done in a rather mechanical way. We are using the computer to record listings in some preconceived way and from what I can gather, it is not directly responsive to our needs. I am not advocating the receipt of all the data that ever existed, probably would fill this room. We can't deal with that kind of a proposition. However, what we want in the data collection and probably the quality control and assurance business is to be sensitive to our needs and I am not seeing that particularly and it bothers me when the contractor says, well, our activity is going to lag your activity because after all, we need your input first before we can finish our task. You know, we are saying the same thing and we are going around in circles on it. It's a chicken and egg proposition again.

Now, I think John has pointed out some of the sensitivities of our needs and I would echo these and I am very concerned when we meet and at least from my perspective, I find out about data that appears at least much more important to me in

my assessment than what I have so far received. Now, that is overstated because I haven't had the opportunity to really get into all of the data the way I really want to but certainly the data on the remedial situation is very important because I can't imagine us coming up with criteria wherein the remedial action, its maintenance, the assurances associated with it and everything else isn't a subordinate part of the criteria. The acceptability of the criteria must necessarily link in my opinion on those assurances that in fact things are getting better than maybe potentially worse sometime in the future.

I guess I am making a plea for that kind of perspective in the data collection process and I get the rather uneasy feeling that it's a mechanical process right now. The data is just being assembled and somehow put in some kind of record that we are expected to understand and that is too big of a task if you want us to get done by July.

DR. DAVIS: Let me follow up on that and suggest that maybe we could recommend what are some of the most important data sets we would like

to see and if we could get that information to you, I think that Jan just referred to the trench notes and if CH_2M Hill could assist Joe in putting those into some form that would be useful, I think we have all talked about the importance of time trend data. We all agree that time trend data is extremely important. I would say based on a review of these things, that to the extent that there are data on the exact same sites that were sampled in '78, that can be obtained now. Two points is better than one point. Two points you can draw a straight line. One point you don't know which way to go and to the extent that we can get that kind of data, that would be extremely useful. I have a feeling, I want to say, trying in my own mind to put together this report, and let me refer to the July 1979 formulation of a preliminary assessment, I tried to put this report together with this one which is the Pirnie report of October 1983, site investigations and remedial action alternatives, in order to determine and I think there are some exact overlaps of points where the sampling was done. I don't know whether the media are the same but it would certainly be

worthwhile to see whether there is any kind of correspondence there. That is the kind of thing that would be, I think, very valuable in this report.

Now, are we going to discuss this report in any detail, the Pirnie report, which we just received a few days ago?

DR. HUFFAKER: There is correspondence that goes with that. There was a critique on that and I think we sent you the DEC response.

DR. STOLINE: I don't remember that one.

DR. HUFFAKER: It was on the---I would have to go back and look.

DR. STOLINE: There was a Hooker response. The main document and the Hooker response were the only two pieces of information I received.

DR. DAVIS: I don't recall that.

DR. STOLWIJK: There was a local response as well.

CHAIRMAN WELTY: Before we get into any further discussion, now I would like to finish going through this timetable and then we can go back and try to start going through other items.

The peer review that I mentioned, EPA is

in the process of soliciting interest in this review and has an ad in the Commerce Business Daily. One of the groups that probably will bid on this will be the National Academy of Sciences and perhaps other groups will also be interested in doing this activity. So, that activity is supposed to take place between September to November of 1984.

DR. DAVIS: When is that notice expected to appear?

CHAIRMAN WELTY: It should appear, as I understand it, in early June or maybe even before that. Steve, do you know any more than that?

MR. HOFFMAN: That is the best the EPA projects right now.

CHAIRMAN WELTY: Okay. In the meantime and even now, I guess you are in the process of computerizing the data that exists beginning on that or---

MR. HOFFMAN: Just beginning on it.

CHAIRMAN WELTY: And after the peer review, depending on what it says, the habitability decisions should be forthcoming sometime in late 1984 and extend on through 1985 and again, this will

depend on how all of these various things link together. So, that is the rather ambitious time-table which has been outlined but again, I feel that we have a commitment to the community to make every effort to stick with this because they have already waited long enough and certainly there has been a lot of data collected. There may need to be more data collected but I would that we would be able to make at least some of the determinations on the existing data rather than delaying decisions for collection of additional data.

In terms of your responsibility in developing these criteria, I don't really feel that it's realistic to get additional data between now and July for you to review. I think the most that we can do is provide you with all of the data that you need that has already been collected.

DR. HUFFAKER: You mean not to gather new data?

CHAIRMAN WELTY: Not to gather new environmental data or not to do new health studies between now and July. We would have to ask you to rely on the information that has already been collected and you can certainly request any of that from the list

that is provided to you by CH_2M Hill.

DR. DAVIS: Do you mean to imply then that there will not be the possibility for some random sampling of an area that we said we would like to go check on, that can't be done between now and July?

CHAIRMAN: My personal opinion is that any quick and dirty sampling procedure would not serve the needs of the community that we are working for. I think that any follow-up of this particular problem needs to be structured in a protocol and needs to be carefully thought out so that we don't have to rush around, gather samples and the lab rushes around, and I don't feel that that would be fair either to the lab or to the community. I think that we would prefer is your recommendation on how monitoring should occur and what types of things need to be followed up.

DR. CHALMERS: As I look through this list of data sources, the dates of publication are mostly '80, '81 and some '83 but I'm not sure when the materials were gathered. Is it possible to put together for us a list by date at which materials were actually gathered so that we will get a feeling

of how much time span has gone by since the important measurements were made, because we just look at publication dates, the date of report.

MR. HOFFMAN: That list that you are looking at right now, Tom, is just an index to the thirty documents that we provided.

DR. CHALMERS: I understand that but each one has a date of the document and I would like to know, since we can't have any new measurements that we might like to have, the first thing I would need would be the comprehensive list of the measurements that have been made with the dates that they were actually drawn so that we can then look up those data in our great piles and put them together with regard to trends over time.

I have this terrible feeling that most of us are being asked to voice an opinion on trends when the last point in time in the trend is largely around 1980 or '81 and now in '84 you are expecting us, with no new data, to say what the habitability criteria would be.

DR. HUFFAKER: Let me respond a little bit to that and Dr. Davis' question about whether or not we will do more sampling. If there are some

places out here like addresses or something that are on the map that you would like to know what data exists on those things, a distribution, we could look that up. That isn't new data. The state has, and federal, has done that and given you values. That now exists and that would probably be better than attempting to go out and do spot sampling which certainly couldn't be as widespread if you wanted to do a scatter or random distribution or something through the EDA. The information is there and could be pulled out.

DR. CHALMERS: And when were the last substantial measurements made?

DR. HUFFAKER: The EPA stuff?

DR. CHALMERS: The date of drawing and the measurement was what?

CHAIRMAN WELTY: '78 and '79 was New York primarily and 1980 was primarily EPA and the Malcolm Pirnie report was '83, was it?

DR. DAVIS: January to March of '83.

DR. STOLINE: When did they collect the data, though?

DR. DAVIS: That is when they collected the data, January to March of '83.

CHAIRMAN WELTY: And when was the E. C. Jordan drawing done? Was that the same time, the summer of '83? The E. C. Jordan--

MR. HOFFMAN: That was probably just after Malcolm Pirnie.

DR. DAVIS: And there seemed to be two sources from 1978 judging by this, one of which is EPA, the contractor for EPA called RTI.

DR. CHALMERS: So, the time trend we have to deal with is '78 through '83.

CHAIRMAN WELTY: That appears to be so.

DR. STOLWIJK: So, the difficulty, just to reiterate again, many of these measurements were made from a point of view aimed at remediation. Some measurements were made in order to establish spread in a manner that is not particularly helpful to determining human exposure. Some measurements were made that were directly meaningful to human exposure. Those, I suspect, we have the least and fewest and I think we also have, in terms of human exposure or potential human exposure, I think we have the fewest longitudinal data.

From our point of view, clearly those measurements that can be translated or are in some

way directly meaningful in terms of human exposure are the most important measures. Many of the measurements that are made are ecological, ground water based, based in terms of how far the spread for all that sort of thing. The human exposure data, specifically indoor air quality, clearly is probably the most important single measurement that would tell us something about human exposure. We have measurements of those on the interior sites, on the Love Canal sites, I believe, and I believe there are some measurements of that in the EDA also. Joe was going to look into seeing how many of those there were and what addresses they were made at.

I understand the reluctance to go into a new set of measurements. I would strongly suggest that a very simple protocol is that, try to identify all of the sites, every house in which we have indoor air quality measurements, especially those that were taken in '78 and '79, that we try to establish whatever longitudinal measurements we can now make so that we do this in the clearest, simple way in which we can determine whether remediation in fact has resulted in improvement of the human exposure and I think that this data is

totally lacking at the moment.

DR. DAVIS: I would suggest that this list of sources needs to be amended. The DEC has told us that they collected other data as well and I think that the sources should indicate whether you have ambient air, indoor air, ground water, drinking water, soil or core or bedrock.

Now, in the case of this RTI study, then I would just put down H, meaning human, because in some cases they have serum and in other cases they have urine and in some cases they have breath. Those data were collected on people. Some of the people had 25,000 parts per trillion in chloroform in their breath and more in their blood and there were high levels in some of these things and I don't think that we need to have a complete list of all of the data. I know the DEC has selected other data and we want to know when it was collected and what it is. That doesn't mean we want the data. I want to make that clear. We do not. I certainly don't want to have you sending us tons and tons of data but I would just like to know what was collected.

For example, in 1982 there was an analysis of sump pumps. We have just received a summary

report on that yesterday. I would like to see the full report on the sump pumps. The dioxin levels in those sump pumps were reported in two cases, the dioxin was in the order of 15 to 17 million parts per trillion in two of those sump pumps. Are those among the sump pumps that were destroyed in houses that were carted off? We don't know. I would just like to know.

MR. HOFFMAN: That is the percentage range. That is about 1.78 percent dioxin, if you want to think about it that way. I think that is 170 parts per thousand, let's see---

DR. STOLWIJK: That is in the 55 million range, something like that, when you track the zeros down.

DR. DAVIS: And this data of June 3, 1982, it says prepared for litigation, confidential, and I'm not sure what that means.

MR. HOFFMAN: At that point in time.

DR. DAVIS: At that point in time. Copy number 21 called "Analysis Love Canal First Ring, Basement, Air and Sumps", the first ring and on the very last page of it, Table 2 says that in two sump pumps they reported 17,200,000 parts per

trillion and 14,500,000 parts per trillion of dioxin. Interestingly, in one of the soil samples you had 16,000.

MR. HOFFMAN: Dioxin?

DR. DAVIS: Yes, 2378.

DR. HUFFAKER: The highest we ever saw was parts per million.

DR. STOLWIJK: That would be parts per million by the time you calculated it out.

DR. DAVIS: So, 17 million parts per trillion, all right---no, it's 17 parts per thousand. So, it's hard to say. Is this an error?

DR. HUFFAKER: Yes.

DR. DAVIS: If it is, we would like to get that corrected. On the other hand, if it's correct, what it does is confirm the suspicion that I raised, that in my memory of the sump pumps, they have many times more higher levels than the soil and that would make sense because the sump pump potential for exposure the way they function now and the gentleman made the comment that the sump pumps would have benzine in solvents in there because people might be squirting oil in there to get the sump pump to work but my only point in raising this

is that this list here is not complete of all the testings done. We know that in '78 they monitored the sump pumps and basement air and in '80 they looked at soil and that the EPA in 1982 looked at the soil, air and sump pumps and that the creeks have been carefully monitored fairly recently and there apparently were additional creek samples taken three weeks ago at the 93rd Street outfall. We ought to have a complete catalog of all of those data.

DR. CHALMERS: It sounds like you have it all catalogued in your head.

DR. DAVIS: No, I do not have it all catalogued in my head but I think that---and I just come up here and look around and try to read everything I am given to read but that is a lot and I think it would be useful for there to be such a complete catalog.

DR. POHLAND: Okay. I will continue with my statement. Now, I think what she has highlighted here is that we are just receiving batches of data without, I think, the kind of sorting out that we would like the contractor to do and certainly the categories of potential contact, particularly

personal contact, whether it's the air phase, water phase or soil phase, whatever the circumstances, if you could categorize that in some way would also be very helpful.

See, you have a tremendous burden just getting at the data but I guess what we are asking you now to do is not to transfer it to us now to sort it out. We don't have the luxury of seeing the raw data in the first place in many cases and, therefore, it's even more difficult for us to sort it out and I think what also is happening now and maybe because of the decision to do this exercise, to come to some habitability criteria in view of the last attempt to do this, that some of the things that were recognized previously as being gaps in the knowledge now are being attended to. Well, they are no less important now to us than they were probably to the last group that looked at these things and there is more current data I think that may well be more impressive to us than a lot of stuff that was done in a nondesigned or maybe focused manner with regard to habitability.

DR. HUFFAKER: What has been going on is that Hill came around and said, give us a list of

everything you have got that relates to data and we did this. So, they would have the mechanical collection of the massive amount of stuff and then the material you have been getting was gathered from requests we had at the last meeting for things that I had on hand or was aware of than CDC had, we just Xeroxed those and sent them out. So, there was a selection process from a pile like that.

DR. POHLAND: I can understand that and I give you all the credit for trying to do that to make our job easier but I am the kind of guy that doesn't like to be surprised and every time we meet I get surprised about things and it's the same old issue of credibility. If we come to a decision that it appears somebody has kind of maneuvered our position by virtue of what is provided for us to consider in making the decision.

DR. HUFFAKER: Let me finish. What I was going to say is that we would now like some guidance back from you and I think Dr. Davis was just saying that maybe you could request some specific information or guide Hill, which I think is what is going on, as to what you want.

DR. POHLAND: I think that we can only do

it, we can be specific when we know about things but we have to be general about the areas of information that we are searching for, otherwise, you are driving us individually into the literature and I think every one of us can go after something.

CHAIRMAN WELTY: Let's just have one more comment and then I think we need to move on.

DR. STOLWIJK: I think what we are trying to do, obviously, even the contractor has a limited total effort that he can devote to this task. What we are trying to do is aid him as effectively as we can at stuff that would help. I mean, you understand what we are after and I hope you are hearing our kind of diffuse comments and that they will help guide you into the most effective approach to the problem.

DR. CHALMERS: May I make a motion before you go on to something else? I would like to move that Dr. Davis put together the first draft of the list of what we would like to have and circulate it to the Committee and then we can amend it and get it back to you and then you will have exactly what we need in relation to time scale and that type of determination.

CHAIRMAN WELTY: I was going to suggest as a prelude to that maybe you could send out a new list updated with all the additional documents that have come to light in the last two days and then---such as the records on the trench.

DR. VANDERMEER: Joe Slack's notes on the work, that is the only new piece of data.

DR. POHLAND: Even though we may not agree with the critiques, it gives us some perception of things.

CHAIRMAN WELTY: You want the sump pump report. Does everybody want that or---is there any problem with sending the sump pump report out?

MR. HOFFMAN: There is no problem. Does everyone on the committee want it?

DR. DAVIS: Well, how big is it? What are we talking about, the sump pump report, the one you gave us the abstract of yesterday?

CHAIRMAN WELTY: Okay. So, we will check on the sump pump report. Are there any others right now?

DR. DAVIS: The GeoTrans report, whatever that is.

DR. STOLINE: I second that also.

CHAIRMAN WELTY: How much is in that Geo Trans report?

MR. HOFFMAN: That is the one that you talked about yesterday I am assuming, the 1983 GeoTrans Trend Report.

CHAIRMAN WELTY: Do you have that with you today as well?

MR. HOFFMAN: No.

DR. DAVIS: Do you have it?

MR. STEELE: Yes. I can make a copy available for you.

DR. HUFFAKER: You may want to make copies for the committee.

MR. STEELE: At 25 cents a page or we can subtract it from the bill I owe you currently and then add on to it my current Freedom of Information Act which you are currently stumbling on.

DR. HUFFAKER: We are prepared to go to the local courts to get it if we have to.

CHAIRMAN WELTY: Just to complete the list of things that you want now, is there anything else that anyone would want that you can think of?

DR. DAVIS: I was just handed this by Dr. Huffaker. It says 2378 CDC sediment samples from

Love Canal storm sewers and creeks. Now, this is a summary of the sump pump work?

DR. HUFFAKER: No.

DR. DAVIS: Oh, I see. This is something else in the public literature that I don't think was in the computerized index of articles from E S and T, Environmental Science and Technology.

DR. HUFFAKER: I thought I sent it.

DR. DAVIS: You certainly may have. I don't recall seeing it. I will pass this around. There is a lot of material and it's hard to know what we received.

DR. HUFFAKER: This says 213 parts per million in the canal right now, the canal itself. So, it should be as high as it is anywhere in the canal.

DR. DAVIS: Let me just finish the list you asked for. There were creek samples that were taken three weeks ago at 93rd Street and I don't know how we are going to make any kind of comparative assessment without some comparative data and I don't think we want to get as much---we certainly don't want to get as much comparative data as we are going to for the canal but all I can tell my

colleagues here is that what this report, EPA '79 did was to look at, I have forgotten the exact number, but a number of sites, most of which I recognize as being on the EPA list of the top 100 abandoned hazardous waste sites and look at those sites for data of the sort that I have mentioned before, indoor, outdoor, ground water, drinking water, et cetera. Those data did exist in '79. Many of those sites are now in litigation. Is the EPA enforcement person still here? Many of those sites, there are things that happened in a lot of those cases and in many cases there are very few, the population density around them is not so great. So, it's really hard to know the appropriate thing to compare the Love Canal with just because Love Canal has the unusual characteristic of having a fair number of people right on top of a hazardous waste site, but if you could determine, has there been any follow-up to this study? I know that there is monitoring there and when they do remedial actions, there is some monitoring going on.

DR. HUFFAKER: It's a part of a series. They tend to follow on.

DR. DAVIS: But you know, with EPA,

follow through is difficult.

DR. STOLWIJK: I think it might be useful for the contractor, if they are listening, it might be useful for the contractor in the light of these discussions to review again the list that they send out and so that they evaluate each of the items and maybe elaborate on their potential for utility for us because I think you probably have a better feel for what we are looking for.

MR. HOFFMAN: Yes. Our instructions last time were 25 to 30 of the largest data sources which is what we did and that is fine.

DR. STOLWIJK: I understand but I think you hear rather clearly from us what we are really specifically interested in. If you are willing to act as a reference librarian that reviews these items that we have in there for their utility for the kinds of things that we need for them, so that we can be advised as to what there might be in it, that would be very helpful.

MR. HOFFMAN: I agree and I think the discussion you had about somebody is going to try to put together a first cut at that and send it to the people and add what they want and then from what

we get back from that, I mean, we can start now based on what discussions we have had.

DR. STOLWIJK: Even that effort would be helped by a review of the list that you have already given us in terms of what its utility is.

CHAIRMAN WELTY: You had also mentioned some EPA data. Now, is that data that you had seen the same as Dr. Davis reviewed?

DR. STOLWIJK: No. There is some other comparative data that is part of the team effort that provides us with "normal" kind of background levels in habitation, a large number of chemicals, many of which overlap with the chemicals that we have here. It's just so that the staff wishes some kind of level of normalcy which is very useful.

DR. HUFFAKER: Research Triangle stuff.

DR. STOLWIJK: That should be around. That report has appeared, summaries of it have appeared in the literature and I don't know, do you know what date approximately they were gathering those data?

DR. DAVIS: Do you know when they started gathering that data?

DR. STOLWIJK: They probably are still

doing it.

DR. DAVIS: I am sure they are but---

DR. HUFFAKER: Last year.

DR. DAVIS: So, that is really very much more current. Do you know if they gathered any of this data in this year? You don't know?

DR. HUFFAKER: No. I think that is all outside in the Washington area.

DR. STOLWIJK: But nevertheless, it embodies that found in households and having to do with all the other stuff that is around the households and we did make the measurements and they would provide for us a background level that would allow comparison of previous measurements that were being made and also any future measurements that were being made.

CHAIRMAN WELTY: I was under the impression that EPA was going to get that data. I'm not sure.

DR. STOLWIJK: I think they are still looking for it. You guys are presumably trying to track down Lance Wallace's stuff.

MS. MONSERRATE: Yes.

DR. STOLWIJK: But you haven't gotten it yet.

MS. MONSERRATE: No. We don't have it yet.

DR. DAVIS: How relevant is that to what we are dealing with here? When we said comparative risk assessment, do we mean Niagara Falls, Hyde Park, Buffalo, New York, Lackawanna, Erie County or do we mean, and I'm asking this, just a question, do we mean Love Canal versus Kimbuck, New Jersey, versus Allentown?

DR. STOLWIJK: We are not at liberty to pick and choose. We are going to have to take what little data there is and that is the best there is. So, we have no choice. I think we have to do with whatever we can find.

CHAIRMAN WELTY: Okay. Are there any other suggestions or discussions related to the documents that you wish to review or can we move on?

DR. POHLAND: Well, I don't know whether it has been established that we want the information on treatment in whatever form it exists.

DR. STOLWIJK: I think Joe is going to provide that somehow to you, Bob, for distribution.

DR. POHLAND: All the remedial action issues should be put on the record.

DR. STOLWIJK: And again, the longitudinal data. There are two things we would like to have and that is, the chain of responsibility governing the site, the treatment plant and the overall performance of the site because that is not clear to us from where we sit here. I am sure there is a chain of responsibility but we don't know where it goes and who is doing it and who is auditing it and the other thing that we asked Joe for was any kind of longitudinal data that he has that describes the operation of that plant. In other words, the total volume flow and any kind of monitoring that was done and the flow of any kind of carbon usage rates that developed.

DR. BLACK: How are you going to separate the EDA stuff from that which is coming out of the canal itself? I'm sure most of the waste treatment material is right directly out of the canal.

CHAIRMAN WELTY: Their concern is primarily how is the plant working and is it effectively removing the contaminants that are being collected. That is as I understand it.

DR. STOLWIJK: Is the rate at which it is having to remove from the leachate going down all

the time or not. That is the important question and it should, of course, be theoretically going down.

DR. POHLAND: He admitted to having just taken ground water samples. That is the kind of information that would be very helpful to us and I get an impression that it's being taken and stored somewhere but not ever being systematically synthesized and reviewed. You see, it's not only the question of the data and whether something is happening, but again, the reliability we can attach to the remedial action which would be again supportive of any habitability criteria. That I think is key to this.

CHAIRMAN WELTY: Do you know what the sample was taken at 93rd Street outfall? Was that part of that?

DR. HUFFAKER: Malcolm Pirnie found dioxin in the storm outfall at 93rd Street and the creek and it talks about it in two different places in there. In one place it's apparent that they did not sample any stream and creek but the samples were taken from the manholes.

DR. DAVIS: This was supposedly storm

sewers and sanitary sewers. This was all the stuff going under the ground, so to speak. There was not sampling of soil per se.

DR. HUFFAKER: This was out of the sewer and the question came up earlier, I believe it was Lou, were we going to put extra fencing around there. So, the request was made that further sampling be done in the creek and in fact the creek had not been sampled itself at that point down below, and this was material coming out in the storm drain and obviously we needed to know whether to jump in the stream itself for remediation purposes. Since this is already planned upstream from it, as well as for fencing or other containment protocol in that particular piece of sampling which crossed my desk last week, the sample will be taken I hope very soon.

CHAIRMAN WELTY: That was the reason for my question. Have the samples been taken yet and how soon would the results be available because I don't want the consultants to be anticipating something that is not yet done or that won't be available in the near future.

DR. POHLAND: See, lacking the sample

data, an understanding of the protocol would be helpful. I recognize that if continuing sampling is going to proceed---

DR. CHALMERS: We would like to see the protocols.

DR. POHLAND: We obviously can't defer our decision until it's over because I don't think it will ever be over for awhile.

DR. HUFFAKER: Well, it's a given. The question is, is it now in the creek and it is in the creek upstream. There is no doubt about that. It was found at levels down to a foot.

DR. POHLAND: I understand that but what I am saying is, if we can't have the data sample with the time to come to grips with our charge, then certainly it would be helpful to know what the protocol is for the sampling program.

DR. HUFFAKER: I will get you the protocol. I can't make a promise because I don't know as to the completion date. I don't know when the sample will be taken. I know that the very minimum will be six weeks after they get the sample in the lab.

DR. DAVIS: You know, I realize you have a timetable here and I know there are a lot of

people who want us to get the job done very quickly and have been waiting for eight years or more some way or other but gee, I would feel a lot better if we really had a little more time to go over these things, given that all of us have other full time commitments as well and also recognizing this peer review process, as long as it takes to advertise in the CBD and review and let a contract, you probably may not get the contract let much before October, I mean, that would be optimistic.

CHAIRMAN WELTY: That is not the time-table of the assurances that we have been given but I don't know.

DR. DAVIS: But I mean, things like that do happen. What is the source for this RFP? Is that EPA?

CHAIRMAN WELTY: Yes.

DR. DAVIS: Well, you have an election year and you have got different things happening that might tend to slow things up, one thing or the other. I just think that putting us on the kind of deadline for July with all the questions we are generating just today, we may do no one a service if we meet that.

DR. POHLAND: Well, I guess the way I would respond to that is that I really don't know whether we can meet that July deadline question because there are some things that we need to consider yet. What I have attempted to do in my own mind is to separate the criteria issue from getting too involved in trying to make a separate determination of the adequacy of the data that is out there. You know, we can get trapped in that process. It appears to me that we are trying to cure--

CHAIRMAN WELTY: And if you recognize that there is another group that is looking at that.

DR. POHLAND: It appears to me we are trying to peer review in a sense every item of data that we feel obligated to look at for one reason or another and I think that it's more likely that we will be able to reach a decision on the criteria but we certainly are not going to come to unanimity of decision on the adequacy of the data.

DR. DAVIS: I agree.

DR. POHLAND: But the data can lead us into the criteria, even if it has faults.

DR. STOLINE: Can I ask a question about

the time schedule? The last item you have down here is habitability at '84-'85. Do you mean an actual decision? You mean what this committee has done, the peer review process and the actual--- whatever is necessary to have been implemented to make that decision is completed by, say, '84, early '85 and that actually the decision will be made at that point, yes or no, whether people can move into certain houses or---

CHAIRMAN WELTY: The answer to your question depends on what format the criteria takes. It may be that more testing is needed before the determination of habitability can be made and that would delay the decision. There may be certain areas, though, that based on the data that you have and the criteria that are established, when we apply the criteria to the existing data, we could make that determination by this date. That is our hope.

DR. STOLINE: But that is not in our charge, to determine whether the data is adequate to make---

CHAIRMAN WELTY: No. Your charge is just to develop the criteria. The application of the

data to the criteria is the charge of the Commissioner of Health.

DR. SIPES: But the peer review will participate in that, right? The criteria that is established then, the peer review is going to look at what? Is it going to take the data---

CHAIRMAN WELTY: It is going to explore the criteria that you have developed and the criteria that is developed by this group to see if they are up to snuff, so to speak.

DR. CHALMERS: So the only reason that we are looking at data is to see whether the criteria we recommend are feasible to achieve.

CHAIRMAN WELTY: That is right, yes, at least that is---

DR. CHALMERS: That is an important point that I haven't yet got through my head.

DR. SIPES: I'm glad you pointed that out because oftentimes I think we get lost where we are asking for data, that our purpose is---our only need for data is to find out if the criteria established is best.

DR. POHLAND: Yes, yes. Obviously, in criteria we can't ask for the decision to rely on

information that doesn't exist or can never exist. You know, we have to recognize that and we can be led to that decision with regard to the development of the criteria on the basis of what actually is out there and that is the reason why we need to know about the data that is there. Out of it all, we can get some notion, I hope, of priority of information that is supportive of criteria that we want to use to guide us in our final decision.

DR. SIPES: Could you reiterate again that? I am still confused on one point. We establish the criteria. Who is going to take the data to see that we have the quality assurance data? Who, I mean, puts it all together? Is that just the Department of Health or the Commissioner's office? Is that it, period?

CHAIRMAN WELTY: As I understand it, as I perceive it, it will be a joint effort of the Health agencies involved. Bob, do you want to comment further on that?

DR. HUFFAKER: We have been working on flow charts on how that would work. The criteria of review, whoever looks at it and says this is adequate or not, and if not, we would come back to

you folks to get it modified so that they are adequate.

The Commissioner says he approves. This would probably go back to the RC and we would use the resources available to us to apply the criteria to the existing data or to gather more data that are needed to satisfy the criteria demands or to do further remediation if the criteria so demands that. We talked about how that might be done and there probably has to be an oversight committee of some sort that participates when the data and criteria are put together. So, the community, EPA or whatever, to take a look at the actual mix when the decisions are being made about house X or the houses on a block or something like that.

DR. SIPES: So, someone would be able to see if there were levels at X point in time, remediation took place, now these levels are such and such, that meets with the criteria for habitability set up by our panel. That is one piece of data and secondly would be the health effects data, et cetera. See, I think we can come up with an established criteria if we are sure those criteria, that someone is overlooking at and that these

criteria are actually met from the existing data.

DR. HUFFAKER: I am sure we are going to be well monitored as far as application is concerned when we get ready to apply these to the individual.

DR. SIPES: See, I am not sure if looking at another piece of sump pump data is going to do me any good at all, as long as I am assured that if we set up the criteria of what is happening, then that data will be pieced into making a final habitability on the house to house or however it is.

DR. HUFFAKER: See, we need to know what kind of levels we saw in this house to give you an idea of what you might expect.

DR. SIPES: We discussed that, that we, that then we would meet within these criteria. Again, we have to think in these discussions if these are achievable.

CHAIRMAN WELTY: In terms of your request, I would ask that when you think of a request, it be analogous to a physician and a patient where you are always considering how will the test result help you in providing medical care for the patient and in this situation, how will the data help you

establish criteria for habitability and I think that I would ask that you kind of keep that in mind in your requests and in that way I think it would be a good guiding factor in the request.

DR. STOLINE: I have another question. Yesterday we learned that in the spring of next year, that, is it the EPA that will implement another monitoring program in the EDA?

CHAIRMAN WELTY: The lead is the state DEC.

DR. STOLINE: Is that correct?

DR. HUFFAKER: The DEC. This is an extension of DEC jargon.

DR. STOLINE: If this group decides that the data that we have so far is inadequate for making a habitability decision and continuing data is needed to make the habitability decision, and also as part of the ongoing monitoring, could we possibly, as part of our recommendation, make a recommendation to the construction of the protocol for that study and use of that data in the---

DR. POHLAND: No. You are mixing up our charge with the decision. See, we are charged with--

DR. STOLINE: But as a part of our

decision that that data could be used in that decision.

DR. POHLAND: Well, we could say that as part of the criteria for making the decision, you must have these kind of data.

DR. STOLWIJK: You would have to give the reason why that data was.

DR. POHLAND: Yes. We don't get involved in the decision.

DR. STOLINE: That is a possible outcome that we could recommend.

DR. POHLAND: We could recommend that more data is needed in an area but our, really our principal charge is to recognize and to indicate that these kind of data are in fact necessary.

DR. STOLWIJK: I think this kind of discussion is probably best when we actually start to think about the specific criteria we might want to apply, otherwise we are talking in a vacuum.

DR. DAVIS: Is there anyone else who feels that the timetable may be unduly constraining?

DR. STOLINE: I feel that it is but I was the last person on the board here.

DR. STOLWIJK: I have never had the luxury

of a timetable that made me comfortable.

DR. DAVIS: Well, all right.

DR. POHLAND: I was going to say that that is an academic malady.

DR. DAVIS: It may be but let me just give you some of the other issues that I think we haven't gotten into that are important in our outlines here on this and our outline on this, I guess, it is charged to us.

In terms of establishing habitability criteria, habitability meaning living there 24 hours a day for each type of human being, including those who plan to have children and young children, that is one kind of habitability. That is one kind of land use. There are other land uses, industrial parks, golf courses, recreational use, obviously not as hazardous waste disposal sites given the water table problem, but there are a number of different land uses that could be recommended, a race track---well, I don't know about that.

DR. POHLAND: That is a nice circular area.

DR. DAVIS: A park for the elderly--that was a joke and I think we have to go through those

different---we have to agree on different kinds of land uses and not just is it an up or down question, can they live there 24 hours a day, by people who go in the basements. I mean, there are land uses for which there would be no basements. I think that that is an area of definition.

The second problem area that I was thinking about is the question of what standards you use. As you all know, there are no standards for 24 hour a day exposure to many of the organic pollutants which are found at Love Canal. They don't exist.

So then the question would be, what do you do with OSHA standards? Well, OSHA standards as most of you know are predicated on professional minimum values for eight hours a day of work exposure for a health person in a work place between the ages of 20 and 65. They are actually standardized based on that. It is based on the assumption that you don't have children in the place, you don't have asthmatics, a whole bunch of other things. One way that we have dealt with this and other work at the Academy is to, well, you take the OSHA level and you divide it by three if you are talking about an adult population, but if you

are talking about a children population, maybe you would divide it by five. You put in a safety factor so to speak. These are issues that this group has to consider and those are just two of the ones.

The third, which is probably the most difficult, is the whole question of risk assessment using animal toxicological data. Now, there are a host of issues relating to this and I just was thinking last night of these three areas and how, between now and July, we are going to get at a resolution of them. I don't know. Maybe you are going to have to have subgroups working on each of those issues. I don't know how it is going to be done but I would like to know what you think.

DR. MILLER: I'm glad you raised those issues because they have worried me a lot, all of them in varying ways. One thing I think that troubles me is perhaps a result of the blinders that I bring here from my own discipline. When we talk about habitability, we are talking about social judgment. It's not a scientific judgment. It's a social value judgment based on criteria, but essentially it's a social problem.

I don't know what it means that the test wells are 14 feet or 25 feet or that they are monitored everyday or every month or every three months or every year if there are chemicals in someone's back yard and I guess a concern I have with all of the discussion that we have had about criteria for habitability is that I am left wondering whether these criteria respond to the chemicals polluting someone's back yard and whether they respond to the chemicals seeping up in someone's basement, whether they respond to the boy that can't cut the lawn. It seems to me that in terms of habitability, what is at issue in the soil, the top twelve inches is more critical than what is going on twenty feet below. Those would certainly have long term implications and concerns for the water table but in terms of raising a child over the next ten or fifteen years, I think there is much more---

DR. POHLAND: Yes. I think what we are coming to task with now is zeroing in on the priorities of contact opportunity and so, certainly the bedrock has less potential habitability exposure than the surface of the soil. So,

opportunity of exposure certainly is one issue.

The population set is another issue, the phase type of material and so on and so forth and if any of you took the time to read my response since the last meeting, I kind of tried to kind of expose my thinking, my own thinking on it and I think it will require in my estimation some kind of comparative risk assessment which I define as taking data from the canal area and looking at it with regard to exposure opportunity, identifying the types of opportunities for exposure as opposed to other areas, not having the contaminant type of proposition that exists here. And then I am hoping that the people that are qualified around the table with regard to health implications can go into that. However, I do feel that linked to that will be a necessity of identifying target type pollutants. Maybe we want to go so far as to use dioxin as one of them, but anyway, something that we can use as an indicator of differential and I think inevitably we will have to make the decision as to what is acceptable, what is an acceptable level and therefore an acceptable risk. And I see that in my mind, at least, coupled with this

notion of remedial care and assurances of decreases in potential contaminants and exposure loads and so forth, I see that as our responsibility for developing criteria.

I agree with the land use notion but as defined for us in our original charge, habitability was defined rather specifically in terms of suitable for humans to live on. So, really in a way outside of maybe a consideration of different types of housing projects, we are really talking about a living proposition and I didn't really mean to be sarcastic about the race track notion but it may well be that when the final decision comes around, the decision will be, you know, uninhabitable for certain types of human population but not uninhabitable for light industry, recreation or whatever. But those decisions are further on down the line, unless that definition that was given to me has been changed now.

CHAIRMAN WELTY: No.

DR. POHLAND: Well, I think we are almost stuck to the land use conception of people living there in some way.

DR. MILLER: There was a related issue I

would like to relate and perhaps an irrelevant issue that I would like to raise, irrelevant in terms of the mandates of this group. I think, as I mentioned to you last evening, I had the opportunity some four years ago or so to interview Mr. Morris shortly after he moved into his job and that was, I believe that was three years ago, and he told me that the thinking at that time was that after the remedial work was completed, the state was going to purchase the homes of those who were volunteering to sell them to the state. There was no compulsion to sell those homes and that subsequently some kind of a caveat emptor clause would be attached to the deeds and the home would be put up for sale and that the burden, I guess, any burden that attached to those homes would then be passed on to those who purchased them and I don't know whether that still is the state's thinking or not. But I guess I am concerned that with a kind of project here that is going to culminate in our producing habitability criteria that would be applied to the one point in time and then what then? We produce the criteria, we all go out and evaluate it, everybody stands around and says, "We did a

swell job. This area and this area and this other area are habitable, those 40 houses down there we are going to raze and then what? The homes are sold and the people move into them and then is there going to be another monitoring?

DR. POHLAND: These are conditions that we can build into the criteria if we desire to do so.

DR. MILLER: I think it is rather important to have some kind of an ongoing risk assessment is essential.

DR. STOLINE: To know that the risk is at a certain level at this point and it might be interesting to know, say, a year from now with the monitoring data and so on is that risk actually going up or going down. That would be an important piece of information.

DR. MILLER: And I think there is additionally, I think we would have to contemplate the possibility that we are looking at a future which is going to be of necessity under those conditions characterized by the kind of distrust that has been typical in the past.

DR. POHLAND: Well, I hope not.

DR. MILLER: I think this almost necessarily has to be true.

DR. POHLAND: Well, I hope that some credibility will be assigned to our effort and I hope that in the process of developing criteria that are justifiable criteria, that we will allay some of the suspicions and everything that I am told about and read about and sense in some of the discussions.

DR. MILLER: I hoped that would be the case.

DR. POHLAND: And I am certain that is one of the reasons why we are sitting here today and it is also part of the conditional aspect of whatever we come up with in our criteria, we are going to have to, in any event, in my opinion, justify why we establish criteria and that means not only data-wise, state of the art-wise, but in due recognition of the sensitivity to the whole issue in a political and social perspective. You know, we are not going to make those decisions but we must necessarily recognize the realities of the setting and I would hope that in our deliberations and our final decisions, that much of this

uncertainty and suspicion derived therefrom would be addressed and may be tempered by whatever we come up with. The social implications and I think throughout all of the documents I read, there is a discreet separation between the technology of things, you know, the state of the art stuff, and then the decision process which is always thrown in the realm of the social/political decision process, whatever it may be. And I guess one of my concerns is that we have to be very careful because this is the first time around for this kind of task in a sense, that we are cognisant of the fact that whatever we do here should not necessarily be assumed to be able to be superimposed everywhere else throughout the country and that would be disaster if that would happen should the decision be that the area is not inhabitable because can you imagine yourself now living near a similar site and recognising that maybe your environment has been deteriorating either in an imagined way or real way and your property values have gone down and suddenly we establish criteria that could be presumed to be superimposed everywhere else around the country. The tremendous task ahead of government to make

similar decisions at every other real and perceived site around the country. That is why, that part of it really scares the hell out of me, frankly, you know, because I am coming at it differently maybe than a lot of the rest of you but I deal with problem solving as an engineer, utilizing the best technology available. I would like to wait until the absolutely greatest technology were available but I can't operate that way. So, in response to the inevitability of the necessity of a decision on our part within a reasonable time frame and we have got to render the best decision and the most comfortable decision we can, recognizing that there will inevitably also be deficiencies because of the lack of certain type of information and I would plead with the rest of you direct to recognize that we are not going to get probably a retroactive, absolute, absolutely best decision because first of all, we can't deal with that because we are not making the political/social decision. You are on the committee I think to provide that kind of perspective and the sensitivity to those issues and that I respect, but I think inevitably the decision will be based within a political and social

setting as it exists here and in the minds of those people who make it and if we try to get involved in that kind of process, I will assure you every one of us can place ourselves in the situation of one of the inhabitants here and never come to grips in an objective way with the criteria and that is, as I see, is our role and I don't want to leave the impression that I am insensitive to these issues, but that we are surrounded, everything we do in life is a risk. You know, somebody has to make a decision on the acceptability of certain levels.

DR. MILLER: I understand that but do you think the issues that you just were discussing would be a problem if our mandate were broader than it is, if our mandate was essentially non-residential and alternative use?

DR. POHLAND: No. The alternative land use issue is the easier. You know, if for some reason we were relieved of the task of determining whether it was humanly habitable, I think we could complete our deliberations within a couple of hours. I don't see any reason, for instance, as an example, and this is probably an overstatement because I haven't looked at it from that angle close enough

but there are lots of sites like this around the country, really, and a lot of them are very susceptible to industrial development, commercial development and the risks are acceptable.

DR. DAVIS: Why couldn't we at least--- are we precluded from considering alternative land use?

CHAIRMAN WELTY: The way we had thought about it was to try to get you to develop the criteria for human habitability and if that was not possible, given the limitation of science, then deal with that other issue.

DR. DAVIS: Let me just reiterate Dr. Miller's point. It's not, specifically speaking, a scientific question. It's a question where we can tell you what scientific data we would like to see analyzed and when the decision is made but it is not strictly a scientific decision. If it were a scientific decision, we could write a computer model, put all the data in and it would spit out an answer, but in fact, there is something called community mental health. It is terribly important and that is a factor that I don't know how you quantify.

DR. POHLAND: But scientifically we think about criteria to address it and so, it is in fact, from our perspective and our mandate, a scientific issue and I hope it remains in that realm. When we get over into this---

DR. MILLER: But Dr. Pohland, it does get over into that other. We go home and they are left with it and you see, if we leave a situation where 25 years from now someone is calling the City of Niagara Falls to complain because there are chemicals pooling in his yard and the city is coming out and telling him that he spilled chloroform out there or he spilled insecticide out there---

DR. POHLAND: Let me respond to that in this way: You bring up a very salient point and it should certainly be part of our deliberations because of your concern of that and probably your better feel for the social implications and so forth, we would depend upon you to deliver to our group those criteria based upon your scientific know-how. That should be a part of the overall criteria package, but again, I'm saying it really should remain a scientific, objective, as objective an

effort as possible. If we try to superimpose our own personal emotions or conceived notions of others' personal emotions and subjective evaluation of things, we are going to get into trouble.

DR. STOLINE: I would like to interject one point here, kind of a midpoint between these two, but it's back to this issue of all data sets. Part of this tangled in with the community perception, that there has been a tremendous number of data collected here, EPA and so on and so forth, and not all of this data is available. Some of it is community perception and I think this group, one of the things I am recommending to this group right now, I am recommending the fact that all data sets be available like we are talking about here and that all of these somehow be used and compared to the standard or whatever data which is used in our actual decision here and the reason to do that is, because of the community perception, exactly the issue that you are raising here.

CHAIRMAN WELTY: Used by whom?

DR. STOLINE: Used by the decision makers that will actually make the habitability criteria.

CHAIRMAN WELTY: That is the intent of

this whole collection of data, getting this data in a format that can be used at this point in time in the decision process.

DR. STOLINE: It's the notion that I guess the adjective that I want to put in front of data is "all" data because, just that fact that there is so much data here that just that issue tangles in with the community perception that there is so much data, that there is some feeling that this data is being suppressed and things like this and I think it goes along with what you are saying.

CHAIRMAN WELTY: Let me reassure you that it's not being suppressed. The data that was not included, it was not intentionally excluded. It was just an oversight. For instance, the monitoring data---

DR. STOLINE: I am not talking about anyone in this room. I'm just saying the community perception.

CHAIRMAN WELTY: But I think that has to be clear for the community, though, that this data is not being suppressed but rather through an oversight or---

DR. POHLAND: I think we all agree that

we want to expose every bit of data in some fashion.

DR. STOLINE: But that data that is out there that is not used directly in the habitability decision, somehow that, whatever is contained in that data is going to have to be juxtaposed to the habitability decision somehow.

DR. POHLAND: Well, that does influence our decision.

DR. DAVIS: And I think we could probably suggest ways of summarizing and cataloguing that data so that CH_2M Hill can then present it in a way that would be more useful to us.

I want to raise one question, though. There appears to have been some sampling going on by some third party not yet identified and I think that I would like to make a motion that this committee formally request from all relevant industrial potential sources, that they make available data that they collect because I have a feeling that they have better time trend data than anybody.

CHAIRMAN WELTY: I just want to point out that this isn't the Committee, so you will have to make your own request as an individual.

DR. DAVIS: I want to make an individual

request. When I got lost coming back up here from Niagara Falls, I got to go through the area that drives by Olin, Carborundum and Carbide, Hooker, and I noticed that many of them had what appeared to be settling ponds or little creeks that seem to run directly into the Little Niagara or the Niagara River and they are now required by law if they are doing on site disposal, to have monitoring and quality control of what is going on there and some of them did dispose, Hooker we know disposed of things in the Love Canal site. There has been no documentation as to when exactly that disposal practice stopped. The notion was 1953, has been reiterated a number of times. However, when the school was evacuated, the, the material was taken from one area to another, 102nd Street received some of the stuff, there has been a lot of considerable exchange going on here and I would like to formally request for the purposes of the individual panel experts here that any trend data that do exist, that has been developed by these sources, be made available to us. They are now under law obligated to be collecting some of this data and that would be extremely valuable.

RECRA was passed in 1976. The first regs were issued in 1980, some were passed in 1980 and the rest came out in 1982 and there ought to be some time trend data now.

DR. HUFFAKER: You are thinking of the canal area?

DR. DAVIS: Yes, and for the outfall, you know, relevant to it, what is the source of contamination of the sanitary sewers on Reed Avenue between 93rd and 95th Streets? That is not clear what is contributing to that or in another area, the 102nd Street outfall.

DR. HUFFAKER: Hooker has provided some of this very, very long list of chemicals which included when they did it and so forth and if you haven't seen that, we will make that available.

DR. DAVIS: I have seen that and I am puzzled by some omissions from it, actually.

DR. HUFFAKER: We can get the recording that they are now doing under DD's and RECRA and the rest of those and I will ask for that from the DEC. We cannot go back to them as a discovery and pull out a lot of material that is not required in the report. Otherwise there is no activity.

DR. DAVIS: This has been in discovery now for about four years, hasn't it?

DR. HUFFAKER: Yes. If that material has not been gotten by this time--well, I don't know. I will let you know.

DR. POHLAND: Let me clarify something. Are you asking for information on all discharges from industry in the Niagara area?

CHAIRMAN WELTY: No, just Love Canal.

DR. DAVIS: Love Canal, relevant information, and I guess I have to say the 102nd Street as well because there seems to be a lot of ready, obvious ways for the hydrogeological investigation to get from one to the other and maybe 93rd Street Creek.

CHAIRMAN WELTY: We can check on that then.

DR. HUFFAKER: I will find out.

CHAIRMAN WELTY: Let's just take a little break now for a few minutes, but prior to the break, I would like to just present the options on how to begin working with the draft of these criteria. I would like to go through this document again after we have resumed in about five or ten minutes and

start jotting down our ideas on each of the steps in developing these criteria and I think once we do that, we will have a better idea of whether or not this timetable is relevant or whether it can be met. I would like to postpone discussion on this timetable until we actually start trying to grapple with the nuts and bolts of the criteria. So, if you can be thinking about that during the break and then we can get back together. It is now 11:19. Let's make it 11:30 and spend a half an hour on this before lunch.

(Whereupon, the above proceedings were recessed for ten minutes.)

CHAIRMAN WELTY: I would like to just talk a little bit about where to go from here in terms of development of these criteria between now and noon and I am told that we have the Niagara Section of the dining room reserved for luncheon, which can be any time from 12 or thereafter.

Now, we have it listed on the agenda. I think we pretty well covered the items that we meant to cover in the morning and in the afternoon

we have drafting of the habitability criteria and a half hour period for questioning and comments and finally adjournment at 3:30. So, we might just discuss a little bit between now and noon how we want to spend our time this afternoon.

I had thought of several ways of approaching this, whether we should try to break up into smaller groups to work on sections of the criteria or go through the document once again to jot down people's feelings about each section or if you want to just go through it and then go home and write something up and send it back in. I kind of hesitate to go with that alternative because it didn't seem to work too well the last time in terms of getting responses in a timely manner and perhaps there would be some utility to going through it and discussing it and having Dr. Huffaker make, myself and Dan Vandermeer and others draft something that could be circulated.

I would like to just open that for discussion at this point, how we want to approach this.

DR. STOLWIJK: I think the last time we had a very open kind of request to comment on or return comments to all members and I think if we

have more specific assignments that are identified by purpose and by individual, I think it would come to be more productive.

DR. MILLER: There is also the case that the teaching era is essentially over. I had that burden.

DR. STOLWIJK: Well, I think that we probably would have a better grasp of the circumstances and the elements that would go into the beginning draft so that we can probably divide up in bits and pieces more effectively than we could earlier and I think that I would probably recommend that we discuss the contents of what we would like to see in the pieces that different individuals would start to draft for us. That could then be collated by Bob Huffaker and distributed again so that there might be one or two interlineations before we get together again and we would have a collective document on the table when we next meet.

CHAIRMAN WELTY: Or before you next meet.

DR. STOLWIJK: So that it could then be specifically commented on at that time.

CHAIRMAN WELTY: Does that meet everyone's approval?

DR. MILLER: Would it be possible to schedule a deadline with a built-in fudge factor on the deadline?

DR. STOLWIJK: We don't have to build that in.

DR. MILLER: That is what I am saying, we identify a deadline early and realize that the real deadline is ten days later.

DR. HUFFAKER: Set your calendar ahead ten days.

DR. STOLWIJK: I think that would probably best be done after we had sort of talked about the bits and pieces that we need and who would like to volunteer for them.

CHAIRMAN WELTY: The other thing I would like to preface the actual criteria discussion on is the re-emphasis of the criteria themselves, that they not be predicated solely on the existing data, that I think it is good that you are looking at all that data but realize that if there are gaps in the data, that your criteria, that we can't go in all--- or answer the question of habitability based on existing data, that that would then be an indication to collect additional data. So, I want to just

emphasize that, that the criteria not be predicated solely on existing data but realize that there is the opportunity that the data is not--- relevant data does not exist, that additional data could be collected.

In terms of your suggestion then, should we discuss the timetable now or wait until we get into it a little further?

DR. CHALMERS: I think you have to have a little more detail of what we are going to do before that.

CHAIRMAN WELTY: Okay. Well, maybe we could just begin then with item 2 on the strategy and from the discussion I have heard so far, it does appear that we feel that habitability criteria can be established.

DR. STOLWIJK: I don't have any doubt that we could come up with a set of criteria. Precisely what form they will take is probably not really altogether clear at the moment. Devra mentioned there are a number of existing criteria, some of which are applicable and some of which are not applicable. There are considerations that have to do with exposure, definitions that we need to have

some agreement on. I think we need to have some agreement or some expression of what forms of risk assessment we can express for cases where there aren't existing guidelines. There are relevant criteria from other arenas, occupational and other arenas. Do we establish criteria separately for indoor and outdoor air, water and soil, major contact areas. Water clearly is going to be, it is my understanding that the whole area is actually served by a public water supply so drinking water in fact is centrally dealt with and is under considerable surveillance already and has been all along.

Another factor that needs to be considered is, there has been central remediation for the whole area. Do we want to consider individual remediation efforts or requirements, individual sites? In other words, do we, in our criteria, accept or consider the possibility of prescribing remediation for a particular house or a particular location before it's considered to be acceptable? That would modify and provide flexibility so that we wouldn't have to come to a whole neighborhood not being acceptable because there was one particu-

lar site that seems to produce problems.

CHAIRMAN WELTY: Standards might say, or remediate to meet those standards.

DR. STOLWIJK: Yes, that is right, for a particular site so that you don't get---I think it would be generally desirable to have the criteria be as widely applicable and as general as can be made but still have them so that they can be challenged for a particular site if that should be, and then a particular site might be remediated. I think that would be a sensible thing for us to consider and see how far we get with that.

There is, for instance, since a considerable amount of the problem will probably arise out of the soil on which the house is located, there are remediation efforts that have been developed and evaluated for people who have radon coming out of the soil and people have actually worried about that and there are remediation schemes that are not terribly costly that can be done in order to limit the amount of radon entering the home from the soil. Similar remediation efforts might be very useful for other things entering from the soil because they are gaseous, both gaseous agents and they would be

remediated in exactly the same way.

DR. POHLAND: Along that same line, there have been incidences where gas migration from landfills has occurred and there are already accepted techniques to protect residences from that kind of problem.

DR. STOLWIJK: That there is the, in terms of the exposure consideration, I think that individual indoor air quality determinations are probably the best indicator at the moment for differentiating a particular site from other sites, if that needs to be necessary. The reason for it is the residence, in fact, does get into it from the soil. Those things are carried in that soil. So, the residence in fact is a place where monitoring for whatever is in this soil immediately underlying the residence, these determinations can be made in the indoor air. Monitoring the outdoor air in particular locations is much less suitable and a very general background determination could probably be made on one site somewhere in the Love Canal area and it would probably be valid for the whole declaration area.

The difference between the background of

outside background and the inside air quality would be then an indication of what is actually coming out of the soil into these residences. If that, for a particular residence, turns out to be a negligible contribution, it would probably obviate the need for extensive soil sampling on that site. So, it might be that the first screening could be made to be the indoor air quality in each of the residences.

DR. MILLER: Isn't that going to be varying at different times of the year?

DR. STOLWIJK: Not in an unoccupied residence.

DR. CHALMERS: Are there not non-volatile substances that seep into basements that might still be toxic to children?

DR. STOLWIJK: That would be another route. We are now dealing then with another route of entry which would be through the contact with contaminated material and that would have to be considered separately. If there are in these houses, in fact, sumps, then such sampling would be an indication that would get at both the gaseous as well as the nongaseous components. I think that

in general the gaseous components would be there more than the nongaseous because the gaseous components in general will travel more and be delivered more.

DR. POHLAND: And they are not reactive with the soil.

DR. STOLWIJK: And many of them will not be. So, I think we could probably, by applying the simple toxicological principles, we can determine whether or not in each of these houses, if there are no gaseous components, the likelihood that the soil or the sump would carry nongaseous components is probably relatively low. We can set up a schedule whereby prior to the determination of the habitability, some kind of a sampling protocol in residences that don't show indoor problems could be used like every fifth house or whatever to sample sumps and see what is there.

DR. SIPES: Sample for specific chemicals.

DR. STOLWIJK: Yes, because the screen will give you the best estimate for what goes on. This is not going to be a cheap procedure but I think it's a procedure that will once and for all determine whether or not if the screen, in fact,

shows up positive for a number of chemicals and shows concentrations that would be worrisome for contact, for instance, then you would proceed from there.

DR. CHALMERS: Because I think one of the worrisome places might be fields where children would be playing and nonvolatile materials might be coming up through there.

DR. STOLWIJK: Yes, but I think that would be happening---I think that the sumps for each of the sites, the sumps probably would be the best indicator of nonvolatile materials present in the immediate surroundings if that would be happening. So, that is precisely how it gets there. So, I think I can see that there obviously, I think, would be some kind of discourse early in that document and I think Fred probably would be the best person to address that, to address it. I think it needs to be addressed and found, as in one of the earlier descriptions, some historical introduction which we associated with the area which is part of a reference from which we operate. The remedial program clearly would be another reference if the stability and assurance of its completed operation

would be in that particular section of the document.

I think there needs to be a description of the exposure considerations which would try to draw upon the data that was gathered in the original which would give us high values and most serious kind of exposures as a frame of reference. Again, I think in a criteria document that would be a necessary and useful expose. Also, this would be an extract of existing knowledge and existing values.

I think that there needs to be somewhere a dealing with risk assessment perspectives. The risk assessment perspective I think would be most usefully dealt with in two areas: one of which would be the present rate risk and the limits placed thereon by the criteria and I think there would have to be some kind of assessment of any reproductive risk and the limits that we think have been accomplished by the criteria such as we might adopt them. That risk assessment I think would be best done not in the abstract, in the abstract I mean the risk of 10 to the minus 6 life-time risk for this or that but I think they should be couched in terms that are relevant to this

particular population and this particular population presumably would be in the declaration area if it were reinhabited, would be in the order of about 2500 people. So, I think the risks that we see as the limit to risk to which these criteria would limit, would have to be expressed in terms of events as they would occur to that 2500 people that are here so that we relate it on the basis that is immediately translatable by the community. The community I think finds it very difficult and justifiably so to relate to risk estimations as they are being done for national policy purposes. This is a local consideration and I think the local community is better able to judge risks if they are stated in terms that are relevant to the population.

DR. DAVIS: But we don't know what the population will be.

DR. STOLWIJK: No, but if the region is to be inhabited again, you can estimate what the size of the population will be.

DR. CHALMERS: In other words, how many hundred people live there now?

DR. DAVIS: Less than a hundred.

MR. STEELE: The declaration area, several

hundred.

DR. CHALMERS: Two hundred?

MR. STEELE: No, a couple of thousand.

DR. STOLWIJK: Well, the full population, if it were inhabited again, it would probably be in the order of 2500 to 3000.

DR. CHALMERS: I just asked how many, so about one-fifth of them are there now.

MR. STEELE: Well, I'm not sure but in that the EDA is a significant portion of the LaSalle area, the City of Niagara Falls and there was mention of all the homes that are going to be tested were vacant, but a lot of them, hundreds are occupied homes in the EDA.

UNIDENTIFIED VOICE: No, 78 families live in the EDA, plus the LaSalle development.

DR. STOLWIJK: I think there are hundreds of people but not hundreds of homes.

MR. STEELE: My understanding is, and I may have the definition wrong, but I thought it extended to 103rd Street and there is a heck of a lot more than 78 families. It may be 78 families in some of those houses but---

CHAIRMAN WELTY: We can check on that and

let you know after lunch exactly how many families and people live there and also estimate how many would live there if it were reinhabited, but I think your point is well taken that the community better understands the risk when it's in their terms rather than the abstract of 10 to the 5th or 10 to the 6th. I think that is the point that you are making.

DR. STOLINE: Originally approximately 800 families in the EDA.

DR. DAVIS: Just as a point of making it clear, would you consider yourself a specialist in risk assessment?

DR. STOLWIJK: No, but we have, in fact, we have in fact made preliminary assessments for the risks in the canal area already that are quite well established.

DR. DAVIS: Well, I am familiar with that. What date of publication are you referring to?

DR. STOLWIJK: I think they did that in--

DR. DAVIS: 1979?

DR. STOLWIJK: '79, yes.

DR. DAVIS: Okay. That was based on levels detected in '78 and that was done in homes

that are now destroyed.

DR. STOLWIJK: That is right.

DR. DAVIS: And that would not be very relevant to what we have to do now.

DR. STOLWIJK: I'm not saying that.

DR. DAVIS: The formulas exist but there are a lot of changes in this area of risk assessment, even in that time. There are pharmacol-kinetic models, 2 hit models. It's a very much state of the art area, one that I do some work in and I don't like to put a lot of faith in---I wouldn't want to see that be the decision point, so to speak.

DR. STOLWIJK: I don't think it would be the decision point. I think it would be an illustration of what the maximum risk would be of any criteria that we might submit and as they would be associated with those levels or with levels as they might be found and what these criteria are based on, the current concepts and the best way we have of estimating it. I understand your apprehension. I'm equally apprehensive about the use of criteria and assessments that are made. I also submit that in fact there is no better way of dealing with it.

DR. DAVIS: Is there some chalk around

for that board?

When EPA was doing their risk assessments, they often used a single end point, namely cancer, and the model they did a risk assessment on was a function of some toxicity data and times some kind of exposure data, all right, and you are dealing with the situation, and I think it's relevant before we get sort of committed to doing these risk assessments, where typically the only toxic end point they used to have was cancer data, you know, and from an animal study, that was how they did it in '78 and '79.

Now what we use is cancer data, they use what I will call other chronic effect data, meaning noncancer end points and sometimes data on teratogens and sometimes data on other reproductive effects. They do some kind of a combination of those toxicity scores and there are lots of questions, should they add them, should they multiply them, but they combine them in some way, all right, and then for exposure we deal with the situation where we have got air, ambient air, indoor air, soil, and you have to combine those in some way and that would be what we would need to see done to do

a risk assessment in this area. In order to do that, there is a further issue of do you do a risk in terms of a lifetime, which is assumed to be 73 years for statistical purposes, or do you do an annual risk, which is what is very fashionable among ONE, which is when you only want to know about this year and not the future and I just want to lay these things out to be some of the issues that are important when you do a risk assessment using animal data.

In addition, if you have this question which is, if you do a dose response curve, there are four different curves that could be involved and I am just briefly--this is response---I am sorry, this is dose and this is response, you do it like this and you assume---usually you have a point here, one point, and you have another point further out. The point being, this model assumes that there is a point at which there is a threshold, that is to say, you can have an exposure, this is low exposure and only here do you get your response or that is the threshold. (Indicating)

This way assumes that you want to be extremely conservative and that your low dose, you

have got a response of some kind.

This way, sort of the hockey stick linear, assumes that you have a very low response here and this way you go zero to linear. Now, those are four different shaped curves. The one most commonly used nowadays is the so-called hockey stick and there are a whole bunch of linear low dose extrapolations. There is a whole bunch of different approaches and all of those curves are based on the animal toxigenicity data and some people say, and in fact in the area of reproductive, since you mentioned it, Jan, the conventional view is that for teratogens, there are thresholds. That is the accepted view for teratogens and for teratogens you use this approach. It's for people who are doing it, they are just starting to develop quantitative models for teratogens. For cancer they used, usually used this approach. It's---gee, I hope I am not just confusing the issue. I just want to say that there are a lot of these different things.

DR. POHLAND: I guess what it is, I don't know what your point is.

DR. DAVIS: I would hate to see us make

this fulcrum, okay, it's one of the things you need to know but I wouldn't want to overstate its importance to the overall process, that is all.

DR. STOLWIJK: I think what Devra has said, first of all---

DR. DAVIS: Because all these different things can be combined and in so many different ways.

DR. STOLWIJK: I understand. The things that you have so ably put on the board for us are, in fact, kinds of alternatives that are available. What is usually done is that some reasonable alternatives are selected and stated clearly when you calculate your risk assessment and I think competent people will always clearly state all those options that go into it and I was not---I would not suggest that it become a fulcrum but I do suggest that it be used as an illustration of what not the basis for the criteria would be but the consequences of the criteria might be with the best estimate that we have. That is not making a fulcrum. It's making an illustration because I think people do have the desire and the need to understand what kind of basis or what kind of

consequence there are with criteria that are in some way or other as you have mentioned yourself, there are many of these chemicals for which other criteria, other carefully considered processes have not been applied. Other than what EPA, in fact, in their cancer assessment group has done, there are no other ways of dealing with it.

DR. DAVIS: Or the NIASH recommended standards.

DR. STOLWIJK: If there are such but the NIASH recommended standards are always the upper limits because you would not want to submit the whole population constantly to NIASH recommended standards. So, I think what we do need is to try and relate whatever we do to whatever there is as current evaluation, the best way we know how.

DR. DAVIS: Do you think we would have to endorse a particular kind of risk assessment or would you just say they must do risk assessment and let them decide how to do it because there are different assumptions built into different approaches to this.

DR. STOLWIJK: I think that I would probably not like to recommend that a specific risk

assessment be made for each site or each home or anything like that but I would probably like to explore for our benefit and for the benefit of the people that receive our recommendations that we try to state what the consequences are of any levels that we might measure in terms of some convention, and there are now, as you pointed out, there are conventions that can be adopted and that are not in any way heavily predictive but they are in a comparative sense able to put a perspective on what risks are there. We are faced with a situation that the risks that you can describe or that you can allege or that you can estimate have been or are, I think, much in people's minds and I think to prescribe criteria without illustrating for people what the consequences of these criteria are or what the judgments are based on and what the consequences of the judgments are, will only invite that somebody will ask the question, what does it mean.

DR. DAVIS: I was just thinking about Fred's comment, though, and I think Dr. Stolwijk is saying that we want to make these expressed in ways the community will understand in some way since there are so many people involved, if there

is a risk of 10 to the minus 5, well, you know, in this population that would mean you would have .2 of a person with a particular disease, only a disease doesn't usually affect .2. It usually affects one. I'm just concerned about how we are going to be communicating these things.

CHAIRMAN WELTY: Well, I think if that is the case then it would be multiply the years times five and that would be understandable. That would be one person, not .2 of a person. So, that would then mean that there would be 1 case of cancer in 5 lifetimes.

DR. DAVIS: If that were the number, yes.

DR. STOLWIJK: But I think what we do need to do, since people are quite concerned, on the standard of concern, understandably concerned about what the risks actually mean and before I think the community can accept a habitability, I think there is a need to understand its own terms, what the consequences are.

DR. DAVIS: How about the other way of doing it which would be less---

DR. STOLWIJK: I'm very happy to listen to any other proposals.

DR. DAVIS: That would be less technical and this would establish some priority pollutants and I think dioxin would clearly be one of them and I am not sure, we would probably look at top ten pollutants in the area measuring 150 and say that when the level exceeds either the OSHA standard by 10 or by one-tenth or some criteria of that sort, then we would recommend against habitability. Now, the advantage of that would be, see, I don't like these numbers for lots of reasons and one of the reasons is that they make people very scared. When you start doing these numbers, these numbers are not real numbers and anyone who works with them knows that when you come up with a risk assessment that you are going to have 5 times 10 minus 5 cancers, you don't really mean you are going to have that many cancers. You don't really mean that that population is going to get those excess cancers. All that you mean is that when you apply this method systematically using these extrapolations and estimating curves, that is the number you come up with. My concern is people believe these numbers and even the scientists who do those numbers don't believe them. I don't mean

to say they think they are phony, it's just that they know that they are not real people and I am, therefore, not sure that given the public concern here, that endorsing this kind of an approach would be as appropriate as coming up with something far more simple that would say these are the criteria pollutants using the kind of approach which was in Pirnie and where they came up with a persistent score and toxicity score. That, you know, the persistence is based on some notion of the biochemical and pharmacol-kinetic properties of the substance and the toxicity is based on some composite of carcinogens which are considered to be more toxic than other things and some more simple approach like that might be sufficient for the purposes here.

DR. STOLWIJK: Yes. I don't know whether they would be more simple. I'm not a good judge of that and I would just suggest that perhaps the community would like to comment on which it would prefer.

DR. POHLAND: Are you speaking of this in a comperative sense?

DR. DAVIS: Yes, only.

DR. POHLAND: Of course, that is what I guess I suggested in my correspondence. I also have the apprehensions that you indicated about the techniques that are used because it's a bit of a magic, but on the other hand, I think for our group to survive, what I think it's going to come in the peer review process, we are going to have to acknowledge, at least, and maybe demonstrate the existence of these procedures applied in the way we think they are best applied to the local situation.

Now, it may be that we won't in the ultimate analysis make the recommendation that these types of procedures be used. Maybe we will do a comparative "risk assessment" of another nature because of the need that we perceive to transfer this understanding to the receptor population but I think we would be foolish not to recognize that the people that basically get involved in peer reviewing the results of our activities would not be so sensitive to the local situation and would do it in a more abstract and maybe what I would call generally scientific approach and wonder why we hadn't used that kind of an approach.

DR. DAVIS: Well, within the field of

toxicology there are different schools about this.

DR. POHLAND: Yes. I know that. That is the trouble with all these kinds of techniques is that they are really in a way unreal but they are didactic in the sense that they can give you some insights into the relativity of things.

DR. STOLINE: Another way of doing a risk assessment possibly is to select one or two collators and do the same.

DR. POHLAND: That is what we are saying, in comparing.

DR. STOLINE: And explain what the level of chemicals found there are using the same model in comparing that risk assessment model evaluation with what is found in the EDA and then express that as a ratio somehow.

DR. STOLWIJK: You are asking for it not to be used as a fulcrum but what I would propose is that we make as many relevant comparisons as we can so that there is not a single fulcrum on which we ever have to actually operate because none of them will support it, at least an identifiable fulcrum you can use, but I think as you established the perspective, one's perspective would be, one

bound would be let's say the kind of effects that are mentioned in the Paigen report. That is one bound. You can quarrel with it, with how effectively the studies that were done actually prove or disprove whether or not there was an effect. It nevertheless provides a bound, but these were observations that were made by people who seriously tried to measure something. There is also a bound that says that there were a number of measurements made and these measurements are an indication of what was out there in '78 and '79. I think it would be exceedingly valuable to find in the same locations what concentrations there are at the present time. I think that would be a very meaningful number because that tells us what in that particular area, whatever remediation was done, this has been a constance of remediation and it tells us what the relative effects were that were out in the EDA. We can probably even use some of the Paigen report to show, which are to some extent some observations made in the canal area, some observations were made in the declaration area back in '78 and '79, some Health Department observations, et cetera. We can, based on the

concentrations that were then seen in the canal area as well as in the declaration area in '78, we could compare what the differences are in whatever concentrations we can still compare and see what kind of improvement there would have to have been in the kind of human exposures that would take place and as a result we could then say, whatever it was going on in '78 is now clearly diminished by this nullifier or abstraction. I think what I propose is that we explore together that, that we look at a number of these simultaneously and see whether that together, without having a single fulcrum, allows us to make pronouncements about the increased habitability of the area.

DR. DAVIS: Perhaps it would make our task simpler, instead of our coming up with these, we simply recommend that the criteria be a multiple approach to assess the relative risk and we can say--

--we can give some names to these but let the TRC come up with their executions.

DR. POHLAND: Well, except that I would hope that we carry it so far as to maybe have a feeling of priority of a method if such a priority existed. You know, just to display all the

techniques now that could be implemented to establish numbers and a risk assessment, I don't think really satisfies our mandate. I think if we are going to suggest techniques, we have to have a feel for the relative applicability again within the setting that we are dealing with.

DR. DAVIS: Who would do that?

DR. POHLAND: I think we should do that. I don't believe in just developing a laundry list of approaches to analysis and then saying, well, here they are, use them to your best ability. I would rather have us look at them as comprehensively as possible and then suggest or make some recommendations as to use. You know, I really feel that watching the way people manipulate this kind of an approach to risk, that you can make those same things say anything you want them to say.

DR. STOLWIJK: There is probably another thing that needs to be considered by us and that is if we first have a declaration area and it now is going to be undeclared, that is a change in position if that is in fact what is going to happen. That also needs an explanation which I think might conceivably be explored by this panel also or at

least recognized by this panel. The emergency declaration was made at a time when data were very scarce, when an increasing level of concern was developing and where the State Health Department had to, based on very incomplete data, make a determination of what it thought the potential risk was.

There is now very much more data. There is now considerable remediation of the actual containment of the site. So that there is in fact room for reassessment that would produce a different judgment at this time than could have been made in 1979 or 1980 and I think for this group to actually identify that sequence of events and recognize it, I think would be a useful addition to the report as well.

DR. HUFFAKER: A point of clarification, the Health Department declarations covered basically rings one and two, a little bit further than that, but the EDA itself was a federal creature and was not based on any findings that I am aware of. We don't have to undo any findings.

DR. STOLWIJK: No. I'm not saying that we have to undo any findings. I'm saying that the declaration was made based on what was perceived

to be a potential risk that was difficult to document, difficult to deal with and not possible to accept and the risk has now been reduced by remediation. It has been clarified by further observations and as a result it is now a risk which may be possible to accept.

DR. CHALMERS: In the expectation of the possibility that our criteria will result in a decision being made that the EDA can be reinhabited, I think it's important that we also come up with criteria for determining what will happen if we are wrong and by that I mean, that we have to outline what we think will be the minimal criteria for good prospective cohort study of the inhabitants which would be concerned both with following up the inhabitants who have lived there and left and whoever there are, over a thousand, and who are now reaching the age at which they are beginning to die of natural diseases so that it would be important to find out what they died of and also, monitoring the people who move in, unless it's absolutely certain from all of the data that the relative risk is exactly the same as living everywhere. I suspect the relative risk is going to be a little different

from living anywhere else in the country and if it is, I think we need some human monitoring. It's important to emphasize that all of the data that I know of about risk with regard to any of these materials in this kind of environmental problem is based on animal data and that human data is essentially nonexistent with the exception of asbestos inhalation in factories and smoking cigarettes and a few other things.

DR. DAVIS: And benzine and arsenic.

DR. CHALMERS: But a lot of the chemicals that we are talking about, especially dioxin of which there is nothing more than chloracne in the long term follow-up of this highly carcinogenic agent, I think it behooves us to outline some criteria for trying to find out in this area which is better studied now probably than any other land contamination area in the country and has the potential for being better studied in the future than any other, it behooves us to find out with humans, well designed human prospective cohort studies what happens.

DR. POHLAND: I guess my response to that is that I would like to have our documents, whatever

way it comes up, to be as positive as possible, notwithstanding the fact that there is always room for error and I would like to see us, if we are going to embrace the possibility that the wrong decision was made, that we do it in such a way that it is part of a set of recommendations, overall recommendations that have derived from our inspection of the available information and what I am really saying is that we ought to emphasize the opportunity to do something here in a follow-up way that would be so beneficial in future analyses elsewhere as well as here.

DR. CHALMERS: I think that is pretty much what I said.

DR. POHLAND: Except that you started off by saying, what if we are wrong and this is what---

DR. CHALMERS: Well, I was hopeful my proposal would be accepted. If you couldn't be wrong, it wouldn't be necessary to do this.

CHAIRMAN WELTY: This is the last comment.

DR. STOLINE: Okay. Just one point I wanted to make, back on the risk assessment discussion, in statistics we could, for example, take a sample size of 30 and use a certain procedure and

if it is significant at 5 percent, decide this action, if it's nonsignificant, decide this action. I mean, you could apply that to the habitability or nonhabitability. My question that I just wanted to throw out to the group is, in a risk model that we are talking about, if we decide to go with that, do we want to also try to put in some recommended procedure on how they are used? If they come out this way, we recommend habitability. If not, we would not recommend habitability because---

DR. STOLWIJK: That would make it the fulcrum that everybody is worried about.

DR. DAVIS: I don't know. I am especially concerned about the power of the studies to detect a risk and the toxicological study, you statistically study one hundred animals in your experimental group and 100 in the controlled group, 50 of each set and sometimes you have two species, mice and rats, and sometimes you just have one, and you have in a study of 100 animals, you have almost a 5 percent chance of not detecting cancer when it is in fact there and---

DR. CHALMERS: And who knows if that is related to humans at all.

DR. DAVIS: Well, that is a whole other issue but I am concerned about the power of all of these tests to detect a risk and the interpretation of so-called negative evidence, it's very problematic and we are dealing with small numbers because your standard error, you have a very large standard error in a small population and I don't know if you would like to get into advising on how you would interpret those data, I would be very happy---

DR. STOLINE: Just laying it right on the table, this group wants to get specific information on it, we could say okay, here is the methodology that can be used and Fred has mentioned possibly some rank ordering of these and some rationale of this and then the next question is to get into the specific detail on how these are used.

DR. POHLAND: I think anybody that would be responsible for dealing with the issue of risk assessment involved in the ultimate decision would know hopefully what these models are all about. I have got to assume that. I don't think it's our purpose here to educate people in the methods of risk assessment. That would be rather presumptuous on our part. On the other hand, my point was that

I think---well, I would hope that out of our consideration of all of the approaches that might be available to us, we may decide based upon what we know about the situation and probably know better than anybody what has already been established or the people that are going to make the decision, what might prove to be the most applicable approach to it and make a recommendation in that direction and they can accept it or reject it, use it however the decision maker wants to use them.

CHAIRMAN WELTY: I think we should continue this discussion after lunch and during lunch if you can just consider how we might be able to distribute the work load of coming up with these criteria, I think there has been some excellent suggestions on ways to approach the problem and how we simply need to get to work on how to do this.

Let's reconvene at 1:30.

(Whereupon, the above proceedings were adjourned for lunch.)

PROCEEDINGS AFTER LUNCHEON RECESS:

CHAIRMAN WELTY: Let's reconvene now. Okay. It is now 1:40 and the time is brief so we have a little over an hour to deliberate on this issue of the habitability criteria and I outlined some of the things we talked about immediately before lunch that the group felt were going to be important in establishing the criteria and as I understand it, your recommendations were that portions of this be assigned to individual consultants to work on and after a finite period of time, recommendations or reports be forthcoming and be circulated and then these be compiled by us here and sent out in one document to be reviewed prior to a meeting.

I would like to propose that such a meeting take place within five or six weeks but I don't know that that is realistic and I'm wondering how you feel about the timing or if this is the appropriate time to set another meeting date or should we discuss this a bit more first?

DR. STOLWIJK: I think I would vote for a meeting not later then six weeks from now because

this could delay things without producing further product.

CHAIRMAN WELTY: Any problem with that?

DR. DAVIS: What date is that?

CHAIRMAN WELTY: That would be sometime in June.

DR. HUFFAKER: The week of the 11th is the sixth week.

CHAIRMAN WELTY: That week would be the best week for me.

DR. DAVIS: Which week is that?

CHAIRMAN WELTY: The week of June 11th.

DR. DAVIS: I can't make it that whole week. I could make it the week before.

DR. CHALMERS: I can't either that week. I will be gone the 1st to the 20th, the 1st to the 21st.

CHAIRMAN WELTY: The question is whether we want to delay that long or proceed.

DR. STOLWIJK: I can't do it the week of the 4th. I have site visits and I cannot do it. I can do it after the 29th of May.

DR. WELTY: Can you do it the week of the 11th?

DR. STOLWIJK: Yes.

DR. DAVIS: How many members do we have that are not here?

DR. HUFFAKER: Three.

DR. DAVIS: There is Dr. Silbergeld, Highland and who else?

CHAIRMAN WELTY: And Dr. Winkelstein.

DR. DAVIS: Okay. I know that Dr. Silbergeld cannot do it the week of the 11th for the same reason I can't do it.

DR. SIPES: I can't do it then either.

CHAIRMAN WELTY: Off the record.

(Discussion off the record.)

CHAIRMAN WELTY: Back on the record. The conclusion is that the meeting of the consultants will be held June 29th in Niagara Falls at the Red Jacket Inn.

Now, I guess the real question here is, what in your judgment is an approach to answering the question of habitability in the EDA and ultimately the criteria, what we are looking for, and Dr. Stolwijk outlined a number of things which I

have tried to tersely summarize here in the hopes that we might be able to delegate certain members, certain consultants to work on each one of these.

Namely, what media should we include in the habitability criteria. Are we going to include ground water or are we going to limit it to soil and indoor air and outdoor air?

DR. POHLAND: I think in the first cut we have to consider all environmental bases and even maybe to the extent that we include some of the information on the animal studies and I heard some worm studies were made and all this stuff. Inevitably we may prioritize the bases, like what was suggested already, it may be the air phase will turn out to be the more sensitive phase.

CHAIRMAN WELTY: Is there one of the group that would want to work on that kind of priority?

DR. SIPES: I was just wondering, you have a list of questions there. Would it not be easier to make two or three categories that we are going to be looking at, one is monitoring, whether it's monitoring now or in the future, and then we are going to have risk assessment and then also the health effects. You could sort of have one divided

up into three categories or three general areas.

CHAIRMAN WELTY: So, you are saying monitor?

DR. SIPES: That would be data that we have already, plus then what may be needed for the risk assessment or not the risk assessment, but for determination of remedial action and then we have to look at the health, what health effect and health parameters that we are looking at.

CHAIRMAN WELTY: This is environmental.

DR. SIPES: Environmental, one would be the health, environmental monitoring and then I think the last thing is the risk assessment, putting the two together.

DR. STOLWIJK: A treatment plan for remedial action would belong to the monitoring phase.

DR. SIPES: Monitoring, yes.

CHAIRMAN WELTY: The third one is---

DR. POHLAND: Risk assessment.

DR. SIPES: You can give that to Dr. Pohland. He said he understood the formula.

DR. STOLINE: I heard him state that too.

DR. STOLWIJK: I know CDC actually put

out something on dioxin.

DR. VANDERMEER: We would not like to do that for 150 chemicals.

DR. STOLWIJK: No, but dioxin is a fairly important one.

DR. DAVIS: Let me make one other point about the list of chemicals. Hooker provided a list of chemicals that they knew that they disposed of but there are other chemicals there as well and I don't think our charge is just to accept the Hooker chemicals, right? I mean, for example, trichlorethylene can grow up in septic tanks. Unfortunately that is a very commonly used substance to flush out septic tanks and we have to assess the habitability of Love Canal, not whether Hooker Chemical has made Love Canal a difficult place to live. So, we need a profile and I would suggest maybe just a volume cutoff, you know, of levels.

DR. POHLAND: Well, what you are saying is that you would like to, out of the mass of indicator parameters, select a group that we are going to use to lead our development of whatever.

DR. DAVIS: Sure.

We might take one indicator, halogenated

compound, one chlorinated compound. We could pick an example of different classes.

DR. SIPES: I think we need to limit the number of chemicals we look at to some reasonable number for monitoring and as far as what data are available.

CHAIRMAN WELTY: That was the reason I put that up there.

DR. SIPES: I think that that should be a scaled down list or we are not going to get anywhere.

DR. STOLWIJK: I think that what we really need is to understand that the specific chemicals in any one location are probably going to be fairly highly correlated with a mix of chemicals in other locations and probably going to have some disassociation, but they will be fairly well categorized as Love Canal chemicals, whatever the mix is. So, I think that the combination of the major chemicals that we have there and that have been actually measured in the ground water, let's say, is probably the best medium that we can use.

DR. DAVIS: Well, probably with ground water in an area like this with such a high and

variable water table is that if you have things in the first two feet of that soil, they keep percolating up every time the water comes up, you might get upward migration that would not be readily predictable. That is a concern.

DR. STOLWIJK: But the ground water table and below is, of course, by now fairly well mixed. We understand that around the treatment area and beyond it there are monitoring wells that are sampling in terms of chemistry fairly regularly, once every three months we were told, or something like that. So, there is data of that kind around that tells us what is in there. So, I assume those were screened analyses.

DR. DAVIS: I think that we should look at all of the media for the same chemicals.

DR. POHLAND: Yes, but if we tried to embrace everything that possible could be there we are just going to go on forever.

DR. STOLWIJK: But I think that basically indoor air pollutants, you are going to see are going to be benzine and the chlorinated hydrocarbons essentially because they are so fugitive and that is what they will be. You will not find dioxin in

the air. You will find that in the water and you will find it in the soil but not in the air. It won't be there. So, there are determinations that can be made as to what things you could find in what media. I would suggest that the list that the State Health Department provided as the list that was primarily of concern and indicated the highest quantities I think is the list we ought to start off from.

DR. SIPES: When you are looking at trichlorobenzine versus the dichloro, you are looking at three isomers of the dichloro. Do you have to do all those. I mean, pick one, because what is missing from here are probably some of the more toxic agents like the chloroform, carbon tet and TCE. So, we can eliminate some of these because you are going to get similar view of the various dichlorobenzines, do they behave somewhat similar, if we looked at the one for dichloro, that would be representative of that class of chemicals.

DR. DAVIS: And probably get a representative trichloromethane the same way.

DR. SIPES: In all honesty, when we went through this list I was overwhelmed as far as

trying to keep track of it.

DR. HUFFAKER: That list was put together, looking at those things, it seemed to be hanging together, the assays had been done around the canal and the point that was made, if you see one you are liable to see some of the others. Also the monitoring list being used at the S site at Hyde Park and these were common, I think, to all of those, the Hooker chemicals. I don't mean that there aren't other chemicals there from other places that got in there. We tried to avoid the really volatile things like hexane or something of that sort that you just would expect to have hang around or those like benzine that are ubiquitous that we would have real trouble deciding where it came from.

DR. DAVIS: With respect to our interest in comparative risk assessment, perhaps we could take these two reports and then go through them to identify those chemicals that we have levels on in other areas in the country and they happen to be things like benzine, methylene chloride and dichlorides and one other, trichlorides or methyl chloroform, trichlorethylene, things of that sort, and of course, the chlorinated benzines as well.

They could identify the ones on which there are other data so we would have some comparative data.

CHAIRMAN WELTY: That is why I put this up here, comparative data.

DR. DAVIS: Maybe that could guide which ones we want to monitor for the Love Canal.

CHAIRMAN WELTY: I wanted somebody to review the data that is available and make sure that it's going to be useful and I don't know if you would be able to do that or---

MR. HOFFMAN: Which data are you talking about?

CHAIRMAN WELTY: The comparative, the New Jersey data that the people are referring to.

DR. DAVIS: No, it is not just New Jersey, this is data from about 50 different cities. It's reported and it is data from about 15 priority dump sites around the country. I am referring to those in addition to the New Jersey study so there are three different sets of potential data for comparison purposes. Now, before saying we want to get locked into that, let me just make a point that the samples in one case, when I looked at the sample methodology, were obtained two samples over

a 24 hour period from a point in the city and you all know about doing that, taking a sample from the parking lot and it's hard to know whether it's the right place to sample it, but still and all, you have it from 50 different cities.

DR. POHLAND: Well, there is some correspondence on background levels of things. So, the list, however it comes out eventually, should be directed not only by what you people have already done to identify things that seem to be associated, but also by what is needed in the ultimate analysis of risk maybe or whatever the decision process is. So, if the health effects require certain data which are not on that list, then certainly those things should be added and I think this is a good point because as you already know, I am kind of in favor of comparative risk assessment if I am not convinced otherwise and you have to have this kind of stuff. So, if we are going to use these data bases that have been generated and published and therefore are a matter of record, we wouldn't want to omit in our accumulation of the list those things that we are inevitably going to want to compare again.

DR. STOLWIJK: I think maybe the thing to do, Fred, would be to make these things come out as bunches of lists. I think there will be an overlap and there will be an overlap between them and the Hooker Chemical list and we probably at the next session collectively could decide what our proxy list will be. I think that would be a good way to do it.

DR. POHLAND: Fine.

DR. STOLWIJK: That way we can all see which ones are included and which ones are not included so that we all have a chance to look at that.

CHAIRMAN WELTY: All right. Just so that we are clear on what is happening, what you are saying is that we will go through this data that is available and make a list of all the chemicals that are measured in these comparative areas and provide them to you sometime before the next meeting.

DR. STOLWIJK: And also if we could, stapled to the same thing, see again the Hooker Chemical list and the scream list that was used by DEC when they do their ground water at the moment. There must be a screening.

CHAIRMAN WELTY: Can you help us with that?

MR. HOFFMAN: Yes.

DR. STOLWIJK: We can then see what kind of overlap we actually have between all these chemicals and we would then have a sensible way of arriving at some list that we would consider in our criteria.

DR. POHLAND: I would like to get in at the same time if we can, just for no other reason but to save some time, to try to get some media orientation, meaning what are the things that would invariably be of concern in soil analysis or air analysis but certainly we would want to include them in the listing and maybe the place to start is with the data base as you have all gotten it so far and see whether you can sort that out for us.

DR. STOLWIJK: In other words, at the top of the list should we indicate the medium from which the list was derived? In other words, when you get a list of this type it should have on it if there were measurements, it should have on whether they were done in air, if they were done both in air and water, then there should be two lists,

one for air and one for water even if they are identical. So that we don't have air and water because then you never know which is which and whether they really have both of them in each case.

DR. SIPES: You are talking the chemicals in this site and in the comparative areas.

DR. STOLWIJK: Yes, because these lists get transplanted from the original report and it becomes difficult to sort out where they came from.

CHAIRMAN WELTY: And one of the chemicals of primary concern has been dioxin and I just wanted to open that up for some discussion if you want to have any special consideration for that.

DR. POHLAND: Well, I don't think under the circumstances we can avoid it. I think we will have to concern ourselves with whatever information is available and then go from there and any other one that has got that kind of connotation.

DR. STOLWIJK: I think what he is saying is that dioxin would be on the list, no matter what.

DR. HUFFAKER: Deadly dioxin.

DR. DAVIS: How about 2378 TCB, please?

DR. POHLAND: Okay.

DR. DAVIS: I mean, there are many dioxins.

Now, on that point, I guess Mark has provided the sump pump analysis and there was a bore hole 11 to 12 feet at depth at 99th Street and in that bore hole there was 16,600 parts per trillion of dioxin at a depth of 11 to 12 feet.

DR. CHALMERS: Sixteen parts per billion. That is not very much.

DR. DAVIS: Well, the CDC action level is 1 part per million.

DR. HUFFAKER: No.

DR. DAVIS: What no? CDC at Times Beach---

DR. VANDERMEER: Times Beach, CDC said that a lifetime exposure to dioxin in soil, which soil was accessible to humans, presented an undue health risk and should be avoided.

DR. DAVIS: From 1 ppb.

DR. VANDERMEER: That is right, in soil which is accessible.

DR. DAVIS: My point is, where is the sample taken in relation to the fence.

DR. CHALMERS: Okay. 99th Street, 10 feet south of 734 99th Street. If we could look at a map, we could determine where that is. In addition, the sump pump at 771 97th Street and

476 99th Street, each contained lots.

Now, number 771, 97th Street had 17,200,000 parts per trillion.

CHAIRMAN WELTY: Are you familiar with the addresses, Anita, where the addresses are in relation to this?

DR. DAVIS: I just put this together by taking three pieces of information and put them on one table. It's here.

DR. CHALMERS: Do we have that?

DR. DAVIS: No, but I think we will. If the people want these, they can get it. What I did was just while we were talking, I flipped through this report and pulled out three tables which allowed me to put this together. So, what I did, I would suggest that I can pull those together for everybody else too.

DR. POHLAND: What I think you are highlighting is the fact that the source of the sample and its potential with regard to exposure to the population is important criteria when we look at numbers.

DR. DAVIS: Right.

DR. POHLAND: And what you may find in the

sump over a period of time is a lot different than what you might find on the surface of the ground, for instance, and so, somewhere along the line we are going to have to take that into consideration as we develop the criteria.

DR. DAVIS: I don't know anything about sump pumps technically but I know something about indoor air ventilation rates. Could anybody here explain to me if there is a model for estimating the concentration in a sump pump and what could be reasonably expected to be in a normal indoor home under ventilation conditions?

DR. POHLAND: For dioxin, there wouldn't be any.

DR. DAVIS: So, the only exposure would be---could you explain to me what a sump pump is? I really don't know.

DR. POHLAND: Well, a sump pump simply pumps out water that accumulates in basements and pumps it out into the sewer.

DR. DAVIS: And it's a completely enclosed metal structure with a little pump part?

DR. POHLAND: The pump goes down into the sump pump. There is a hole in the floor that

collects drainage, however derived, and it is accumulated. Usually it has a sensor device that when the level rises to a certain point, the pump goes on and it pumps it out into the sewer.

DR. DAVIS: Oh, I understand. Okay, but the exposure danger would be to anyone working on it, right?

DR. STOLWIJK: No. The exposure danger would be somebody messing around in the water that was collected there and that is about it, but it's an indication that the ground water that is surrounding that basement contains dioxin.

DR. DAVIS: So, it would ten to be kind of analagous to maybe the fat in our body, it would accumulate these things?

DR. STOLWIJK: No. It would be there in equilibrium to the water outside, what the equilibrium would be.

DR. DAVIS: It isn't concentrated?

DR. STOLWIJK: No. It sits there.

DR. POHLAND: See, if I pump it out and the next flushing brought in some more and presuming that during the flushing process we are reducing the local concentration wherever it is,

then each time that this same quantity comes in, likely the concentrations will be lower.

DR. DAVIS: Why are there a thousand times more dioxin in the sump than in the soil?

DR. STOLWIJK: It may be a problem in somebody's calculation.

DR. DAVIS: I would like to know.

CHAIRMAN WELTY: We will try to keep that in mind.

I think the question is, how is the sample obtained and what does it mean and where is this location? Is it within rings one and two or is it in the EDA? All of that information we can get.

DR. CHALMERS: Where is 97th Street?

DR. VANDERMEER: It is the house that backs on to the canal itself.

DR. CHALMERS: Well, that is ring one.

DR. VANDERMEER: Yes.

DR. DAVIS: And 99th Street, 376---

DR. VANDERMEER: The same thing.

DR. HUFFAKER: Those houses were on a sand lens that went clear across the canal and you cut into it when you trenched on both sides and then

we went out under 97th Street and were able to follow the dioxin from the back yard, the side of the house and out into the street and the levels were going down step-wise and we didn't get across the street, as I recall on that, on 97th on the ring two side but that whole sand lens was an open conduit from the canal itself. It was full of that.

DR. DAVIS: The samples that were collected in 1981 from standing homes, I presume. Do these homes still exist?

DR. VANDERMEER: No.

DR. DAVIS: So, the homes were destroyed in--

DR. VANDERMEER: Last summer, that is right.

DR. DAVIS: What happened to the sump pumps?

DR. HUFFAKER: Everything, the concrete work was all broken up and they were buried in their own basements.

DR. STOLWIJK: The basement would be caved in and backfilled.

CHAIRMAN WELTY: So, essentially it would be within the fence that you now see

surrounding the canal.

DR. HUFFAKER: The back yard of the house backing onto the canal itself, or the two houses.

CHAIRMAN WELTY: So, Dr. Davis, in terms of that standard of 1 part per billion, this is in the fenced area and that standard would not pertain to this particular area because it is not accessible to humans at the present time.

DR. POHLAND: That brings up a point, though, somewhere along the line we discussed the possibility of having a map such as that one indicate to us really where the homes are that still exist and that would be very helpful I think in our final analysis with regard to the relationship of data that we might want to concern ourselves with and the source of these data.

MR. HOFFMAN: It would probably be easier to indicate it right on that map right now where the homes don't exist.

DR. POHLAND: I don't care, whatever.

MR. HOFFMAN: Either way.

DR. POHLAND: Whatever code you use for it.

CHAIRMAN WELTY: Could we get back to this? Now, we are still on environmental monitoring data and we talked about the chemicals. Dr. Sipes, would you be able to research that particular issue since you seem to be knowledgeable on it?

DR. CHALMERS: On the chemicals we would like to update.

DR. STOLWIJK: Can you take an active role in assembling this list and we will all see them, I suppose, but you will be the one that is condensing them into some order.

DR. SIPES: What will I be getting from the contractor?

DR. STOLWIJK: They will be sending the list out of the other areas. They will be giving you the determinations of the lists that were made, a sample in the DEC screening and water sample, ground water sample and whatever else they have. Those will be coming in. So, my guess would be that you might have, like, a dozen or so lists.

DR. SIPES: And then you would like my judgment as to what chemicals then we would suggest for monitoring and why?

DR. POHLAND: As a start, and the media too.

DR. SIPES: That will be the hard part for me but I can do it.

CHAIRMAN WELTY: Maybe Dr. Pohland could help you in terms of the media, what media would be appropriate and prioritized.

DR. POHLAND: Yes. Let's make it clear what the contractor is going to do for us. I thought we decided that, for instance, they would drag this information out.

CHAIRMAN WELTY: That is right.

DR. POHLAND: And identify it as to media.

DR. STOLWIJK: Maybe they can tell us what their understanding is of what they are going to do. That is likely what is going to happen.

CHAIRMAN WELTY: Let me try to summarize it.

DR. STOLWIJK: No, let them summarize.

CHAIRMAN WELTY: Okay.

DR. STOLWIJK: In terms of the list of chemicals that we are to analyze at the other sites, other abandoned waste sites, the lists of chemicals

organized by the medium in which they were measured and the list of chemicals that were similarly measured here in Love Canal and in the declaration area.

MR. HOFFMAN: Versus a list of the ones that the DEC monitored for us versus a list of those that have been dumped or supposedly placed in the canal?

DR. STOLWIJK: Right.

CHAIRMAN WELTY: Yes. So, there are three lists. There is a list of Hooker's---

MR. HOFFMAN: There is more than three. I mean, there is Hooker's list, there is the ones that EPA has monitored for and there would be others that have been historically indicated at some point in time as may have been placed in the canal and that list you compare.

DR. STOLWIJK: And the list that Joe is measuring now in monitoring the wells.

DR. DAVIS: And the list of those chemicals which have comparative data available from other cities.

MR. HOFFMAN: That is right, out of those three documents.

DR. DAVIS: And our purpose for asking you to do this is so that we can then decide on the, if you will, the sentinel chemicals, the major chemicals, the indicators.

CHAIRMAN WELTY: So, Dr. Sipes is going to coordinate that but I think everybody needs to have a copy of the list if possible.

MR. HOFFMAN: Okay. If we have any confusion, we will call Dr. Sipes about what it is we are doing if we run into something that doesn't quite fit that.

DR. SIPES: Or vice versa.

DR. STOLINE: There is another one you might want to add to that, I don't know, that is the monitoring study the DEC is going to be starting up in 1985, if they have anything on that too.

CHAIRMAN WELTY: I don't think that has even been formulated yet.

DR. STOLINE: Okay.

MR. HOFFMAN: In fact, they are going to look to see what comes out of here.

CHAIRMAN WELTY: That is a good point.

DR. POHLAND: Now let me talk about the media. Are we including an animal media?

DR. STOLWIJK: I don't think so.

CHAIRMAN WELTY: I am sorry, I didn't hear your response.

DR. STOLWIJK: I don't think animals ought to be specifically considered.

DR. STOLINE: So, this would be wells, air, soil and ground water and sump water.

DR. STOLWIJK: I think deep water is much less interesting than sump pumps.

DR. DAVIS: Sump and surface.

DR. STOLWIJK: Because if it is deeper than what gets into the sump pump, it isn't going to come anywhere. It is of long term importance but not of any importance that would be a characteristic of that particular site.

CHAIRMAN WELTY: We are still on the environmental monitoring data and have I think at least a few more things to consider. One is the treatment plant and then the data that they have collected on that, and I am wondering, Dr. Pohland, if you could coordinate the review of that, that data?

DR. POHLAND: Yes. I will receive it and coordinate it.

CHAIRMAN WELTY: Presumably you will receive it.

DR. STOLWIJK: I hope that would have in it Joe's records on the trench. I hope it would have in it whatever Joe has in terms of monitoring, out of the monitoring wells. I hope it would have in it the records of the volumes that are harvested by the treatment plants since the period that it has been going.

DR. DAVIS: And carbon usage rates.

DR. STOLWIJK: And carbon usage rates.

CHAIRMAN WELTY: Yes. The next question is, does everybody want to receive all that data? I suspect that it is quite a volume of data or can we entrust that to Dr. Pohland?

DR. STOLWIJK: I would be happy to have him look at it.

DR. POHLAND: So I can hang alone.

DR. STOLWIJK: We will look at what you do and then we will all hang together.

CHAIRMAN WELTY: The consensus seems to be, Steve, that Dr. Pohland can be the sole recipient of that information.

DR. HUNTAKER: We can't quite do that. I

have to have copies and our distribution to Anita's office and things like that.

DR. STOLWIJK: It doesn't matter who else gets it.

CHAIRMAN WELTY: We are trying to simplify your life in terms of not having to duplicate it for everyone.

DR. HUFFAKER: If you get it to us, we will take care of the distribution.

MR. HOFFMAN: Now, what are we supposed to do now? Are we supposed to send it to you, Bob, for distribution or---

DR. HUFFAKER: You go ahead and send it to Fred but send me a copy and I will make sure that Anita gets it and anybody else on the list.

MR. HOFFMAN: Okay. Our instructions right now for distribution are, when we send something to the members, we send you a copy, we send Dan a copy and we send Anita two copies and we send the EPA Region 2 a copy, headquarters gets a copy---

DR. HUFFAKER: That is fine but I understood you were just going to send it to Dr. Pohland.

MR. HOFFMAN: That is the tip of the iceberg.

CHAIRMAN WELTY: Send it to the usual list with the exception of the other health experts.

DR. POHLAND: Except that I think that it would be informative to the other members of the group to get your cover letter with the listing of what you sent me in case they know of some more data that we missed up on.

CHAIRMAN WELTY: Steve, are you clear on how to retrieve that data and where to retrieve it?

MR. HOFFMAN: I think we know where to start and we know what we're after.

CHAIRMAN WELTY: And Joe Slack's personal notes, I guess we will have to call him on that. Hopefully they are in a form that is legible for our engineers.

DR. POHLAND: Yes. Well, I am a little concerned about these notes. If he writes like some of my students, I won't be able to decipher them and I don't know.

MR. HOFFMAN: Our intent is, if it turns out to be that there is a page filled out everyday, is not to send you a copy of over 1200 pages. There is four years of operating records on that site but to try to reduce that, maybe, you know, if

you are looking for carbon usage levels, give you a number once a month that will show you how the trend has been over the last four years, flow records and things like that. Maybe we can reduce it to an average monthly flow record or something like that to make it a little bit easier to digest so you can look at it because what you are looking for is the trends.

DR. POHLAND: Of course. You know, I think you guys are familiar with the issue well enough to do that but just let me caution you that you make sure that you don't select your points of focus in an arbitrary way. Do it in terms of the actual sequence of operations that occur and so forth so that the data truly reflect the trends.

MR. HOFFMAN: Yes. It is the intent of the committee to be, I think, conservative.

DR. POHLAND: Don't miss out on unusual things. Don't dismiss unusual things. In any event, I will come back at you if I'm not satisfied.

MR. HOFFMAN: I'm sure.

CHAIRMAN WELTY: Does anyone need to look at the comparative data in more detail? I mean, we are going to get Dr. Sipes and everyone a list of

the chemicals but should somebody review the comparative data in toto?

DR. DAVIS: In what way do you mean?

CHAIRMAN WELTY: Well, I mean sampling scheme.

DR. STOLWIJK: I think this morning we got CM Hill to agree to go over the list of data they sent us. We had special emphasis on any data that exists in this area that has any time trend value to it.

CHAIRMAN WELTY: I am talking about, when I say comparative data, I mean the data that EPA has collected in other areas that we are going to use for comparison.

DR. STOLWIJK: I see. That's the data that we were looking at.

DR. POHLAND: That was part of the list development.

CHAIRMAN WELTY: That is just the list.

DR. DAVIS: Yes. I understand the point that you are making. There might well be a necessity to look at how the samples were obtained, what methods were used. For example, there are some valid questions raised about the Pirnie sampling

of sampling for dioxin and why they were not able to stick to one protocol as opposed to another. I don't know, we may be into an infinite regress here. I'm not really sure. Fred's point may be sufficient to answer it, mainly that even though any individual data point with respect to, say, the levels of benzine in the air may be off by an order of magnitude, the relative ranking of the areas that are obtained through this kind of measurement may still be valid and so, therefore, I'm not sure that we do need to take the limited time we are going to have to go into that.

DR. POHLAND: Well, our comparative assessment, though, I see is a task beyond a point that we have the list and so forth. So, it's something we will pick up again and look at comparatively.

DR. STOLINE: I would like to ask Tom, what do you mean by comparative data? What is your understanding of that phrase? I heard you to say EPA data and---

CHAIRMAN WELTY: Yes. There are other areas where EPA has monitored that are presumably in normal areas or like the background levels.

DR. STOLINE: You are talking about the 1980 data released in 1982, the Volume 1?

CHAIRMAN WELTY: No. This is in non-Love Canal areas.

DR. STOLWIJK: You are thinking of Lance Wallace. I think Lance Wallace's data needs to be compared with the data that was taken on currently still existing housing.

DR. STOLINE: In Love Canal.

DR. STOLWIJK: The values that were measured prior to this and in currently existing houses. That would again give us the ability to compare both species and concentrations in houses that existed, that now still exist that were measured in '78 and '79 as far as indoor air is concerned and it would ultimately give us the opportunity to compare that with what current levels are in the same structures.

CHAIRMAN WELTY: All right. I guess what I'm hearing is, for purposes of this committee, just providing a list would be sufficient.

DR. POHLAND: Well, this can be done at the same time but I would suggest that maybe the contractor do this also in their searching of data,

the more specific point that was brought up now. You know, somehow, somebody is going to have to put those data together so that we can see what they are worth.

DR. STOLWIJK: In other words, unless we are overloading Hill, I would suggest that they are perhaps the best outfit to actually provide that comparative data directly. It would consist of the observations that Lance Wallace made in his team effort which you are about to get, I gather, and it would consist of those measurements that were made in structures in Love Canal that are now still in existence. That involved the measurement of indoor air quality and there were a sizable number of those made, buried in the various data bases. So that if these houses still exist and we can compare it with then existing concentrations, with concentrations existing in non-controversial areas elsewhere, then we have still the opportunity after the next session to ask for specific sampling to be done in those structures again so that we have both the measurement that was taken in '78 and whatever protocol we would then agree we ought to follow in 1984.

DR. STOLINE: I have an additional question of that data set. As I understand when we talked about this data set before, it contains data of other sources too outside of the Love Canal area, New Jersey and---

DR. POHLAND: No. That was another.

DR. STOLWIJK: This is specifically relating to indoor air quality measured by an EPA team in a large number of dwellings and office buildings in different parts of the country, mostly on the east coast.

DR. STOLINE: But that part of the country does include a subset of that.

DR. POHLAND: There is some Love Canal data.

DR. STOLWIJK: There is some Love Canal data that was not taken within the same series of measurements. It was taken earlier in 1979 and 1978, I believe.

DR. STOLINE: And that data set is an ongoing data set?

DR. STOLWIJK: No.

DR. POHLAND: It was implied but I don't think so.

DR. STOLWIJK: Those measurements were made once. They were then subsequently used by the EPA in an attempt to assess the risks associated with those and we have a report on that in the pile you have and there have not been further measurements, but there have been measurements I believe outside the original Love Canal area in the declaration area. I don't know that we have seen those measurements but----

DR. DAVIS: Are you referring to the RTI study? Because RTI also did what you are talking about in 1978, they measured indoor, outdoor; Is that what you are referring to?

DR. STOLWIJK: Yes, although that is using much of the same methodology and much of the same protocol and so, they would be comparable in that respect. They have not been as far as I know repetitions of those measurements of environmental studies.

CHAIRMAN WELTY: So, what you are feeling is that the CHM Hill can look at these data and give us some feedback as to whether they are applicable or not?

DR. STOLWIJK: What was found up there

and what were the concentrations in each of these cases and which houses that are still standing were sampled.

CHAIRMAN WELTY: Okay. I guess we are ready to consider health and Dr. Chalmers, you suggested that this population be monitored and I would submit that the most logical method to monitor such a population would be through use of various registries such as congenital defect registry and cancer registry and I am wondering if that is what you have in mind or was there something else that you were alluding to?

DR. CHALMERS: I understand that 90 percent of the original residents, even those who have left, you have some addresses for. Did I hear that somewhere?

DR. DAVIS: Yes.

CHAIRMAN WELTY: Dr. Vimms I guess has the best fix on it.

DR. CHALMERS: And it is now possible through Social Security to get data on date of death on all people and I would set up a prospective study to gather their date of death and find out what they died of.

CHAIRMAN WELTY: In other words, a mortality study.

DR. CHALMERS: Yes, and compare that with the control group or with the general population data.

DR. DAVIS: There is your problem, case ascertainment, for example, liver cancer, pancreatic cancer are not well ascertained and so you might have to---the categories might have to be very gross like internal cancer versus others, but I think it certainly---if these people have all been identified as Dr. Vianna said to us, it would be worthwhile to continue to try to monitor them. I am not sure whether, if you got negative results it would be necessarily meaningful.

CHAIRMAN WELTY: That is the one thing I wanted to mention is how much power would you have in detecting any kind of increases in these people since it is at most 4000 people.

DR. DAVIS: Well, we know the area of Niagara, Buffalo from the period of 1950 to 1969 had a fairly high cancer rate compared to the rest of the country. So, one thing we know is you have to get an appropriate comparison group and it

wouldn't be Buffalo, it would be some---

DR. CHALMERS: Well, it would be both.

DR. DAVIS: Yes, exactly.

CHAIRMAN WELTY: Unfortunately, New York has a very high turnover rate.

DR. DAVIS: Yes, and we don't know how many people are in New York anymore. Does anyone here know the proportion of people who ever lived there still live in New York? Is that known?

DR. HUFFAKER: Yes, Nick knows.

CHAIRMAN WELTY: Would you want to monitor specific sentinel tumors or specific birth defects?

DR. DAVIS: I think looking for a sentinel tumor in 4000 people is not worth doing.

DR. HUFFAKER: I would definitely be more comfortable if you could give us some specific things to monitor. The problem here is that we have unknown exposure to an unknown chemical or chemicals and have an almost infinite number of targets to look at on the other end and if we start that, we are going to get an infinite number of associations, all spurious perhaps, I don't know.

DR. CHALMERS: Not if you have suitable

controls.

Secondly, I don't see any objection to just monitoring the cause of death. Let me just present an interesting concept. If 2500 people don't give you enough power after 40 years to pick up an increase in cancer, I wouldn't mind being one of the 2500 people moving in there. In other words, what do you mean by power? You mean power to pick up a certain risk and if the risk is so small that you can't pick it up with 2500 people followed until most of them die, I'm not going to worry about that risk and especially in view of the fact that the people who move in are going to have one one-hundredth of the exposure or something which somebody will come up with that the people who lived there during the ten year period had. I am most impressed with those small birth weight children disappearing, I mean, after 1953. So that it looks like the largest, most toxic effect could well have been back then long enough ago so that if that large toxic effect has any effect on people and it doesn't show up at 40 years later, I'm not going to worry very much about people moving in at the very low effects that they have now.

CHAIRMAN WELTY: Would you be willing to work on a proposal between now and the next meeting?

DR. CHALMERS: Sure. Power is relative.

DR. STOLWIJK: If you see small differences, that is one thing.

DR. DAVIS: There is a high relative risk. You could look at age specific rates. I don't want to be preaching the choir here but I think that that is a serious problem that I think has to be addressed before you embark on such a study, is that I am concerned about the neurological effects which we have no background data on but we have things like methylene chloride which perhaps a carcinogen of much more problematic as a neurotoxin, and it causes perhaps other irregularities and when it comes to assessing those kinds of things, kinds of effects, usually neurological effects don't tell you, they just make you miserable and you die of cardiovascular disease or other so-called natural causes and it would never be detected. Other problems could be associated and we are really in a state of the art when it comes to those associations. So, while mortality, it would be worthwhile to get an SMR on this group, Standardized Mortality Ratio

for different causes, I think---

DR. HUFFAKER: The proposal of Dr. Chalmers to use the registries has a big advantage in that we can find them across the state as long as they are state residents, they may remain within reach on birth defects of children that they may have or cancer or cause of death. So, this allows us to do the monitoring by computer, so to speak. To start to do neurologicals means we have to locate them physically and get them in and do something or to them, and it becomes very difficult.

DR. DAVIS: I wonder if you would be taking those people who were identified in, for example, the so-called liver function tests which Dr. Sipes has pointed out that were inappropriately interpreted and some of the other tests that were done on people and trying to find those same people now and looking at whether there has been repair or whether this is still---

DR. CHALMERS: We don't have the data on the liver function test.

DR. DAVIS: You do on some.

DR. CHALMERS: I would much rather say that one of the other questions you will ask is, is

it safe to move into this area again would be what the liver function test would show right after the people move in because liver function tests are a reasonably sensitive measure of toxin.

DR. HUFFAKER: Alcohol.

DR. DAVIS: No. Rather than doing that, couldn't we just move in some mice and rats first? I mean, with all due respect, I think you might want to get some kind of a sentinel. Maybe liver is also not the right target but I think we could--- I think that we might recommend looking at some of these natural experiments that go on with the voles and worms and things and while it is scientifically interesting to monitor people after they just moved in, I don't know. I think if we need to do that, maybe they shouldn't be there.

CHAIRMAN WELTY: Risk assessment, we have talked a lot about that this morning and how are we going to handle that. How would that be incorporated into the criteria.

DR. STOLWIJK: I would be prepared to look at the health effect reports and the risk assessment.

DR. POHLAND: That is good.

CHAIRMAN WELTY: Do you want to participate in that?

DR. DAVIS: No---of course I would. I would be glad to talk with Dr. Stolwijk about it but I think I would be glad to let him---

DR. POHLAND: She is an expert in instructing you on the various methods.

DR. STOLWIJK: If I need to know, I know where I can find out.

CHAIRMAN WELTY: Okay. One of the other things we haven't talked about yet is how we are going to apply these criteria. Are we going to apply them to the EDA as a whole? I think I will start a new page here.

DR. DAVIS: I missed something. Are these then to be our criteria?

DR. POHLAND: We are not at that stage yet.

DR. STOLWIJK: I think what we have done so far is assure ourselves that we will have a perspective around us the next time we meet where we can actually discuss whether or not and at what levels we want to consider. I think that we could think about it in the meantime but I think that we

will need to have a session where we actually sit down and see whether a consensus can be developed

DR. DAVIS: On criteria. You might want to add risk assessment/standards because for some of the chemicals, very few, there are standards. Again, that is something which CH_2M Hill could determine for us after they come up with their list of all the different ones as those substances for which there are OSHA standards or NIASH recommended standards and the date of the standards and whether they are recommended or in place.

DR. POHLAND: Or any standards.

DR. DAVIS: Yes and if you don't have OSHA or NIASH, then there is ACGIH.

DR. STOLWIJK: That is like OSHA.

DR. HUFFAKER: There are FDA for acceptable levels of foodstuffs and things that may be extrapolatable, if that is a word, into what we are talking about here.

DR. DAVIS: Well, there are different issues there because the FDA, you know, levels are based on ingestion, intentional, and the only thing that they may apply to, I suppose, is drinking water and there you have smarts, but the EPA

has drinking water standards.

CHAIRMAN WELTY: In terms of the criteria, I was wondering how we should handle this in relation to getting this information back to Dr. Huffaker. Does he then want us to prepare a draft for your review for the next meeting or just circulate what is prepared by the various people?

DR. STOLWIJK: I think we do need somewhere a summary, a historical summary of the circumstances around that were somehow taken into consideration in our discussions. There needs to be a perspective of some sort as to what it is that we actually took into consideration and by extension, what we did not take into consideration. So, there needs to be an accounting of what we listened to and what we heard about and what we see as the concern and that, of course, then leads into---that should end, I think, essentially at the time of the emergency declaration and then the treatment plant, remedial action and so forth covers the period after that.

DR. POHLAND: We are setting the stage for our activity and we know it's spread out, everything you read, there is always a historical,

but we need a more direct---

DR. STOLWIJK: It is my experience from criteria documents that unless you provide enough indication of what was taken into account, sort of claim or disclaim what you did not take into account, that peer reviewers will say, you didn't do that or you shouldn't have done this or whatever. I mean, that is what they will do. They will still do it but at least they will do it on a well founded basis because then they will know what we did or didn't consider.

DR. HUFFAKER: We can do something like that. We will have the transcript to help us. This has been a very busy day and we could not even try to do it without the transcript.

DR. STOLWIJK: But you have been through this. You have been through enough of these historical summaries already I am sure, having had to give them or having had to listen to them, and I think that some lead-in that sort of describes how we got here I think is good. Now, there is a historical record of what happened at Love Canal and what we considered out of that record, what we listened to, what we heard so that we do know---

CHAIRMAN WELTY: A listing of all of the documents that were sent out to you.

DR. STOLWIJK: That would not be a very readable way of dealing with it.

DR. SIPES: Why we rejected certain data, is that what you are getting at?

DR. DAVIS: I don't know. Why wouldn't a list of all the things sent to us be appropriate?

DR. STOLWIJK: I think a statement, for instance, that tells that we have had full access to all reports published and unpublished that were available around this whole issue, I mean, that I think is a statement that needs to be in this criteria document.

DR. DAVIS: I am not prepared to make that statement.

DR. STOLWIJK: Well, some expression of whatever it was that we had available must be made.

DR. POHLAND: But our focus is going to be on the period of after or at the time the EDA was declared. We are working from that point on and what John is asking for is a setting of the stage to that point.

DR. STOLWIJK: So that we don't suddenly

start up in a criteria document without a lead-in that makes some sense.

DR. DAVIS: And it may be necessary to in fact enumerate all of the things that we have been able to examine because what if three years from now it turns out we did not have access to some report that was done by a consulting engineer for one of the companies?

DR. STOLWIJK: We could make an appendix.

DR. DAVIS: Yes. I think you ought to have a listing.

CHAIRMAN WELTY: There is one other thing that I neglected to work on and that is the sampling scheme for monitoring. Does anyone---

DR. STOLWIJK: This is for monitoring from now on or after the declaration has been made or something like that?

CHAIRMAN WELTY: Yes.

DR. POHLAND: I think that is an issue down the road too. It's part of our deliberation.

DR. STOLWIJK: It depends, for instance, on what chemicals are going to be taken into consideration.

DR. POHLAND: I think that is something

that will naturally emerge depending upon what we decide our criteria are and what we need to fortify it.

DR. STOLWIJK: But I think the kind of things that need to be considered, it will not look like a sampling scheme that would be used as an out of site, for instance. That would be a sampling scheme that would be as specific as you can make it to the particular location and that would be also with some flexibility built into it so that it doesn't actually condemn the community or the authorities to inflexible propensities of sampling. There ought to be some gradation in the recommendation for monitoring that allows determination or administration of the efforts at some convenient cut-off point. I think there should be at least some consideration that it is not an endless supply of sampling effort that is available.

DR. DAVIS: I meant to ask this earlier and I'm sorry if you mentioned it already, is there one drinking water supply?

CHAIRMAN WELTY: Yes, and it's monitored through the city.

DR. DAVIS: I would like to get what

those levels are because we have tap water levels.

DR. VANDERMEER: And so would everybody in this room. I don't mean to be sarcastic but it's an issue that has come up at every single meeting and we will try to get those for you.

DR. DAVIS: Who has them?

DR. HUFFAKER: The monitoring is done by Niagara City Water Works Laboratory and the State Health Department oversees that and from time to time we do samples. There have been historically a lot of problems down there because of the proximity to the S site and Hooker Chemical is coming back in and that has been in part corrected. The water quality is satisfactory now. There was a period of a couple of years ago when there were chemicals in the water that didn't belong there. They were not coming out on the finished water side but coming into the water supply.

DR. DAVIS: The reason I have the question is that one of the things that was kind of surprising last night was to see that the tap water levels of chloroform and carbon tetrachloride reported in 1978 were substantial. Now, that is tap water. Tap water as opposed to drinking water

tells you not only about the drinking water at the plant but the tap water is where the people actually drink.

DR. HUFFAKER: Mr. Hinchey, the State Assemblyman, brought that to our attention, that the Love Canal area drinking water was polluted and we went back and looked at it and it was a hell of a thing, the whole Niagara Water Works distribution system was extremely high and that was before the changes were made down at the plant. I will get you the data on that.

DR. DAVIS: I think that is very important to have that data.

DR. SIPES: Are those significantly lower now, could we know?

DR. HUFFAKER: Yes. They are in pretty good shape now. They switched the intake. They used to pick water up right down below here and they went over---

DR. CHALMERS: Right in the middle of all of those chemical plants.

DR. HUFFAKER: As you get into the chemical plants, the water works, and it's built right on the edge of the S side landfill and picked

up from two tunnels under the river, one goes halfway across and one goes way out in the river and the bottom one had a bay, the tunnel came up and the material evidently was coming through the deep rock out of the S site and into the forebay and was being brought into the plant and they were getting it out in the plant but it was bad quality water coming in and they just stopped using the big tunnel. They are using an ancillary system that goes down to the middle of the river now but there is a series of hearings going on right now in the Federal Court about the arrangement with Hooker as to what is to be done with the S site and the water works for the water supply. It is really a complicated case.

DR. DAVIS: The answer to my question is, we have knowledge that the area of Niagara, the general area has a high cancer rate, at least in general, and knowing what has been in the drinking water historically is kind of important. We may be in a situation of recommending cleaning up Love Canal and them having drinking water which is a cutting situation. So, I think it is really important that we get that information and, it is

just another kind of thing that we need to know.

DR. STOLWIJK: There is a section in the State Health Department that the water companies have to report on a regular interval.

DR. HUFFAKER: We have already done this for other people so I will get you a copy of the report.

CHAIRMAN WELTY: And those of you who have things to do, shoot for June 8th to have something in to Dr. Huffaker?

DR. CHALMERS: It's a function of when we get the material.

CHAIRMAN WELTY: I would like to ask Dr. Miller, I know you had some qualms about this.

DR. POHLAND: Yes. That was going to be my point, as an additional item, I would like to see, since you brought it up in your communications with the group and also in discussions, I would like to see something addressing the social implications and so forth.

CHAIRMAN WELTY: That is what I was going to bring up, to ask in what way you feel your expertise could most effectively be used at this point in our deliberations.

DR. MILLER: You began I think to raise the salient social question when you turned the page over. It was the question of the whole EDA. I mean, as a general statement, I think Martha and I haven't really had much opportunity to talk but as a general statement, I think I am safe in saying for both of us that we feel that the history of scientific work at Love Canal has been largely compromised by social factors that no one is paying any attention to and I guess I would be comfortable with some strategy where we began perhaps to prepare some kind of a document that spoke to those factors and where they seem to be effective and also for the ways in which I think we would predict they are going to impact on any declaration of habitability should that be forthcoming or the obstacles to effect the habitability, but I mean, I realize that in doing that we run the risk that we may be preparing a minority report.

CHAIRMAN WELTY: Let me emphasize that I don't think there is any minority report.

DR. MILLER: I understand that but there is such a division of labor that it looks to me like that division of labor implies a consensual

mode. It doesn't imply that?

DR. POHLAND: I hope you are not over-responding to my too frequent comments maybe.

DR. MILLER: Well, perhaps I am over-responding or responding in part to your assertion this morning that there was a distinction to be made between what was scientific and perceptions because for us, perceptions are real in that they condition the way people behave.

DR. POHLAND: The only point I was trying to make is that I can be more comfortable with solid data than I can perceptions.

DR. DAVIS: Let me try to mediate this thing.

DR. POHLAND: I wasn't trying to demean your approach and that is in fact why I asked to address the situation.

DR. MILLER: Thank you.

DR. POHLAND: Really, because it is something that certainly I need to moderate my opinions on.

DR. FOWLKES: I think what Pat is trying to say is that somehow all of what has evolved here has to mesh with common sense ideas of what it means

to live in a home in that neighborhood and I think in addressing this question which is how I would go at it, raises questions of what is the social context of habitability.

CHAIRMAN WELTY: Can you address this question in response?

DR. FOWLKES: Well, I think it would implicitly and explicitly be addressed.

DR. MILLER: That is part of it but there are other issues about long term monitoring that are absolutely crucial.

DR. FOWLKES: Yes.

DR. MILLER: Which would move far beyond the mandate of this committee.

DR. POHLAND: I don't think it does because our criteria, again, has to be justified as well as we can justify them and whether they are on perception of things or real data or state of the art notions of what needs to be done in the future and so forth.

DR. FOWLKES: What we have to do is consider people's perceptions as data.

DR. POHLAND: I understand what you are saying.

DR. STOLWIJK: What you mean by long term monitoring.

DR. MILLER: Well, I understand and I know a bit more about the community than I think most of you all do but I don't live here and all the work we have done has been in the distance but my understanding is that there are problems about, for instance, the long term maintenance of the treatment facility and questions about the financing of that and the provisions of who is going to be responsible for it, who is going to pay for it.

DR. CHALMERS: You mean long term monitoring of the treatment of the chemicals.

DR. MILLER: Yes, what Joe Slack referred to as the perpetual care facilities on the canal and if we are going to talk about habitability, I mean, as I raised the issue this morning, I don't think we can talk about monitoring as a one time thing.

DR. STOLWIJK: Habitability is clearly going to be conditioned along that plan forever.

DR. MILLER: Yes, that is true but you see, that---we understand that. We understand that but we go home, you see, and they stay here.

DR. POHLAND: So, we would transmit that impression, though, in our ultimate document I think.

DR. STOLWIJK: Where you probably can be extremely helpful to the whole group is at what we ultimately commit to take, actually be clearly interpreted by the community on its terms. I think that is where you can be very helpful, knowing the community better than we do and I think we need help and guidance in that area and I think that is probably going to be also the most effective contribution that you could make because to add to the document specific considerations of the social aspects may be a useful thing to do. I think, for instance, about the concerns, I would have concerns about after the declaration of habitability, what the process would be by which you reinhabit.

DR. FOWLKES: We have some concerns about that too.

DR. STOLWIJK: And this is an unusual situation and there are some unusual possibilities for good and for bad in that sort of thing and I think that some statement of that effect might not be out of order and I think that we probably would

have not much in the way of dissent in this group for reasonably cogent mention in the recommendations. So, I don't see any reason to think that they are going to be minority reports or anything like that. On the contrary, I hope that your insights and your experience with this community will help us make our report and our recommendations be as effective as they can be and we are going to need all the help we can get.

DR. DAVIS: To speak to that point, I think that these two are not that far apart. Do you think a risk assessment---we do this, you know, we put the numbers in scientifically, so to speak, but what people perceive to be a risk is important too and unfortunately studies of perception indicate that people think it is much more risky to fly in an airplane than to drive a car and in fact it's not. So, we have to deal with those realities, though, and we have a big responsibility to communicate as clearly as possible what we judge scientifically to be the risk, but also to recognize the social context under which those risks must enter into and I think that perceptions can be measured. Whether the "reality" of them from the

scientific point of view in some way becomes irrelevant, what people perceive can be relevant and a consequence, the self-fulfilling prophecy, if you will. The people perceive the bank is going to run out of money, they all go to the bank and take their money out and the bank will run out of money and it's worthwhile to keep in mind that perceptions are very real and an important process and we are, in a way, we are trying to push the bus in which we are riding because the perception, they will be moving along with us and we have to keep that in mind. This is why we are conducting this "scientific meeting," in a public way, and it affects the whole atmosphere.

DR. POHLAND: Furthermore, I think whatever we come up with in terms of criteria and recommendations, I would again hope that this would benefit the perception model that exists out there. As I sense it right now, there are some very definite opinions and so forth that may be absolutely correct and some which are misconceptions and the process should augment that total perception in the community so that these functions can come together to the best solution to the benefit of the

population being impacted. So, I don't recommend this just as a way to nullify the situation. I just want to be sure that we, of all people, would respect that kind of perception but I want to do it in a way that's truly productive situation and certainly I don't want to in any way polarize the group because of it.

CHAIRMAN WELTY: I think we are running into the public meeting and I would just like to take this opportunity to give the opportunity to the public to question us about our deliberations.

DR. DAVIS: I had one other point, who has the responsibility for coming up with lists of all the different monitoring data that have been done in the Love Canal?

MR. HOFFMAN: Yes, I will.

DR. DAVIS: You will do that.

MR. HOFFMAN: I thought that was the direction earlier today.

CHAIRMAN WELTY: Now, before we get into the public meeting, I would just---Dr. Davis and Dr. Stoline, you don't have any specific assignments. Is there any area that we have neglected?

DR. STOLINE: I thought we had given

Dr. Davis the assignment of coming up with the monitoring data that we need. That is different from the monitoring data that are available.

CHAIRMAN WELTY: And Dr. Stoline, is there any area that you feel you could address?

DR. STOLINE: I noticed a lot of people had simply put down their thoughts and I have read those thoughts and I think probably that is where I am right now. This is my first exposure here and so I think I need to decompress a little bit and put down on paper some overall things that I would like to share with you, first of all.

DR. DAVIS: And what I would suggest that you could pick up better than I is the question of statistical power and the relative risk because I think that is a very important one, whether one recommends a study should be, as Tom was talking about, if you could just develop sort of theoretically under what terms it would be worthwhile to follow those people up and what would have to be the relative risk for it to be worthwhile to do these kinds of studies, that would be a helpful clarification in the area of statistical monitoring.

DR. FOWLKES: I had one question and I

think it does overlap with some public concerns and forgive me for a minute. It was a question of the confidential data that we have not had access to. I worry about that in connection with the problem Dr. Stolwijk raised about what we would have considered and not. I am assuming the data that is being used for litigation is considered very central to precisely these same kinds of concerns that we are working with, and if we are left in the embarassing position of never having had a chance to access that data that are considered crucial to the court case as part of our decision making, then I think it makes us vulnerable. I just raise that because---

DR. STOLWIJK: I think that the authorities that talked to the people that control this data, I don't think there is anybody here that controls any of that data, that has the effective access to it, but it's my understanding that our concerns are going to be communicated.

DR. FOWLKES: Okay. Maybe I missed that.

CHAIRMAN WELTY: Yes. We did discuss this and the way it was left and the way I understood it was that we were going to convey your concerns about

the accessibility of that data and make every effort to gain access to as much of it as possible.

DR. FOWLKES: Or at least know what it is.

DR. STOLWIJK: Yes, at the very least we would like to know the form and the quantity of the data and the protocol used.

DR. DAVIS: Maybe we could take a moment just to refresh our memories as to the kinds of different things that we would like, that we want to get data on. Drinking water is fresh in my mind. We just mentioned that. We need time trend data in all cases, especially the relevant time trend data on drinking water at Niagara Falls. That is an absolute must. What are some of the other things that we have talked about that we need?

DR. STOLWIJK: There is probably not data on organics in the drinking water of Niagara Falls going further back than---how far?

DR. DAVIS: '78.

DR. HUFFAKER: How far back do the records go? When did they start monitoring for organics?

MR. HOFFMAN: I don't remember.

DR. HUFFAKER: I have that letter already

written. I will copy it and send it to you.

CHAIRMAN WELTY: I think we have a pretty good fix on those items and rather than take away from the public comments, I would like to get on with that and we will just double-check with CH_2M Hill.

DR. DAVIS: You did ask about the procedure. You said you wanted people who were giving you things to give them to you by June 8th and that they would be circulated to us.

CHAIRMAN WELTY: That is correct.

DR. DAVIS: So, we will get them by the 15th or the 20th?

DR. HUFFAKER: As fast as they come in, we will Xerox them and send them back out to everybody else. If it is something that we are supposed to put together jointly, then I will be talking with John.

DR. CHALMERS: I would like to have the number, total number of people who have had one or more years of exposure in the two areas.

DR. HUFFAKER: I will get Nick's totals and find out how many are still within the state to be reachable and Anita is going to find out for

us how many houses are in the canal, how many apartments in the LaSalle development, how many are now occupied, that sort of material.

DR. STOLWIJK: And the map is going to have the missing houses crossed off.

MR. HOFFMAN: Yes.

DR. HUFFAKER: Yes.

CHAIRMAN WELTY: Anita, do you want to coordinate this part of the meeting?

MS. GABALSKI: Sure. I have only got three people who have specific questions so why don't we start with those individuals and then if we run out of questions, we can allow duplicate questions.

Joanne Hale.

MS. HALE: What I have is basically a, like a two part question. I was just wondering, Dr. Stolwijk has suggested taking indoor air samplings but I was wondering, I think it would be very important, when you say to take them in vacant homes as you suggested, that the furnace be on or the air conditioning and the sump pump be running such as if someone was in that home because if you take it at a time in the summer time when the

windows are wide open and the air conditioning is not running, you may get a different reading than if you take it in the winter time when everything is closed up or in the spring time when the sump pump is going full time.

DR. STOLWIJK: The philosophy would be that the most serious condition would occur as it has in other cases where something comes up from the soil, when everything is closed up and nobody is in it and no one is using it and no one is opening any windows. That is when you get the most serious conditions. We are interested in finding the most serious condition because we are going to use it to find out what might be coming into the house under the worst of conditions. If the windows are all wide open, we worry a great deal less. That is the reason for doing it in vacant houses, because the concentrations in vacant houses will be higher. If they come from the soil, the concentrations will be higher under those conditions than when they are occupied.

DR. MILLER: Providing the windows are closed.

Are there many of those buildings where

the windows have been broken out?

MS. HALE: Right. Most of those homes have no windows. It's not a livable condition.

DR. STOLWIJK: But they were boarded up, though.

MS. HALE: Yes, they are boarded up but they are not really livable.

DR. STOLWIJK: That is as good as windows.

MS. HALE: I had another part for Mr. Hoffman, he mentioned that---I didn't quite understand what you meant by a conservative side, when you made that reference to this doctor or this engineer over here. I didn't quite understand what you meant, conservative side of the treatment plant. The documents that you would give to this man or to this committee, does conservative mean to the right or to the left?

MR. HOFFMAN: It means as to the worst case.

MS. HALE: The worst case.

MR. HOFFMAN: Yes.

MS. HALE: Okay.

DR. STOLWIJK: We always look for the worst case.

MS. HALE: Okay, but conservative is another word.

DR. STOLWIJK: We are conservative on your side.

MS. HALE: Who is going to do your follow through of your recommendations? Who is going to check on the men that makes the decisions when you guys finally finish up with your recommendations? Who is going to do that?

DR. POHLAND: The public will be one.

MS. HALE: But we have been trying to do that job for five and a half years and we are fairly tired. We want a vacation.

DR. STOLWIJK: You probably heard the explanation this morning about the sequence of events that is going to take place. There will be a public record documented and that document will be considered in peer review and will then be brought back to us in case we haven't done our homework and it may be corrected or modified. It will then go out together with the review of the quality of the environmental data and that will be applied to these criteria and it will then go to a decision making process that presumably will then

result in habitability decisions starting late in '84 or early in '85.

MS. HALE: But it's all been presumably for five and a half years and that is why you guys are here. You know, it's all been presumed somebody would do that.

DR. STOLWIJK: Well, you can't blame us for what happened before.

MS. HALE: No, that is right. We're not going to. That is why we are asking. When the final man says, when you make the recommendation maybe to close off this area but leave this area or whatever, how do we know?

DR. STOLWIJK: We will not make that recommendation. We make a recommendation of how somebody who makes the decision ought to judge what should be done.

DR. DAVIS: My understanding is that after we make our recommendation, the Commissioner of Public Health and their TRC committee will use our recommendations, use the criteria recommended, the methods we recommend to make a decision and that the use of those criteria and methods will be evaluated by some group such as the National Academy of

Sciences.

DR. HUFFAKER: Wall, we have talked about this with the Commissioner this week and the suggestion was that an oversight committee of some sort be a part of this and this certainly could be a citizen's group to watch the application of the criteria and the data when they were put together so the final recommendations came out and he thought that was fine, that there was no problem. We are a long ways from that, but we anticipate doing something of that sort. We would even solicit input from you people as to how that might be done.

MS. HALE: Thank you.

MS. GABALSKI: Bruce Steele.

MR. STEELE: I have a list of notes that I have made in the course of the day and I would like to review them briefly with the committee and ask for the committee's indulgence. There has been a lot of conversation and discussion that the committee and/or individual members need additional data. I am a lay person. I am not a scientist. I hear people around me, primarily government people, expressing their confusion as to why they need additional data and what kind of data that we

need and what value is the additional data going to be. At some point after the meeting closes today, if maybe you can give myself and my clients and perhaps the government people here some sense of what we are looking for, what do we mean to do with the new data, what is the goal of the search for new data, I know there was quite a bit of confusion among people, not among you people but among people in the audience yesterday and I detected some confusion especially as I listened to the consultants attempt to respond to our expressed needs this morning and I just wanted to have everyone's understanding from your point of view as to why we need the data. I am not downing it at all. Whatever you say goes, as far as I am concerned, but I just wanted to understand what you said.

Secondly---

CHAIRMAN WELTY: Can we answer them one at a time? It may be easier rather than making a list of them.

MR. STEELE: I suppose.

UNIDENTIFIED VOICE: By "new data," do you mean they don't want to look at all the data

that they are asking about or---

MR. STEELE: Bruce, I think I explained that.

UNIDENTIFIED VOICE: I didn't understand you.

MR. STEELE: Well, I wasn't talking to you. If any of the committee members---if I wasn't clear to the committee, that is one thing.

DR. DAVIS: I think you could answer his question.

MR. STEELE: Well, I don't know---

DR. CHALMERS: That is a polite way of saying it wasn't clear to one of the committee members.

MR. STEELE: Dr. Davis, you have expressed on many occasions the need to look at additional data. Other people have expressed the need for additional data. What is the connection between the need for new data and developing a grasp on an appropriate criteria to determine habitability judgments?

DR. DAVIS: The reason why I would like to see the data is because the data presented to me so far leaves some unanswered questions.

Specifically, they leave unanswered the question of how much gunk is there that still is getting in the homes through other means besides the storm sewers and the sanitary sewers. So, in order to answer that question, we need to look at what is in the surface water, the stuff that percolates up and what may be in the cellar of the house.

MR. STEELE: And the connection between that and the particular criteria of habitability is what?

DR. STOLWIJK: Well, if I may answer that one, the connection is that nobody in the group here anticipates that there will be a complete set of satisfactory data that would be desirable in all aspects in order to arrive at criteria. What we fully anticipate to have to deal with is that we will take a piece of the data from one collection, another piece from another collection and we will have to pull together this in such a way as to make as much sense out of it as can be made out of it and then on the basis of less than total insight and total understanding, make the best recommendation that we can make. Our efforts refer to our continuing attempts to get as much out of what is

here as could possibly be gotten out. If we seem to be insistent, that is why we are insistent. The fact remains that even after we are all done, we have gotten everything that we possibly can, there will not be the kind of data that will make an absolutely tight, totally satisfactory set of recommendations.

MR. STEELE: With respect to habitability criteria.

DR. STOLWIJK: That is right.

MR. STEELE: So, what you are saying is that you need additional data of particular kinds in order to judge or assess what kinds of habitability criteria are most appropriate to be used.

DR. STOLWIJK: If we define criteria and there does not exist any data that applies to these criteria, we have wasted our efforts now.

MR. STEELE: Well, except couldn't one in the abstract devise an appropriate habitability criteria and then go out and say, hey, this is the best habitability criteria approach but nobody has any data on it so we have to collect this data. I mean, if all the data you have is sufficient to satisfy a poor habitability criteria, I mean,

obviously then doesn't the existing quality of the data constrain you?

DR. STOLINE: I think one of the things we are going to be discussing at our next meeting is exactly how much data is out there and maybe at that time some determination of the quality of that data and can it pertain to the habitability decision. We have assigned out several tasks here and at that time I think you asked the question really that we are going to be asking ourselves here in June and my feeling is that probably we will need some more data, but I don't know that absolutely but if that is one of the issues that this group is wrestling with right now, it is trying to figure out what is there, how useful it is and what quality it is and ow that pertains to the habitability decision.

MR. STEELE: I just guess I feel more comfortable using additional data in order to determine what is an appropriate habitability criteria on an absolute basis as opposed to using the data that we have and getting additional data consistent with what we have in order to satisfy some suboptimal habitability criteria and why must

we work off, I mean, what I thought I heard and maybe I am mistaken, I hope I am, to what extent are we working off? Is habitability criteria going to be a function of just whatever data one happened to collect in the past?

DR. MILLER: That is why we are asking you for new or additional data. It isn't altogether adequate and some of it is useful and some of it is not useful.

DR. DAVIS: May I suggest that you go on to your next question? I think we understand the point.

MR. STEELE: There was some announcement by the Commissioner of Health that the habitability criteria would be applied on a house by house basis. I am concerned about that and I am concerned about the extent to which the Commissioner might be prejudging you people and that if a house to house determination is not consistent with the most sensible application of what you people believe is an appropriate habitability criteria, maybe it would be helpful for that to be made clear to the Commissioner of Health.

In your final report, to the extent that

data or information lacks or gaps, in fact, the assurances that one can provide with respect to the final habitability criteria, if one can put in perspective that level of confidence that the result might come out with, I think that would be useful. The state has indicated that it wants, to some extent, to provide an opportunity for additional data. At the same time the state and federal governments have expressed a reluctance to spend a lot of time gathering additional data. To the extent that that somehow constrains the ability for an appropriate criteria methodology to give sensible assurances, it would be helpful I think to have that be flushed out.

There was some talk earlier this morning about what kind of guidelines there are with respect to existing or proposed hazardous waste sites and what kinds of monitoring do they do. I would point out that SECO and SEA both are required to do air monitoring and are both required to do ground water testing and so, that is relevant.

Also, the New York State has a siting board statute and it sets forth certain kinds of locational criteria for new hazardous waste

facilities. So, if people are interested in the extent to which the Love Canal fits the locational criteria for a new hazardous waste site, one would look at that particular article or title in the New York Conservation Law and one can figure out whether or not a hazardous waste site would appropriately belong there.

You talked about risk assessment a great deal and talked about other things that I am not sure I understand really clearly but I would ask that to the extent that particular criteria methodology internalizes specific judgments with respect to acceptable risk levels or other kinds of subjectivity, that there be some opportunity for the community to understand what particular acceptable risks are being involved and some opportunity for the community's perception and understanding of what should be an acceptable and appropriate level of risk. I know sometimes risk assessment builds in an acceptance of a particular level of increased risk and to the extent that we are talking about a risk assessment, to the extent we are going to build in an acceptability of one times 10 to the minus 6 or whether it is one times 10 to the minus 4,

there may be some reason for getting a sense from the people who do or may or could live in the declaration area to get their feeling about that.

On behalf of the Renters Association, I have a note here that thanks you people for coming and holding your meeting in Niagara Falls and being open about your decisions and your determinations and it certainly goes a long way in terms of building credibility.

There was some particular discussion about the schedule. Mention was made by the government officials that the July 7th date was a date suggested and that it was a date within which the government hopes that the task could be accomplished. I know when Mr. Labresy was here last week, he indicated in conversation in response to questions that if your committee needed more time, that certainly that would have to be given and I want to pass that word on to you.

In the discussion of the QA/QC data, it was unclear to me whether or not the ongoing QA/QC analysis was to be applied to the Environmental Protection Agency's data or to all data, and it was unclear to me the extent to which the National

Bureau of Standards reports on evaluations of Love Canal data had been made available to the individual committee members and if it hadn't, I would ask that it be made available.

I am a little bit uncomfortable with the perception that I have between the difficulty in the consultants to understand the need and directions of the persons on the committee and I would ask that the consultants and the committee work closely together to make sure that the consultant understands clearly what the committee needs because it wasn't clear to me that, in the conversation, that there was a clear understanding.

MS. GABALSKI: Excuse me, Mr. Steele. I don't mean to cut you off but there are a number of other people and we can come back to the rest of your comments and questions if you wouldn't mind.

MR. STEELE: Why don't we do that then.

MS. GABALSKI: Thank you.

Sister Mark Margeen.

SISTER MARK MARGEEN: I have just one comment. When you are talking about in the area of social factors and perception and so forth, I agree wholeheartedly with what you said and those of us

who serve the community, that is what we have to deal with. So, there is a whole social element, psychological side of the arena, the community, the development, by whatever name you want to call it, that would be left here long after this problem had come up and so forth and what happens to the community socially, psychologically has a lot to do with the determination as to the health of the community as well. So, it would have been very helpful to us as providers to have help with that because we don't go home someplace else.

The last time, and I may have missed this beca__ I have not been here all the time, there was some discussion about resumes, I don't know if this is appropriate or not, and it was that the resumes not to question your qualifications at all, but that there would be some provision made from the members of this committee that we would have the---the community would have the ability of the resume and is that appropriate to ask you?

DR. STOLWIJK: We sent them all in.

DR. DAVIS: And we were led to believe that you had received them.

CHAIRMAN WELTY: They were given to Anita.

DR. HUFFAKER: All that we received were given to Anita.

SISTER MARK MARGEEN: Of all of the members?

MS. GABALSKI: Most, the majority of them I believe I have.

MR. STEELE: I think there was some question about how many pages could be copied per day and we were told we could only get seven copies per day free and I don't know how some of the resumes may have evolved.

DR. DAVIS: How many groups are there among you that each want free copies of these things, approximately?

MR. STEELE: Five, at least.

DR. DAVIS: Five groups.

SISTER MARK MARGEEN: It depends on what day of the week or what hour of the day you are talking about as to how many groups.

CHAIRMAN WELTY: Excuse me, I think at the last TRC meeting we tried to work out an arrangement with Anita whereby two copies would be sent to Anita, one would remain in her office and one would be on a loan basis so that you all can take these

home with you and review them and copy it, do whatever you want to with it. Now, is that working out okay, Anita?

MS. GABALSKI: Well, Sister Mark Margeen hasn't been here for a week or so but---

SISTER MARK MARGEEN: We have such an efficient staff, all right.

CHAIRMAN WELTY: Well, that makes me feel good that we responded to your needs.

MS. GABALSKI: Reverend Dyer.

REV. DYER: I'm sure that you know we have a grieving community because our community has died and there is people that are in the community, like Sam, and he lost all of his friends and history and I am concerned about this entire community and the habitability of it and your determining that, and I feel confident by what you are saying that you are aware that this is more than a project that you are working on, that it is our lives, and in your determining the habitability, that you are saying that you could choose to move here and with its water problems and with its other related problems, that you would feel comfortable in living here and I understand and it is my opinion

of what is going on, that this place is even a greater burden on you for determining habitability because of all the other related problems that are here, not just at Love Canal here but then all these other problems and things that should be considered. I keep wondering why New York is trying so hard to put people back into this area that has been a horrible national public relations nightmare and try to make this a residential area again. We are not hard-pressed for land in this area. We are not desperate to move people up into a chemical dump or move back into houses close to it. If we were desperate, then let's do it but to make it habitable when we are not that desperate for land, it's not necessary, the idea that this is safe or only safe but let it be a nice place to live and let's have a big buffer zone around it, you know. If we are going to build houses around it, let's get a big buffer zone, not just a few streets that they have blocked off there and say this is the Love Canal zone. Let's have a big buffer zone and then people can look at that and say, this is a nice place to live because you know, whether we know it or not, 50 years from now this is still going to be

contaminated with the chemicals still in the ground there. And you know, if this group decides that this is a safe place to live, then how many people around this country are really going to believe it enough to move to this city and to move into that area?

So, this particular area of problem is concerning me. It seems to me that New York is trying to duck the entire issue and to duck their heads and to forget somehow in their mind that there ever was a Love Canal but the way I look at it is, in religious circles you take something that is your greatest handicap and you make your greatest benefit out of it. If you can turn it around, use positive thinking. Use areas of, let's attack this problem and let's make it be the greatest thing that ever happened to Niagara Falls, the fact that Love Canal did come here and that we had this problem and since this is a scientific group, let me just recommend that Love Canal be cleaned up and let it be contained and as a result of it being contained, Love Canal has a place in history and with its place in history, let's allow Love Canal to be a national landmark. With it being a national

landmark somewhere on the edge of the canal put a museum in so that people can come to this area, scholars that are wanting to study what you are studying, and it's already going to be on computer, put it in here. Tourists who have heard about it, they can come. They will have all the news data. It's already in all of these newspapers around here. They can have all of that but they can see it, but not only that but all the video tapes, people can come in and push a button and see crisis by crisis and year by year and approach it and see it from this particular perspective.

Also, it could be a library of a resource center where the up to date and state of the art approaches to this kind of a problem is, where people can come and study and not only that, but that people, when they do come and people, when they do see it, that we can have a film that we can make and say, this can never happen again. These are the things that we want you to know to be very confident that this is never going to happen again. And if we can do that, then we can reserve a place in our history so that this is all documented instead of just being all just pushed under the rug.

let's make it something so that we are pround of it. Let's don't necessarily move back in there but let us look at it and all the work that is going into it and let us reserve a place in history for it. Thank you.

DR. DAVIS: You are suggesting making it a kind of a living laboratory?

REV. DYER: Yes.

SISTER MARK MARGUERN: That subject has come up different times. It has always amazed me, we tried to do this as a community, look at our problem, you know, and make it be positive but the community, the governmental forces, the political powers that be, et cetera, don't provide that opportunity as a planner, community developer. That is what I would like to see. Why can't we sit down, a new idea, brainstorm the stuff as new ways of bringing people in there. Why don't we talk about the things and make it something else. Buffer that zone and then have this other thing. We never had a forum where we could really talk about that. Do something else with it. Turn it into something. I would go down there if I was one of the boys in City Hall and say, okay, tourism is

your big thing. Well, let's make tourism something else. I have heard that idea a hundred times about the resource thing and the laboratory. You could make it, my God, bring in all the scientists from all over because Love Canal, my concern is not just Love Canal. What you do here in looking at it is, how about the people in Hyde Park? Have you seen them, the people that live next to Bloody Run, those poor, suffering souls? They were sitting in my office this morning and that is why I am not sitting here, because people are hurt and crying yet. Those people, what about the people in the City of Niagara Falls? We got three days of water. You talk about water, lady, we will talk about water. We are down in the federal court now trying to scrounge and find a few pennies to get in there to be heard. We are appealing a decision in that court about that water. We are paying thousands of dollars to have a water system. We are sitting here with it. We have three days of water in this city for fire, for the hospital, for the people to drink, for these motels, these tourists and everything. Maybe the biggest blessing that God could send us is to send us that

breakdown because we are riding on the edge and I don't care, I heard that from the top too, some of the top sources, a very high level in this community, that we got three days of water and if that intake goes, we have had it and maybe that would be the best thing, then maybe all the people in the city would rise up and cry.

People come to us all the time. Somebody told Barbara last night in a dark parking lot, "What do you mean Love Canal?" And he said, well, what about that other one and he named two or three other dumps around and he said, "Well, we are really glad somebody is doing it for all of us." A lot of them people want to talk about it but they are at home. The community is oppressed. It's our holocaust and let's make a film so we don't forget. Don't turn away. Look at it, then turn it in. Bucks are their big thing, turn it into bucks. If bucks were my big objective in life and my big career, them, man, I would be out there and find out how to get the bucks and turn this thing around.

DR. DAVIS: I'm a little confused about something, Sister. You are saying that there are a number of other sites here so you are not talking

about just taking Love Canal and making a buffer, you are talking about taking the entire area.

SISTER MARK MARGEEN: I am talking about whatever you decide, when you come up and you have got something to say about this, what you decide to say goes, it's okay to live in Love Canal, in certain areas so it's going to be okay to live up there on X, Y and Z streets, up in the Hyde Park area, that has got eighty some thousand four hundred tons of waste. It's going to be okay to drink this water. Hey, it's okay because you look at that data and that data and so forth. Hey, it's okay to live across from the Durez site. We got a lot of things. I'm not going to name them all.

DR. DAVIS: So, you are saying that you would have to zone off a lot of these sites?

SISTER MARK MARGEEN: Yes, whatever you decide. It is going to be real interesting. What is going to happen because you are going to say, hey, it ain't okay to live in Love Canal, okay, and it ain't okay to live in Hyde Park, I am here now and there are a lot of people you haven't even seen in this room who are back there, real interested, and we go back and report to them what was decided

down there because what happens in Love Canal, happens all over. You know that.

DR. POHLAND: Well, we are, of course, very sensitive of that issue and as far as the Reverend is concerned, you could also turn around a decision of habitability in your favor too because certainly what is habitable makes all these other ideas far more attractive. So, you must recognize that we have to come to grips with criteria. We are not making the decision. The decision is for somebody else. We are certainly very receptive in trying to be as sensitive as possible to what you people are saying to us.

SISTER MARK MARGEEN: I guess you have to understand, this is five years and it's kind of like Joanne or somebody said back there, you know, it's five years and we want a vacation or raise or something. You know, I will tell you what you represent up there right now, it's another hope, okay. I can't explain the feeling. The sociologists can take care of that. What I see is that I think we feel the best from what we have seen here plus because of the public openness of it and the interaction because always before we asked a question

and sort of like the answer we got yesterday, well, that is what we have got this committee for. We are looking at the data. You know, people around here don't feel---even the criteria, you know, people around here say common, ordinary Susie Q and you know Joe Smith, they are not going to talk about criteria by which they do something. That is not a word they use. So, they hear this criteria on habitability, I mean, you know, that has got lots of consonants in it and sounds important. You must know something about that, really, Dr. Smith, I meah, so there is a lot of expectation, maybe like the kid with the Christmas tree the night before, it's a lot bigger in my imagination than that Christmas tree, when you actually go down there and see it. So, that is what we are concerned of and are looking at now and I just want you to realize that and maybe that is what you are getting, but I think you have to get that too, don't you, to get how we feel?

DR. STOLWIJK: Let me ask you a question about that. You said three days of water. You are referring to the fact that if the intake should get blocked or something, there would only be a three

day storage of water?

SISTER MARK MARGEEN: Yes, sir.

DR. DAVIS: And that includes the calculation they make for fire.

SISTER MARK MARGEEN: Yes. You are aware of our particular water problems, that they refer to closing down our intake.

DR. DAVIS: No. I don't think we are actually aware of it. Maybe you ought to tell us.

SISTER MARK MARGEEN: I think maybe you should apprise yourself of that.

DR. STOLWIJK: We are going to be given a report by the Health Department but I hadn't heard of three days of water.

DR. CHALMERS: I'm not sure this is relevant to our present problem.

SISTER MARK MARGEEN: No. I'm just saying that the water quality and all of that and that is why we got the three days, because it has something to do with the water quality, the water coming in and why they had to shut the intakes, et cetera. What has happened to our intake, we have one of the most expensive, most sophisticated and most expensive treatment systems in the country, right? You know

in that very brief time that it was in, it all broke down, the carbon beds, because of the pollutants in it.

CHAIRMAN WELTY: Anita, could we have one more then or how many more are there?

MS. GABALSKI: There are a number of additional questions. I guess I would ask that the next questions would be preferable if possible.

UNIDENTIFIED VOICE: Can I ask this panel if any thought has ever been given to removing Love Canal and the 102nd Street and if not, why not? New Jersey sent us all of the NUCO for the next ten years to this area, why can't we remove it, very simple? Is there anybody here qualified to answer that?

DR. SIPES: I think we asked that question before. Part of the problem was the cost and what to do with it was the answer I got.

UNIDENTIFIED VOICE: Well, New Jersey sent us quite a bit. In fact, they were planning on sending us even more the next ten years, NUCO, who maybe some of you are aware of. You might have had part of it. If they can do it, if they can send a dump a thousand times more bigger than Love

Canal, we surely can take it out of there and 102nd Street and ship it back and that would solve the problem, very simple. New Jersey is doing it everyday. Let's be nicer about it, we will ship it to some remote area of the country where it won't contaminate rivers like this one, one of the greatest fresh water basins in the world. Let's send it to maybe Utah or some area where it would be safer, right or wrong?

DR. SIPES: Well, I don't know that it would be safer.

UNIDENTIFIED VOICE: But they are doing it everyday, shipping it here 24 hours a day, thousands of Love Canals.

Are any of these people with the EPA at all? Some of your people are very aware of the facility. There are every type of waste ever produced by all industries. They dump dioxin, PCB contamination, everything ever made, I think that is a byproduct, is shipped to this area, many Love Canals and I think it's important to get to that next question. I think it might give you another side of the story.

MR. GIARRIZZO: I wasn't going to speak

today because I didn't have anything to speak about. The people answered most of the questions that I was going to ask, but I happen to disagree with Sister Margeen and Rev. Dyer. They want to make that a showplace. Let's show the world that we can clean up the Love Canal and we can make it the cleanest place in the world. In other words, we went from a cesspool to the best place in the world.

There is an invalid woman who has lived there 82 years. She was born in that house and has lived there 82 years. What is she going to do at her age. There was another woman that is living off of 99th Street, she is 83 years old. She is the great granddaughter of General Robert E. Lee from the Civil War. She has got no place to go. She is satisfied with where she is at. The mst of the people I represent up there, they are older citizens. They have got houses paid for. They don't want to be moved around like a bunch of cattle.

Look what happened at Times Beach. What are you going to do, move people around like cattle all the time when there is a chemical dump? Like Joe said, clean the place up. Make it a showplace for the world. This is the kind of museum you

want. When people come up, they will say look at this place, people are able to live in this place again. Not, we are going to close it up and put a big fence around it and set up a museum up there and say, look, this is the place we had, a cesspool here. That is all I got tomy.

UNIDENTIFIED VOICE: I think generally it isn't done this way. That would be settled in court. I think all controversial matters that aren't settled when the public are involved, they will go to court to be settled if they don't do the job.

REV. DYER: I would say clean it up or contain it, you know, and then do it. You know, so, I am not against cleaning it up. We would love to get it cleaned up.

UNIDENTIFIED VOICE: Well, I understood you to say make it a museum out of the whole thing.

DR. HUFFAKER: Why don't you bring this question up when we have the EPA and DEC up here at the next TRC meeting. These people, they did consider cleaning it out and there was a number of alternatives that were considered. I can't speak to any of those because it's not my turf but

Bob Ogg can talk to you about it or the people from the EPA would be glad to do that, I am sure.

UNIDENTIFIED VOICE: This problem will always be here as long as it is allowed to stay like this. It is never going to go away. It will be here for infinity. The next generation will be fighting it maybe in court.

DR. STOLINE: I have a question with respect to that. Is there anything written on that? Could this committee be given any written information on the consideration of that?

DR. HUFFAKER: In the original proposal for the containment, there were the options listed of the things that had to be considered in that.

DR. MILLER: Is that the Conestoga Rovers?

DR. HUFFAKER: That was the Conestoga Rovers I believe it was, the one that was back there. That should be in Anita's office.

DR. STOLINE: One of the options that was considered was the actual removal of the contents?

DR. HUFFAKER: I believe so.

DR. POHLAND: That is always one of the options, always, and usually it's eliminated due to the cost and the problem of doing something with

what you dig out. See, you have to understand, if you dig it out of one place, it has to go somewhere else.

UNIDENTIFIED VOICE: We are well aware of that, sir. We had that explained to us 24 hours a day, 7 days a week, before you came in. Do you agree with me on that? We see it everyday.

DR. POHLAND: Well, I don't know what the circumstances were.

UNIDENTIFIED VOICE: Well, it's very easy. If you did your homework, we are the cesspool of the United States. We have every type of chemical that was ever made by man and they solved their problem, they sent it to us. Why can't we remove it to small sites and send them to an area of the country where it would be safe and then the problem is done with but let's not hurt someone else like they are hurting us everyday of the week and we sit here with panels and try to solve little things, let's solve the big ones. Get them over with because this is a lot of money we are going through, you know. You have got a problem and every problem can be solved. They even fight wars and end them. Let's get involved and get it over with

because you have got a body of water here that is the greatest body of fresh water in the world. No one has got what we have got here and if you let it stay here and try to bottle it up, it's going to continue to leak in this part of the country.

MS. GABALSKI: Thank you for your comment, Joe. I have got a couple of more questions. Joanne has a second brief question.

MS. HALE: What I was wondering is, I think you had a July deadline, is that correct, July deadline for the criteria?

DR. POHLAND: Well, that is the target date.

MS. HALE: I missed a couple of hours this morning but it's hard to come to all of these all of the time but could you please express your concerns if you feel rushed by any means? Does anybody feel rushed and, like, science can't take its place because you are in a hurry or you are under a deadline?

DR. POHLAND: Let me respond in a different way. I am not going to respond directly to the question but let me assure you that these kinds of concerns are foremost in our minds and let me assure

you that if we feel that way, after we have done what we intend to do between now and the next meeting, let me assure you that the schedule will be adjusted and I think that falls well enough within what has been indicated to us as a group. Anytime you do a task, you have to kind of predict what kind of effort it's going to take and see where you might be sometime in the future and you all understand, I am sure, the complexity of the issues that we have to deal with here and a lot of these are just being really probed in depth by us and so, maybe next time we will give you a more straightforward answer to the question.

MS. GABALSKI: A final question by Mr. Steele, comments or questions.

MR. STEELE: I think perhaps part of the problem is what I perceive to be a difficulty in communication between the consultants and the committee, maybe because the people relating to the committee are entirely engineers and perhaps it would be possible if some health scientists would be hired by the consultants to work with the committee. I am concerned about---

DR. DAVIS: I'm sorry, could you say that

again?

MR. STEELE: The people, the consultants that are helping the committee find information, indexing and--

CHAIRMAN WELTY: You mean CH_2M Hill?

MR. STEELE: Right, they seem to be having a difficult time or at least I perceive that they are having a difficult time understanding clearly some of the information that the panel wants and the rationale and the reason for that and it occurred to me that perhaps part of that difficulty might be because their training might not be particularly appropriate to the task that they are assigned to and I was thinking it might be helpful if the firm put on a health scientist to assist in the liaison process and I know when we asked to have a public meeting, whether or not CH_2M Hill, the engineering firm, was the appropriate firm to do this kind of task and they assured us that if they needed people from particular disciplines, those people would be hired. I am concerned about government perhaps attempting to limit and/or constrain the information of the people on the committee vis-a-vis the collection of additional

data, vis-a-vis sensible time frames, vis-a-vis options regarding land use. I have to wonder about what is appropriate for the area in the interim phase if you people determine that additional data is needed to really determine an appropriate habitability criteria. What is to happen to the neighborhood under those circumstances?

I would like to encourage the development of the idea that neighborhood is a co-base of a social unit and is important to consider as a sensible criteria and I am glad that it was brought out in the comment to the Health Department and I am glad that the committee is moving to have that further explored and further developed.

The question about the limits and definition of the emergency declaration area to the extent that that declaration area is defined in an artificial way, perhaps it might need some flushing out and with respect to that, what about the north sides of the creeks which are affected? What about the particular areas near and/or adjacent to particularly the contaminated sewers. What about the lateral sewers that might be affected? Are there perhaps residences or groups of homes outside

the emergency declaration area that might be appropriate to be considered? What about the effect of the outfall on 93rd Street? Does that suggest that there might be some reason to take a close look at the areas otherwise considered to be outside of the emergency declaration area?

I think it's important to continue to provide information on a timely and ongoing basis to the DEC's public information office. There was some conversation about, important conversation about health follow-up and health monitoring over the longer term. In the past, those of my clients who live in the LaSalle development haven't been exposed to that same level and degree of health testing that some of the home owners have been and I would like to encourage that the committee make sure that in any long term health monitoring effort, that renters are also included in a part of that.

Finally, to the extent that data and analysis of data would continue to be withheld from the committee, that there be provided to the committee by the custodians of that data a clear and written rationale explaining why it is appropriate from a practical and a legal sense for such

information and data to be withheld.

CHAIRMAN WELTY: Thank you for all your comments. I would just like to mention that the next meeting will be here on June 29th. I have been told there is a limousine service from the airport to this hotel. In the event you want to stay here, the meeting will be convened here, a one day meeting on that Friday. Off the record.

(Discussion off the record.)

(Whereupon, the above proceedings were adjourned to Friday, June 29, 1984.)