

August 11, 1976

Subject: Monitoring Report #1

Detroit Water and Sewerage Department Development Program

Project: 76:45

Date of Monitoring: August 6, 1976 (working day 154)

Actions taken:

- Briefly reviewed work from previous three sessions
- Monitored facilities plan (FP) initiation network, sheet 1, Issue #1 dated July 16, 1976
- Monitored projects 01.01, 01.02 and 01.03 (rehabilitation of existing primary system at waste water treatment plant) from sheet 2, Issue #1, dated July 16, 1976
- Reviewed and discussed revisions to sheets 5 and 6, Issue #3, dated July 27, 1976 for contract processing and routing

There have been three previous work shops held on various programs and projects of the Detroit Water and Sewerage Department during which elements of the program have been discussed and in some cases, diagrammed. Earlier meetings were held on July 16, 1976 (working day 139), July 20, 1976 (working day 141) and July 27, 1976 (working day 146). The first three sessions resulted in preparation of network models shown on sheets 1, 2, 3, 4, 5 and 6.

In these first three sessions we also generated considerable information on the blackboard and on flip charts. This material is summarized in work shop notes prepared by the DWSD staff for sessions 1, 2 and 3.

At the August 16th session, it was decided to start monitoring project work to date. Results of this monitoring are summarized below.

It is to be noted that material contained in these monitoring reports should be reviewed by those participating in the meetings for accuracy and completeness. In subsequent sessions it would be wise to prepare monitoring reports while the staff involved is present and can participate.

**Monitoring Report #1
Detroit Water and Sewerage
Dept. Development Program
Page two**

**RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER**

The original and two copies of the monitoring reports will be sent directly to Charles Scales, P.E., Director of the Water and Sewerage Department. Distribution will be at his discretion.

Facilities Plan (FP) Initiation

Monitored from sheet 1, Issue #1, dated July 16, 1976 (working day 139)

As of August 6, 1976 (working day 154) staff recommendations for selection of the facilities plan consultant have been reviewed by the director and a final choice made. Preparation of the engineering service agreement will be put into work immediately. This activity is currently 3 to 5 working days behind our projected schedule. It does appear, however, that the lag can be picked up in subsequent agreement approval processing.

During our early discussions at the monitoring meetings some problems did appear in the task of enriching and submitting the step #1 application to the Water Resources Commission. Apparently submission of this step #1 application will require a detailed statement of all incurred costs for planning and design work to date on all projects covered by the facilities plan. Also needed will be a prediction of probable future costs to be incurred on projects covered by the FP program. Consultation with the accounting staff indicated that if a full statement was required, it might take considerably longer than the time available. Therefore, it was decided to generate and submit the information as summary totals from the detailed statements, accompanied by microfilmed copies of the backup sheets.

After considerable discussion, it was decided further that the target for completion of this step #1 application would be no later than August 27, 1976 (working day 169) at which time the material would be submitted to the Water Resources Commission. It was assumed they would require three days to review and submit this to the Environmental Protection Agency. There is some possibility here of concurrency in the review with completion of the step #1 application preparation.

Next EPA would review and approve the material. This was expected to consume about 15 working days. Thus, approval of EPA on the step #1 application is expected by September 23, 1976 (working day 187). At this time it should be possible for EPA to make a step #1 grant offer to the Board of Water Commissioners. The lag over our earlier projected schedule would be about 11 working days. Hopefully some time can be picked up subsequently so that a work order for the facilities plan preparation can be issued by the DWSD on or before October 22, 1976 (working day 208).

**Monitoring Report #1
Detroit Water and Sewerage
Dept. Development Program
Page three**

**RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER**

There was an additional task introduced after preparation of the proposed engineering service agreement. It was felt desirable by the staff to solicit City of Detroit Council approval of the grant amount. This should be done prior to the step #1 grant offer being made to the Board of Water Commissioners.

The process above was discussed in great detail by the entire group present and it is assumed a full awareness and understanding of the process is now held by each. I recommend a continuous review be made by the responsible managers involved to insure that this understanding does exist. The facilities plan presently occupies a very high priority and is critical.

Project 01.00 Rehabilitate Existing Primary System at Waste Water Treatment Plant (WWTP)

Rehabilitation of the existing primary system at the WWTP has been assigned a code number of 01.00. Presently we have three sub-projects. These are:

- | | |
|-------|---|
| 01.01 | Rehabilitation of the first four primary settling tanks |
| 01.02 | Rehabilitation of the second four primary settling tanks |
| 01.03 | Rehabilitation of all remaining primary tanks after 01.01 and 01.02 |

As of August 6, 1976 (working day 154) the machinery for awarding a labor contract for project 01.01 has been set into motion. Apparently most materials necessary for the job are available and it is hoped that work can begin on the rehabilitation program by August 30, 1976 (working day 170). There was some confusion about the exact status of the contract award and this presently is being resolved by those concerned.

Following a detailed discussion, it was decided to restrain rehabilitation of the 01.03 primary tanks by a restudy of primary tank flow characteristics. This restudy is now in work and will be an ongoing project throughout the rehabilitation period of projects 01.01 and 01.02.

Preparation of Facilities Plan (FP)

Monitored from sheets 3 and 4, Issue #2, dated July 20, 1976 (working day 141)

These two sheets of network models show a rough approximation of the DWSD staff concept of what would go into preparation of the facilities plan (FP). It was generated to obtain a feeling for the time scale that is involved and to identify most of the tasks the staff felt should be included in preparation of a facilities plan. The network is to be reviewed with the FP consultant as soon as appropriate.

Subsequent to that review the consultant, in conjunction with the DWSD staff, will be asked to prepare a detailed network model of the FP work. I wish to stress the importance of DWSD staff participation in this process. Just as with DWSD work, there are direct and dependent goals encountered by the consultant. The dependent goal areas are those in which the client can be of enormous assistance in preparing the plan. Thus, dual input to the proposed network model is of high importance.

We should discuss this mutual participation effort in more detail at subsequent work sessions.

Project 03.00 Sludge Handling Systems at WWTP

Monitored from sheet 4, Issue #2, dated July 20, 1976 (working day 141)

As of August 6, 1976 (working day 154) the memo of understanding with the Wayne County Air Pollution Control Division is in work. Bulletin #1 is also being prepared and bond marketing for project 03.01 (Sludge Complex #3) is under study. It was recommended by those attending the conference that marketing of project 03.01 bonds be diagrammed in detail since it is a critical part of the work. (Note: Please observe that there was a mathematical error in sheet 4 of the Issue #2 network dated July 20, 1976 on marketing of the bonds. The early finish of that task should have been working day 228 instead of 208).

Because of the important interaction of bond marketing, it was decided to complete the memo of understanding and preparation of Bulletin #1, then to print the documents, advertise and receive sealed proposals. These proposals would remain sealed until marketing of bonds was complete, after which the proposals could be opened, reviewed and a contract awarded.

Some discussion was held regarding the date to be maintained for awarding this contract, however, no change was made to the date shown on network model tracing sheet #4. The information was penciled on my field set in red and we should discuss this matter at the next session, along with suggested revisions presently being reviewed by DWSD personnel. Changes decided upon can be incorporated into the rough tracing at our next conference.

Network Model for Contract Processing

Monitored from sheets 5 and 6, Issue #3, dated July 27, 1976

At the close of our work session, we made a quick review of the comments DWSD staff had on this network model. There has been considerable study of the network since it was prepared and there could be substantial savings in time achieved by minor revisions to the logic. These revisions were inserted for activities following the City of Detroit purchasing department opening and tabulating proposals.

It was felt that the obtaining of the human rights approval and income tax clearance could be carried out concurrently with processing proposals through the City of Detroit, DWSD Engineering and on through to submission to EPA for their review and approval of the proposals. It also was suggested that EPA be requested to review and approve the proposal package within ten working days. This did not seem, to those concerned, an unreasonable request.

It was further recommended that the EPA approval only restrain the director from executing the contract and that presentation and execution of the agreement with the contractor could occur after human rights approval and after the Board had authorized award.

Further down the path of approvals, it was also agreed that we should encourage the City of Detroit legal department to complete their review within five working days after receipt of the agreement. Utilizing this sequence, it might be possible to remove 65 working days or more from the process and thus, save both time and money during the contract award period.

At our next session I suggest we review this procedure in detail to insure that the proposed revisions can, in fact, can be made. I suggest that DWSD management also review this revised flow prior to our next session.

Ralph J. Stephenson, P.E.

RJS/m

To: Mr. Charles Scales, P.E. (Orig. & 2 copies)

October 19, 1976

Subject: Monitoring Report #2

Detroit Water and Sewerage Department Development Program

Project: 76:45

Date of Monitoring: October 11, 1976 (working day 199)

Actions taken:

- Briefly reviewed work from previous sessions
- Reviewed current targets for all major programs
- Monitored facilities plan initiation, Issue #1, dated July 16, 1976, sheet #1
- Monitored network for rehabilitation of existing primary system from sheet 2, Issue #1, dated July 16, 1976
- Monitored PC295 network, sheet #4, Issue #2, dated July 20, 1976
- Monitored network model for primary and final clarifier tanks, sheet #7, Issue #1, dated August 30, 1976
- Prepared revised network model for administrative front end approvals
- Conducted 1 - 1/4 hour orientation seminar in project planning and control for professional staff of Water Board

General Summary

At the outset of this monitoring Mr. Suhre reviewed in detail the various targets and constraints placed upon work of the DWSD over the coming months. Below are reviewed some of the more critical elements of the program which were brought out in our discussion:

- PC295 Sludge and Incinerator Complex #3

Presently plans are to issue a letter to start work to the contractor by March 30, 1977 (working day 318).

- PC276 Two Primary Clarifiers

Work is expected to start no later than April 15, 1977 (working day 330).

- PC285 Four Final Clarifiers

Work is to start no later than April 15, 1977 (working day 330).

- Interim sludge disposal technique plan

To be available by December 15, 1976 (working day 245).

- Investigation of phosphorous levels and methods of reducing these

Within 120 calendar days (by approximately December 27, 1976 - working day 252), complete the investigation, and provide a schedule of the recommendations to be implemented.

By December 3, 1979 (working day 1000) have the phosphorous reduction program in effect so that phosphorous levels have been reduced to the required amounts.

- Staffing plan

To be completed by February 1, 1977 (working day 277)

- Operations and Maintenance (O and M) training plan

Have such a training plan in work by April 1, 1977 (working day 320)

- O and M manuals

Begin work by January 14, 1977 (working day 265)

- Tall stacks for complex 1 and 2 (existing incinerator)

Commence design by January 3, 1977 (working day 256). Construction of tall stacks to begin by January 3, 1978 (working day 511).

Mr. Suhre emphasized that we must address ourselves to the problems of achieving all of the above in our upcoming sessions. We shall plan to do this.

A major share of our work at this session revolved around monitoring projects in work and covered by networks that have been prepared in previous sessions.

A brief summary of the monitoring reviews follows.

Facilities Plan (FP) Initiation

Monitored from sheet 1, Issue #1, dated July 16, 1976 (working day 139)

Approvals of the Board of Water Commissioners and the Detroit City Council have been obtained on the agreement with final steps now being taken to provide an official authorization. It is anticipated presently that this official authorization will be available by October 22, 1976 (working day 208). It is entirely possible that some early work can be started pending this official approval.

The original target date from our Issue #1 network for obtaining the official authorized work order was October 7, 1976 (working day 197). Thus, there was reasonably close achievement of the target goal. It should be pointed out that one of the reasons for the delays was the dependence for approvals upon departments, agencies and groups outside the direct managerial arena of the DWSD project team. However, it appears now that full scale preparation of the facilities plan will be able to proceed within a few days.

Project 01.00 - Rehabilitate existing primary system at waste water treatment plant (WWTP)

Project 01.01 rehabilitation of the first four primary settling tanks (now called PC407) is in work with a contract target date of January 26, 1978 (working day 528). It should be noted here that DNR target date was set at November 2, 1977 (working day 470). Considerable discussion was conducted about this matter and it was decided to study the problem in more detail to see what could be done to bring the contract target and DNR target more closely in line with each other. I suggest this matter be given serious and detailed consideration at an early date. It is presently early enough in the rehabilitation process to encourage improved performance. It is possible that by close attention and above average coordination efforts in the field that some improvement in target completion can be achieved.

For project 01.02 rehabilitation of the second four primary settling tanks, contracts are expected to be awarded for procurement of materials by January 25, 1977 (working day 272). Materials will be delivered and stored so that rehabilitation of the second four tanks can begin immediately upon completion of the PC407 program. Target completion for the second four tanks is presently set at January 8, 1979 (working day 769).

Project 01.03, rehabilitation of all remaining primary tanks after PC407 and the second four tanks, is presently in design. A review is being made to see if the engineering studies are to follow the same procedure as was followed for PC407.

Start of rehabilitation work on primary tanks for project 01.03 is expected on January 8, 1979 (working day 769). Completion of all rehabilitation work on primary tanks 01.03 is scheduled for March 11, 1980 (working day 1069).

Concurrent with work on the second four primary tanks, a study of flow characteristics will be conducted. This is an ongoing study and will be utilized in work on the primary tank group 01.03 rehabilitation.

Preparation of facilities plan (FP)

No monitoring was done on this work since it is just beginning and the consultants doing the work are preparing a preliminary model of their anticipated work procedures. We should make certain this network is prepared and that we have a monitoring document by which we can gage ongoing progress of the study.

Project 03.00 (PC295) Sludge handling systems at WWTP

Monitored from sheet 4, Issue #2, dated July 20, 1976 (working day 141)

Considerable discussion was conducted about progress on this project and it was definitely established that a target contract award date of March 30, 1977 (working day 318) must be held. An analysis of the process shows that it is very tight and will require continuous attention on a day to day basis. Much of the approval processing will have to be walked through and many of the normally sequential operations will be required to run concurrently.

An element of this program not covered at our session was the marketing of bonds for PC295. Apparently this is an unpredictable process and at an early session we should consider what we are to do with this particular matter. Under present arrangement, marketing of the bonds should be completed by January 27, 1977 (working day 274). Further study will be made.

Monitoring Report #2
Detroit Water and Sewerage
Dept. Development Program
Page five

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

Primary and Final Clarifier Tanks 06.00 and 10.00

Monitored from Issue #1 dated August 30, 1976, sheet 7.

It is critical that proposals be received and a contract let on this project no later April 15, 1977 (working day 330). Thus, heavy efforts were expended at this session in updating the Issue #1 network to Issue #2 dated October 11, 1976 where the logic to achieve this compressed date is shown.

A set of blueines marked in red were left with Mr. Everett and he is revising a sepia of the tracings to show the new logic and times. Presently the amended contract is in for human rights and tax approval, the EPA grant resolution is being processed and by October 12, 1976 (working day 200) contract documents should be in work. Preliminary drawings will be needed by the Department of Natural Resources in order for them to forward the grant application to EPA. The present goal is to obtain DNR review and issuance of a construction permit concurrently with securing EPA authorization so as to advertise no later than January 5, 1977 (working day 258). This should allow proposals to be received and a contract let by the target of April 15, 1977 (working day 330). It is to be emphasized that this program will have to be given day by day monitoring and management attention. It is an extremely tight schedule.

Ralph J. Stephenson, P.E.

RS/m

To: Mr. Charles Scales, P.E.
(Orig. & 2 copies)

August 11, 1977

Subject: Monitoring Report #1

Detroit Water and Sewer Department (DWSD)

Waste Water Treatment Facilities

Project: 76:45

Monitored from documents noted below for each project

Date of Monitoring: August 4, 1977 (working day 407)

Actions taken:

- **Monitored full range of waste water treatment projects currently in design and construction**
- **Discussed project status with Mr. Everett and Mr. Johnson of the Progress Monitoring Group**

General

As a result of my monitoring sessions on July 21, 1977 (working day 397) and August 4, 1977 (working day 407) I decided to institute a series monitoring report on each of the projects reviewed. These two monitoring sessions have been helpful in bringing all of the waste water treatment projects into focus and further, have been gratifying in that there is a noticeable improvement in the understanding and acceptance of planning and control techniques.

In fact, at the August 4, 1977 monitoring, there was a welcome enthusiasm shown for the detailed evaluation process we went through. It is obvious that these periodic reviews can often isolate and bring to the attention of the managers who must know, what the problems are, and in many cases, offer direction and guidance in searching for solutions. It will be increasingly important as additional DWSD funds become available, to carry out many of these programs and to maintain an increasingly close monitoring on them.

I strongly recommend we make the monitoring sessions a regular part of my consulting with the DWSD. I shall discuss this matter in more depth with Mr. Everett and Mr. Suhre at our next session.

Monitoring Report #1
DWSD
Waste Water Treatment Facilities
Page two

During our monitoring on August 4, 1977 (working day 407) we reviewed several projects. A brief discussion of each of these is given below. They are arranged in random order. If there is a better review sequence desired, this can be incorporated in subsequent monitoring reports.

Primary Clarifier (P C 276)

Monitored from Issue #3 dated July 21, 1977 (working day 397)

Target completion date: July 15, 1980 (working day 1157)

The step 3 grant application has been forwarded to the Michigan Department of Natural Resources (MDNR). MDNR is also reviewing the working drawings and specifications for certification. Meanwhile work is being brought to completion on the contract documents. These are expected to be finished and ready for issuing on October 3, 1977 (working day 448). There has been a problem crop up on this project since there is an unofficial question as to whether MDNR will recognize the project or not. Presently the draft of the facilities report does not show the new primary clarifiers in the same location on the site as the design documents have them positioned. There is an expectation this matter can be resolved with the facilities plans consultants and such steps are being taken. If it is to be done, it should be prior to the final printing of the facilities plan and its issuance.

Meanwhile, there has been a conditional approval of a rate increase by the Detroit City Council which should initiate acquisition of additional capital by bonds.

If a revision to the facilities planned draft can be made, it is expected that the documents will be complete enough for advertising by October 3, 1977 (working day 448) and this will put the project on target for completion in 1980.

Four Final Tanks (P C 285 - tanks 12, 13, 15 and 16)

Monitored from Issue #3 dated July 21, 1977

Target completion date: December 1, 1980 (working day 1254)

Four Final Tanks (continued)

The application from DWSD was sent to MDNR on June 30, 1977 (working day 383). It is presently in their hands for review and approval of a letter of certification for the Environmental Protection Administration (EPA).

Work is meeting early start and early finish targets. The key date is to be able to distribute contract documents for receipt of proposals by December 1, 1977 (working day 490).

Scrubber and Silo Unloading Improvements (PC 400)

Monitored from Issue #2 dated July 21, 1977

Target completion date for approval of test results on incinerator #2 -
December 21, 1978 (working day 759)

At our monitoring on July 21, 1977 (working day 397) there was some question as to the course of action to be followed in processing revisions to the fan design. The project team prepared a decision tree outlining the alternative courses of action possible. At present, the team is preparing a decision cost analysis of these various alternatives and should be able to recommend a course of action by next week.

If the present apparent desirable course of action (AAA-) is accepted, then the current lag in this work is approximately 22 working days over the Issue #2 network. If other courses of action are decided upon, the lag will be considerably greater depending upon which is selected.

We also monitored other areas of the P C 400 project and found that most are currently in reasonably good shape.

Feed equipment presently lags about 10 working days, but the project team feels they will meet the early finish date for fabrication of December 28, 1977 (working day 508).

An area of strong concern is the entire control and instrumentation detailing and fabrication. This is a critical element of the project and should be given immediate and careful attention at a high technical level. Apparently some assurances have been obtained from the suppliers that work there is on schedule. However, traditionally this is a complex component of waste treatment systems and I strongly recommend that more authentic information be obtained

Monitoring Report #1
DWSD
Waste Water Treatment Facilities
Page four

Scrubber and Silo Unloading Improvements (continued)

on this element. It might be wise that in subsequent monitoring sessions we discuss how this information might best be obtained. At this time we need more data to make such an evaluation.

On this project I also suggest that a more detailed network than is available be obtained from the general contractor. We made some effort at our session to compare his current plan of work with the one projected by the DWSD. It was difficult and in some cases not possible to correlate the desired plan of DWSD and the expected course of action of the general contractor. We should discuss this at subsequent meetings.

Site Improvements at Waste Water Plant (C S 801)

Monitored from Issue #2 dated December 6, 1976

The grant application was forwarded to Lansing MDNR on July 28, 1977 (working day 402). This was the target date in the Issue #2 network. MDNR is reviewing the application and will forward it to EPA for their approval.

There was considerable discussion at our monitoring session about whether an early advertising date could be gained by advertising as soon as the grant offer is made by EPA and MDNR. This target is September 30, 1977 (working day 447). Thus, it is hoped that we can advertise for the project on October 3, 1977 (working day 448). Work from here out will be geared to meeting that target date.

The project is in good condition measured against the Issue #2 network.

Additions and Modifications to the Employees Service Building (C S 804)

Monitored from Issue #2 dated December 2, 1976

Target date to receive and tabulate proposals: December 30, 1977
(working day 510)

Monitoring Report #1
DWSD
Waste Water Treatment Facilities
Page five

Additions and Modifications to the Employees Service Building (continued)

The step #3 grant application is either on its way or will be momentarily to MDNR. It is expected that the September 30, 1977 (working day 447) grant offer cut-off date will be met by MDNR and EPA. This should allow us to advertise earlier than had been expected. The anticipated date in Issue #2 was October 26, 1977 (working day 465). This may be possible to do as early as October 3, 1977 (working day 448). If so, it will save a corresponding amount of time and receipt in tabulation of proposal.

The project is in fair to good condition measured by the Issue #2 network.

Renovation of Electrical Distribution System at the Waste Water Plant (C S 805)

Monitored from Issue #3 dated November 29, 1976

Target date to receive proposals: December 30, 1977 (working day 510)

Presently the job is meeting targets between early and late starts and finishes. The step #3 application has been forwarded to MDNR and is currently in their hands. It was sent July 22, 1977 (working day 398).

The construction permit is apparently to be sent out this week. It is expected to advertise for this project on October 26, 1977 (working day 465), the target date in the Issue #3 network.

This project is in good condition currently measured by the Issue #3 network.

Modification and Testing of Final Clarifier Inlets

Monitored from Issue #1 dated July 1, 1977

Target completion date for final report: December 1, 1977 (working day 490)

Presently pipe is not on the job but is expected by the end of August. Four adapters have been brought to the site and all 144 forty-five degree elbows are on the job.

Work is just barely meeting targets between early and late starts and finishes. However, it is anticipated by the project team that major installation of inlets should still be completed by October 20, 1977 (working day 461).

Monitoring Report #1
DWSD
Waste Water Treatment Facilities
Page six

Modification and Testing of Final Clarifier Inlets (continued)

There has been very little change in the position of the project since the monitoring in July except for obtaining additional 45° elbows. Pipe is the critical element of the project and must be given special attention. We should plan to monitor this project again at our next session.

Design and Construction of Phosphorous Removal System

Monitored from Issue #2 dated July 21, 1977

Target completion date: September 1, 1981 (working day 1446)

This project was monitored on July 21, 1977 (working day 397) but not at the monitoring on August 4, 1977 (working day 407). As of July 21, 1977 (working day 397) the DWSD was ranking qualifications of consultants and preparing to invite proposals. Consultants will then prepare proposals and forward them to DWSD. Proposals are due to the DWSD by September 6, 1977 (working day 429). The selected consultant is expected to be able to begin preparation of design and contract documents on December 30, 1977 (working day 510).

Sludge Disposal Implementation (C S 813)

(No network model prepared)

This project has been given the go ahead and money is available to retain the consultant/contractor. It was pointed out that the program will not have any effect on complex #3 incinerator.

A plan of proposed work will be submitted by the contractor shortly. Present thoughts are that within 30 calendar days of approval, the liquid sludge disposal program will be in implementation. In 90 calendar days from start of work, the contractor will be expected to be implementing the sludge cake disposal.

There was some discussion as to whether it was necessary to prepare a network diagram for work up to these points. We prepared a laundry list which seemed rather sizable and although a detail discussion was not conducted, it may be appropriate to re-examine whether a network model for implementation of the sludge disposal plan should be prepared.

Monitoring Report #1
DWSD
Waste Water Treatment Facilities
Page seven

Sludge Disposal Implementation (continued)

Some of the items in the laundry list that appeared to be potential delay elements included the following:

- Acquiring, installing and modifying present equipment at the waste water plant
- Complete acquiring land control for disposal
- Mobilize and assemble the initial transportation fleet
- DWSD approve the vehicle fleet
- Obtain land use approval from the MDNR and the various health department agencies involved.
- Generate and implement a public information program
- Obtain and analyze a biological survey of the site
- Install monitoring wells
- Construct access road
- DWSD provide the sludge
- Erect the temporary building

All in all there are enough of these items so that I would tend to recommend a close look be taken at the time implementation requirements of the program. I have mentioned this to the project team and perhaps at a subsequent monitoring session we should review this in more detail.

Tall Stack Design and Construction

Monitored from Issue #5 dated June 15, 1977

Target completion date: October 31, 1980 (working day 1234)

There is a conflict in recommendations for the tall stacks between the overview plan and the feelings of Wayne County, the MDNR and

Tall Stack Design and Construction (continued)

the EPA. These differences must be resolved before DWSD can make a final review and authorize preparation of contract documents.

The Issue #5 network dated June 15, 1977 showed final review and authorization of contract document preparation to be given by June 17, 1977 (working day 374). However, the present delay appears to prevent the release until about November 14, 1977 (working day 478) due to potential difficulties in obtaining agreement on the course of action to be followed. This is a lag of nearly five months and of course, is serious. We have prepared a two prong decision tree which essentially shows one course of action being to disburse the contaminant; the other being to remove the contaminants at the source, primarily by improving operation of the plant.

Until some agreement can be reached as to which course of action is to be followed, this project is paralyzed. Since the disagreement appears to be one somewhat outside the DWSD, it must be resolved by constant attention by the DWSD to these outside agencies. I recommend that at our next monitoring session we pursue further the decision tree to decide what course is best to follow so that heavy attention can be given immediately.

The current lag, however, on the tall stack decision is becoming serious in relationship to the dates being imposed on DWSD.

Permanent Training Program

Monitored from Issue #2 dated July 21, 1977

This program is moving quite well with personnel being selected and teaching schedules and outlines in preparation. The major need at the present time is a temporary classroom. Mr. Davanzo is acquiring additional facilities so he can put the training program into effect.

Major tasks are currently meeting target dates.

Monitoring Report #1
DWSD
Waste Water Treatment Facilities
Page nine

Personnel Acquisition Training and In House Staffing

Monitored from Issue #2 dated July 21, 1977

The current lag is 12 working days in preparation and submission of the amended budget. This is in work and should be approved by August 17, 1977 (working day 416).

The Issue #2 target date was for approval by August 1, 1977 (working day 404). It should be still possible to achieve, review and approve of this amended budget by the city council by August 31, 1977 (working day 426) which should reduce the lag to approximately 7 working days.

The residency revision review is in work by the DWSD director.

* * * * *

This monitoring session was very healthy since it indicated to me a strong continuing interest in maintaining planned progress on the projects. It also showed relatively good adherence to current schedules on most projects monitored.

There were some that we did not cover and perhaps they should be looked at in subsequent monitoring sessions. From the experience of the last two meetings at the water board, I would strongly recommend we review all projects in depth on a regular basis to supplement the work of the DWSD progress monitoring group.

At the next session we should also plan to continue work on the cost and resource control system. It has been some time since we gave attention to this matter and I believe it merits heavy attention in the coming weeks.

Mr. Everett will prepare a detailed agenda for our next meeting which is currently scheduled for August 26, 1977.

Ralph J. Stephenson, P.E.

RJS/m

To: Mr. Darrel Suhre, P.E.

cc - Mr. Ed Everett

September 7, 1977

Subject: Monitoring Report #2
Detroit Water and Sewer Department (DWSD)
Waste Water Treatment Facilities

Project: 76:45

Monitored from documents as noted for each project

Date of Monitoring: August 26, 1977 (working day 423)

Actions taken:

- Reviewed network specifications
- Discussed tall stack, interim sludge disposal and PC400 projects
- Prepared network diagram for front end work on interim sludge disposal

General

At this session we began by reviewing the contractor work plan section of general specification GS-6. I made several suggestions to Mr. Everett and Mr. Johnson identifying considerations that must be taken into account as contractors prepare a detailed network diagram. I recommended that consideration be given to breaking the submissions into two sections, one for the early part of the job, perhaps the first four months or so, and then the second submission for the total project once adequate data has been gathered. I stressed here the need to insure that any submission be given adequate time to prepare so the information gathered would be accurate, authentic and not subject to constant change and updating. These comments were noted by Mr. Everett and Mr. Johnson and will be considered.

Next, Mr. Aho gave us a brief review of interim sludge disposal study status. The discussions merged into consideration of a single problem - how do we proceed with the many inter-related programs that deal with sludge disposal and air pollution with these inter-connected to the requirements imposed by state and national authorities?

Monitoring Report #2
DWSD
Waste Water Treatment Facilities
Page two

Mr. Aho said there has been some reworking of the interim sludge disposal proposed contract and that presently this document is being put into final form for submission and processing. A discussion ensued about steps to be taken to put the sludge program into operation. It appears complex and in a brief review of the laundry list prepared at our session on August 4, 1977 (working day 407), the same steps appeared still necessary and desirable.

Our discussion was not yet complete when the tall stacks project team arrived. They participated in our total conversation, informing the people present that tall stack design work has been stopped, that the contract is to be ended and that EPA now feels as does the facilities plan consultant that tall stacks are not the answer. Thus, EPA will not approve tall stack work. Apparently the procedure now will be to study energy efficient methods of sludge disposal.

It became quickly apparent that the interim sludge disposal program is now critical and that a network diagram should be prepared of the steps necessary for its implementation, gaining maximum participation from all concerned.

Mr. Suhre was asked to join the meeting at this time and we requested we be allowed to consider the interim sludge disposal, the tall stacks and the PC400 project (scrubber and silo unloading improvements) jointly. He agreed and the PC400 staff available was then involved in the meeting.

There was a brief review of PC400 activities regarding the processing of change order #7 and Mr. Suhre is presently discussing courses of action with his staff. These various alternate courses of action will be considered along with the overall procedures of the DWSD over the next few weeks.

The next step was to focus on the laundry list for the interim sludge disposal plan. This was prepared in conjunction with Mr. Aho and a network diagram, Issue #1 dated August 26, 1977, sheet 1, was drawn for interim sludge disposal work. The diagram showed the program being put into effect sometime in early 1978. Durations assigned are preliminary and being reviewed by the project team and the progress monitoring group. Prints will be made and distributed to those concerned for their comments. This diagramming was fairly complex and required a substantial part of the afternoon's work.

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

Monitoring Report #2
DWSD
Waste Water Treatment Facilities
Page three

At our next session we will continue an evaluation of the individual programs and I suggest that a monitoring of each of those still in progress be made to track the status of each. Mr. Suhre indicated he wished us to follow the same procedure as we did in Monitoring Report #1 so as to keep a constant watch on all projects and their current positions. We shall endeavor to do this.

I shall be in touch with Mr. Ed Everett shortly to set the next meeting date.

Ralph J. Stephenson, P.E.

RJS
m

To: Mr. Darrel Suhre, P.E.

cc - Mr. Ed Everett

October 11, 1977

Subject: Monitoring Report #3

Detroit Water and Sewer Department (DWSD)

Waste Water Treatment Facilities and Water System

Project: 76:45

Monitored from documents as noted for each project

Date of Monitoring: October 7, 1977 (working day 452)

Actions taken:

- Prepared network model for front end work on new and renovated effluent flow measurement system
- Monitored and evaluated work on clarifier modification program (Consent decree section 3 - F - 2, 3 and 4)
- Prepared front end network model for selected mains and sludge effluent lines in water system

Effluent Flow Measurement System (EFN and REFN)

At this session we focused heavily on preparing the network model for both the renovated and new effluent flow measurement system whose installation is required to be put in work immediately and to be partially operative according to the consent decree by July 1978. The focus on this program is to work concurrently on both the renovated system as well as design of the new system. It is the present goal to get the renovated system in operation by the target date established in the consent decree. This will be a tight schedule to meet but apparently the project team feels it is a feasible target.

We did not assign durations at this meeting but Mr. Everett and Mr. Johnson will discuss durations with the project team members and mutually assign times so we will have a monitoring document for our next session.

Monitoring Report #3
DWSD
Waste Water Treatment Facilities
and Water System
Page two

Clarifier Modification

Mr. Everett and Mr. Johnson, Mr. Ladensack and I made an evaluation of the current status of clarifier modifications in work. There apparently was some incorrect information provided for the October 3, 1977 (working day 448) monitoring which was corrected as of this monitoring.

The second grooving tool was obtained on September 29, 1977 (working day 446). However, on October 6, 1977 (working day 451) it broke down and because of the problem, current production of grooved pipe has fallen about two working days behind. This, in turn, has thrown transporting, storing and hanging of pipe two working days behind.

Material deliveries have been very spotty and studs still have not all been delivered to the job site. They lag late starts and late finishes by about one working day. Fabrication and delivery of hangers is somewhat more serious since all hangers were due to be on the job no later than September 29, 1977 (working day 436). There still are several which must be delivered and although they are expected by the end of the day today, October 7, 1977 (working day 453), the current lag is about 6 working days. This lag could be picked up quite quickly since we had hoped to have the hangers on the job at an early date and had, by desire, locked it into an early position. Thus, the lag could be as little as 2 working days.

A very important lagging element presently is preparation and issuance of the testing program manual. It was hoped to have the manual completed by October 4, 1977 (working day 449). However, preparation is not yet started. Thus, the lag there is currently 6 working days and will increase for every day that work on the manual is delayed. This manual is important to the test program and influences design and installation of the guide cables and the testing system.

Guide cable design is also running into a snag since they are having trouble with skimmer interference at the guide cables. Thus, the lag there is potential but could become important if immediate attention is not given to this series of tasks.

In summary, work on the clarifier modification shows considerable difficulty and is serious, in my opinion, since it has dropped 2 to 6 working days behind the Issue #1 network within the first ten working days of preparation. I suggest strongly that a careful look be made to see if this is going to affect any of the target end dates that relate to the consent decree. There is some spare time built into the run and testing of the program on B9 and

Monitoring Report #3
DWSD
Waste Water Treatment Facilities
and Water System
Page three

B10 but it is risky to use this testing time now since it may be needed to obtain fully satisfactory results from the tests to satisfy the consent decree.

Interim Sludge Disposal

(Monitored from Issue #1 dated September 30, 1977)

Mr. Johnson, Mr. Everett and I discussed the revised logic on this program which is reflected in a summary network of our previous logic findings. Apparently the interim sludge disposal report did not go to the Board on the target date of October 5, 1977 (working day 450) and thus, shows as being late.

Since there have been some major revisions to the logic in the interim sludge disposal plan, I suggest at our next monitoring or soon thereafter, we revise the diagram so as to better evaluate alternate schemes available to us.

Phosphorous Removal

(Monitored from Issue #1 dated September 28, 1977)

I did not make a full technical evaluation of this project but discussed it briefly with Mr. Everett. He indicated that although we do have the Director's approval to negotiate with the consultant, negotiations have not yet started. They are critical and should have been initiated on October 5, 1977 (working day 450). However, according to Mr. Everett, probably some time can be picked up in negotiations that hopefully will bring the project back on schedule.

Presently it appears to lag by about 3 working days.

Award New Labor Contract

(Monitored from Issue #1 dated September 30, 1977)

This program has just started and according to Mr. Everett is within early and late start targets. It was not possible to make a full evaluation of the project at this session.

Monitoring Report #3
DWSD
Waste Water Treatment Facilities
and Water System
Page four

Water Department Route Analysis and Selection

(Sludge line from southwest station to Liddesdale, water main from Joy station to Ypsilanti station and water main from Schoolcraft to Joy Road)

We closed out the monitoring and diagramming session by preparing preliminary network models for the above three projects, Issue #1 dated October 7, 1977. Each follows the same pattern of selection and analysis along the routes, conferences with affected communities, preparation of cost analyses for each route, preparation and submission of a final route report, its review by the director of engineering and submission to the Board and their review and acceptance.

The sludge line route study from the Southfield station to Liddesdale if started now would be approved by April 3, 1978 (working day 575). The water main route study from Joy station to Ypsilanti if started now would be approved by August 14, 1978 (working day 668). The water main route study from Schoolcraft to Joy Road which is further along presently than the other two programs, if continued as at present, would be completed by December 6, 1977 (working day 493).

The above completion dates represent the points at which the Board of Water Commissioners have accepted the reports. Following, of course, is the design, bidding and construction period.

There was some concern by all involved in the conference that there was not adequate manpower to complete these projects as noted above. Therefore, we did a rough manpower analysis by the use of bar charts and approximate time assignments. This showed there is a heavy peaking of manpower needs during the first several weeks of the projects which tails off to a manageable number of man hours required by about mid-November 1977. This analysis sheet was left with Mr. Everett and he will review it once again with the group working on the route analysis and selection.

General

Overall, I reviewed the technique being used to measure against standards of performance required by consent decree stipulations. Work on these appears to be moving fairly well although slower than had been anticipated.

RALPH J. STEPHENSON, P. E.
CONSULTING ENGINEER

Monitoring Report #3
DWSD
Waste Water Treatment Facilities
and Water System
Page five

However, the graphic techniques being utilized are quite good and should work well for use as a management by exception tool.

I shall plan to meet with Mr. Everett again next Friday, October 14, 1977 at 1:30 P.M. He will prepare the agenda for the session.

Ralph J. Stephenson, P.E.

RJS
m

To: Mr. Darrel Suhre, P.E.

cc - Mr. Ed Everett

October 21, 1977

Subject: Monitoring Report #4

Detroit Water and Sewer Department (DWSD)

Waste Water Treatment Facilities and Water System

Project: 76:45

Monitored from documents noted for each project

Date of Monitoring: October 14, 1977 (working day 457)

Actions taken:

- Monitored work on route analysis and selection for selected water mains and water sludge effluent lines
- Monitored industrial waste control system implementation

Water Department Route Analysis and Selection

(Monitored from Issue #1 dated October 7, 1977)

An evaluation was made of the current route status of the sludge line from the southwest station to Liddesdale, the water main from Joy station to Ypsilanti and the water main from Schoolcraft Road to Joy Road relative to route selection.

Mr. Gray pointed out that in order for this work to be done properly that there probably would be considerable title work which should precede submission of the final route reports to the Board. It was further learned that in order for title work to proceed that the City Council must renew funding for real estate review and acquisition. This, of course, has to be formally requested and the request must be prepared and submitted.

Renewal of the acquisition authority could take as much as 22 working days if it is walked through or longer if delays develop. The title work should start as soon as the right-of-way and utility evaluation for each route is made. Thus, it becomes imperative, if we are to maintain the target dates established previously for review and acceptance of the final route report by the DWSD Board, that immediate action be initiated to renew the acquisition authority.

Monitoring Report #4
DWSD
Waste Water Treatment Facilities
and Water System
Page two

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

We projected further that the design and property acquisition for the water main from Joy to Ypsilanti would probably take as much as nine months with construction taking another 18 months. Thus, there is as much as 27 months, plus the time it takes to let a contract to be added on to the point where the Board has accepted the route report.

In the case of the water main from Schoolcraft to Joy Road, this time would not be quite so great but on the other hand if we are to proceed immediately with this work, it will be imperative that Mr. Gray be given the tools by which he can begin his right-of-way title search, particularly since it was anticipated that the Board would have the final route report in their hands no later than November 7, 1977 (working day 473). It appears improbable that the title search could be accomplished by that time and therefore, this date will probably have to be pushed back to a later time.

Monitoring the present status of the work, no substantial progress has been made on either of the three programs over the last week, primarily due to manpower shortages and difficulty in getting work assignments to the staff. It should be pointed out that the manpower loading on these three projects, maintaining the plan anticipated, peaked to 8 men in the first two weeks of work following the October 7, 1977 (working day 452) planning effort. Wherever this manpower is relocated in the histogram will reflect a consequent delay to the projects and therefore, it is essential if the plan of work is to be met that strong efforts be initiated quickly and immediately to get the work underway. Mr. Everett and Mr. Johnson will update the network tracings to reflect the additional tasks that should be imposed relative to property search and acquisition.

Industrial Waste control (Consent Decree Article 2, paragraph A through E,
page 8)

Mr. Everett, Mr. Johnson, Mr. Dehem and Mr. Pollard reviewed progress with me on the industrial waste control program. We did not prepare a network diagram of the project at this session but at our next meeting we will start work on planning steps necessary to obtain full implementation by August 1, 1978 (working day 659).

Presently a preliminary plan for industrial waste control has been submitted to the Michigan Department of Natural Resources and Mr. Dehem

Monitoring Report #4
DWSD
Waste Water Treatment Facilities
and Water System
Page three

said that he is waiting for a response. I suggested that a letter be sent to the MDNR with a carbon copy to EPA requesting response and comments by December 1, 1977 at which time response or not the final report must be put into work to meet the January 1, 1978 (working day 911) date in the consent decree.

The major problem immediately facing Mr. Dehem and his group is issuing permits to customers covered under the industrial waste control system. It was considered to be only fair that a minimal requirement for starting charges is that all permits be issued at which time the technique of charging can be fairly established.

Presently work on the industrial waste control program is moving in conformance to the consent decree schedule, but immediately after January 1, 1978 (working day 511) it will be necessary to set a program to meet the full operation date of August 1978. This is the work we would like to diagram.

It will involve mobilization of materials, manpower and equipment necessary to service as many as 7000 potential customers located in some 75 communities.

One interesting sidelight is that according to Mr. Dehem, approximately 17 contractual customers of the DWSD have been sent copies of the preliminary industrial waste control program and their comments solicited. None as yet has responded. These contractual customers are listed in section 8 of the regulation for control of industrial discharge. It would be helpful if questions were asked by the contractual customers so as to clarify the program, gain assistance in its implementation and thus, receive maximum support from these agencies. Such cooperation will be essential to the program's success.

Ralph J. Stephenson, P.E.

RJS
m

To: Mr. Darrel Suhre, P.E.
cc - Mr. Ed Everett

November 2, 1977

Subject: Monitoring Report #5

Detroit Water and Sewer Department (DWSD)

Waste Water Treatment Facilities and Water System

Project: 76:45

Date of Monitoring: October 27, 1977 (working day 466)

Actions taken:

- Reviewed interim sludge disposal program and prepared preliminary network diagram of early activities in revised program
- Monitored and prepared model for early work in industrial waste control system implementation

Interim Sludge Disposal Program

(Monitored from Issue #1 dated October 27, 1977 - working day 466)

The conference was attended by members of the project team for the Water Board, the local manager for the consulting organization expected to do the work and members of the monitoring and control group for the DWSD.

Our initial efforts were to prepare a random laundry list of activities that had to take place in the program. The consultant had prepared an earlier list which was of great help in setting up the major classifications for the activities. These included:

- public relations
- initial site selection
- liquid application site selection
- composting site selection
- construction of remote site facilities
- construction of waste water treatment plant improvements
- equipment selection and acquisition
- personnel acquisition and training
- operations
- subcontracting operations

Monitoring Report #5
DWSD
Waste Water Treatment Facilities
and Water System
Page two

We next prepared a preliminary network model, Issue #1 dated October 27, 1977 (working day 466) for as much of the work as we could project at this time. It is expected that the consultant will be released to begin his work sometime in December and from then on he is governed by a relatively well defined timetable as spelled out in his proposed contract. I suggest it will be imperative that we monitor the program carefully since the various activities outlined under the major categories above may prove to be somewhat longer in nature than perhaps had been expected.

Also, much of the work depends upon dependent goal achievement with agencies over which very little, if any, control can be exerted. This is particularly the case in achieving approvals of systems and techniques by these outside agencies. Although every effort has been made to keep the dependent goal activities to a minimum, they cannot be avoided.

Mr. Everett distributed prints of the two sheets to the consultant and to the project team requesting them to fill in durations for each of the activities from the point of start work order on. This they will do and additional meetings will be held soon to complete the network model for the projected work program. I shall discuss this with Mr. Everett at our next monitoring session.

Industrial Waste Control

(Consent Decree article 2, paragraphs A through E, page 8)

Mr. Dehem, Mr. Pollard, Mr. Everett, Mr. Johnson and I prepared an updated laundry list for the IWC program and began initial diagramming of the job to determine the implementation characteristics of the operation. It was pointed out that the program consists of two major thrusts. The immediate thrust is to establish a monitoring and control system over the discharge by constant attention to its content. Thus, when violations are encountered, corrective action can be taken. The second element and one which will be brought into play over a period of years is the billing and service operation. This is a longer range program than is the monitoring program and will be implemented as equipment, manpower and techniques become available.

We outlined the acquisition of manpower through December 15, 1977 (working day 500) and through the fiscal year to July 3, 1978 (working day 639). We also were able to incorporate some of the additional activities expected to be done over the next eight months into the network diagram.

Monitoring Report #5

Waste Water Treatment Facilities and Water System

About three quarters of the way through our conference, it was decided to discuss how the customer information and billing operation would be conducted and if it could be related to the current customer billing information service study. Mr. John Rucker joined the conference and after considerable discussion, it was decided that for the time being it would be assumed that the IWC component of the customer billing and information program would be kept independent by the industrial waste control team. This matter will be discussed in more detail as the program unfolds. However, it is an element that can be considered over a period of time since it is not one of the more critical items facing the IWC group. We shall discuss it at subsequent monitoring meetings.

Thus, of the two main jobs, enforcing the ordinance and reporting on

The tracing for the Issue #1 network dated October 28, 1977 was kept by the progress monitoring group and will be printed. We shall probably continue work on this at our next session. I shall be in touch with Mr. Everett soon regarding this next meeting.

Ralph J. Stephenson, P.E.

RJS
m

To: Mr. Darrel Suhre, P.E.

cc - Mr. Ed Everett

- CHINESE AND BEARING

107000 9' 23E164202N E. P.

January 17, 1978

Subject: Monitoring Report #6

Detroit Water and Sewer Department (DWSD)

Waste Water Treatment Facilities and Water System

Project: 76145

Date of Monitoring: January 9, 1978 (working day 515)

Actions taken:

- Reviewed future work program for project planning, monitoring and control with Willie Wilson, Arthur Tang and Ken Stewart
- Reviewed interim sludge disposal program
- Monitored personnel acquisition and training
- Monitored final classifier modifications
- Monitored scrubber and silo unloading project
- Reviewed yard relocations

Interim Sludge Disposal Program

We reviewed the current status of the interim sludge disposal program (CS-813) with Harry Blerig and Mr. Davanzo. Generally the review was an overall evaluation of current status, since the most recent network model, Issue #1 dated October 27, 1977 has been superseded by a new strategy recommended by the legal department of the city of Detroit. It was deemed best by this group that the hauling contract be separated from the professional services contract so more appropriate proposal procedures could be followed in competitive areas of the service to be provided. The sludge disposal engineering implementation program is the CS-813 program while the hauling project will have a PC number.

Bi-products may do the professional service work. Their contract is now formulated and is expected to be submitted to the Board of Water Commissioners on January 18, 1978 (working day 522). It should go to city council on January 25, 1978 (working day 527) and work is expected to be able to start by January 30, 1978 (working day 530). This presumes that all the approvals are given promptly.

**Monitoring Report #6
DWSD
Waste Water Treatment Facilities
and Water System
Page two**

**RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER**

The contract provides that Bi-products purchase and put into demonstration operation two liquid haulers and a solid cake hauler by April 1, 1978 (working day 575). In addition, they will write an equipment specification to be available by February 28, 1978 (working day 551) so proposals can be solicited for hauling, with advertising on March 1, 1978 (working day 552). The hauler must be under contract no later than June 15, 1978 (working day 627) to meet current deadlines.

On April 1, 1978 (working day 575) it is anticipated that actual interim sludge disposal of both cake and liquid will begin. To achieve this, the site must be selected, the loading and unloading facilities made ready, the demonstration hauling equipment made available and modifications to the plant completed.

These modifications are to be made by the DWSD and their in-plant staff. Working drawings and specifications for modifications have been prepared and are in the hands of the staff at the waste treatment plant. They will focus on the liquid and solid conveying facilities concurrently. Difficulty is expected at the liquid pumping facilities due to the need for obtaining pumps without having adequate time to purchase new equipment. Therefore, much of the installation will be assembled from materials and equipment readily available. Hopefully, this interim equipment can be replaced as items are purchased and reinstalled.

Mr. Bierig feels that the time schedule anticipated is reasonable and is working on that basis. Mr. Ken Stewart will monitor this job each week and will follow it closely with Mr. Bierig and Mr. Davanzo.

Once the contract has been let to Bi-products, Mr. Bierig has agreed it would be wise to re-diagram the project and bring the previous networks and logic plans up to date.

Mr. Stewart will also review the laundry list for the interim sludge disposal program and extend it with the help of Mr. Bierig.

Long Range Program of Personnel Acquisition and Training

We reviewed the current status of the waste treatment personnel acquisition and training program with Mr. Davanzo and Mr. Ploehn. Mr. Davanzo reports that the early phases (stage 1) of acquiring additional personnel have been completed and that new people are being brought on line at a rate of 25 people per month. This will continue for six to eight months.

**Monitoring Report #6
DWSD
Waste Water Treatment Facilities
and Water System
Page three**

**RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER**

Acquisition of new people is on schedule although the grade sequencing and titling of these new additions is out of phase with the plan at present. Additional instructor personnel is being acquired and hopefully by the target date of March 14, 1978 (working day 561) a permanent instructor program will be in operation.

The interim program for early class segments has been implemented on an overview basis and now classes are being converted to specialized courses of instruction for small groups.

Mr. Arthur Tang will follow this program with Mr. Davanzo and prepare a comprehensive laundry list of all tasks yet to be completed on through to the end of implementation of the training program and to the point where the program becomes a repetitive process.

Mr. Davanzo reports that additional classroom space is now available and being wired. As soon as wiring and rehabilitation are complete, the area can be used as teaching facilities.

Final Clarifier Modifications

Final clarifier modifications have been substantially completed and about 8 weeks of testing have been conducted. This is a first phase of testing as Mr. Davanzo points out and will be followed by additional testing over the next month to two months. The data that has now been collected will be analyzed in depth and a preliminary report prepared so as to meet the April 15, 1978 (working day 582) deadline in the consent decree. Mr. Ken Stewart will follow this project and prepare a laundry list of additional activities that must be conducted in order to carry the program on through from here to completion. He also will monitor to insure that the necessary test data and reports are available and are submitted appropriately. If a laundry list has been prepared that is comprehensive enough, it might be wise for Mr. Stewart, in conjunction with Mr. Davanzo and Mr. Kluck, to prepare network diagrams for the ongoing work program. These, we can monitor and evaluate at the next session where I am able to again review the projects and current progress.

Scrubber and Silo Unloading Improvements (PC-400)

Target completion date for approval of test results on incinerator #1 - December 21, 1978 (working day 759).

Note: The original intent was to test incinerator #2. This has been changed now to incinerator #1.

**Monitoring Report #6
DWSD
Waste Water Treatment Facilities
and Water System
Page four**

**RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER**

We monitored project progress based upon current and projected status of the several elements still required to bring this project on line. Mr. Stiller said that the contractors had assured him and he is confident that if we have the first scrubber, fan and motor on hand at the job by mid or late July 1978 we can meet our target end date of having approved test results on incinerator #1 by December 21, 1978 (working day 759). He said it is expected installation of the fans and motors will take approximately 30 working days after delivery to the job site.

Most other portions of the installation are in work and thus by the time the major equipment arrives at the job site, most support equipment installation will have been completed.

A major source of concern remains instrumentation and controls. There has been considerable discussion about how the control and instrumentation system is to be detailed, how it is to be approved, how it is to be assembled for testing and how it is to be finally installed at the job site. About 60% or 70% of the shop drawings have been received but it is necessary to have the remaining shop drawings of the control and instrumentation work on hand to make a final check so that the total package can be reviewed. The project team will follow this item very closely and on a day to day basis so approvals can be given a high priority with minimum time spent on returning shop drawings.

Staffing for proper review of these shop drawings will be important and I urge that department managers make provision now for putting adequate manpower on the shop drawing checking process. Mr. Tang and Mr. Stewart will both give this project ongoing attention and in the immediate future will together prepare a laundry list of items necessary for the instrumentation and control work to be processed and installed. This will then be converted into a logic plan to gain a better handle on the actual progress toward the December 21, 1978 (working day 759) target date for approval of the test results.

PC-400 and related programs are probably the most important projects of the entire group. Therefore, they should be given a continuing high order of priority in our planning, monitoring and evaluation process.

Central North and East Yard Relocation

We met briefly with the project team studying central, north and east yard relocations. It is expected a consultant contract for the feasibility

**Monitoring Report #6
DWSD
Waste Water Treatment Facilities
and Water System
Page five**

**RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER**

study will be authorized by tomorrow, January 10, 1978 (working day 516) and that a start work order will be issued. This is one day later than had been projected by the Issue #1 network dated October 18, 1977.

The target date for the final site recommendations has been set at May 10, 1978 (working day 602). Following this, decisions will be made as to how to proceed with property acquisitions.

The project is presently in good shape and it was decided that due to the press of other projects, no immediate assignment would be made to the work from the project planning, monitoring and control department. However, as the project nears a point where additional work is to be done, we should have them involved. The consulting firm will provide a network model of their work for the project to the Water Board for use in monitoring progress.

Overview Discussion of Planning, Monitoring and Control Process with New Staff

A major share of the work today was a discussion of procedures and techniques to be used in the planning, monitoring and control process to be carried out by the PMC department. This material was reviewed in depth with Willie Wilson, Arthur Tang, Ken Stewart with a portion of the meeting attended by Mr. Darrel Suhre. General authorization was given to proceed in the manner outlined in the session and recorded on flip charts 1 through 11 dated January 9, 1978 (working day 515). Mr. Stewart and Mr. Tang will save these flip charts and I suggest it might be appropriate to type off from these any procedural notes that would be of help in future work of the department.

Meanwhile, I shall plan to, in February, begin intensive work sessions with the group and will be in touch with Mr. Willie Wilson shortly to set the dates. Mr. Tang and Mr. Stewart are working on the items discussed in the monitoring sessions today.

Ralph J. Stephenson, P.E.

RJS/m

**To: Mr. Darrel Suhre
Mr. W. Wilson
Mr. K. Stewart
Mr. A. Tang**

February 8, 1978

Subject: Monitoring Report #7

Detroit Water and Sewer Department (DWSD)

Waste Water Treatment Facilities and Water System

Projects: 76145

Dates of Monitoring: January 30, 1978 and February 3, 1978
(working days 530 and 534)

Actions taken:

- Began detail preparation of network model for design of permanent Ypsilanti Pumping Station
- Evaluated current status of personnel acquisition and training and final clarifier modifications
- Made detailed evaluation of scrubber and silo unloading improvements (PC 400)
- Completed preliminary review network for interim sludge disposal program

Design of Permanent Ypsilanti Station

On January 30, 1978 and February 3, 1978 (working days 530 and 534) we worked with the design team on the Ypsilanti station network model for preparation of final contract documents. The sequencing is to first prepare a preliminary design report which after an internal review and comment process can be converted to the final design report.

At that point contract document preparations begin on three distinct elements - the building contract (BC), the pumping unit contract (PU) and purchase order items (PO).

We assigned times to the early preliminary design report preparation network and this showed we can expect the preliminary design report to be complete by about November 10, 1978 (working day 731). There was no additional quantification of the network made since we next concentrated on the logic of the following system. Mr. Johnson and project team will make a detailed evaluation of the network d' prepared to date and make preliminary assignments of dur

to our next session. At this next session we should plan to complete diagramming the entire sequence for working drawings, specifications and contract awards.

Preparation of the various contract document phases is quite complex and Mr. Johnson requested that we separate the network into the three basic elements noted above - BC, PU and PO. This is being done and will be carried through in the final design preparation.

I suggest that when we have enough of the network prepared so it can be drafted, it be put into final form. I discussed briefly with Mr. Stewart and Mr. Tang the desirability of drafting networks into final form and it was agreed that wherever possible, this would be done.

Mr. Tang and Mr. Stewart will both follow the project carefully to insure that Mr. Johnson has the necessary information so that he and his staff can make a full analysis of the preliminary network.

Interim Sludge Disposal

On Friday, February 3, 1978 (working day 534) we made a detailed review of the steps necessary to put the interim sludge disposal program into implementation. The contract is being processed at the city of Detroit with the DWSD hoping to issue a start to work order by February 13, 1978 (working day 540). This will free up several operations critical to the process.

It is the intent of the interim sludge consultant to immediately work on obtaining and making ready the disposal sites. We prepared a rough analysis of the time it will require to complete critical tasks in this network model. These are shown on Issue #2, sheets 1 and 2 dated February 3, 1978 of the interim sludge disposal program.

Note sheets are marked Preliminary - for initial study and review only.

There is a considerable amount of work already done and much of the operation shown in the network is a matter of formalizing decisions already made informally. Of course, this sometimes proves to be a very difficult task, particularly in such a sensitive matter as interim sludge disposal. It appears that we will be able to submit the final sludge cake plan of action to the DNR on or before June 15, 1978 (working day 627). The liquid sludge disposal plan could be submitted on or before June 22, 1978 (working day 632). At that point DNR is required to review and approve the final plans of action after which the DWSD can issue a start implement order.

Monitoring Report #7
DWSD
Waste Water Treatment Facilities
Page three

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

Presently our model shows that we could expect to begin implementing early sludge cake disposal by August 22, 1978 (working day 574) and early liquid sludge disposal by August 29, 1978 (working day 679).

By March 20, 1978 (working day 565) it is anticipated that we will be able to begin implementation of the demonstration liquid sludge disposal plan. This is expected to proceed to June 15, 1978 (working day 627) and apparently the demonstration time span is satisfactory.

The consultant will review the proposed plan of work to see if the logic is accurate and if the durations are realistic. I strongly suggest that all of the project team, plus Mr. Stewart and Mr. Tang also review the network to insure there is an understanding of them and a full acceptance and approval of the logic and the quantification. This is a very critical program and its implementation is important relative to consent decree requirements presently imposed upon the DWSD.

There are some less critical elements of the network model that bear a brief discussion. One of the most important of these is the construction of the take-off facilities at the existing waste water treatment plant. It is necessary to provide the consultant with sludge cake and liquid sludge samples in running his demonstration program. It also will be necessary to provide the entire program with adequate liquid and cake sludge so the disposal facilities can be operated effectively. The project manager estimates that construction work at the take-off by the time the demonstration liquid sludge disposal plan gets into work will be adequate for limited amounts of cake and liquid. By mid-April, he estimates there will be adequate cake and liquid available to run the full program and shortly after, enough to insure backup from complex 1.

Another element of importance is letting the hauling contract. The consultant is due to provide a hauling report to the DWSD by April 11, 1978 (working day 581). Following this, DWSD will prepare a hauling contract, advertise, receive proposals and let a contract for the hauling. This contract is expected, on an accelerated basis, to be let by May 2, 1978 (working day 596). This allows adequate time by present information for the hauling contractor to acquire his hauling equipment.

We will monitor this project on a regular basis at each of the monitoring sessions. In the interim, between sessions, Mr. Stewart and Mr. Tang should plan to follow the job carefully since it, too, is a very critical project.

Long Range Program of Personnel Acquisition and Training

Mr. Tang reported that the remaining implementation of the training program is not yet formulated to a point where Mr. Davanzo would like to further diagram. Mr. Tang will stay in touch with Mr. Davanzo to keep updated on progress of the training program. Apparently it is running very well at present.

Final Clarifier Modifications

Testing of the final clarifier modifications has been completed. The raw data is now available and being put into report form to meet the consent decree date of April 15, 1978 (working day 582). Mr. Stewart is following the project and reported that the project team does not feel there are enough activities predictable yet to diagram subsequent work. Mr. Stewart will follow.

Scrubber and Silo Unloading Improvements (PC 400)

(Target completion date for approval of test results on incinerator #1 - December 21, 1978 - working day 759)

We briefly reviewed the current status of the project and Mr. Stiller says that he is still planning to have the first scrubber, fan and motor on hand at the site by mid or late July 1978. The target for having approved test results on incinerator #1 remains December 21, 1978 (working day 759). However, there is a continuing serious problem with instrumentation and controls. Several plans of action are being evaluated and a selection of the action course to be followed will be made shortly. This is a very complex problem and one that directly affects bringing the first incinerator on line.

Mr. Tang and Mr. Stewart will both continue to follow this project in detail and I again strongly suggest that we prepare a network model for the remaining work to be done on through to December 21, 1978 (working day 759). This, of course, would be a model as proposed and conceived by the DWSD staff. However, I also think that it would be wise to consider requesting from the contractors a plan of action for their work from now until activation of incinerator #1. Again, Mr. Tang and Mr. Stewart will follow this matter with the DWSD project team.

Monitoring Report #7
DWSD
Waste Water Treatment Facilities
Page five

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

General Summary

Overall, the projects as expected are moving with some difficulty due to the sizable problems encountered in all work presently underway.

The activities of the project planning, monitoring and control group are beginning to be apparent and continuing efforts should be made to get Mr. Tang and Mr. Stewart more deeply involved in in-house diagramming.

We had some brief discussions about drafting rough network models into final form. As previously, I recommend this be done. The models we prepare as a result of our rough diagramming sessions are sometimes not arranged in the optimum order and sheet placement for easy interpretation. Again, the department will follow up on this matter.

I shall be in touch soon with Mr. Wilson regarding the next session.

Ralph J. Stephenson, P.E.

RS/m

To: Mr. Darrel Suhre
Mr. E. Wilson
Mr. K. Stewart
Mr. A. Tang

March 7, 1978

Subject: Monitoring Report #8

Detroit Water and Sewer Department (DWSD)

Waste Water Treatment Facilities and Water System

Project: 76:45

Date of Monitoring: March 2, 1978 (working day 553)

Actions taken:

- Discussed phosphorous removal program and related facilities (CS-822)
- Reviewed status of final clarifier modifications report
- Monitored interim sludge disposal program
- Discussed permanent sludge disposal program progress
- Monitored scrubber and silo unloading improvement project
- Completed design network for permanent Ypsilanti Pumping Station

Phosphorous Removal and Related Facilities (CS-822)

On March 2, 1978 (working day 553) I met with the project team from DWSD to discuss progress being made on phosphorous removal studies.

On November 4, 1977 (working day 472) the work plan and proposed contract for design of the phosphorous removal and related facilities work was submitted to MDNR. The submittal was rejected with a request that it be segmented and on January 11, 1978 (working day 517) a work plan was resubmitted by DWSD as requested. This plan anticipated there would be two major segments - a step one study phase and a step two, phase one design work activity. The segmented step one study phase was approved and released by MDNR about February 16, 1978 (working day 543). The segmented step 2 design phase part one has not been released as of today.

The work studies phase is expected by contract to take one year (255 working days) and be completed in the period between February 20, 1978 (working day 545) and February 20, 1979 (working day 800). A one month DWSD review period has been anticipated (about 22 working days) and then there is an indeterminate amount of time that will be required for review of the

**Monitoring Report #8
DWSD
Waste Water Treatment Facility
Page two**

**RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER**

segmented step one studies phase by MDNR, EPA and other involved agencies. There is no word on how long these reviews will take.

The important thing to observe here is that the consent decree of September 14, 1977 (working day 435) identifies target dates within the phosphorous removal program in section 7, page 19. Design of the system was to begin on or before January 1, 1978 (working day 511) and be complete on or before February 1, 1979 (working day 765). Construction was to begin on or before September 1, 1979 (working day 937). Presently it does not appear possible to meet these requirements based upon the above facts.

A significant deterrent, of course, is the fact that the design phase and the studies phase have been segmented and one has been released while the other is being held. It was stated by the project team that the step two phase one design could start concurrently with the studies phase, if a release could be obtained. The step two phase one design is expected to take one year plus approximately one month for design review and approval of all agencies. Therefore, its early release is important if we are to even bring a portion of the project back into some kind of alignment with consent decree requirements. This schedule analysis, of course, does not take into account the segmented step 2 design phase, part 2, which will follow the study phase. However, completion of step two phase one design could possibly release construction of early improvements to the plant. This is provided that prompt processing of proposals is possible so construction could begin on or before September 1, 1979 (working day 937) to meet consent decree requirements.

The consultant presently intends to meet with the project team and the project planning, monitoring and control (PPMC) group next week to present the initial work plan and go over an expected approach to the project. We have requested the consultant to provide a work plan using non-scaler arrow diagrams and preferably with manual computations. This will allow ease of review and help minimize expensive planning work that may have to be revised. Careful attention should be given the consultant's plan of work since it is expected it will be tailored around the task definitions given in the segmented work plan for the project step one studies phase.

The monitoring of project progress is a shared responsibility for the project team and the PPMC group with the prime duty of identifying major progress problems lying with the project planning, monitoring and control group.

Therefore, a satisfactory interchange of correspondence and copying of the various reports and letters should be established early that will allow both the project team and the control group to function effectively.

Monitoring Report #8
DWSD
Waste Water Treatment Facility
Page three

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

I shall work with the PPMC group so they can make their services available and helpful without over burdening the communications channel or interfering with the technical process and evaluation procedures. This then can act as a model for the interacting of the project planning, monitoring and control group with other departments and projects in DWSD.

Final Clarifier Modifications

As of this date the final report on the clarifier modification testing is being prepared. Findings are generally that with the modifications the fluid flow characteristics of the tanks have been improved but that further physical improvements to the tank probably will not materially improve treatment characteristics.

It appears if further testing and modification is appropriate because of severe difficulties in obtaining more land for additional tanks that a chemical or other non hydraulic technique that might revise sludge characteristics be brought into the testing pattern. There are some additional minor physical testing methods to be checked such as working with the valves, or altering rates on return sludge pumps, or operating at a lower sludge depth that can be tried. However, to maintain this type of testing program now will require, according to the project team, temporary additional staff at the site to assist in the actual work making tests and recording results. It would appear from the tenor of the discussion that this would be a very desirable course of action to follow and I recommend it.

It should be pointed out that according to the consent decree, page 14, item 5, on or before May 1, 1978, if the inlet piping modification is successful, Detroit shall file a grant application for revisions and/or modifications to remaining clarifiers. The definition of success here is scarcely comprehensive and although there has been success achieved to a certain level, adequate success to eliminate the need for additional tanks has certainly not been demonstrated in the project team's opinion.

At this point, then, if we assume that additional land is needed to build more tanks, the decision becomes one that transcends only technical evaluation and must be decided at a high level of management. I suggest in light of the consent decree boundaries that this be done soon.

It would be wise to ask the project team for final clarifier modifications to present their findings personally so the benefit of information interchange can be fully explored. The monitoring team will follow this closely.

Interim Sludge Disposal

At this session we reviewed the Issue #2 network dated February 3, 1978 to establish current status and to evaluate the future needed progress relative to interim sludge disposal. The consent decree, on page 17, items 3 and 4, states that a contract must be awarded for sludge disposal on or before March 1, 1978 (working day 552) with interim sludge disposal to begin on or before April 1, 1978 (working day 575). Currently the program is held pending City of Detroit approvals and there is no word when these might be obtained. Once approval has been gained, DWSD can authorize start of work. The processing of the agreement started about January 18, 1978 (working day 522) with Water Board approval. It was hoped that approval of the contract could be obtained from the City of Detroit by February 3, 1978 (working day 534). If that had been done, a start to work order could have been issued on February 6, 1978 (working day 535).

Our Issue #2 network dated February 3, 1978 showed we could expect to begin implementing early sludge cake disposal by August 27, 1978 (working day 674) and early liquid sludge disposal by August 29, 1978 (working day 679). This was, of course, a preliminary evaluation of the procedure and will have to be now again re-evaluated due to the fact that we have not yet been able to authorize the consultant to begin his work.

In addition, there is another set of tasks that must be inserted prior to the beginning of work. These are for preparation, review and approval of the projected budget data for operating expenses.

Since there is no additional data available to continue work on the plan, we did not evaluate the program further. It was noted, however, that the DWSD is now preparing a hauling contract and this contract will be taken as far as possible but cannot be completed until the hauling trailer report has been prepared by the consultant and submitted to DWSD.

Construction of the waste water treatment plant take off is presently in work and proceeding.

Permanent Sludge Disposal

We began preliminary discussions of the permanent sludge disposal program with Mr. Blerig. He mentioned there have been considerable changes in thinking over the past several months and that presently their consultant is evaluating a mechanical system with design being tempered by consideration of hauling sludge by rail to a location in Lake County, Michigan. The hauling of raw sludge by rail is a serious consideration being given some support by the MDNR.

**Monitoring Report #8
DWSD
Waste Water Treatment Facility
Page five**

**RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER**

Requirements of the consent decree, page 17, section B3, require that construction of a permanent sludge disposal facility at the treatment plant shall be complete by December 1, 1983. It is estimated that it would take as much as 8 years to program, design and construct an energy recovery system for permanent sludge disposal. This would be made operative in phases which could allow us to meet this date while remaining part of the disposal system for energy recovery would be constructed subsequent to making the main plant operative. This program will require very serious consideration immediately if we are to abide by the consent decree.

It is suggested that further evaluation of the plan of work be made at an early date. Mr. Bierig said that they are following the program aggressively and that their consultant is due back for further consultation next week. At some early date we will plan to do whatever preliminary planning and diagramming would be appropriate to help isolate the major sequences needed and the problems that may be encountered over the next few months.

Further planning probably should be done in early or mid-April.

Scrubber and Silo Unloading Improvements (PC-400)

**Target completion date for approval of test results on incinerator - Dec. 21, 1978
(W/D 759)**

The PPMC team reviewed the current status of the project with Mr. Stiller who says that his target for having the first scrubber, fan and motor available by mid or late July of 1978 holds. This will allow the approved test results to be obtained as per our target above. The first scrubber is set and awaiting breeching and stack installation.

It has been generally decided that instrumentation drawings will be checked to the greatest extent possible by DWSD and that the electrical contractor will assemble the instrumentation system on the floor of his shop. The contractor will then load this floor assembled system with a simulation program (dummy) to check out the system under varying load characteristics.

Next, the drawings will be brought up to date and the system dis-assembled in the electrical contractor's shop and re-assembled on the job site.

Apparently there is now an improved probability of this work being done in a more timely fashion to coincide with the need for the initial test results. However, the program is still far from being assured schedule success and will have to be followed very carefully. Mr. Stiller appears to have the project well in hand as of this monitoring.

Design of Permanent Ypsilanti Station

We met with the project team to complete major diagramming for preparation of working drawings, design and specifications for building work and some purchase order items on the permanent Ypsilanti Station. Durations were not assigned to the building contract components at our session due to lack of time. However, Mr. Stewart and Mr. Tang distributed copies of the network to the project team and they will complete duration assignments as well as review the logic.

Considerable improvement in the Issue #2 plan of work was achieved by having a comprehensive discussion with the entire team about how they intended to proceed. It still appears that we will have a preliminary design report by mid-November 1978 and be able to move well into contract documents by early 1979.

It was observed in preparation of the plan of work that there are several dependent goal tasks based upon activities not under the direct control of the project team that seriously impact upon work. We also identified some interior dependent goal areas that were dependent internally within the DWSD but outside of the project team. I recommend that top management give early attention to these so they can be resolved before they become serious problems.

Generally the project team has a good understanding of how this particular program should be assembled and the logic for their work is in reasonably good shape.

Meanwhile, the PIMC group will draft the network into final form.

General Summary

Overall, our evaluation today made in conjunction with Arthur Tang and Kenneth Stewart dealt with reviewing the projects primarily in relationship to the consent decree requirements and very importantly in relationship to what problems are preventing effective action in carrying them out. It was found that there still are serious dependent goal delays from outside agencies beyond the control of DWSD yet without whose approval work cannot be done. The dependent goal problem is one that constantly recurs in this type of work and must be given ongoing attention so that any such problem is resolved promptly and thoroughly recorded.

Ralph J. Stephenson, P.E.

RJS/m

Monitoring Report #8
DWSD
Waste Water Treatment Facilities
Page seven

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

To: Mr. Darrel Suhre
Mr. W. Wilson
Mr. K. Stewart
Mr. A. Tang

March 27, 1978

Subject: Monitoring Report #9

Detroit Water and Sewer Department (DWSD)

Waste Water Treatment Facilities and Water System

Project: 76145

Date of Monitoring: March 23, 1978 (working day 568)

Actions taken:

- Monitored route analysis networks for sludge line and water main locations
- Prepared preliminary network plan for Detroit area water systems model preparation
- Monitored phosphorous removal program
- Discussed and monitored preparation of operations and maintenance manuals (CS 803)
- Monitored scrubber and silo unloading improvement project

Sludge Line and Water Main Route Selection

The sludge line route study from the southwest station to Liddesdale route location had just started and a small amount of work done when it was decided a more extensive review of existing information should be made. This review indicated there had been considerable previous work done in analyzing alternative methods of disposing of filtration plant sludge. Previous files and reports were read, studies made and a report submitted to the Director of Engineering on February 3, 1978 (working day 534). This report was read, evaluated and a decision made to evaluate two alternatives. This will require a cost evaluation which is about ready to begin. The total selection process for whether to construct a new sludge line or to stay with the present system should be made by June 2, 1978 (working day 618). At that time adequate data should be available for the director to select either of the two suggested techniques.

Monitoring Report #9
DWSD
Waste Water Treatment Facilities
Page two

If a decision is made to construct the sludge line, then the network model Issue #1 dated October 7, 1977 will be re-evaluated and the logic and durations updated. There is presently no funding for this program since it must be paid for out of current revenues and has not been budgeted.

We next evaluated the water main route selection from Joy Road to Ypsilanti. This water main is important in a sense to the Ypsilanti pumping station although the station could be brought on line without the main being installed. Presently right-of-way evaluations are being prepared for multiple routes and utility data is being assembled.

The current lag over the Issue #1 network dated October 7, 1977 is about 76 working days. The evaluations and utility data assembly was supposed to be completed no later than December 20, 1978 (working day 503). It is currently in process. Work probably will not resume on this project until later when more definite information is available.

Detroit Area Water Systems Model (DAWSD)

This session was to launch planning and set up some of the early procedures to be followed. It was first agreed that the name of the project would be revised from its present title of Water Works Park Project to the Detroit Area Water Systems Model (DAWSM). The reason for this was that the study now encompasses a full analysis of the entire system and as such has a far broader scope of work than previously. We talked for some time about the objectives of the program. It was defined as - to build a mathematical model of the Detroit area water system that will provide:

- 1) An effective base for future planning of the water system
- 2) Emergency simulation capabilities
- 3) Adequate data to improve operation of the existing system
- 4) Adequate data to decide the future of Water Works Park

I stressed with the project team the importance of defining the approach they were to take and to constantly keep in front of them the basic objectives of the entire program.

With this in mind, we then prepared a preliminary diagram of early work on the project. This diagram is shown on sheet 1, Issue #1, dated March 23, 1978. In it early work focuses primarily on preparation

of new low pressure, intermediate pressure, high pressure and suburban systems base maps. These maps will contain schematic representations of pipe sizes, lengths, elevations, control valve locations and friction factors. In addition, it would be wise to define the DAWSM budget needs in greater detail than has been done to date.

An ongoing task presently in work is the review of analysis methods. This review is important since it will influence to a considerable extent the computer capability required. As the review of analysis methods continues, computer resources will be identified and selected. Once analysis methods have been selected and the computer resource selected, a computer program can be obtained and put into required form.

The project team felt that it was probably going to take at least four or five months (until fall) to get a substantial part of the base maps, particularly the low pressure system complete. At our next session we will further study the approach and diagram in more detail work that can be going on as base maps are in work.

Phosphorous Removal and Related Facilities (CS 822)

The step 2 design phase, part 1, has not yet been released by MDNR. Work, however, is proceeding on the step 1 study phase. The consultant has provided a preliminary logic plan showing how he intends to work through the step 1 studies phase. This logic plan is divided into the work tasks and then into smaller activities within each of these.

It is suggested that:

- 1) the logic plan be completed and that interrelations between the diagrams be shown where possible
- 2) task descriptions be made more explicit. Presently there is confusion as to what is covered by each of the tasks since they are described by only two or three words.
- 3) durations be assigned to each task. These durations should be in estimated, elapsed working days.

- 4) the network be manually computed. It should be noted that this present network does not appear to be complex enough to warrant computer processing. Therefore, for purposes of our monitoring, an early start/early finish and late start/late finish manual computation with the working days or calendar dates shown directly on the plan should be adequate.

It is suggested that the consultants use our base date calendar with January 2, 1976 as working day 1. Copies of this calendar can be provided by DWSD.

I discussed with the project team the process they should use to evaluate progress. It was suggested they monitor each two week period for the present, with the possibility of this period lengthening out later if the project is running well. It would be wise to have the consultant submit a monthly report referenced to the network model. In it tasks complete and in work should be identified. The monitoring should be both against early and late starts and finishes so as to pick up trends in the work. This is a very tight project, having a duration of approximately one year and since it is a very complex study, its progress will have to be watched carefully to insure it is completed as presently scheduled. Present completion is set for February 20, 1979 (working day 800), followed by a one month DWSD review period.

Requirements of the consent decree have been made known to the consultant and he is currently working to achieve those target dates. This matter should be reviewed since there have been some cases where the consultant's contract targets were not coincidental with the consent decree targets.

Preparation of Operations and Maintenance Manuals (CS 803)

The consultants were present at this meeting to discuss an apparent current lag of the project as reported in the DWSD monitoring report of March 1, 1978 (working day 552). We reviewed the project in some detail and established that the logic for preparation of their contract work should be revised if a maintenance system is to be prepared rather than a maintenance manual. This matter is being reviewed by DWSD and I recommend the decision be released quickly so the consultant can determine his course of action.

We next reviewed the provisions of the consent decree relative to the consultant's work. Present requirements are that the operations and

maintenance manual be complete by October 1, 1978 (working day 702). The consultant, after careful study, has suggested a maintenance system rather than a maintenance manual be prepared. If this alternate is accepted, a card system would be established to help operate the maintenance system. The present goal of the consultant, if the alternate is accepted, is to complete the operations manual and preparation of the basic card deck by October 1, 1978 (working day 702). It is felt that if a maintenance system is more appropriate than a maintenance manual that then the card work up to October 1, 1978 (working day 702) should be accepted as a substitute for original manual requirements. This should be checked in detail.

Much of our discussion revolved around the wording of monitoring reports and the preparation of control documents. It is recognized that in a project of this nature it is difficult to be exact relative to logic and durations anticipated for the program. It should be kept in mind, however, that monitoring and network models are used basically to predict problems before they become catastrophes. Therefore, it is encouraged we provide network models even on those projects subject to frequent and rapid change.

The model also should be used as a basic measuring point and should be able to give us a constant reference to the current status relative to the basic standard of performance.

One of the reasons for the current lag on the project is addition of extra work and some re-ordering of internal priorities by the DWSD.

Scrubber and Silo Unloading Improvements (PC 400)

**(Target completion date for approval of test results on incinerator #1 -
December 21, 1978 (working day 759))**

Work continues on this program with target dates still being held as substantially reported before. Scrubber fan and motors for incinerator #1 should be available by mid or late July 1978. This will allow us to meet our target completion date for approval of test results.

Instrumentation is being assembled on the floor of the contractor's shop and although it is a difficult task, appears to be moving in good shape.

The project team reports that probably most instrumentation shop drawings will be completely checked by early April 1978.

Monitoring Report #9

DWSD

Waste Water Treatment Facilities

Page six

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

There is still a chance that the instrumentation work can be done in time so the instrumentation can be used to run the initial tests on incinerator #1.

Summary

It appears from today's analysis that overall DWSD work activity is slowing with several projects currently being held for various reasons. These need releases on approvals or funding, or require additional data to continue. It would be wise to review the DWSD overall work load in a near future session to insure continuity is maintained on the critical jobs.

Mr. Tang, Mr. Stewart and Mr. Wilson will prepare an agenda for our next meeting on April 5, 1978 (working day 577).

Ralph J. Stephenson, P.E.

RJS/m

**To: Mr. Darrel Suhre
Mr. W. Wilson
Mr. K. Stewart
Mr. A. Tang**

April 8, 1978

Subject: Monitoring Report #10

Detroit Water and Sewer Department (DWSD)

Waste Water Treatment Facilities and Water System

Project: 76:45

Date of Monitoring: April 5, 1978 (working day 577)

Actions taken:

- Monitored and continued diagramming Detroit area water systems model (DAWSM)
- Monitored industrial waste control program
- Conducted preliminary discussions regarding air pollution abatement program
- Monitored phosphorous removal program

Detroit Area Water Systems Model (DAWSM)

We discussed the DAWSM in detail attempting to evaluate steps necessary to get the project into high gear. It is a basic research and development program about which much is not known, and for which no standard procedures are available. Our work today aimed at bringing the network diagram to a point where the mathematical model was debugged for the maximum hour demand simulation. It was decided to model the low pressure system and we discussed the survey and analysis work necessary to provide input and take-outs from the LP system. The inputs are feeds into the low pressure loops. They include such sources as Water Works Park, along with three pressure reducing valves from the intermediate pressure system. The inputs are reasonably well identified. However, the take-outs from the system are very complex.

In order to better evaluate input and take-out to the system, the project team is currently identifying large users, as well as changes to the basic LP service area. They will then abstract meter data for these large users. There is also a need to physically inspect the flow and pressure measurement points to be used, after which actual measurements can be made to get additional flow data.

**Monitoring Report #10
DWSD
Waste Water Treatment Facilities
Page two**

**RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER**

Once the LP base map is prepared and the inputs and take-outs determined, data is plotted on the base map and a maximum hour demand simulation run can be made. Presently it is expected the run will be made sometime in early November with simulation and debugging proceeding on through to early December.

An essential part of the program will be to obtain computer facilities since the program makes high demands upon computer capacity. In addition, it will be necessary to obtain and modify a computer program suitable for the project. Several systems are being evaluated with the project team leaning toward use of the Newton-Raphson method. This is not a final decision as yet and further study is to be made. A selection of the analysis method probably will be available by early June.

We should plan to monitor this project on a regular basis and continue filling in additional data on the network plan. Work done on the plan today is identified as Issue #2 dated April 5, 1978 (working day 577).

Industrial Waste Control Program

The PPMCS team reviewed the industrial waste control program with Mr. Dehem and Mr. Pollard. This program is moving slower than desired primarily because of delays to approvals of the enforcement plan. Mr. Dehem brought out the following chronology of the plan approvals.

December 14, 1977 (W/D 499) DWSD submitted a final enforcement plan to the DNR for their approval.

March 24, 1978 (W/D 569) DNR responded to the submission of the final enforcement plan withholding their approval.

March 30, 1978 (W/D 573) Mr. Dehem responded to the DNR that the DWSD would resubmit the final enforcement plan on or before June 5, 1978 (W/D 619).

Mr. Dehem said that in the interim he is starting implementation of the plan and working toward his staff assignments and activities so that the plan can be put into full effect as soon as approvals are given.

We also discussed the training program and Mr. Dehem said that he will start this when the revised enforcement plan is submitted for legal review.

Work is continuing on identifying discharges into the system and Mr. Pollard reports that this identification process is about 60% complete. Additional vehicles and equipment required are presently on order. Delivery is expected shortly.

Air Pollution Abatement Program

This session was primarily to review the recent needs and requirements of the air pollution abatement program. The basic document for this review was a proposed memo of understanding with the Wayne County Air Pollution Division dated March 21, 1978 (working day 556). In this memo was discussed the scrubber and incinerator modifications along with the enhancement program of stack dispersion. The dates proposed for the enhancement of stack dispersion must be re-examined carefully since they appear at first glance to be a very difficult set of goals to achieve. The basic program is that there does not appear to be adequate time to receive approvals and where grants are involved, to actually follow the full grant process. In addition, contracts for design and construction require sizable amounts of time to let. It may be that there is not adequate times allowed for these activities.

We began a preliminary analysis of the type of network model to be used to show this. However, due to the press of time we were not able to do any substantive diagramming. At our next session we should plan to attack this project aggressively and to prepare a network plan on through to letting of contracts for the stack dispersion programs. This entire project appears to be very tight and I recommend careful study before formal decisions are made.

Phosphorous Removal Program

Mr. Tang, Mr. Stewart and I met with the consultant's representative, Mr. Al Posthuma and Mr. Steve Williams. The purpose was to completely review the network model for work on the phosphorous removal and related facilities step one studies phase.

We went through the consultant's network model, Issue #3, dated April 5, 1978 and manually computed the entire diagram. Presently work progress appears good although it is too early in the project to accurately evaluate status. It was noted that the contract dates from February 20, 1978 (working day 545) and extends over a 282 working day period. This brings the target completion date to March 29, 1979 (working day 827). On all major task groupings the assumed early start date is April 3, 1978 (working day 575). The target completion for the consultant represents the point at which a report has been written by them and submitted to the DWSD. It was decided to use the target end date as the late finish for each major task.

It was pointed out by Mr. Posthuma that task 344, final clarifier contingent alternatives, which is an optional plan may require amendment of the contract

**Monitoring Report #10
DWSD
Waste Water Treatment Facilities
Page four**

**RALPH J. STEPHENSON, P. E.
CONSULTING ENGINEER**

time if it is necessary to extend the final clarifier inlet modification studies into other alternatives than can be evaluated during the regular study. Thus, these final clarifier alternatives were not considered in establishing the late finish dates in the network model.

I suggest that this project be monitored by the PPMCS group with the DWSD project staff on a regular basis, probably once each two weeks. I shall monitor the project on an as-needed basis.

It should be noted that the consultants appear to be well in touch with the project and were very helpful in giving us monitoring information.

General

Overall, the DAWSM program is just getting underway and shows promise of being a very exciting and significant contribution as a technical tool of the DWSD. The industrial waste control program is moving reasonably well but requires approval of DNR to move full steam. The air pollution project is just getting underway in its revised phasing and will require very careful attention over the next two or three months. The phosphorous removal project is in reasonably good shape and the consultant and the project team at the DWSD appear to have it under control.

I shall be in touch with Mr. Stewart and Mr. Tang regarding our next monitoring session and the suggested agenda.

Ralph J. Stephenson, P. E.

RJS/m

**To: Mr. Darrel Suhre
Mr. W. Wilson
Mr. K. Stewart
Mr. A. Tang**

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

June 2, 1978

Subject: Monitoring Report #11

Detroit Water and Sewer Department (DWSD)

Waste Water Treatment Facilities and Water System

Project: 76:45

Date of Monitoring: May 25, 1978 (working day 613)

Actions taken:

- Prepared preliminary summary network model for air pollution abatement program (concentrating on enhancement of stack dispersion - paragraph I-B-2 of consent decree)
- Reviewed reporting format for step 1 projects
- Conducted preliminary discussions regarding traffic patterns and interferences during waste water treatment plant construction program
- Reviewed and monitored phosphorous removal program

Air Pollution Abatement (Enhancement of stack dispersion)

The consent decree in paragraph I-B-2 required certain steps be taken to enhance stack dispersion of incinerator particulates. This schedule of dates is explicitly stated in the consent decree and our analyses today were aimed at identifying the validity of the dates and what must be done to achieve them. For the analysis we prepared a network model for air pollution abatement, Issue #1 dated May 25, 1978, sheet 1, in which we diagrammed the step 1 grant work study to establish the system and prepare a final report, the obtaining of the step 2 grant and preparation of contract documents and solicitation and receipt of proposals and award of contract subsequent to obtaining the step 3 grant.

It was found that with very heavy expediting and compression of normally anticipated times that the final report identifying the methodology to be used could possibly be prepared by the target date of April 1, 1979 (working day 829). It should be pointed out this presumes an extremely fast

turn around by all parties and further, presumes that the step 1 grant can be obtained subsequent to filing for the grant within a two month (44 working day) period. As noted, this is a highly compressed plan of action that will have to be maintained mutually by all parties including the DNR and the EPA, as well as the DWSD and their consultant if the initial date for the submission of the report is to be met.

The second stage of work requires filing for, processing and obtaining a step 2 grant. In our network we have allowed 15 working days following the final report in the step 1 grant process to file for step 2 grant and then 44 working days to obtain the step 2 grant.

Preparation of working documents follows and concurrent with review and approval of the final contract documents, the step 3 grant application will be prepared and submitted. It was assumed that the step 3 grant processing and obtaining would take approximately 70 working days, followed by solicitation of construction proposals within the next 30 working days. The award of a construction contract is estimated to take as many as 86 working days following solicitation and receipt of proposals.

This brings award of construction contract to December 29, 1980 (working day 1273). The date required by the consent decree for award of contracts is June 1, 1980 (working day 1127). Therefore, our present plan of work shows an over-run of about 136 working days.

We discussed methods of compressing this schedule, however, because many of the factors which influence any compression are unknown at this time, we found we were unable to justify any rational compression with the present available data. This matter should be reviewed in subsequent diagramming and monitoring sessions. In any event the over-run is of such magnitude as to constitute a serious problem with respect to achieving the consent decree requirements.

I recommend that at subsequent planning sessions we periodically review this air pollution abatement network and that we insure a close monitoring is put on the initial step 1 grant stage. It should be noted that presently the consultant agreement has not yet been executed pending completion of the scope of work plan. Immediately upon receipt of this within the next week, this consultant agreement must be executed in order to properly process the step 1 grant. It is an important jump off point for the early work and should be given top management attention.

Quarterly Reporting for Step 1 Projects

Mr. Wilson, Mr. Stewart and Mr. Tang have been given the responsibility for preparing detailed supplemental reports regarding the current status and projected future work on step 1 programs. Specifically, they have been asked to focus on the final facility plan, the environmental impact statement (EIS) for the final facility plan, the phosphorous removal program, the sludge management project and the rate study analysis.

I emphasized to this group the need to establish quickly for each of these programs a satisfactory standard of performance. This is a prerequisite for any comprehensive monitoring. The standard of performance we have found to be best exhibited in a network model prepared as a joint effort between the consultant and the DWSD staff. Then there is a mutuality of interest that is conducive to motivating both parties to better interact.

Monitoring of the networks for a good reporting system must be done on a regular and a consistent basis. It should be done in conjunction with those being monitored and should be qualitative as well as quantitative. I strongly recommend the use of color coding and advise the technique of isoquant lines as perhaps the most visible graphic tool to accompany the narrative report. It would be wise, I believe, to identify late start/late finish isoquant lines on a fresh blue line or set of prints each time the project is monitored. Then the isoquant of the actual project position should be overlaid and the areas ahead and behind identified by coloring them in with an appropriate yellow or green water color tint. This focuses attention immediately on those areas that are in less than desirable and in excellent condition. It allows rapid monitoring and management by exception.

In addition, each project should have its own monitoring narrative report. These reports should follow substantially the techniques that are used in the submission of my own monitoring reports to the staff. They should be concise but identify clearly the actions taken, should list those participating in the project analysis and should focus strongly on the standard of performance and the comparison of the job to it.

As a general rule only problem areas should be identified and the problem discussion should be followed by a statement regarding corrective actions that are being taken.

A quantitative measure should be made of the lags, preferably over late starts and finishes, so that measurement of rate of improvement or deterioration can be made.

In summary, the use of isoquants with liberal color coding, along with a good narrative statement that provides an engineering analysis of the task should give DWSD management and EPA the information they need. It should be emphasized that an integral part of the monitoring report should be identification of the current issue and date of the network model being used.

Further sophisticated techniques can be applied to such a reporting system and we shall discuss these in more detail at a later meeting. However, I do not feel at present that it is appropriate to engage in these since often-times they are time consuming and merely provide redundant documentation.

We shall review the entire reporting system in more depth at a later date to determine whether additional translations of the information to such forms as bar charts, slide charts, narrative schedules, corridor schedules or other such techniques are appropriate. Presently, however, the above suggestions should suffice to get a good control position on the jobs.

It has been requested by the DWSD management that a full reporting system be modeled and presented by June 15, 1978 (working day 627). It would be wise to take an ongoing project, for instance the phosphorous removal program and display such a technique of color coding as noted above. I reviewed this briefly with Mr. Stewart and he will test the system on the phosphorous removal project network.

An integral part of this system, as noted above, requires mutual acceptance of the network model. This is something that is best done on an individual basis for each project as it is evolved. It has to be, however, a mutual effort between the consultants, the DWSD and regulatory groups for the system to be a workable tool.

Plant Traffic Pattern and Corridor Analysis for Waste Treatment Plant

At the DWSD waste treatment plant a major series of construction programs is about to start that will have a severe impact upon existing traffic patterns. For instance, it is anticipated that by this fall construction of a new employee parking deck and service facility will be underway that will force closing of the plant entrance and removal of nearly all present employee parking. This type of disruption will be common over the next three years as several new facilities are brought on line.

In light of this it was felt wise to begin developing a method of identifying where conflicts and problems would exist in this dynamic changing program.

I suggest three basic approaches be used in conjunction with each other. This method involves first identifying the projects to be constructed and their interrelationship through the use of a summary network model. This network model would actually show the overall sequence of construction and identify what construction would occur after what other construction is complete or started. The second document, prepared after the network analysis, identifies the physical situation at any given point in time at the waste water treatment plant. This analysis is called the corridor analysis and depicts points in the plant where a system or series of systems will be impacted upon over a given period of time.

Next, corridor conditions which surround that particular facility or system are identified and given a position on a bar chart time scale. For instance, if on November 1, 1978 (working day 724) we plan to start construction of the parking deck and employee service building, then several sub-corridor conditions exist, i. e. the main plant entrance is closed; also a new access route must be totally available. In addition, we should have additional parking since we are removing nearly 95% of the existing employee parking. I discussed the technique in some detail with the project team and with Mr. Stewart and Mr. Tang. Time did not allow a full exposition of the method but the basics were conveyed and are being studied at present.

From these analyses is then prepared a site plan which shows the actual physical condition of the site during the various corridor points. Mr. Tang has already prepared a series of these physical plans and they will be a great help in identifying the various conditions that will exist.

In summary, a network model of the sequencing is prepared first. A preliminary site plan showing the anticipated improvements and temporary conditions would be helpful here in identifying some of these sequences. This has already been started by the project coordinator. Once the network model has been generated, a corridor analysis is made which gives a time scale view of the conditions that can be expected on the site as of any given point in time. (It should be remembered that as the projects proceed corridors will be turned off and on within any given situation and therefore, represent a dynamic series of continuing revisions to the site condition.) Then the site plan should be brought into final form to reflect the statements of the network model and the corridor and to identify explicitly what is to be done physically to the site during the work stages.

We should plan to go into this in more depth at a later meeting because there are very critical problems existing at the site that should be receiving the benefit of such an analysis.

Phosphorous Removal Program

Mr. Tang, Mr. Stewart and I met with the consultant's representatives, Mr. Al Posthuma and Mr. Steve Williams to monitor the phosphorous removal program.

Subsequent to our previous monitoring on April 5, 1978 (working day 577) and as described in Monitoring Report #10 dated April 8, 1978, the network model has been put into slightly different form by the PPMCS department and we used this to monitor. Most major tasks are meeting targets between early and late starts and finishes. There are some minor exceptions but detailed discussions with the consultants indicated that it does not appear they represent major problems.

An area that should be watched carefully is work at the pilot plant. It is slightly out of line with our model in the estimating of chemical dosage for pilot plant work. However, the consultants have moved ahead on some work originally intended to follow. Therefore, it presently is meeting its target dates.

Another element that shows some slowness is design of sludge removal modifications. These were due to begin no later than April 17, 1978 (working day 585) and have not yet started in full. However, a review of following tasks indicates that this time should be able to be picked up shortly. I suggest, however, that this sequence of tasks be monitored carefully over the next 2 or 3 weeks.

The present target is to prepare the draft reports and submit for final review by February 13, 1979 (working day 795). This target appears valid and the project team feels it is achievable.

Again, this project is a very critical program and is a keystone of pollution abatement efforts. Therefore, it must be watched and monitored on an ongoing basis.

The PPMCS group will follow it carefully.

General

Overall, the work load at the DWSD has picked up considerably since our previous monitoring and it has now been requested that we focus more time and heavier attention on planning and control of the projects. Therefore, beginning in July I shall plan to spend at least one full day each two

Monitoring Report #11
DWSD
Waste Water Treatment Facilities
Page seven

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

weeks working with the DWSD staff. I also plan to meet with them in June to continue work that was initiated at this meeting.

The PPMCS group is gaining good experience and working familiarity with the modeling system and therefore, our major efforts now can be focused on specific jobs. However, it is important to keep in mind that a refining and improvement of their abilities must also be a part of the ongoing efforts. Such training and coaching will be included in each planning and monitoring session.

I shall stay in touch with Mr. Wilson, Mr. Tang and Mr. Stewart to set the subsequent meetings with the staff.

Ralph J. Stephenson, P.E.

RJS
m

To: Mr. Darrel Suhre
Mr. W. Wilson
Mr. K. Stewart
Mr. A. Tang

July 5, 1978

Subject: Monitoring Report #12
Detroit Water and Sewer Department (DWSD)
Waste Water Treatment Facilities and Water System

Project: 76145

Date of Monitoring: June 29, 1978 (working day 637)

Actions taken:

- Reviewed basic goals of project planning and monitoring group
- Prepared network model for interim sludge loading modifications at existing plant
- Reviewed corridor studies of waste treatment plant traffic patterns
- Monitored scrubber and silo unloading improvement (PC400)
- Monitored air pollution abatement program
- Reviewed use of display board for reporting and monitoring

Planning Goals for Planning and Monitoring Group

Mr. Stewart, Mr. Wilson and I spent the first part of our session discussing the role of the planning, monitoring and control group in future activities of the DWSD. It was agreed it has a very important function and efforts should be made to strengthen the department since Mr. Stewart is now the only member remaining of the group. Immediate recruiting will be initiated to bring qualified people to the staff. It was decided that I should plan to spend two working days per month at the DWSD and that this activity would be devoted to assisting as in the past to plan work and to coach and train those involved in planning, monitoring and controlling the projects.

As part of our discussion we also reviewed some additional techniques that might be applicable. One of these is the corridor analysis system as discussed at our previous monitoring, primarily in relationship to waste water plant traffic patterns. Mr. Stewart has extended the corridor concept and done some work with overall interfacing of the total planning efforts of the department. We reviewed his suggested coding system and put under

consideration was the use of seven digits to identify the corridors and their conditions. The first three digits would be used for project identification, the fourth and fifth digits for responsibilities and the sixth and seventh position for describing the condition of the corridor or project.

It is emphasized that in this system corridor conditions or project conditions should be determined initially from network models. Then by translating model data to a corridor bar chart, we are able to pick up conflicts in project conditions, as well as potentially use the network derivation or translation to quantify manpower and cost requirements.

The corridor analysis resembles the resource allocation exercises that have been done several times in the classes conducted in network systems. It essentially consists of preparing a network model and then deriving from the network model a bar chart translation that indicates when and where key activities are to be done.

The suggested sequence for preparing a corridor analysis is as follows:

- 1) Prepare a summary logic plan showing the timing and positioning of the various improvements or projects to be built or made
- 2) Quantify and compute the network model
- 3) Prepare a bar chart schedule of the various activities assigning a corridor number to each project
- 4) Derive the conditions which must exist during the course of the project and identify the point in time within any given activity at which the condition will start and end
- 5) Prepare a bar chart depicting the main corridor and each corridor condition with its starting and finishing points
- 6) Analyze the entire model for conflicts and overlaps

This entire concept is one I have not fully articulated as yet but that has already proven to be extremely powerful in applications where major conflicts of traffic patterns or between activities must be identified early so as to be predictable. Mr. Stewart will continue working on this type of modeling and study its application to the overall project load presently being carried by the DWSD staff. This is to be done both for the DWSD waste water treatment plant traffic corridors and the project corridors that Mr. Stewart has begun defining.

Waste Water Treatment Plant Modifications for Interim Sludge Loading Facility

Plant modifications for the interim sludge loading consist of four basic projects -

- Cake 1 (C1) at the train shed
- Cake 2 (C2) out of complex 2
- Liquid facilities (LF)
- Cake 3 (C3) later train shed modification

We focused today on cake 1 modifications which are being designed. Activities are shown on network model, sheet 1, Issue #1, dated June 29, 1978 and indicate that with some compression of the proposed schedule we can expect we will have the loading facility in operation and debugged by October 18, 1978 (working day 714). The major planning problem today revolved around getting design and detailing of steel in work at an early date. Also important are the DNR and City of Detroit reviews for construction and building permits.

Once field work is able to start, installation of modifications should consume a relatively short time. There have been commitments made that this work would be completed by September 1, 1978 (working day 682). This would be a very difficult feat to achieve with the present status of the program considering the approvals required.

It was decided that, if possible, structural steel acquisition would be made a part of the PC424 program and that this might considerably expedite the program by eliminating the need to detail the steel at the water board staff level.

It was also decided at this meeting that design drawings would be complete within the next 15 working days for the C1, C2 and LF facilities. This is so that all three can be submitted together to the Michigan Department of Natural Resources for a final review and issuance of the construction permit. It is expected during this review that fabrication of structural steel for C1 will proceed thus dovetailing the two activities.

There is some concern that the project is shown as taking too long and intensive study of the network will be made by the project staff to see if any compression of time can take place. Meanwhile, discussions will also be held with the upper management of the DWSD to evaluate the impact of a potential later delivery on the entire project.

We should plan to monitor this program carefully as it proceeds. I suggest the network be posted on the project board immediately and color coded on a weekly basis.

Scrubber and Silo Unloading Improvements (PC400)

The target date for approval of test results at incinerator #1 is still being held at December 21, 1978 (working day 759). In the field, work is just starting on the breeching and stack for incinerator #1. Instrumentation is being assembled for #1.

We discussed instrumentation in some depth and the project team brought out that there are several instrumentation packages to be considered. These are the incinerator control package, the plow control panel, the central control panel and the burn control panels for each incinerator.

Burn control panels for incinerator #1 have been delivered and are being put in place. Incinerator control panels are presently in work and must be debugged in the shop. Apparently they are about 50% complete. The plow control panel is currently being assembled and should be ready for checking in about 20 working days. It should arrive at the job site sometime within the next 5 to 7 weeks.

Work on the central control panel is in process with needed corrections being made. It is expected that all necessary instrumentation will be either permanently or temporarily in place by the time incinerator #1 is to be test run. Once instrumentation has been approved and debugged, shop drawings for the work will be correlated.

It was pointed out that setting the central control panel may pose difficult installation procedures. This matter should be studied early so that no delays are encountered in getting it into its position.

There was considerable discussion about the true health of the project and extensive questioning brought out that in general the project appears, from the comments of the project team present at the meeting, to be moving rather smoothly in the field. There are some administrative problems which are being handled on a day to day basis.

One other item discussed was the preparation of operating manuals. It is expected that once incinerator #1 has been installed, debugged, tested and run-in that preparation of the manuals will begin. This then will allow the early installation and operating experience to be written into the manual.

Air Pollution Abatement (Enhancement of stack dispersion)

(Monitored from Issue #1 dated May 26, 1978)

Most of the scope of work has been submitted and is presently being evaluated. Also in work is processing and executing of the consultant agreement. It is anticipated by the project team that they will file for a step 1 grant within the next 10 to 15 working days. In our Issue #1 network it was intended that the grant application would be filed by June 22, 1978 (working day 632). If we require another 15 days to file that would bring the date to July 21, 1978 (working day 652), about 20 working days late. This is a serious lag since the project is very tight.

Another problem that could be encountered is that without approval of the environmental impact statement, EPA is not likely to approve the step 1 grant. Therefore, this could delay processing the grant. The environmental impact statement is expected to be approved sometime in September 1978.

I suggest this network model be reviewed with the proposed consultant to see if it represents a reasonable plan of work. The reason for this review is that indications are we are going to have considerable trouble meeting the consent decree date in paragraph I-B-2. This was discussed in detail on pages 1 and 2 of Monitoring Report #11 dated June 2, 1978 (working day 618).

Again, I suggest the model be posted on the project bulletin board and that it be monitored on a bi-weekly basis to indicate to those concerned where the work stands. The monitoring process should make use of the four color codes described on the bulletin board on the 7th floor. Annotation of pertinent notes should be made directly on the network model posted. In addition, a monitoring report should be prepared each time a monitoring of the project is made.

Discussion of Future Sessions

Mr. Stewart and I spent some time reviewing where we stand and what we should be doing in the future. I recommended to him that he prepare a detailed list of all network models that must be prepared and identify which of these we should do in-house.

I further suggested and outlined some specific steps to be taken to reactivate the bulletin board on the 7th floor. There was some discussion also about monitoring techniques and we should plan at future sessions to cover some of the more detailed methods of actually monitoring projects.

Ralph J. Stephenson, P.E.

Monitoring Report #12
DWSD
Waste Water Treatment Facilities
Page six

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

To: Mr. Ken Stewart
Mr. Willie Wilson
Mr. Darrel Suhre

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

August 4, 1978

Subject: Monitoring Report #13

Detroit Water and Sewer Department (DWSD)

Waste Water Treatment Facilities and Water System

Project: 76145

Date of Monitoring: July 21, 1978 (working day 652)

Actions taken:

- Continued discussion of goals, functions and staffing of project planning, monitoring and control section (PPMCS)
- Monitored industrial waste control program
- Monitored air pollution abatement program focusing on enhancement of stack dispersion
- Monitored Detroit area water system model (DAWSM)
- Monitored and continued diagramming interim sludge disposal modifications
- Monitored phosphorous removal program

Project Planning, Control and Monitoring Section (PPMCS)

- Objectives, Activities, Staffing

Those attending: (some part time only)

Darrel Suhre
Willie Wilson
Najah Akkam

Jim Carethers
Ken Stewart
Ralph J. Stephenson

Because of the strong need to continually improve the project planning, monitoring and control process, we continued our discussions from the previous monitoring on June 29, 1978 (working day 637) into this session. Plans are presently to review project related improvements briefly at each monitoring session so as to identify progress and continually build a stronger PPMCS within the engineering division over the next several months.

Mr. Hakam attended the meeting to observe activities with the possibility of his joining Mr. Stewart on the staff. There is a strong recruiting effort being made to strengthen the PPMCS since it is now understaffed and unable to fully accomplish its objectives.

We spoke briefly about the type of professional needed for the job and it was agreed that his or her background should be technical in nature although an engineering education is not necessarily a prerequisite but would be of help. The important factor is that the person must be interested in a multitude of disciplines all of which deal with DWSD activities, while still understanding the technical structure of the work that is to be done. In addition, there is a strong need for PPMCS personnel to understand the business mind and be able to apply management techniques to problem solving, motivation and goal achievement. It might be well to explore using management oriented graduates from engineering schools who have taken construction engineering, industrial engineering or even business administration. Many of our engineering colleges now offer optional courses in management methods. These are seeing greater acceptance than ever before.

Another source of working personnel might be those who have attended technical colleges and received associate degrees. There is an increasing level of competence found among these people and oftentimes their backgrounds and approaches are extremely valuable at actual working levels in this kind of operation. We will cover the matter in more detail at succeeding sessions since the PPMC section is emerging as a critical pivot communication point with upper management and the DEG, DnoG agency activities within and external to DWSD.

In our review, it was established that for the time being the basic goal functions of the PPMCS would be to:

- 1) Prepare network models for all projects in conjunction with group and section leaders
- 2) Assist to identify and state goals and objectives of the various programs in conjunction with group and section leaders
- 3) To monitor all projects and programs
- 4) Where appropriate and within the skills of the PPMCS, to recommend corrective action where project problems exist

**Monitoring Report #13
DWSD
Waste Water Treatment Facilities
Page three**

**RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER**

- 5) To regularly, and using management by exception, report project and program status.

It was further agreed that the above should be concentrated in the engineering division of DWSD but must take into account all influences external to engineering that affect plans and programs. This will call for a high level of sensitivity since many of the affecting actions (DEG, or dependent goals, and DnoG, or unknown or unidentified dependent goals) are very obscure and sometimes more complex to meet than are solving direct goals identification.

As a beginning point to today's discussion, we attempted to identify what the product of the engineering division truly is. A starting list might look something like this:

Products of the DWSD Engineering Division are:

(not in order)

- Grant applications
- Contract documents
 - Water and sewer mains
 - Minor and major facilities which require the proprietary and specialized knowledge of the DWSD staff
- Consultant procurement
- Management of consultant interfaces including:
 - Technical guidance
 - Goal setting
 - Project and program monitoring
 - Project and program reviews and approvals
- Manage interfaces between DWSD consultants and external and internal agencies (sometimes these are classified as the regulatory agencies)

**Monitoring Report #13
DWSD
Waste Water Treatment Facilities
Page four**

**RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER**

We attempted in our sessions, particularly those with Mr. Suhre, to set definite objectives for PPMCS. We began by identifying four major activity categories which PPMCS is engaged upon, capital improvement programs, consent decree projects, preparation of quarterly reports and preparation of productivity reports, all for major work of the engineering division. Mr. Suhre said that the capital improvements program is rapidly becoming critical and will continue to occupy a high priority position in future activities.

The Corps of Engineers has recently been appointed as a construction representative for some of the federal regulatory agencies. With this appointment come several major responsibility shifts relative to reviews and approvals. The PPMCS will be expected to be involved in this matter in some depth. With the increasing number of projects now moving into the field, actual field monitoring will be increasingly important to DWSD management. Because of the present requirement that all contractors prepare network models, the need to monitor these models will be urgent and the machinery should be set up now for accomplishing this. We will review this matter at subsequent sessions. Mr. Suhre has asked that we consider how we might best organize and maintain such a monitoring system in the field. This is especially important with the appearance of the Corps of Engineers on the construction scene.

The potential for true contribution to the efforts of DWSD in the future is great within the PPMCS. I feel it is an extremely important function and can serve a very useful role in the future of DWSD. Mr. Wilson and Mr. Stewart will continue to place a discussion item on the agenda for on-going review at each monitoring session in which I am involved.

Industrial Waste Control Program

(Monitored from Issue #3 dated April 5, 1978)

Those attending:

**Frank Pollard
Willie Wilson
Najah Akkam**

**George Rippel
Ken Stewart
Ralph J. Stephenson**

Monitoring Report #13
DWSD
Waste Water Treatment Facilities
Page five

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

The enforcement plan was approved on June 5, 1978 (working day 619) and is in effect now. We discussed the staffing effort and Mr. Pollard said they have now 39 people on board in the group. This will be increased to 52 within the next month. There has been some difficulty in adding personnel but a promise has been made for additional staff.

The training program is gradually getting underway with basic training being given at the waste treatment plant. A training program for sampling crews will be started shortly. Training will be an ongoing process.

Form preparation is continuing as a routine, administrative matter with all the ongoing forms now being in use. Special forms including computer input forms are still in design.

We briefly discussed crediting permit fees received to participating contractual agencies. This, however, will be delayed until the Wayne County Road Commission is formally accepted as a DWSD agent.

Dischargers into the system have all been identified and lists are being typed. These lists will be provided to the rate consultant. The rate consultant has not yet been retained and probably additional field work will be necessary after he is retained.

The project team has decided which computer program they wish to use and the process they intend to follow. Mr. John Rucker is helping with this study and it has been decided the analyst will probably be recruited from inside while the programmer will be from the outside.

Funds for the ongoing programs are being acquired from various sources. The needed vehicles and equipment have been procured and are now available. Mr. Pollard also said that the review and evaluation of sampling manual components has been completed.

Thus, the program appears to be moving into an ongoing process and we will continue to monitor it until the tasks shown in Issue #3 dated April 5, 1978 are complete. At that point, if required, we will diagram the future work program for the project group.

Air Pollution Abatement (Enhancement of Stack Dispersion)

(Monitored from Issue #1 dated May 26, 1978)

The consultant agreement has not yet been executed with the delay primarily in completing definition of the work program. It was suggested that possibly the consultant should be involved in our monitoring sessions to better determine when various steps to be taken will be required. Apparently no technical work can be done ahead of obtaining the grant and this poses some problems in terms of obtaining consultant input. However, the matter will be reviewed in depth before our next session.

Filing for the step 1 grant is still to be done. This was targeted in our Issue #1 network dated May 26, 1978 for June 22, 1978 (working day 632). It was further delayed, as noted in Monitoring Report #12, page 5, dated July 5, 1978, until July 21, 1978 (working day 652). Further delays will be serious since the delays cut substantially the amount of time available to prepare backup work needed for the final report prior to filing for a step 2 grant.

Presently the goal is to file for the step 2 grant by April 2, 1979 (working day 829). This is predicated upon obtaining the step 1 grant no later than August 24, 1978 (working day 676). According to the consent decree, paragraph 1-b-2, construction contract award was to be by June 1, 1980 (working day 1127). With the present lags, achievement of this target appears to be extremely difficult and I suggest an immediate and thorough evaluation be made of the entire process with all concerned. Apparently the program is critical and must be given top management attention now if the dates established in the Issue #1 are to be met.

It should be noted even there that the award of a construction contract was almost 136 days later than required by the consent decree. We should monitor this program at our next monitoring meeting and I suggest, if at all possible, that the proposed consultant be made a part of this session.

Detroit Area Water Systems Model (DAWSM)

(Monitored from Issue #2 dated April 5, 1978)

Those attending:

Darrel Suhre
D. Thomas
A. K. Khatri
Ralph J. Stephenson

William Weirauch
E. Johnson
Ken Stewart

Presently the major work effort is aimed at measuring and recording flows at selected measurement points while high loads are being imposed upon the system. This is a very important element to allow ongoing work in plotting data to continue. Concurrently the project team is abstracting meter data for the large users and preparing objectives of the project. Mr. Suhre suggested it is important to him that these objectives be clearly identified. This will then allow the project team to set manpower requirements and budgetary needs over the next year. This activity has a high priority and I suggest the project team give it their immediate attention. It might be wise to further diagram work on the water system model soon after the measurements and flow recording have been completed for the low pressure system. This will sharpen the focus on objective definition, manpower requirements and budgetary needs.

Waste Water Treatment Plant Modifications for Interim Sludge Loading Facility

(Monitored from Issue #1 dated June 29, 1978)

Those attending:

Willie Wilson
G. Aho
William Mortimer
Ken Stewart

D. Cotter
George Haberer
V. Salano
Ralph J. Stephenson

Design drawings for the cake 1 (C1), cake 2 (C2) and liquid facilities (LF) programs are continuing in work. Design drawings should be ready for submittal by July 28, 1978 (working day 657) according to the project team. They will be sent to DNR for comments and issuance of construction permits. We are still holding a target of October 18, 1978 (working day 714) for startup and debugging of the cake 1 installation. Adequate data wasn't available to determine whether this is achievable or not at our session and we should plan to monitor the project again in the future.

We also discussed in detail the liquid facility design drawings and prepared additions to sheet 1, Issue #1 network dated June 29, 1978. These were left with Mr. Stewart for printing and distribution. Apparently the liquid facilities plant modifications are still not fully decided upon and I suggested an initial step would be to get complete agreement from all concerned about what the facility is to do and what it is to look like. Some paving has started in the field and it may be that this is premature, particularly if there is to be any major structure provided at the hose facility.

**Monitoring Report #13
DWSD
Waste Water Treatment Facilities
Page eight**

**RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER**

A discussion of whether or not a roof or enclosure should be built over the loading facility occupied a portion of the session and it would be in the interest of project effectiveness to resolve this matter immediately. I recommend we take a short time at one of our soon-to-be-held sessions and complete diagramming installation of the modifications since they are critical elements to properly disposing of sludge on an interim basis.

Phosphorous Removal and Related Facilities Program

(Monitored from Issue #4, sheets 1 and 2, dated June 2, 1978 (working day 618))

**Target completion for preparation of report drafts - February 13, 1979
(working day 795)**

Those attending:

**L. B. Jackson
Basil Tommina
Ralph J. Stephenson**

**Steve Williams
Ken Stewart**

Presently most major tasks are meeting targets between early and late starts and finishes.

On primary clarifier process loading, testing has been completed without chemicals and testing the primary with pickle liquor and polymer is in work. The consultant is also evaluating the primary structural and mechanical reliability with 12 units evaluated and one left to evaluate.

At final clarifier inlet modifications, modifications A and B are being constructed. They were due to begin no later than July 26, 1978 (working day 655) and thus, are maintaining close adherence to targets.

Purging and testing liquor to the primary clarifier and ferric chloride to the aeration basin have been delayed by difficulties in the plant operation. These deal basically with a solids accumulation problem in the disposal system. Mr. Williams says that they will try to pick up this time and it is possible that the present delays can be overcome by compression of future activities. The same plant problem is causing delays to other tests with polymer additions.

On the pilot scale phosphorous removal, purging of the primary testing of pickle liquor to pilot aeration is just starting as is constructing the air flocculation. Both are meeting targets at or close to late starts.

**Monitoring Report #13
DWSD
Waste Water Treatment Facilities
Page nine**

**RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER**

In the recycle streams network, measuring and sampling the recycle streams is complete with evaluation in work. At the wier cleaning, alternate cleaning methods are presently being developed.

At the final clarifiers, the consultants are ready to test the mechanism arm modifications. However, the oxygen system at the plant was damaged on July 19, 1978 (working day 650) and is needed for this testing. There is no present word when it will be back on line.

Existing tank hydraulics at the final clarifiers are being evaluated and sludge removal modifications are being designed. There is some question as to whether modifications will be required.

Relative to flow metering and sampling, most work here is meeting targets between early and late starts and finishes. An evaluation is being made of existing sampling methods and alternates are being developed. Flow measurement alternatives are also being investigated. Temporary flow metering facilities are being set up and pump head discharge curves being prepared.

Relative to hydraulic profiles, the structure elevations have been established and the project team is gathering data and computing the hydraulic profile at existing flows. This task lags by about 25 working days. However, Mr. Williams feels they will recapture this delay over the next several weeks.

The project team is reviewing past records relative to the biological system control and has also begun an investigation of alternative process control procedures. This work is slightly ahead of schedule.

At primary clarification, the mechanical and hydraulic evaluations have been made with operating procedures presently being studied. Activities here lag by about 10 working days. However, it is expected to begin development of alternative methods of sludge removal at the late start date of August 9, 1978 (working day 665).

Overall, it appears from the detailed evaluation made that the project is in very good condition and meeting the targets and logic established in good form.

We should plan to monitor this project on an ongoing basis since it is a very critical part of the DWSD program.

**Monitoring Report #13
DWSD
Waste Water Treatment Facilities
Page ten**

**RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER**

* * * * *

The next planning and monitoring session is tentatively set for Wednesday, August 16, 1978 (working day 670). Mr. Stewart will prepare a detailed agenda for the session and set up the required meetings.

It would be appreciated if the majority of our sessions could be held in the training room due to the excellent working space it provides. I shall expect to hear from Mr. Stewart shortly regarding the next session.

Ralph J. Stephenson, P.E.

**RJS
m**

**To: Mr. Ken Stewart
Mr. Willie Wilson
Mr. Darrel Suhre**

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

August 23, 1978

Subject: Monitoring Report #14

Detroit Water and Sewer Department (DWSD)

Waste Water Treatment Facilities and Water System

Project: 76:45

Date of Monitoring: August 16, 1978 (working day 670)

Actions taken:

- Reviewed functions and background of PPMC section with Ken Stewart, Najah Akkam, Subhash C. Beri and Willie Wilson
- Diagrammed and monitored computer billing information system with John Rucker and Coopers & Lybrand staff
- Monitored interim sludge disposal loading facilities
- Monitored air pollution abatement program
- Monitored scrubber and silo unloading improvements
- Monitored primary clarifier renovations program
- Discussed network systems in depth with PPMCS staff

Project Planning, Control and Monitoring Section (PPMCS) discussion re objectives, activities, staffing

Attending:

Ken Stewart
Subhash C. Beri
Ralph J. Stephenson

Najah Akkam
Willie Wilson

Ken Stewart has had two additions to the staff since our last monitoring - Mr. Najam Akkam and Mr. Subhash C. Beri; thus, our main discussion during the early part of the meeting was to review the background of the PPMC section and to identify its functions. It was explained that at DWSD, which presently is a project oriented organization, the melding of disciplines and project management is very important. One of the major functions, in fact, of the planning, monitoring and control section is to provide ongoing project attention that will insure that disciplines are brought on board into the project at the proper times and in the proper degree.

Monitoring Report #14
DWSD
Waste Water Treatment Facilities
Page two

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

We continued to discuss the jobs of the planning, monitoring and control section and as outlined previously, they consist of the following:

- 1) To plan, monitor and control capital improvement programs
- 2) To plan, monitor and control consent decree programs
- 3) To prepare and submit necessary quarterly reports to regulatory agencies
- 4) To prepare and submit necessary productivity reports
- 5) To interface with the Corps of Engineers in respect to project planning, monitoring and control.

All of these, of course, relate to the engineering division at DWSD. It should be noted that a fifth function has been added since our previous discussions outlined in Monitoring Report #13 on July 21, 1978 (working day 652). I have urged Mr. Stewart to continually add to this list of duties those that he feels the PPMCS should become involved with. Now that additional staff is available, full outlining of tasks and responsibilities should be undertaken at the earliest possible time. I shall work with the group to help set future work patterns for them.

I stressed with all three men involved in the PPMCS the importance of excellence in their work. It is only by being conscientious and meticulous in project work that the true value of the project planning, monitoring and control function can be felt. In addition, it is imperative that the section work closely with all department and division managerial and technical staff. This close working relationship to build a feeling of mutual trust and respect is of the utmost importance.

We shall plan our meetings over the next two months so that portions of each will be devoted to ongoing training and coaching in this very important subject. I am presently arranging the meetings in advance with Mr. Stewart and he will, in turn, prepare an agenda for each of the sessions. Hopefully, this agenda can be released at least two weeks ahead to allow all personnel to prepare for the meeting. I shall also work with Mr. Stewart to outline a training and coaching development program for his staff.

**Monitoring Report #14
DWSD
Waste Water Treatment Facilities
Page three**

**RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER**

Customer Billing and Information System (CBI)

Attending:

**Ken Stewart
Subhash C. Beri
Dave Liebermann
Jim Jung
John Rucker**

**Najah Akkam
Ron Warner
Gary Capobianco
Bob Paterson
Ralph J. Stephenson**

Mr. John Rucker had requested Mr. Stewart to allocate some time at this meeting to replan the customer billing and information services project. We began our work by reviewing the current laundry list of activities to correct all mismatches and errors needed before loading production data. In addition, we went through the steps necessary to bring the system onto line so that the process final audit program could be run for the first pilot district.

This is a very complex study analysis and the Coopers and Lybrand staff, as well as Mr. Rucker, were helpful in assembling the preliminary network model. This model is shown on sheets 1 and 2, Issue #1 dated August 16, 1978. In it, the error correction process was shown as being complete on approximately November 2, 1978 (working day 725). Concurrently work on programs for the production data base was assembled so as to be complete about December 7, 1978 (working day 749). These were then brought together into the final program for the pilot district which was shown to be able to be run by December 8, 1978 (working day 750).

Apparently this is not a satisfactory plan of work for the consultant and the DWSD. Therefore, extensive reworking of the model was put into effect immediately by them. Mr. Rucker has asked that we allocate two or three hours at each planning session for the next few sessions to work on a continuation of this model bringing it out to ultimate completion. Mr. Stewart will arrange this to the greatest degree possible. Once the model is in relatively good condition, we will plan to draft it into final form, date it and issue it for use of the consultants and the DWSD.

Waste Water Treatment Plant Modifications for Interim Sludge
Loading Facility

(Monitored from Issue #2 dated July 21, 1978 (working day 652))

Those attending:

William Mortimer
James Kaloustian
Najah Akkam
Ken Stewart

Willie Wilson
Jim Carruthers
Subhash C. Beri
Ralph J. Stephenson

As of August 16, 1978 (working day 670) design drawings for the C1, C2, and LF facilities have been packaged and sent to the Michigan Department of Natural Resources for review and approval. These were due to have been sent to DNR no later than August 18, 1978 (working day 672). Thus, their completion target was met.

We have indicated a need for DNR review and issuance of a construction permit no later than September 20, 1978 (working day 694). This is to allow a proper start of construction in time to complete installation of the C1 loading facility by October 18, 1978 (working day 714).

Structural steel for C1 is being detailed and we are holding a delivery date of September 20, 1978 (working day 694) or earlier for steel to the job.

The liquid facility (LF) loading area design is now complete except for the canopy roof over the island and aprons. Foundations and other sub-structure installation have been designed with the idea in mind of ultimately erecting the canopy roof. Most of the work to be done by the engineering division has been completed and now the LF portion of the work is ready for construction by the plant maintenance staff.

Our original target in Issue #2 dated July 21, 1978 (working day 652) for completion of the liquid facilities installation was September 1, 1978 (working day 682). Currently the lag is about 7 working days and probably will increase to as much as 10 or 15 working days depending on how promptly work can be put into effect in the field. It should be noted that it is hoped to begin hauling sometime in mid-October 1978 but that DWSD is still held in terms of a start by need for approval of the DNR on the disposal site. There is no word whatsoever at the present time as to when this will be available. Also improvements at the disposal site must

be made by the disposal contractor. There was no word at our monitoring as to the current status of these but they are an integral part of approval of the program.

The design team noted that it would be greatly appreciated if they could receive some feedback from the plant regarding current construction status. This, of course, should be a role that the PPMCS plays in their ongoing evaluation of the job. I recommend that such liaison, where required, be established by both PPMCS staff and the plant and engineering section staff. Close cooperation on these matters is essential to project success.

Air Pollution Abatement (Enhancement of Stack Dispersion and Emissions Reductions)

(Monitored from Issue #1 dated May 26, 1978)

Currently the consultant work program has been defined and preparation of the step 2 grant continues. It should be noted that in previous monitorings and on the Issue #1 network, sheet 1, we have labeled the first grant a step 1 grant. Actually the grant being applied for at present on the stack dispersion program is a step 2 grant which will lead through the study phase and into and through preparation of contract documents. We shall refer to this project from time to time as project 6 since it is one of several projects contained in the air pollution abatement program.

It is planned to complete and submit the step 2 application on August 30, 1978 (working day 680). Allowing 44 working days for receipt of the grant gives a starting date of November 1, 1978 (working day 724) for initiation of work on the report. It is estimated the report will require about 88 working days to complete which brings its submittal to March 8, 1979 (working day 812). Although no authoritative information is available, probably approval of the report by the regulatory agencies will require at least 44 working days, which gives an approval date of May 9, 1979 (working day 856).

Once approvals have been gained, bidding documents can be prepared and it is estimated they may require as many as 190 working days although some compression of this time could occur if the project is heavily staffed. Allowing the 190 working day brings completion of contract documents to February 7, 1980 (working day 1046). Probably it will take four to six months after completion of documents to receive proposals and award contracts. Allowing 100 days brings award of contract to

June 27, 1980 (working day 1146). The present requirement is that a contract shall be awarded by June 1, 1980 (working day 1127).

Thus, by compressing time on earlier tasks we have potentially brought back the actual work toward a closer alignment with the consent decree date of June 1, 1980 (working day 1127). However, the consent decree gives about one year, to June 1, 1981 (working day 1381) to start construction. Thus, DWSD should be able to begin construction, at least by present projections, on the target dates set in the consent decree.

We also briefly reviewed the emissions reduction progress. Mr. Devanzo is currently preparing a final control plan for submittal to the appropriate regulatory agencies. This control plan must be complete by September 1, 1978 (working day 682). There is some doubt that the date can be met since present work loads at the Water Board have been exceptionally heavy due to the recent sewer breakage. Therefore, key staff members who have been working on these items have not been as available as would be desirable.

Scrubber and Silo Unloading Improvements (PC400)

Attending:

William Mortimer
Najah Akkam
Jim Carruthers
Ralph J. Stephenson

Willie Wilson
Subhash C. Beri
Ken Stewart

The project has encountered difficulties since the previous monitoring in June 1978 and now there is disagreement as to the actual completion date that might be achievable. The contractor is currently considering a four month extension of time due to various problems he claims have hindered his work. However, if agreement can be achieved in some difficult negotiation areas, perhaps this time can be brought back to somewhere near the original targets.

We discussed in some depth the problems that have caused the apparent extension of time. We also discussed whether this was a real or fictional extension. The revised completion date appears to be such that it may permit meeting the requirements of consent decree, section 1A 2 a (2) (4). However, no assurance of this can be given by any of those participating in the meeting.

Monitoring Report #14
DWSD
Waste Water Treatment Facilities
Page seven

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

In any event, there is concern about the project within the staff and careful attention will have to be given now to bringing this project into stronger focus than presently is the case.

Primary Clarifier Renovation

This is an ongoing program which was begun sometime ago and is now moving into latter phases of work. Four primary tanks are complete, eight tanks are being worked upon with three shut down now. The first tank of the three is expected to be back in service by August 21, 1978 (working day 673). The second tank will be back in service September 5, 1978 (working day 683), while no date has been set for the third tank. The project is well ahead of projected schedules and is considered an excellent project by the DWSD staff.

General Summary

Overall, our work today very strongly indicated the need to maintain a good PPMCS operating in close conjunction with all sections of the DWSD. The project planning, monitoring and control section should expect and be expected to play an integral role in smoothing the inter-connections and communications among the various sections of the DWSD. To do this it needs good managerial support and ongoing involvement in all major programs. We are working on training and coaching elements that should materially improve the abilities of those in the section.

So far as projects are concerned, they still need careful attention and I recommend we do some upper and middle management planning to insure good execution of the project. This is particularly important since forty or fifty million dollars worth of capital improvement work will be into the field at the waste treatment plant and at other locations by the end of the year. This will require ongoing attention of a high caliber.

Our next monitoring and planning session is presently set for Friday, September 8, 1978 (working day 686). Mr. Stewart will prepare and distribute the agenda in advance of the session.

Ralph J. Stephenson, P.E.

RJS/m

To: Mr. Ken Stewart
Mr. Willie Wilson
Mr. Darrel Suhre

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

September 26, 1978

Subject: Monitoring Report #15

Detroit Water and Sewer Department (DWSD)

Waste Water Treatment Facilities and Water System

Project: 76:45

Date of Monitoring: September 8, 1978 (working day 686)

Actions taken:

- Monitored interim sludge loading facility program
- Participated in meeting with Corps of Engineers re their work on DWSD projects
- Reviewed and monitored progress on the customer billing information system
- Discussed interim sludge disposal program

Waste Water Treatment Plant Modifications for Interim Sludge Loading Facility

Monitored from Issue #3 dated August 16, 1978 (working day 670)

Those attending:

Willie Wilson
William Mortimer
Walter Peltó
James Chute
David Cotter
Darrel Suhre (part time)

Nelson Caldwell
Jim Carethers
Ken Stewart
Najah Akkam
Subhash C. Beri
Ralph J. Stephenson

During this session there was some confusion as to the exact designation of the various elements of the sludge loading facility. Therefore, it was decided that a new terminology would be used wherein work at filter building #2 would be called FB2 work; loading position A at filter building would be FB2A; loading position B would be FB2B; and work at the train shed would be TS.

Structural steel for renovation work at filter building #2 has been detailed and shop drawings are in for a second submittal. They will be returned on September 15, 1978 (working day 691). Allowing an additional ten days for fabrication of the steel and delivery to the job site, brings steel to the job on September 29, 1978 (working day 701). It is felt that erection and trimming out of steel could be done in 20 working days, bringing completion of structural work to October 27, 1978 (working day 721). Allowing ten more days for installation of the screw conveyor and the electrical and communication system brings start of debugging and cleanup to November 3, 1978 (working day 726), with completion by November 10, 1978 (working day 731).

This is for the first portion of the facilities at filter building #2. The second half of these facilities will probably be completed about 20 working days later, or by December 11, 1978 (working day 751).

Design documents are still being reviewed by the DNR, and no word is currently available as to when they will be returned. Again, we discussed the matter of whether a building permit is needed and there was some confusion about the need for such a permit. I suggest this matter be investigated and resolved.

It was felt not necessary to monitor progress on the liquid facility loading installation. The plant forces said that concrete is in short supply and that therefore, their work, which is not geared to high production concrete installation is being held by difficulty in getting concrete.

At the meeting it was determined that the sequencing of the various remodeling moves has changed considerably since our original diagramming occurred. Therefore, present plans are to re-evaluate and rediagram the project at a future session.

Conference re Corps of Engineers Participation in Inspection and
Evaluation of DWSD Project Progress

Those attending:

Charles Chapin
Jim Carethers
William Mortimer
D. Bitzarakis
D. Casey
George MacDonald
Najah Akkam
Willie Wilson
Subhash C. Beri
Ken Stewart

Darrel Suhre
C. Schultz
Charles Barksdale
Donald Wiedyke
A. C. Davanzo
George Dehem
Richard Albert (Corps of Engineers)
John Grundstrom (Corps of Engineers)
Ralph J. Stephenson

This was the initial conference between the DWSD staff and the Corps of Engineers to discuss the role of the Corps relative to their inspection services now being provided to the EPA on major funded DWSD programs. The basis of our discussions was the documents distributed July 20, 1978 (working day 651) to all group and section leaders by Mr. Suhre. These included a detailed discussion of the Corps of Engineers' checklist for initial monitoring activities (attachments A2 and A3).

Apparently this meeting was for the purpose of initiating inspection work under these checklists. The meeting was direct and to the point. The Corps is just starting their work and inspection procedures. Presently the intent is to inspect affected projects once per month. There is no current word on when there will be an on-site presence representing the Corps.

The Corps stressed they are primarily concerned with results rather than the methodology used to obtain these results. Naturally they have a responsibility to see that good practices are followed, but essentially to insure to their satisfaction and EPA's that a proper end product results.

The Corps asked if there was any strong feeling about unannounced inspections of the site. DWSD staff responded that there is no serious concern except that if the Corps desired a full discussion of records and other such administrative items, rather than merely looking at the physical aspects of the program, it would be very helpful for the DWSD to have advance notice of the visit. There seemed to be no disagreement with this.

The Corps of Engineers said they will be working on projects PC400, PC408, PC299, PC294 and PC288A. It was pointed out that projects PC299 and PC294 are almost complete.

We next discussed each item on the checklist for initial inspection activities and for the followup monitoring activities. Again, there was stress made on the desire of the Corps to be concerned with results rather than how-to-do-it elements of any given project.

It was pointed out during our conversation that change order procedures for DWSD work are quite difficult and long. The Corps said, however, they are not interested in approving change orders and therefore, it appears this should be no problem during their monitoring.

Monitoring Report #15
DWSD
Waste Water Treatment Facilities
Page four

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

Mr. Suhre discussed in depth with the Corps of Engineers the various programs now in work relative to operations and maintenance, education, inspection, testing and other like activities. Undoubtedly all projects will be evaluated on an ongoing basis as the Corps becomes more familiar with the work being done.

A brief discussion followed about planning and scheduling of the work. There was an exchange of ideas relative to how each of the organizations handles its planning and scheduling, and it was agreed that what we are doing currently seems to be acceptable. Again, the Corps is not interested in changing whatever systems might be presently in work. This is particularly so, so long as the DWSD remains effective.

The requirement for effectiveness points up the ongoing need to continually improve the in-house DWSD office and field planning and monitoring practices. I shall plan to concentrate on this with Mr. Stewart at future meetings to insure we give it ongoing attention. Again, end results rather than intermediate procedures are of prime concern to the Corps of Engineers.

The conference was closed out by a review of what the Corps hopes to contribute to improve project performance. They agreed that their retention by EPA is designed to assist various agencies involved to improve and better performance on projects so a higher quality of work and quicker completions was the result. It was agreed that on time performance continues to be a major concern on most programs; however, the DWSD staff did point out that several of their recent projects have experienced improvements in performance that have allowed them to meet schedules as committed. This, of course, is why we must continually focus on improving planning and monitoring techniques within DWSD departments, not only engineering, but all departments.

In summary, the meeting was congenial, helpful and, I feel, contributed greatly toward getting the Corps of Engineers properly and positively involved in efforts that can be truly of assistance to DWSD in carrying out their programs expeditiously.

Customer Billing and Information System (CBI)

Those attending:

Ken Stewart
Subhash C. Beri
Najah Akkam
John R. Rucker

Jim Jung
Dick Young
David Lieberman
Ron Warner (part time)
Ralph J. Stephenson

The customer billing and information system consultants have prepared a network model for their work from here on to the end of the project. This model has not been fully quantified as yet since the plan is still being studied and revised. We made a detailed review of the project and also monitored project progress against early starts and finishes. No calculations have yet been made of late starts and finishes.

Generally the program appears to be in fair condition, although I would evaluate from our brief monitoring that there has been considerably more slippage than would be desirable over early starts and early finishes during the brief period from preparation of the network to the monitoring day.

Mr. Stewart will work closely with Mr. Jung to complete the network and draft it into final form. He will then manually compute early and late starts and finishes. This will then be used as a basis for future evaluations of the project.

The CBI team greatly appreciated the assistance that DWSD's project monitoring group provided and are looking forward to getting the final network drafted and issued. We should plan to continue monitoring the project if Mr. Rucker is agreeable. In any event, we should make one additional review to insure that the current network model is in good shape and represents an achievable plan of action.

Interim Sludge Disposal Program

Those attending:

Dave Cooper
Ken Stewart
Najah Akkam

Subhash C. Beri
Ralph J. Stephenson

This session was a basic review with Mr. Cooper regarding current status of the work. We made no detailed monitoring of the program since there presently is planned a major meeting on September 12, 1978 (working day 688) to review the program in depth.

This meeting will be with the Michigan Department of Natural Resources and will help determine the direction of the program in the future. Thus, we did no major diagramming or planning of work at this session. However, at our next session we should plan to rediagram future work to insure we have a proper and accurate plan to follow.

**Monitoring Report #15
DWSD
Waste Water Treatment Facilities
Page six**

**RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER**

It was emphasized during our monitoring that construction of the new interim sludge loading facilities at the waste water plant should continue as aggressively as possible, and to get these into operation as quickly as they can be made workable.

General

Mr. Stewart and I discussed the agenda for the next session and he is going to attempt to hold a major part of it open for ongoing training and coaching for his staff. The PPMC section will be expected to take on additional activities with the need to carefully and closely monitor upcoming programs. These will be in both design and construction. Therefore, we must continue to devote time to improving the planning and monitoring skills of those in the section.

Mr. Stewart will prepare a detailed agenda of the meeting and provide it as quickly as possible to all concerned.

Ralph J. Stephenson, P.E.

**RJS
m**

**To: Mr. Ken Stewart
Mr. Willie Wilson
Mr. Darrel Suhre**

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

October 16, 1978

Subject: Monitoring Report #16
Detroit Water and Sewer Department (DWSD)
Waste Water Treatment Facilities and Water System

Project: 76:45

Date of Monitoring: October 6, 1978 (working day 706)

Actions taken:

- **Conducted summary training program for staff members**
- **Monitored customer billing information service progress**
- **Monitored interim sludge loading facility program**
- **Made detailed review of future activities of PPMC section
 relative to DWSD engineering organization**

Training

Those attending:

Mr. R. Hogan
Mr. R. Tadeo
Mr. C. Galka
Mr. D. Yang
Mr. R. Jaitly
Mr. M. Baxi
Mr. W. Bernstein
Mr. T. Kluck
Mr. Ken Stewart
Mr. Najah Akkam
Mr. Subhash C. Beri

Mr. J. Anayias
Mr. B. Doshi
Mr. Sidney Bailey
Mr. Gary Bowling
Mr. Arthur Tom
Mr. A. J. Vakil
Mr. David Dunham
Mr. Ted Zenoy
Mr. B. Smith
Mr. G. Aggarwal
Mr. Ralph J. Stephenson

It is felt important that the various divisions and groups now begin preparing network models internally with the assistance of the PPMC section (PPMCS). However, many younger men and newer staff members in the sections and groups have not yet received instruction in the technical aspects of network

systems and the planning technique desired for the DWSD. Therefore, this brief session of two hours was arranged for the purpose of briefing these staff members on the technique, explaining to them how it is used, how the calculations are made, what the steps are in preparing a plan of action and how to proceed to plan their work.

The first hour and 15 minutes was devoted to outlining steps necessary to prepare a good network model. We then made up a laundry list on a real project presently in work, after which the class prepared a partial network diagram for the issuance of contract documents. We were then able to display the method of quantifying and calculating the network model once durations had been assigned.

At this point the class indicated they would like to discuss how network models were to be prepared, how they were to be used, and most importantly, how project management was to be exerted through the model. One of the participants in the class set the tone for this meeting by saying that in his opinion the network model should not be used solely as a report card for the project team but should be used rather as a powerful management tool.

There is serious concern by some class members about committing their proposed plans of action to written form where inability to meet these dates (caused by both direct and dependent goal areas) may force ultimate deviations from the plan. We discussed this matter in depth and although there was no clear resolution as to how to avoid plan dislocations, certainly the positive and constructive intent of the system and its use was able to be made clear to the group. However, it was obvious that working with this group of people, who primarily are doers and younger engineers, it will be necessary to generate at middle and upper management levels consistent practices in respect to network planning and monitoring.

After the meeting, I discussed the various seminar comments with Mr. Suhre and it was decided that he along with the PPMCS staff would meet that afternoon to set preliminary courses of action responsive to the comments of the class. This effort will be discussed below.

Meanwhile, it would appear to be appropriate to hold additional training sessions for this group, particularly once a middle and upper management course of action is clearly established.

At the session Mr. Stewart passed out a handout entitled Fundamentals of Critical Path Method. This is a small five page treatise that establishes the basic principles of critical path planning. I reviewed the material

**Monitoring Report #16
DWSD
Waste Water Treatment Facilities
Page three**

**RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER**

with the class and pointed out minor revisions in text and content that I suggest be made. Overall, it appears to be a good summary of the method and with some rewriting and editing, could form the basis for an in-house paper on network systems to be used by those preparing or working with network plans.

Customer Billing and Information System Monitoring (CBIS)

(Monitored from Issue #3 dated October 6, 1978, sheets 1, 2 and 3)

Those attending:

**Mr. Subhash C. Beri
Mr. Najah Akkam
Mr. Ken Stewart
Mr. Dave Lieberman**

**Mr. John Rucker
Mr. Ron Warner
Mr. Gary Capobianco
Mr. Ralph J. Stephenson**

At this session the Issue #2 network for customer billing information activities was issued for review and comments. This Issue #2 network had resulted from previous monitorings and conversations between the project team and the PPMC section. There were several revisions suggested. Mr. Stewart will have his group prepare these revisions in conjunction with Mr. Dave Lieberman.

It was stressed by Mr. Warner that of critical importance presently is to obtain user sign-off and complete any revisions required in the system. Sign-off in the specifications is expected October 13, 1978 (working day 711). This task unlocks several very critical activities and is considered important.

Also important is the obtaining of additional staff to correct meter mismatches and to correct and recycle dup/mult. errors. It was anticipated that the start of meter mismatch correction would be on September 8, 1978 (working day 686). It has not begun as yet although plans are to begin as soon as temporary help is available. Thus, the lag there is 20 to 22 working days over the target of December 1, 1978 (working day 745) to make the final error correction and meter job updates. The present target has been revised on that task to January 2, 1979 (working day 765). Thus, the lag of 22 working days is important in correction of these errors since it will be going on right out to the completion of the first phase of work.

It was the intent in Issue #2 of the network to begin developing the new GEMCOS links task data base by August 31, 1978 (working day 681). This activity is just now underway and thus lags by a possible 25 working days.

**Monitoring Report #16
DWSD
Waste Water Treatment Facilities
Page four**

**RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER**

The program leading from there out to the final error correction is critical and will have to be given the same careful attention as other earlier noted areas in order to complete by January 2, 1979 (working day 765). The 25 working day lag is over the Issue #2 network completion date of December 1, 1978 (working day 745).

It should be noted that the final systems testing cannot be completed (the last five days of the test) until the final sign-off has been obtained, the report module has been tested, the file maintenance batch has been coded and tested and the forms are available to use in the testing process. Thus, there is a sizable amount of work in this area to complete.

So far as the training portion of the program is concerned, there is not as much concern with this as with the other areas since it is felt there is enough training material available now to conduct programs needed. However, the network model shows there still remains about 40 or 50 working days of activities to complete before a full scale program is in effect for the final review and sign-off on phase one.

In phase two, the present lag ranges from 20 to 27 working days, primarily in A/R activities. Management reports were due to be finalized by September 13, 1978 (working day 689) and are just now nearing completion. The bill and collect notices were due to be set by September 13, 1978 (working day 689). They also are just being brought to completion. Meter reading forms are to be ordered and this appears in the network to be a long lead time item. Therefore, it seems appropriate it be given immediate attention.

Other activities in the phase two work indicate that most are meeting targets between early and late starts and finishes. There is a slight lag in development of the conversion plan memo and schedule. This work was due to be completed no later than October 2, 1978 (working day 702). It is currently in work.

Overall, the customer billing and information services program lags in phase one between 15 and 23 working days and in phase two by about 20 working days, over a target of December 1, 1978 (working day 745) for phase one and a target of May 7, 1979 (working day 854) for phase two.

As a result of this meeting and review, sheets 1, 2 and 3 of the network model are to be re-evaluated and updated to reflect the current status of the work with efforts made to compress activities where possible. It is important to remember that this project will increasingly be a team program with the consultant, the DWSD and the city required to meet commitments that each has in the plan of action.

We shall again plan to monitor the project at future sessions.

Interim Sludge Disposal Program

(Monitored from Issue #4 dated September 8, 1978 - W/D 686)

Those attending:

Mr. William Mortimer
Mr. V. P. Salano
Mr. J. Chute

Mr. B. Haberer
Mr. Najah Akkam
Mr. W. Pelto

Shop drawings have been returned on filter building 2 structural steel and steel is to be delivered Wednesday, October 11, 1978 (working day 709). The steel was originally due to be on the job by September 20, 1978 (working day 694). Thus, the lag over the original target date for deliveries is about 15 working days.

It is anticipated it will take about 20 working days to erect the steel, 10 working days to install the conveyor and the electrical and communications systems and about 5 days to start up and debug the first portion of the FB 2 facility. Thus, completion is now set for November 30, 1978 (working day 744). A second section of the FB 2 system will probably be completed 20 to 25 days later by about early January. Of course, it can be expected that weather will have an impact on the outdoor work of installing this second facility and therefore, it could be slightly later.

At the liquid facility, construction of the loading arm, platform and lights will begin next week. Steel for the platform will probably be on the job within the next ten working days, or by November 3, 1978 (working day 726). Completion will take from the time of delivery of structural steel, about 10 to 15 additional working days. Thus, completion of the liquid facility should be by early December.

It should be noted that there is no roof to be placed over the liquid facility at this time. However, the design is such that it will accommodate a future roof.

As noted in previous reports, construction of the sludge cake and liquid facilities will proceed irrespective of the progress being made on disposal of sludge in disposal bed areas.

Project Planning, Control and Monitoring Section Activities

Those attending:

Mr. Darrel Suhre
Mr. Harry Bierig
Mr. Ken Stewart

Mr. Subhash C. Beri
Mr. Najah Akkam
Mr. Ralph J. Stephenson

As a result of our morning session with younger staff engineers of the organization, we spent a large share of the afternoon session on PPMCS work discussing how it can be made more effective in the intense work load period coming up. Generally the decision was that we should have a section by section orientation over the next few weeks regarding planning needs and methods of DWSD. It was agreed by all concerned that good orientation and thorough early training would be of great help in solving some problem areas that seem to exist in the current work group.

It is recognized that planning is only a part of the work of the various sections and groups, but a very important part. It was decided to first reach agreement on the planning procedures to be followed by means of a one day symposium with group and section leaders focused on the matter of how to plan activities in a consistent and usable manner within the DWSD engineering division. Once the approach methodology and content are established, a series of training programs will be conducted to address the unique needs of each of the sections in the engineering division.

Mr. Ken Stewart and his staff were given the responsibility for assembling this initial program with the group and section heads. It probably will be held at one of our early meetings quite likely at our next session in late October or early November. Mr. Stewart will put together the agenda for this meeting and I shall assist Mr. Stewart in whatever manner he feels best.

Following that and in a relatively short span of time we will plan to hold training sessions for the staff of each section. This is, of course, subject to confirmation by section and group leaders and we shall use their comments and ideas to formulate the training program outline. Hopefully this approach to the planning process will also be reflected in increased training activity up and down the line in other matters also.

As part of our afternoon session we discussed in some depth most of the comments and observations which came out of the morning meeting. Generally they were considered constructive and there was considerable

Monitoring Report #16
DWSD
Waste Water Treatment Facilities
Page seven

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

PPMCS enthusiasm generated as a result of the decisions made at the afternoon session. I shall follow closely with Mr. Stewart and his staff to insure that the intent of the session is carried out.

As part of the afternoon session I also gave Mr. Stewart, Mr. Subhash Beri and Mr. Najah Akkam a book of handout material which I used in my most recent network modeling class. I left with Mr. Stewart four additional copies of the material which can be used for basic training work in network systems. This might be a good handout text to use in our sessions with the middle managers.

As a suggestion, I recommend we provide a rather well structured agenda for our middle manager meeting to insure that we cover the materials necessary. As a part of this session we should also discuss how we are to organize for the planning efforts since within each section it will be vital that there be well defined assignments of responsibility and duty to prepare the plans of work needed to carry out future efforts of the engineering division.

General

Overall, the sessions today provided a note of enthusiasm and optimism for improved planning work. Mr. Stewart is to begin putting together the middle manager seminar and I shall stay in touch with him on an ongoing basis to assist where possible. We will also plan to set our next session date shortly. This will be in late October or early November.

Ralph J. Stephenson, P.E.

RJS
m

To: Mr. Ken Stewart
Mr. Willie Wilson
Mr. Darrel Suhre

November 20, 1978

Subject: Monitoring Report #17

Detroit Water and Sewer Department (DWSD)

Waste Water Treatment Facilities and Water System

Project: 76:45

Date of Monitoring: November 17, 1978 (working day 736)

Actions taken:

- Monitored customer billing and information system program
- Monitored scrubber and silo improvement program
- Monitored interim sludge disposal facility program
- Monitored phosphorous removal and related facilities study
- Reviewed planning procedures and approaches to implementation of capital improvement program at the waste water treatment plant

Customer Billing and Information System Monitoring (CBIS)

(Monitored from Issue #3 dated October 6, 1978, sheets 1, 2 and 3)

Those attending:

Mr. Ron Warner
Mr. Al Memran
Mr. Dick Young
Mr. Jim Jung
Mr. Ken Stewart
Mr. Ralph Stephenson

Mr. Gary Capobianco
Mr. Paul LaPorte
Mr. Bob Paterson
Mr. John Rucker
Mr. Najah Akkam

Present short term goals on this project are to have all errors corrected in the pilot site (district 44) by January 1, 1979 (working day 765) so as to be able to proceed with initial testing of the system. There are some relatively serious problems that are presently delaying work. One of these is completion of sign-off's by the DWSD staff. Apparently there are some reservations about the operating characteristics of the program that Mr. Herrscher, superintendent of maintenance and construction, wishes to review further. The problem is outlined fully in Cooper and Lybrand's

CBIS status report dated November 10, 1978. It is very important that agreement be reached on the sign-off with Mr. Herrscher since without this it is inadvisable to proceed with the present program structure. The project team emphasized the serious need to resolve this matter just as quickly as possible. Mr. Rucker plans to meet with Mr. Herrscher for whatever period of time and whenever it is necessary to clear this matter.

The other problem looming as increasingly serious is that of available personnel. The consultants on the project will probably be intensively involved in their work through June 1979 or slightly later. Then there will be a tapering off of the staff assigned throughout the remainder of the year and hopefully, most work can be completed by December of 1979. Over this period the entire system must be assimilated and taken over by system operating personnel, as well as present staff who must be trained and educated in the use of the system.

We attempted to make preliminary estimates of the number of new people, as well as the number of existing people that would be involved in the use of the new customer billing and information service system. It appears there could be as many as 37 to 40 core operating staff that would be brought on line as new employees. As many as 200 existing staff and personnel could be affected by the program and require training varying from casual, day to day contact requirements to intensive training in the system and its techniques.

Over the past few months as we have monitored the project, it appears there has been little, if any, progress in acquiring new staff or in carrying out an effective training program. The latter, of course, depends upon the former. Presently some of the correction and recycling of existing errors in the data is being seriously delayed by lack of staff to assign to this very important job. An attempt is being made to retain outside secretarial and personnel services for temporary use. However, processing of the request is still in work and seems to be moving slowly. This is, of course, an inherent problem with obtaining any additional assistance of this nature. However, if extra aid is not acquired soon, some work will be brought to a halt until the staff needed is available.

It is difficult to assess the true importance of this program but in my monitoring and discussion with the project team, their work continuity depends to a great extent upon having additional staff available. They

**Monitoring Report #17
DWSD
Waste Water Treatment Facilities
Page three**

**RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER**

consider it to be a top priority problem and have for some time heavily stressed the critical nature of the activity. I recommend that the top management of DWSD give special attention to this problem immediately or it appears that some of the effectiveness of the entire program could be lost permanently.

In phase one work which deals with conducting the pilot district run, there is still, as noted above, a desire to start this on January 1, 1979 (working day 765). However, there is considerable work yet to do and measuring against the Issue #3 network model, on sheet 2, it appears that the tasks going through the final systems test, review and varification of the final systems test, modifying and final editing, processing the final edited program for the pilot district and final error correction and meter job updates lag by about 26 working days over this target.

We made a brief analysis of phase two operations and it appears that the lag there over a target completion of May 7, 1979 (working day 854) could range from 36 to 50 working days. The basic lag areas are in development of A/R work flow and system controls. In all of this work sign-off acceptance and ordering of forms becomes quite important, although it appears that this type of acquisition problem could be resolved on a crash basis if it becomes serious. Most important are the procedural problems that deal with the system itself.

I would like to emphasize again the seriousness of the need to turn the entire customer billing and information system over to DWSD and City of Detroit staff in the oncoming months. To do this requires on board personnel and an extensive training program. Presently this appears to be the biggest bottleneck in effective implementation of the new system. In order to make effective use and derive optimum benefits from the investment in consulting services, it would be wise for top management to take immediate steps to correct this serious difficulty.

Scrubber and Silo Unloading Improvements (PC 400)

Those attending:

Mr. William Bernstein	Mr. Jamie Cocadiz
Mr. William Mortimer (part time)	Mr. Harold Stiller (part time)
Mr. Ken Stewart	Mr. Najah Akkam
Mr. Ralph J. Stephenson	

The major thrust is to complete work on incinerator #1 so that by February 3, 1979 (working day 789) the equipment can be started up for

testing. There was considerable discussion about the feasibility of meeting this date and there is some concern that it is going to be very difficult to achieve. Since there is no discernible contractor network model against which to measure current status available to the monitoring group, a formal and fully justifiable evaluation of the feasibility of meeting the date is not possible at this time.

Depending upon the urgency of the matter, it might be wise to explore methods by which a plan and schedule can be prepared for the next two and one half months of activity that will allow a better day by day evaluation than presently available to be made of progress toward incinerator #1 completion. This would be an appropriate subject for the PPMCS to review with the project team. I recommend it highly.

Interim Sludge Disposal Facilities

Those attending:

Mr. William Mortimer
Mr. M. Batmanghelichi
Mr. Najah Akkari
Mr. Ralph J. Stephenson

Mr. N. Caldwell
Mr. J. Kaloustian
Mr. Ken Stewart

Structural steel is being installed for the first phase of the FB2 facility. The chute is to be furnished by the miscellaneous iron contractor and no word is available on when it will be installed. Completion of work at the second phase is expected to follow phase one by 20 to 25 working days. There was no current confirmation on this at the meeting but it will be imperative that this schedule be maintained.

In addition, because of demands of the court relative to the consent decree, it is desirable to have sludge cake being discharged out of incinerator building #1 to the train shed within one month due to the mandate. Discussions were held on the possibility of achieving these targets and most agreed that it would be difficult, if not impossible, to complete this work in that short period of time.

The project team reported that the conveyor was on the job for the phase one cake sludge handling system, however, the plow table has not yet been built.

Phosphorous Removal and Related Facilities Program

(Monitored from Issue #5 dated October 20, 1978 - working day 716 - sheets 1 and 2)

Presently the goal is to complete all major field work by December 22, 1978 (working day 760). This will be followed by preparation of report drafts due to be done sometime between an early finish of February 13, 1979 (working day 795) and March 29, 1979 (working day 827).

All major tasks are meeting targets between early and late starts and finishes referred to the later finish date above. There have been some problems in the flow metering and sampling area, however, the pump head discharge curves are being prepared and it is expected that the evaluation of waste water pumps based on the calibration curves can be completed within ten working days after completion of the discharge curves. This reduction in time should allow these tasks to be brought up to schedule in the work plan.

(It should be noted that in the Issue #5 network dated October 20, 1978 (working day 716) that the late finish shown at node 131 was February 13, 1979 (working day 795). The actual latest allowable finish is March 29, 1979 (working day 827).) Evaluating against this late date shows all major project tasks meeting targets between early and late starts and finishes.

Planning Procedures

Those attending:

Mr. Clayton Kersey
Mr. Lyle Duke
Mr. J. B. Kelly
Mr. L. Petrykowski
Mr. C. Schultz
Mr. C. Barksdale
Mr. Don Dix
Mr. Dennis Green
Mr. Ralph J. Stephenson

Mr. C. Chapin
Mr. Najah Akkam
Mr. Ken Stewart
Mr. James Carethers
Mr. James Kegler
Mr. Darrel Suhre
Mr. William Mortimer
Mr. E. A. Rutkowski

The session began by a brief review of the answers to the questions asked in our October 6, 1978 (working day 706) meeting. A tabulation of these questions and the responses was covered in Mr. Kenneth Stewart's memo of November 2, 1978.

**Monitoring Report #17
DWSD
Waste Water Treatment Facilities
Page six**

**RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER**

A brief discussion of the capital improvements program ensued, but the main discussion was about meetings that Mr. Suhre had had with the judge in respect to a 30 day calendar period in which certain conditions of the consent decree must be met or penalties are to be levied.

Major activities in this discussion session consisted of attempting to identify methods by which a crash program of work on meeting effluent standards could be implemented and help in achieving the requirements of the judge. Some time was spent in isolating the most serious problems being encountered at the vacuum filters and the methods that might be found over this next month to alleviate some of these problems. The course of action which appears most likely to be followed will be to retain an outside firm to furnish intensive consultant plant management services in an attempt to improve the effectiveness of the waste plant. If this is the course of action selected, I strongly urge that an internal DWSD task force or project team be established of good problem solvers who are also able to think through broad applications of engineering principles in the waste treatment process to work closely with the outside consulting firm. There is strong pressure to devise solutions for this very serious problem and every effort is being made to bring full attention on the problem.

I suggest we continue to monitor this work over the next 30 day period on a day to day basis and to provide the consultant team, if that is the way the decision is made to move, in all of their work efforts.

One of the major areas identified as a problem is the low effectiveness operation of the vacuum filters. There was at one time in the past an engineer who was able to bring one of the vacuum filters upon which he concentrated up to full operating capacity. It might be wise to explore the possibility of having this same man head up the project task force to see if the same thing can be accomplished with additional of the filters.

The entire top management staff of DWSD is presently charged with the responsibility of bringing every bit of problem solving and creative thinking to this problem and plan to be meeting on a regular basis over the next two to four weeks.

I shall be in touch with Mr. Stewart to see if there is anything I can do in assisting in this matter.

Ralph J. Stephenson, P.E.

RJS/m

To: Mr. Ken Stewart
Mr. Willie Wilson
Mr. Darrel Suhre

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

December 18, 1978

Subject: Monitoring Report #18

Detroit Water and Sewer Department (DWSD)

Waste Water Treatment Facilities and Water System

Project: 76:45

Date of Monitoring: December 8, 1978 (working day 750)

Actions taken:

- Reviewed program for enhancement of stack dispersion
- Monitored scrubber and silo improvement program (PC 400)
- Monitored interim sludge disposal facility program

Enhancement of Stack Dispersion Consulting Program

(Consent Decree section 1B, page 4)

Attending:

Mr. Najah Akkam
Mr. Robert P. Butler
Mr. G. Stiller
Mr. W. Parker
Mr. W. Pelto
Mr. C. Schultz
Mr. Stuart Trager
Mr. W. Mortimer
Mr. Alan Van Kerckhove
Mr. Jim Carethers

Mr. Subhash C. Beri
Mr. H. J. Smith
Mr. Walter R. Niessen
Mr. J. C. Regler
Mr. Robert Opland
Mr. D. Suhre
Mr. G. Haberer
Mr. L. Kluck
Mr. Ken Stewart
Mr. Ralph J. Stephenson

This session was primarily concerned with a review of the work originally shown on sheet 1 of the air pollution abatement program, Issue #1 dated May 26, 1978 (working day 614). The program deals with improvement of air quality around the waste treatment plant. The consultants, CDM, are presently awaiting approval of the step 2 grant to begin their active engineering work in writing the methodology report.

Monitoring Report #18
DWSD
Waste Water Treatment Facilities
Page two

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

In our work today we assumed that the step 2 grant would be approved no later than February 2, 1979 (working day 787). This grant application was submitted October 2, 1978 (working day 702).

Upon approval of the step 2 grant, preparation of the methodology report will begin. It is expected this report will require approximately 169 working days to complete, or by October 1, 1979 (working day 956).

At an intermediate point in preparation of the methodology report contract documents can begin, probably about August 1, 1979 (working day 914). In the early stages of contract document preparation plans are to concentrate heavily on specifying long lead time equipment (LLE) so that if possible, contract documents for LLE work are to be completed in 88 working days after August 1, 1979 (working day 914), bringing their completion to December 5, 1979 (working day 1002).

Meanwhile, approvals must be obtained on the methodology report, both from regulatory agencies, as well as DWSD. Other approvals on the various packages of contract documents will have to be obtained as they are prepared. It is expected that all contract documents will be able to be completed in about 300 working days from the start of work, August 1, 1979 (working day 914). This brings completion of contract documents to October 3, 1980 (working day 1214). In our work, it has been assumed that means will be found to let separate contracts for certain items of work. To recognize how this might be done and identify the procedures to be followed, the consultant has been requested in his methodology report to recommend a contract packaging technique. All present agreed that this is a very critical part of the program and will need top level attention. It is further recommended that the contract packaging identification be tied to a two way matrix of which one component is the discipline, trade or to-be-purchased item, while the other component of the matrix is the geographic or physical location of each facility.

A timetable was developed in detail on flip sheets 4, 5, 6 and 7 dated December 8, 1978 (working day 750). These sheets will be duplicated by Mr. Beri and Mr. Akkam and distributed for internal use.

In addition to the timetable, we also began preparation of a detailed laundry list for the methodology report and for those items to be considered in preparing the contract documents. Some of the items stressed in preparation of the methodology report on contract documents included the following:

Monitoring Report #18
DWSD
Waste Water Treatment Facilities
Page three

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

- Preparation of a step by step into-operation analysis and plan
- Prepare a minimum-interruption operations analysis and plan for the construction period
- Preparation of a concurrent testing and demonstration plan of work
- Preparation of a construction staging plan that proposes major milestones for evaluating project progress.

Note: It is not recommended that a detail network model be incorporated as part of the contract documents by the DWSD. However, establishment of major milestones is to be considered.

It was also identified that an important part of the early work will be to obtain as many problem area listings as possible from all parties involved. Project staff at the plant is to begin preparation of this list immediately.

Within the next one to three weeks it has been requested by Mr. Suhre that the PPMC section continue detailed preparation of the laundry list and begin assembling these activities into a detail network model for preparation of the methodology report and contract documents.

In addition, I have requested that the timetable shown on sheets 4, 5, 6 and 7 dated December 8, 1978 (working day 750) be incorporated into a summary network model for the guidance and use of all concerned. This will be put into final form and issued shortly.

It is also recommended that the laundry lists prepared at our meetings be typed, duplicated and distributed for the use of those concerned.

Some discussion was held about the advisability of appointing a single source of responsibility and authority on this project. Because of the heavy work load presently existing in the DWSD, it may not be possible to accomplish this, however, it is urgent that within the next two months a centralization of project authority and responsibility be identified and appointments made to carry this program on through in the manner that has been suggested. Without effective ways of managing this program, it probably will not be successful.

Interim Sludge Disposal Facilities

Attending:

Mr. Subhash C. Beri
Mr. James Kaloustian
Mr. Manoj Baxi
Mr. William Mortimer

Mr. Najah Akkam
Mr. Ravi Jaitly
Mr. Mike Batmangelichi
Mr. Ralph J. Stephenson

The solid cake sludge loading facility from complex 2 is now operational although there still remain to be completed the exterior skin of the siding, installation of windows and doors and installation of a conveyor crossing. None of these affects the ability of the conveyor to operate. However, at the present time the facility is not being used extensively since apparently there is not adequate sludge to justify its continuous operation.

It was mentioned at the meeting by Mr. Batmangelichi that concern is felt over the hauling characteristics of the trucks in respect to carrying wet loads. This matter is being investigated by DWSD staff.

At the solid sludge disposal facility in the train shed the steel platform has been erected and other work will be underway soon. Yet to be done is to install the opening through the wall for the screw conveyor and to install the chutes. A gas line and steam line probably will have to be relocated and electrical work will have to be installed, including relocation of lights. There probably remain from 5 to 15 working days of field operations to bring this conveyor to an operational point. However, there is no present projection as to whether this work will be done soon or not.

At the liquid facility, below grade, concrete apron and curb work are complete.

The design of the pump stand is nearly complete but no funding apparently is available at present for constructing the facility. Therefore, no projection is possible as to its completion target.

General Summary

The major effort today consisted of discussing the consulting program for the enhancement of stack dispersion at the waste water treatment plant. Considerable progress was made toward identifying the needs of

Monitoring Report #18
DWSD
Waste Water Treatment Facilities
Page five

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

the project and we will continue working on the network models for the work in subsequent meetings. In the interim the PPMCS will prepare a summary network model of the timetable, along with starting their work on the network model for preparation of the methodology study and early contract documents.

I shall plan to again meet with the DWSD staff on Friday, January 5, 1979 and Monday, January 29, 1979. It would be well to prepare an agenda well in advance for these meetings, starting our work at 8:30 A. M. and continuing on through till 4:00 P. M. which allows a one hour windup for report dictation and discussion. Mr. Beri and Mr. Akkam will prepare agenda for the sessions.

I should like to take this opportunity to wish everyone at DWSD a very pleasant holiday season and a happy and prosperous new year.

Ralph J. Stephenson, P.E.

RJS
m

To: Mr. Ken Stewart
Mr. Willie Wilson
Mr. Darrel Suhre

February 8, 1979

Subject: Monitoring Report #19

Detroit Water and Sewer Department (DWSD)

Waste Water Treatment Facilities and Water System

Project: 76145

Dates of Monitoring: January 5, 1979 (working day 768 and
January 30, 1979 (working day 775)

Actions taken:

- Reviewed customer billing and information services on January 5, 1979
(working day 768)
- Prepared approach to early high priority activity plans for achieving
compliance with effluent limitations
- Reviewed progress on PC-400 scrubber and silo improvements
- Reviewed current status of conveyor access and improvements PC-429

Customer Billing and Information (CBI)

At this monitoring of the CBI program adequate time was not available to do a full evaluation and Mr. Stewart completed the monitoring review with the consulting team. No report has been prepared of this session pending further evaluation of the current status of the work.

Planning to achieve compliance with effluent limitations

The work done in the January 5, 1979 (working day 768) session was reviewed briefly by Mr. Stewart in his memo of January 17, 1979 (working day 776). Work on the program will be ongoing and organization of the data to allow selective runs to be made is currently in progress. Mr. Stewart is attempting to incorporate the 65 major work items which evolved out of this session into a system by which work items can be related to the 15 components defining scope of work and 7 parameters which relate to compliance requirements of each of the 65 activities.

Present efforts are to be aimed at diagramming each one of the 65 activities. DWSD management decided the initial approach should be to work on items 24 and 25.

- 24) Construct supplemental sludge dewatering facilities
- 25) Provide suitable cake sludge export handling facilities

Monitoring Report #19

DWSD

Waste Water Treatment Facilities

Page two

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

At our conference on January 30, 1979 (working day 785) we began the session by identifying the assumptions around which we would diagram procedures to be followed. These assumptions are listed on the network models.

We then prepared a laundry list of items necessary for implementing activity 24 - construct supplemental sludge dewatering facilities. The basic goal was to identify whether it would be possible to achieve the objectives set out in an earlier conference, to have 10 additional dewatering units on line by December 1979 with an intermediate number of units on line on a staggered basis between now and then. Preliminary diagrams of the process were prepared and will be evaluated between now and our next session which will again concentrate on this particular item.

As part of our work, we found it was necessary to closely relate item 25 - provide suitable cake sludge export handling facilities - to construction of supplemental sludge dewatering facilities. Thus, it will be critical that design and construction of both activities 24 and 25 proceed concurrently if maximum effective use is to be made of the updated facility.

The projects are complicated by the need to process acquisition of funding through conventional grant procedures. This, of course, requires considerable time and will undoubtedly pose some problems in meeting a quick timetable. We should further consider this matter at our next session.

Network models prepared will be printed and issued by the project planning and monitoring and control sections.

To complete our work on activities 24 and 25, we prepared a contract document matrix which indicated that it would probably be best to prepare the contract documents in five separate groupings. These are shown on the network model drawings.

Scrubber and Silo Improvements, PC-400

Attending:

Mr. Subhash C. Beri
Mr. Najah Akkam
Mr. C. Schults
Mr. C. Barksdale

Mr. R. Weindendorf
Mr. H. Stiller
Mr. Ken Stewart
Mr. Ralph J. Stephenson

Present plans are to fire up the first incinerator on Saturday, February 3, 1979 (working day 789). There will then be 66 working days allowed to complete emissions testing for the first incinerator. It should be pointed out that an emissions measurement consultant should be brought on board shortly since emissions measurement and evaluation are an important part of the period following startup.

Monitoring Report #19
DWSD
Waste Water Treatment Facilities
Page three

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

There was no authentic information on startup points for succeeding incinerators. I suggest efforts be made to obtain better data than now exists on what these dates might be through a complete review of work to be done. This would be an appropriate function of the PPMC section along with the project team.

Conveyor Access and Improvements, PC-429

Attending:

Mr. Subhash C. Beri
Mr. J. Kaloustian
Mr. C. Schultz
Mr. C. Barkesdale
Mr. R. Opland

Mr. Ken Stewart
Mr. Ralph J. Stephenson
Mr. Tom Riddering
Mr. E. G. Clawson

Monitored from contractor's issue dated October 31, 1978, sheet GPM1.

The present target completion date for this work is June 16, 1979 (working day 883). The monitoring indicates the major present lag is in design of the vacuum piping system. This system design is to be submitted January 31, 1979 (working day 786) even though there are revisions pending.

The lag in the vacuum system over current early starts and early finishes is 44 to 55 working days. Our detailed discussions with the project group indicate that there is a good chance that a portion of this lag could be recaptured since some work following design of the vacuum piping system is now in work.

It would be wise to carefully monitor the activities for the total project on an ongoing basis for the next several weeks to insure the lag is recaptured.

Miscellaneous and structural steel work is in fairly good shape and could start shortly. The nuclear non contact belt scale is in fabrication. There was no current word on its delivery. Wringer, enclosure, spray washer and belt washer equipment is presently being detailed.

I suggest a well defined monitoring process be reviewed with the contractor and project team and that regular evaluations of the job be held every 2 to 4 weeks. This should allow identification of those items that are presently slowing or delaying the project.

General Summary

Our next session is scheduled for February 7, 1979 (working day 791). During this meeting we will plan the various compliance tasks. Mr. Stewart has prepared and distributed an agenda for the day.

Ralph J. Stephenson, P.E.

RJS/n

To: Mr. Ken Stewart
Mr. Willie Wilson
Mr. Daxrel Suhre

March 14, 1979

Subject: Monitoring Report #20

Detroit Water and Sewer Department (DWSD)

Waste Water Treatment Facilities and Water System

Project: 76:45

Date of Monitoring: March 7, 1979 (working day 811)

Actions taken:

- Reviewed basic relation of lead consultant to total projects
- Prepared decision tree analysis of need for sludge hoppers
- Discussed auxiliary building and dewatering facilities briefly with staff and consultants
- Discussed various managerial approaches to problem areas

General Summary

The agenda for this meeting was predicated upon the attendance by several key people who, at a late date, were called for court appearances. Therefore, it was not possible to maintain adherence to the formal agenda published by Mr. Wilson and Mr. Suhre for March 7, 1979. However, we were able to cover several important matters during the day and these were discussed in depth with the staff. Mr. Suhre was able to join us late in the afternoon and we reviewed the work efforts of the day with him then.

Our morning session focused on an analysis of activities of the DWSD staff, the lead consultant and the other project engineering firms that will be interfacing over the next several months. We attempted to define some terms to identify the various planning techniques and to, most importantly, identify what parts of a planning and control system were already available and able to be used. The outline of the discussion was tabulated in a series of flip charts which were retained by Mr. Ken Stewart.

Monitoring Report #20
DWSD
Waste Water Treatment Facilities
Page two

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

I suggest Mr. Stewart prepare a report of the morning session discussion for consideration by the staff and the various consultants as deemed appropriate.

Of prime importance is to recognize the rather sizable steps that have been taken over the past several months to train and indoctrinate DWSD personnel in the need for, and use of, good planning and control tools. There already exists within the staff an understanding of the various planning techniques that are available; much of the processing potential is also available, and the major thrust necessary over the next few months will be to generate accurate, authentic, realistic and meaningful logic plans for all programs anticipated.

We also discussed the three part activity identification system resulting from our meeting of January 5, 1979 (working day 768). In this meeting as summarized by Mr. Stewart in his memorandum of January 17, 1979 (working day 776) was established a three component analysis of the tasks to be done to achieve discharge limitations set forth in the consent judgment.

The first of these components was an identification of seven parameters dealing with the characteristics of the effluent including such items as grease and oil, BOD, suspended solids, phosphorous and others.

Added to this was a list of 15 components that describe an overall scope of total work involved to achieve compliance with effluent limitations. These concern such items as capital improvements, operating effectiveness, residual product disposal, financing, grants and permits, acquisition and use of consultants and other such items.

Then, a list of 65 activities was developed that described the actions necessary to achieve compliance with effluent limitations.

Thus, the three part description when assembled in the various combinations possible, could allow identification of the total planning needs to be established. There has been some work done on identifying the inter-relations among these components, but this work has gone on and off depending upon the demands of the department upon Mr. Stewart's time. I strongly recommend he be allowed to complete his analysis and make this system available for test use in the very near future, preferably within the next week.

Monitoring Report #20
DWSD
Waste Water Treatment Facilities
Page three

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

With the tool in hand, it should be possible to better evaluate the various plans that have to be prepared in order to truly achieve a master overall planning effort. This matter was discussed in depth at the morning session and key members of the staff are fully aware of the need for such an identification system.

This discussion led into a review of the need for a sludge hopper installation. The question was asked very early whether we had proved a true need for the sludge hopper. The answers to this led to a decision tree analysis in which several courses of action were outlined. It appears that the initial activity should, in any event, be to design and install a cross conveyor between the two discharge conveyors from present sludge sources. This cross conveyor should be reversible and allow as much flexibility of sludge movement as possible. It was further recommended that the impact of the cross conveyor on the operation be observed prior to taking any major steps toward installing the hoppers.

A full analysis of the procedures possible is shown in the decision tree which was retained by Mr. Stewart and which, it is expected, will be drafted into final form and issued for further review and evaluation. I suggest this be done.

In the early afternoon consultants for the new dewatering facilities met with key members of the DWSD staff and we discussed the potential and need for installing additional dewatering facilities. It appears this program is presently yet to be totally defined and the consensus by the consultants was that it was not yet appropriate to prepare a summary network of the steps possible. Apparently it is their intent to prepare such a plan of action in the near future, therefore, no major discussions were conducted on this matter. It was pointed out that in a meeting on February 7, 1979 (working day 791) considerable effort was expended in preparing a network model for DWSD effluent limitation study which dealt with supplemental sludge dewatering facilities.

In the late afternoon Mr. Suhre joined the DWSD staff meeting and we reviewed in detail with him what had been accomplished during the day. This review consisted primarily of those items described above.

In closing, I would like to strongly recommend that an immediate effort be made to bring the three component checklist which is now being worked upon by Mr. Stewart to completion so that it can be further evaluated.

Monitoring Report #20
DWSD
Waste Water Treatment Facilities
Page four

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

It appears to me that these three components represent fundamental data needs for generating a good planning and control program at DWSD.

I shall be in touch with Mr. Stewart shortly to set the next planning session.

Ralph J. Stephenson, P.E.

RJS
m

To: Mr. Ken Stewart
Mr. Willie Wilson
Mr. Darrel Suhre

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

March 25, 1979

Subject: Monitoring Report #21
Detroit Water and Sewer Department (DWSD)
Waste Water Treatment Facilities and Water System

Project: 7645

Date of Monitoring: March 23, 1979 (working day 823)

Actions taken:

- Reviewed preparation for summer test program
- Diagrammed design of 16" Sludge Line Extension
- Diagrammed design of Centrifuge Installation

Preparation for summer testing:

Attending: (both full and part-time)

Mr. Alan K. Wong, CDM	Mr. Ray Peruski, DWSD
Mr. George Beckford, CDM	Mr. Ken Stewart, DWSD
Mr. J. B. Jones, DWSD	Mr. Najah Akkam, DWSD
Mr. John Cross, CDM	Mr. C. Barkedale, DWSD
Mr. E. S. Johnson, DWSD	Mr. S. C. Beri, DWSD
Mr. Gary Aho, DWSD	Mr. H. Bierig, DWSD
Mr. Don Dix, DWSD	Mr. Darrel Suhre
Mr. Frank R. Porta, DWSD	Mr. Jim Carethere, DWSD
Mr. Walter Peltz, DWSD	Mr. A. Davanzo, DWSD
Mr. D. Cleggy, DWSD	Mr. Al Postuma, Williams & Works
Mr. Richard Garland, CDM	Mr. Tom DeRiemaker, DWSD

We first reviewed in depth the memorandum from A. C. Davanzo to D. Suhre, dated March 20, 1979 (working day 820). This memo identified several major projects that are to be accomplished so as to move into a summer plant testing program. The summer testing program is to begin July 15, 1979 (working day 902).

From the many projects and programs identified in Mr. Davanzo's letter, the group selected some of the more critical to plan. Those selected to diagram initially were, in order of priority:

- IV-1 Extend 16" thickened sludge line (Complex B) from W.A.S.P. building to existing blending and storage tanks.
- IV-3 Construct meter by-pass line for excess sludge.
- IV-6 Convert existing storage tanks to blending tanks (at least two tanks to be converted).
- II-3 Develop design and construction process for excess liquid sludge de-watering centrifuges.
- IV-11 Construct collection system improvements to skimmers.

We concentrated first upon the 16" sludge line extension and diagrammed the design work necessary to get construction work underway. This plan is shown on Sheets 1 and 2, Issue 1, dated March 23, 1979, and entitled "Summer Pre-Test Activities - 16" Sludge Line Extension". Two sets of durations were assigned to the logic, normal and optimistic. Then a set of isoquant monitoring lines was drawn for optimistic dates.

It was recommended to the staff of the water board, particularly PPMCS, that weekly monitorings be made of the program, since it is only by careful tracking that this work is going to get completed and installed by the start-up date for the summer test.

Assumptions made in this network model are listed in the general notes on Sheet 1 and are important to review since they deal with additional items still to be accomplished.

Mr. Ken Stewart kept the tracings of this network and will distribute them to the appropriate parties on the project team.

Metered By-Pass Line For Excess Sludge:

This network model was not prepared since it follows substantially the same process as for the 16" sludge line extension reported upon above; thus, the network prepared for the sludge line extension can be used for evaluating the work to be done under this item.

Liquid Sludge De-Watering Centrifuge:

Attending: (both full and part-time)

Mr. C. Barksdale, DWSD	Mr. W. R. Mortimer, DWSD
Mr. K. Stewart, DWSD	Mr. T. Kluck, DWSD
Mr. J. Be. Jones, DWSD	Mr. D. Suhre, DWSD
Mr. E. S. Johnson, DWSD	Mr. J. L. Carothers, DWSD
Mr. H. Bierig, DWSD	Mr. G. Aho, DWSD

Installation of the centrifuge revolves around both delivery of equipment and the design and installation of support equipment and connections. Our diagramming, shown on Sheet 1 of the Summer Pre-Test Activities, Centrifuge Design, indicates there are some reasonably complex steps to be taken in order to design a proper installation for the equipment.

This is a sizable piece of machinery and must be given careful attention so it is provided with necessary mechanical and electrical services. Also of importance, is conveyance of the sludge cake so that it can be loaded properly and so that whenever stand-by arrangements are necessary, when there are no trucks available to haul, can be an integral part of the system.

Monitoring Report #21
DWSD
Waste Water Treatment Facilities
Page three

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

As with the sludge line extension, design work for the centrifuge should be initiated immediately along with inquiry and commitments as to the availability of the major centrifuge equipment.

Monitoring here should also be on a week by week basis to insure careful tracking of progress is maintained, and trends in the work are identified with management action taken where necessary.

General:

The number of items necessary for start-up and maintenance of the summer testing period are sizable. My recommendation is that the PPMCS staff, in conjunction with the lead consultant and with my help as I work with the staff, focus intently upon preparing network models for each of these actions. The job is crucial and depending upon the importance of each action to the summer program, will have more or less impact upon the testing program's success.

One of the first activities is to establish which of the many items outlined in the memo from Mr. Devanzo to Mr. Suhre are absolute critical importance to the summer program. Then focus should be directed to designing and accomplishing each of the priority activities. This should insure to the greatest extent that those that are truly important are being done first. Without such a hierarchy of activity, much time can be wasted and serious negative impacts on the program produced, by having things ready and available that are not necessarily needed, at the expense of those that are.

I shall be in touch with Mr. Stewart shortly to set out next session and at that session I would suggest we continue planning and monitoring the various elements of the summer test activity.

Meanwhile, I recommend the 3-component checklist, which was prepared several weeks ago, be brought to completion and put in data processing form so that it can be further evaluated and used as a working tool.

Ralph J. Stephenson, P.E.

RJS:j

cc to: Mr. Ken Stewart
Mr. Willie Wilson
Mr. Darrel Suhre

May 11, 1979

Subject: Monitoring Report #22
Detroit Water and Sewer Department (DWSD)
Waste Water Treatment Facilities and Water System
Project: 76:45
Date of Monitoring: May 11, 1979 (working day 858)

Actions taken:

- Reviewed status of Item II-3, centrifuge installation
- Monitored grease collection system, Item IV-11
- Reviewed past summer test activities
- Monitored PC-400
- Monitored 8" by pass work, Item IV-3
- Monitored 16" sludge line installation, Item IV-1
- Monitored level control work, Item
- Monitored supplementary power for test, Item IV-4
- Reviewed project PC-434, Item IV-6

Centrifuge installation, Item II-3

Monitored from Issue #1, dated April 30, 1979 (working day 849)

Attendings: Harry Bierig, Ken Stewart, Walt Nagi, Gary Aho, Walter Palto and John Bona

Work is proceeding on issuance of a purchase order and it is expected that July 2, 1979 (working day 893) can be held for delivery of the centrifuge. A location has been set and this should free up start of installation of services to the equipment, including the sludge header, drain lines, power and water. Completion of design of the centrifuge foundation is held by obtaining load requirements. These will be available on May 15, 1979 (working day 860).

Of importance is that a pile foundation may be required; and if the installation is extensive, it might be necessary to let a construction contract through the expedited procedure. This, according to the project team, could be within three weeks after issuance of contract documents.

The footing and slab on grade design should be available by May 16, 1979 (working day 861) with completion of building contract documents by May 29, 1979 (working day 869). Thus, we could have a piling contract by June 7, 1979 (working day 876) and a contract for the building awarded by June 19, 1979 (working day 884).

The major decisions facing the project team now deal with selection of the type of pile and selection of the structural frame of the building. This evaluation will be tempered by the present strike of concrete truck drivers, which is liable to last 2 to 6 weeks.

Piling will be important because, if the centrifuge is delivered on July 2, 1979 (working day 893), the foundation should be ready and available to avoid double handling of the equipment.

Piling installation probably will force an increase in earlier duration allowed for construction of footings. In addition the building is now a sizable structure projected at about 50 by 120 feet.

The design for the building will be completed by May 29, 1979 (working day 869), and projecting ahead construction probably will not be complete until late fall or perhaps even early winter depending upon construction activity availability of materials and the nature at the contract let.

Installation of services to the building will start as soon as the plant has established a specific location for the building and schematics are available. The plant staff is ready to begin this work now.

A major difficulty appears to be delivery of auxiliary equipment which could be as late as August 3, 1979 (working day 916). Attempts are being made to shorten this period and on-going efforts will be made to get auxiliary equipment on the job at an earlier date.

Once auxiliary equipment is available, final piping and hook up can proceed and the centrifuge can be made operative. The current target for making the centrifuge operative is August 29, 1979 (working day 934). This is then followed by 10 days of training for operators which brings the equipment on line with operators by September 13, 1979 (working day 944).

Again of prime importance to getting this equipment on line is delivery of auxiliary equipment, design of the centrifuge, footing and slab on grade, particularly with piles now anticipated, and design and letting of contracts for the building housing itself.

Grease collection system improvements - Item IV-11

Monitored from Issue #1, dated April 30, 1979 (working day 849)

An important element of the test and post test periods is improvement of the grease collection system. At our last monitoring session we diagramed installation of these improvements and today monitored this network model standard of performance.

New trash pumps are presently in procurement and are planned for delivery by July 25, 1979 (working day 909). The new heat exchanger is due on the job by May 21, 1979 (working day 864).

At tanks A1 and A2 repairs to the cutter and grinder pump on tank A1 are in progress. These were due to be completed by May 9, 1979 (working day 856). Following the repairs which will be late, a five day operational and evaluational period for tank A1 is scheduled, after which tank A2 will be shut down, partially drained and then modified. To complete work at tank A2 a new submersible pump will have to be on the job and available. This is presently due for a delivery of July 11, 1979 (working day 899). Thus, work on tank A1 and early modifications to the grease hopper on A2 have some float time.

The secondary scum baffle is presently being designed and will be fabricated on an on-going basis. Isolation valves are being procured and once they are on the job, the tank will be shut down and the header drained. Then the valve system can be installed.

At the incinerator, the air feed pumps for grease are in procurement. The grease incinerator air feed system is being designed and a contractor is being selected to repair the grease incinerator refractory material. Refractory material has been ordered and probably will be on the job about July 25, 1979 (working day 909) or earlier.

However, the restraint on replacing the grease incinerator brick arch, which is the major repair work to be done in the near future, is from soliciting off-site grease hauling proposals and awarding an off-site grease disposal contract. The successful proposer will be required to provide a site and approvals will have to be given on this site.

Present projections indicate that grease hauling could optimistically be initiated about July 27, 1979 (working day 911). It will be necessary to start this process before the grease incinerator can be shut down for repairs. Thus, July 27, 1979 (working day 911) by present plans the incinerator will be shut down for an approximate 17-day working period and repaired bringing reactivation of the incinerator to August 21, 1979 (working day 928).

In summary, grease collection improvements are moving fairly well; however, they will require constant expediting since procurement items and award of contracts is critical to maintaining progress.

Post summer test activities

The next work done by the group was to identify major activities required in the post summer test period. Work at the plant dealing with testing has been broken into three periods, as follows:

- Pretest period - on-going to August 1, 1979 (working day 914)
- Summer test period - from August 1, 1979 (working day 914) to October 1, 1979 (working day 956)
- Post test period - from October 1, 1979 (working day 956) to January 2, 1980 (working day 1020)

The goal of the summer test is to identify and quantify true capabilities of the plant operating under the present staff and with processes as readied for operation in pretest activities. By the end of December, 1979, it is expected that the effluent standards that have been established will have been met in eight major parameters; these are:

1. Grease and oil.
2. B. O. D.
3. Suspended solids.
4. Phosphorus.
5. Phenol.
6. P. H.
7. Air quality.
8. Faecal coliform.

A convenient label has been given the achievement of effluent standards in all areas as 30/30; however, it should be understood that 30/30 technically applies only to the 5-day BOD and the suspended solids parameters. However, where 30/30 is used in this report it will refer to effluent standards for all eight items.

Using the 3-section identification system established last January, 1979, we first identified those activities that were of high importance during the post test period within each of the eight parameters. The parameters themselves were arranged in order of highest priority of importance, as follows:

3. Suspended solids.
1. Grease and oil.
7. Air quality.

For suspended solids it was decided that activities 5, 9, 24, 25, 29 and 30 (all from the list of components and activities published by Mr. Stewart on January 22, 1979) were of major importance. The question asked about the parameters and the activities within each was - what happens if we have to engage in any of these activities during the post test period. Taking each major parameter in order of priority a brief review is given below of the activities required:

3. Suspended solids

5. Improve chemical addition facilities. This is a long program and presently is expected to be completed within the next 2 to 3 years. Design of the facility is presently in work.
9. Modify existing final clarifier inlets. Design is complete and a proposal request is about to be advertised. This is a very important element of both the test and post test period and an early completion is desired.

It also should be kept in mind that, as the tanks are being modified, they will have to be taken out of service temporarily. This could affect the summer testing program; careful planning should be done on out-of-service timing.

24. Construct supplemental sludge dewatering facilities. The belt filter press facility is presently planned to be operative by June 30, 1980 (working day 1147). No current word was available on progress being made toward this date.

The centrifuge facility, as noted previously in this report, will probably be completed and operable by late August or early September, 1979, except for enclosure of the equipment. The enclosure will probably carry on out to near the end of the year.

29. Develop off-site sludge disposal facilities. On-going.

30. Develop export sludge off-site transport facilities. On-going.

Notes: In Items 29 and 30 a need may develop from the testing period to generate additional liquid sludge disposal capacity.

1. Grease and oil.

52. Improve oil and grease incineration reliability and effectiveness. This work is presently underway and has been reviewed in previous sections of this report.

63. Improve scum and grease collection and transport system. This item has been discussed under grease collection system improvements. Again to be emphasized is that the grease and scum incinerator shut down cannot be made under present plans until the off-site disposal system is operative. This is expected to be on July 27, 1979 (working day 911).

7. Air quality.

26. Improve incinerator reliability capacity and effectiveness (sludge). The method of doing this is to be determined after the summer testing period.

Over the long term, the CS-823 prototype construction and evaluation will be required for additional analysis; however, this work as noted is to be done after the test is complete. The status of approvals on starting this work are presently not determined.

36. Complete and activate PC-400 (scrubber and silo). A detailed evaluation of this program is to be made on an on-going basis and at subsequent meetings. To date there is no current assurance the operational demands can be met.

- 52. Improve oil and grease incinerator reliability and effectiveness. See above.
- 40. Improve supervision skills. On-going internal activity.
- 42. Calibrate and verify (instrumentation). This is an on-going activity being maintained by plant personnel.
- 55. Complete facilities plan of selected alternates for sludge hauling and emissions. Presently under consideration by the staff and their consultants. It is not critical until the CS-823 prototype is constructed and evaluated after testing.
- 56. Modify existing on-site incinerators. Covered above under discussions of sludge incinerators and scum and grease incinerators.
- 58. Study, design and operate improved stack gas dispersion system. This is presently under study on an informal basis. Some post test activity could be required.

The above three major parameters, suspended solids, grease and oil, and air quality, are the most important elements of work to be done in the post test period. However, additional miscellaneous activities must be conducted under the remaining five sections. These are discussed briefly below:

- 2. BOD. Generally the feeling is that if the suspended solids effluent requirements can be met, BOD requirements will also be met. Additional items for consideration are:
 - 6. Renovate aeration facilities. Presently in design.
 - 8. Add reserve oxygen capacity. Under construction.
 - 12. Upgrade aeration facility controls and communication. On-going.
 - 15. Modify existing final clarifier return sludge pumps. These sludge pumps are long lead time items and if they are required should be ordered at an early date. This matter is presently being reviewed.
- 4. Phosphorus. No post test activity anticipated. Phosphorus levels are presently good.
- 5. Phenol.
 - 32. Implement industrial monitoring and control and enforcement program.
- 6. PH₂ No activity required as yet.
- 8. Fecal coliform. It was mentioned that probably a new evaporator could be installed to improve this system. The evaporator is expected on the site by late August, 1979; however, its installation may not be completed by the end of the year depending upon inplant working schedule.

The project team said that so long as present equipment operates properly it is not essential to operation in the post test period; it is primarily a back up system.

During our discussion Mr. Bierig said we should keep in mind the importance during the post test period of item 22 in the activity list, improve secondary and screen final effluent (SFE) water system. This matter should be an on-going evaluative process and not lost sight of.

As we utilize the three factor system prepared last January, 1979, in evaluating pre, during and post test requirements, it became apparent that it would be wise to have this system available for use in other areas. It is possible that such a system could be tied not only to time periods but also to the greatly intensified procurement procedures that are about to be entered into. Mr. Stewart is going to continue work on this 3 system listing. We shall discuss it at subsequent meetings.

PC-400

Monitored from network model dated April 16, 1979 (working day 839) and revised as of April 19, 1979 (working day 842)

Attendings: Robert Opland
Ken Stewart
Cliff Hubbard
Walter Pelto
Marcus Moore

Major discussions today revolved around reconstruction of hearths 4 and 5 in incinerator #3. At present, it is expected a contract for reconstruction of the hearths will be let by Tuesday, May 15, 1979 (working day 860), with work taking about 30 working days. This brings completion to June 27, 1979 (working day 890).

Allowing 5 days for the hearths to dry would permit the incinerator performance test to start July 5, 1979 (working day 895). This is a lag of 6 working days over the presently desired starting date of June 26, 1979 (working day 889). The above projected schedule is based upon utilizing emergency purchasing procedures and getting work started immediately.

Demolition of the damaged hearth is to begin tomorrow, Saturday, May 12, 1979 (working day 859), and work will proceed continuously over the next few days. I suggested that photos be taken of the damaged hearth as a matter of project record.

We also evaluated the current work status at each incinerator under the PC-400 program. Incinerator #1 is currently being tested for performance and instrumentation. There are varying opinions about the effectiveness of the current operation but corrections are apparently being made as the tests proceed.

Incinerator #2 is being readied for start of testing when the incinerator test #1 has been completed. It would be desirable to have the incinerator #3 induced draft fan and motor base poured and the fans set prior to the

start of testing number two. This is to provide as much mass as possible to control vibration. Presently, concrete truck drivers are on strike, however, and the strike is delaying installation of bases. Therefore, a decision will have to be made soon as to whether to proceed with the testing at incinerator #2 without having the fan and motor at #3 set.

Presently most major work is meeting targets between early and late starts and finishes at incinerator #2.

At incinerator #3, work is proceeding toward a target start of testing by June 26, 1979 (working day 889). As noted above, the collapsed hearths in incinerator #3 are to be repaired and probably will delay the start of these tests for 5 to 10 working days past the target.

At incinerator #4, most owner early work at the incinerator is either well along or complete as needed to turn over the incinerator to the contractor for shutdown and installation. Testing of incinerator #4 is currently set to start December 11, 1979 (working day 1006).

Incinerator #5, work required prior to turnover to the contractor has been completed; however, the turnover will not be made until incinerator #2 has been tested and put back in service.

Incinerator #6 work, prior to turnover, has been completed; however, incinerator #3 must be completed and reactivated prior to taking #6 out of service.

We shall continue to monitor from the current network standard of performance and I strongly recommend a careful tracking of the job be made on an on-going basis.

8" by-pass construction - Item IV-3

Procurement of materials is well along and installation is proceeding on the pipe and sampling points. The mag meter is expected to be delivered by June 11, 1979 (working day 878) with completion and calibration due to be finished by June 14, 1979 (working day 881).

16" sludge line - Item IV-1

Presently work is proceeding on completion of piping and the current target of June 13, 1979 (working day 880) is being held.

Level control - Item I-7

It is anticipated this work will be completed by July 6, 1979 (working day 896). A full evaluation was not made at this session but the data appears to be able to be met. The project should be reevaluated at subsequent sessions.

Supplementary power for test - Item IV-4

The target date of completing this area is presently being held at July 2, 1979 (working day 893). It appears to be a reasonable target current date.

PC-434 convert storage tanks to blending tanks - Item IV-6

Presently, the air blower is being removed and relocated. Internal tank piping has started and procurement is in work for the check and butterfly valves. Check valves should be on the job in about 30 working days and butterfly valves on the job in about 20 working days. It is presently the intent to hold a target completion for this work somewhere between early and mid June, 1979.

A further evaluation will be made at our next session.

General summary:

Several projects were evaluated at our session today and the attempt is being made on an on-going basis to pull all programs together and identify the various network models needed to keep the overall plan of action current and valid.

Mr. Stewart will prepare the agenda for our next session and distribute to those concerned.

Ralph J. Stephenson, P. E.

RJS:jc

To: Mr. Ken Stewart (original)
Mr. Willie Wilson
Mr. Darrel Suhre

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

May 31, 1979

Subject: Monitoring Report #23
 Detroit Water and Sewer Department (DWSD)
 Waste Water Treatment Facilities and Water System
Project: 76:45
Date of Monitoring: May 31, 1979 (working day 871)

Actions taken:

- Prepared network model for PC-276, primary clarifiers
- Prepared network model for components of CS-849, miscellaneous design elements
- Monitored scum and grease collection improvements work
- Reviewed present activities of PPMCS
- Monitored PC-400 program

General

At our morning session we discussed the entire capital improvements program coming on line between June 1, 1979 (working day 872) and December 31, 1979 (working day 1019). There are several critical items that must be launched in this period and our major focus in the morning session was to identify the more critical of these and where possible prepare network models for implementation.

The programs selected for network modeling were the PC-276 project, which consists of clearing construction start on two new primary circular clarifiers, and initiation of design for three elements of the CS-849 program, including:

1. Provision of a third power source.
2. Design of scum collection modifications.
3. Design of a scum transport system.

We were able to bring some critical elements into focus during our planning session, but because of a shortage of authentic input we were not able to

complete our work. I strongly recommend, from our experience gained during this session, that we do further network modeling of these elements at subsequent meetings. Indications are that programs need careful planning attention and there would be major value to continuing our diagramming efforts.

A brief review of each element of the days work is given below:

PC-276, Primary Clarifiers

Monitored from Issue #1, dated May 31, 1979 (working day 871), Sheet 1

Attending: Dave Yang, DWSD, part-time
Darrel Suhre, DWSD, part-time
William Lawrenchuck, DWSD
Jim Carethers, DWSD
Ed Johnson, DWSD
Ken Stewart, DWSD
Subhash C. Beri, DWSD
Ed Rutkowski, DWSD
Ralph J. Stephenson

Presently this program is about ready to issue for construction proposals. However, there has been a need to reword the minority business enterprise (MBE) specification and submit it to EPA for review and approval. Concurrently the sub-agreement for step 3 work should be authorized and contract documents completed and printed.

Once EPA has approved the MBE specification, we can advertise and receive proposals, and then review the contractors submittals and process the contract. Following, a construction contract can be executed. Presently it appears that by November 2, 1979 (working day 980) the pre-construction meeting can be held.

One the pre-construction meeting has been held, the contractor must submit his MBE agreements within the next three weeks. Probably construction will start then somewhere between the pre-construction meeting and the time these agreements are to be available.

Using a construction period as originally proposed of 885 calendar days or about 616 working days, brings completion of the project to March or April, 1982. This is a considerable different than the date originally projected for this work; an analysis should be made to see if construction activities can be initiated sooner.

One of the major problems encountered with the later date is that construction will be ready to start in the early cold weather period. Thus, since most of this work is weather sensitive, it is doubtful that much can be accomplished over the winter except in the more sheltered areas of the project.

Again this matter is one that should be reviewed in depth at our next session if further analysis is considered appropriate.

CS-849. Miscellaneous Design

Monitored from Issue #1, dated May 31, 1979 (working day 871), Sheet 2

The projects selected as high priority design items were the provisions of a third power source, design of scum collection modifications and design of a scum transport system. In order to get these programs into design it is necessary to complete the work plan, cost and pricing data, sub-agreements and sub-consultant agreements. Once this work is complete and the application prepared for step 2 grants, the contract can be executed and processed.

Following this, an application can be made for the step 2 grant for these three high priority programs. It is estimated presently that application can be made for the step 2 grants by August 17, 1979 (working day 926) with authorization to proceed on design work given by October 5, 1979 (working day 960). These are the target dates which will presently be held and against which the project will be monitored.

Grease Collection System Improvements (IV-11)

Monitored from Issue #1, dated April 30, 1979 (working day 849), Sheet 1

Attending: Ken Stewart, DWSD
Dean D'Angelo, DWSD
Ralph J. Stephenson

During this meeting, Mr. D'Angelo provided us data from field observations he has made on the project over the past month.

The trash pump has been ordered and will be delivered about July 9, 1979 (working day 896). The heat exchanger is in transit; however, there is no present word on when it will be on the job site. Neither the trash pump #7 or the heat exchanger are overly critical at this point. However, they should be, as with all parts of the program, followed carefully.

Repair of the cutter and grinder pump at tank A-1 is just starting and there was no reliable estimate as to how long it would take. Because of manpower allocation problems at the plant, we have assumed it will take another two weeks, after which tank A-1 could be operated and evaluated. Once evaluated, the new submersible pump can be ordered while tank A-2 is modified as required.

Presently it appears that delivery of the new submersible pump is a major critical item and that the tank A-2, under our present program, cannot be reactivated until about September 11, 1979 (working day 942). Mr. D'Angelo mentioned that grease removal effectiveness has been improved at the plant and with this improvement the priority of tank work has been diminished.

There was no information on where design of the secondary scum baffle was at present. It was assumed that it is in work.

Isolation valves are on order. However, it has been found that the existing isolation valves could be made operative if required; therefore, this program also has been lowered in the priority list for summer test work.

At the incinerator, the small feed pumps for grease are on order but there is no word on delivery. Design of the incinerator air system is in work but Mr. D'Angelo said that to his knowledge, the air compressors are not ordered.

Refractory material has been ordered and will be on the job in 17 weeks or 85 working days. This puts completion of repairs to the incinerator late in the year, and thus they will not be available for the summer test program.

Off-site work is continuing with design of the grease loading facility. The current lag on this section of the work appears to be about 10 working days over the target date for making the grease system operative of September 5, 1979 (working day 938). This lag is probably going to increase.

Overall, in a phone discussion with Mr. Walter Palto and a personal review of the project with Mr. Davanzo, the consensus was that probably most grease collection system improvements will not be completed in time for use during the summer test period, defined as being from August 1, 1979 (working day 914) to October 1, 1979 (working day 956).

Planning Activities of PPMCS

Attending: Ken Stewart, DWSD
Ralph J. Stephenson
Darrel Suhre, DWSD, part-time

This session was abbreviated due to the need to work on several concurrent projects during the period. However, discussions between Mr. Stewart and myself were of such a nature to indicate the desirability of continuing to define how we can best prepare the network models needed for waste water treatment facilities over the next few months.

It was decided we should continue diagramming capital improvement programs with the idea in mind of obtaining as many valid network models as possible over the next few weeks.

In addition it was also decided by Mr. Suhre and Mr. Stewart that continuing efforts would be made to have those project team members most deeply involved with the program prepare the network models of their respective activities.

We should examine this procedure at subsequent meetings to see how we can perform more effectively in diagramming the projects to be planned.

PC-400, Scrubber and Incinerator Silo Improvements

Monitored from network model dated April 16, 1979 (working day 839) and revised April 19, 1979 (working day 842)

Attending: Harold Stiller, DWSD
Ken Stewart, DWSD
Darrel Suhre, DWSD (part-time)
Ralph J. Stephenson

A detailed review was made of the current status of work on the incinerators as well as reconstruction of the hearths in incinerator #3. Presently, it looks as though the 5-day systems test for incinerator #1 will begin next week. This should bring completion of testing to about mid-June, 1979.

Performance and instrumentation tests on incinerator #2 are about ready to start, but there is no current word on when they will actually begin. Their late start was set at June 26, 1979 (working day 889).

For incinerator #3, we are aiming to have the hearths reconstructed by June 27, 1979 (working day 890); allowing 10 working days to dry and start up, brings beginning of the 30-day performance and instrumentation test to about July 12, 1979 (working day 900).

At incinerator #4, as noted in the previous monitoring, most work is complete and ready for shut down and turnover to the contractor. This will be done when incinerator #1 is tested and on line.

Incinerator #5 will be made available to the contractor when incinerator #2 is tested and operative.

Incinerator #6 will be made available when incinerator #3 is available and complete.

Monitoring Report #23
Waste Water Treatment Facility
and Water System (DWSD)
Page six

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

Target dates established in the network model dated April 19, 1979 (working day 842) should be able to be held within a range of a few days plus or minus. The present work progress indicates that these dates are still reasonable.

General

At our next session, I recommend strongly that we continue to identify the programs which must be diagrammed and put into the basic planning system. I suggest that in the intervening period between this meeting and our next a list of priority items be established, and at subsequent meetings the personnel needed for authentic information be present. This requires early identification of work to be diagrammed since generally these various parties require lead time to prepare.

I shall be in touch with Mr. Ken Stewart to set the next session.

Ralph J. Stephenson, P. E.

RJS:jc

To: Mr. Ken Stewart (original)
Mr. Willie Wilson
Mr. Darrel Suhre

August 2, 1979

RALPH J. STEPHENSON, P. E.
CONSULTING ENGINEER

MEMO TO: Darrel Suhre
Willie Wilson
Tom DeRiemaker
Ken Stewart

Discussion
DRAFT

On August 2, 1979, following our network planning seminar at the waste treatment plant, Ken Stewart, Charlie Barkedale, Najeh Akkan, Tom DeRiemaker and I met to review the proposed construction specification for network planning.

We divided the discussion into several major subject headings:

1. Format.
2. Time to submit.
3. Cost and manpower loading.
4. Payments.
5. Schedules.
6. Monitoring.
7. Computer runs.
8. Reports.

1. Format

Normally it is best to allow contractors to select a network format that best suits their needs. The various systems possible in present day network modeling work include the following:

Project evaluation and review technique (PERT) - A planning technique that labels milestones rather than activities. This system is almost obsolete and is seldom used today.

Arrow Diagramming - In arrow diagramming, a conventional end to end method may be used, although I recommend and use a dummy separation technique in which each task arrow is separated from each connecting arrow by a dummy.

The arrow system is that most widely used in the Detroit area. It is generally preferred by action oriented users, particularly superintendents and construction management personnel.

In the work I do, because it is bulk diagramming and is usually manually computed initially, I universally use arrow diagramming and the dummy separation technique.

This is the technique I have taught the QMSD staff.

Precedence diagramming - Precedence diagramming uses boxes to indicate the activity with solid arrows to show relationships. As

such, it does not have the dynamic graphic impact of arrow diagramming. It is an accepted system but requires computer processing to be fully effective. Manual computations of precedence diagrams, utilizing other than end to start relationships, is frequently difficult.

In some specifications the use of precedence diagram is restricted by the requirement that only end to start relationships are to be used. In such cases, precedence diagramming is different from arrow diagramming only in the graphic symbols used.

Overall, every planning organization seems to have a favorite system; and I recommend the DMSD allow contractors, who are preparing and submitting networks at the contractor's cost, to use whatever format best suits their purposes. In the event there is a choice I recommend you encourage arrow diagramming using the dummy separation technique. Most Detroit contractors are familiar with or now utilize this system.

So far as process work on the diagrams is concerned, I recommend that you ask that they be manually computed and this be allowed and encouraged in the initial submission. The reason is, if we permit preliminary submissions of manually computed diagrams, it saves computer processing, an expensive and time consuming process. Ultimately in most cases it is best to require some type of computer processing, although it is doubtful whether this should be made a specific requirement on every job. The need should be considered for each project individually.

Information contained on each activity should include a full description, the responsibility codes showing who is to perform the action, the location (geographic code) of the activity, the expected duration of the task in estimated elapsed working days, and an identification of the task by node numbers or work item numbers unique to each task.

There are other standard elements of network format which also should be included, such as early and late starts and finishes, time restraints to start and end of work, along with front end activities.

2a. Time to submit

I suggest the time to submit be negotiated individually for each project at the preconstruction meeting. There is no standard best fixed time for submitting networks.

On a simple small project it is entirely possible that the entire diagram could be put together within the first 20 working days after the project was let. On a similarly small project but with very complex front end (delivery and approvals) work, this submission might not be possible until all data about the front end was available. This could take as long as 30 to 40 working days into the program.

It probably would be wise to indicate in the specifications an approximate submittal time being certain to leave it open to negotiation and mutual agreement. An excessively short period of time imposed upon a contractor to prepare his network model will usually force him to submit a plan of work that is not valid, and one that will be out of date very quickly.

On the other hand the preparation should not be allowed to be deferred past a point where the contractor is working without an adequate plan which can be monitored.

It would be appropriate to request a first 70 to 100 working day network model within 20 to 30 working days after the project has been let.

It is better to have a later valid, usable diagram than one that is assembled merely to satisfy an unreasonable specification.

Time of network preparation is always controversial; however, I have found in my own professional practice that invariably a hastily put together diagram, improperly conceived and containing incorrect information and inadequately checked, is far worse than having no model whatsoever.

Related to the time allowed for submissions is the restriction on contractor payment and performance that might be imposed for tardy submissions of networks. It is presently unclear as to whether a contractor, who has put work in place, is performing well in the field and is entitled to be paid, can be penalized by withholding payments, if the specification provision of network model submission is not fulfilled.

I suggest this matter be approached with caution and good sense since it is entirely possible that a good contractor performing excellently could be penalized unfairly for something that may not be within his control.

If for instance a conscientious competent contractor has not submitted his network model in the time he agreed upon because he is waiting for critical delivery information that is not available and he requests that he be allowed to hold submitting until he does have this authentic information; then to penalize him by withholding payment may impair and damage his performance. Also, it is doubtful whether legally you are entitled to withhold money for work properly put into place and accepted. Thus, it imposes a legal question and becomes a psychological problem related to something that frequently is in symbols rather than significance.

I believe that normally a client, such as the D&SD, has enough clout within its inspection and approval group so that imposition of penalties can be done outside the network planning requirements.

A suggestion was made during our discussion that we might wish to set the time of submissions at the pre-award meeting rather than the preconstruction meeting. This should be considered, although I think that the final decision on submittal time should be reserved for the preconstruction session.

3. Cost and manpower loading

There has been a great deal of discussion about whether to require the contractor to show task costs and expected resource use on each activity. I suggest that as a starting point, since this is a new venture for the DMSO, the assignment of costs and manpower be reserved for future jobs once the bugs have been worked out of the early specified system.

It is best to get a functioning, agreed upon network model submission requirement that allows proper monitoring of the project in the field, and then to gradually apply refinements to the system as they appear to be necessary. Assignment of costs to each task is a difficult thing for contractors to do, and at the present time in Detroit, except for some GSA and Corps of Engineer work, it is not generally required.

There are inherent difficulties with assigning costs to the network model; and although the method does have some merit, I would prefer to discuss this in more depth with DMSO personnel.

So far as assigning manpower and allocating resources other than costs, I strongly recommend any attempt to do this be deferred until a better handle is obtained on how the network model is to be used by the DMSO. There is great contractual reluctance on fixed cost jobs to identify manpower allocation. In fact, during early phases of the work, and often even further along it is frequently the case that accurate manpower projections are not available. Therefore, early projections may be only poor guesses.

Normally, this information is not requested on the type of work we are presently contemplating putting into the field and on lump sum jobs it is questionable as to whether this information can be legally required.

4. Payments

We have covered the basic thoughts behind payments above. If costs are assigned to activities, then it is a fairly simple procedure each month to merely agree to the percentage of each task complete. However, DMSO presently has a request for payment system through which the percentage of line item costs complete can be accurately made.

5. Schedules

A very serious matter of semantics is involved here; a quantified and calculated network model is not a schedule. The only tasks scheduled (locked into fixed starting and completing positions) in a computed network model are tasks on the critical path (generally 10 to 15 percent of the total tasks in the diagram). The remaining tasks have float time available and the scheduling of these is normally the prerogative of the field manager for the contractor.

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

I suggest that the only specified submission requirement be for a properly quantified and calculated network model of the project.

In fact, the simplest and most effective performance language for the entire specification might be to say: As a condition of this project contract, the contractor will submit within _____ days a properly prepared and properly quantified and calculated network model for the work showing early and late starts and finishes.

6. Monitoring

The monitoring process is one in which the actual job condition is compared to the condition projected in the network model. Normally, internal monitoring by the contractor is done every one or two weeks. Formal monitoring, upon which owner reports are based, usually occur once a month.

So far as ~~how~~ monitoring is to proceed, it would usually be the responsibility of the contractor to monitor his project and report on it in a format suitable to him and the owner. I have discussed this format with Mr. Ken Stewart and many copies of monitoring reports which I have prepared for DWSO as well as samples which have been given in seminars that have been taught are available as a guide.

The monitoring reports should contain the project name, the network issue number, the date of monitoring, the job number, the starting date of the project, the anticipated completion date of the project, the actions taken, and a summary of the status of each in work sequence in the diagram. In addition, a projection should be made describing what is expected to be done over the next future given period of time (usually two to four weeks).

Next, an analysis of the job is given which helps identify potential problems and how these difficulties could be solved.

In addition to the contractor's monitoring report, it would be wise for the DWSO field inspection and engineering staff to use the network model to prepare their own monitoring reports; thus, it would be possible to compare the contractor's monitoring report with the internally generated report.

It also might be desirable for the DWSO project planning and control staff to produce monitoring evaluations. This is an internal management matter and Mr. Stewart has addressed the problem by outlining a suggested typical format for his monitoring reports. It should be noted that in that format there is a provision for monitoring costs on the job to date compared with anticipated costs.

If the project shows identifiable and severe deviations from the plan of work, provision should be made to have the network model updated.

Updating is the process of revising the logic and durations of the network presently being used to reflect new conditions. A network model should not be updated until it is no longer able to serve a purpose in guiding and evaluating work. Changing a network monthly to reflect its current position, then releasing the diagram, is a doubtful practice, since it merely produces a new

model showing the new data which is dictated by work slippages. Thus, regular updating becomes an adaptive tool which may have little comparative value.

In my opinion, a network model should be kept as a standard of performance until it no longer is valid as that standard of performance; then it should be logically and intelligently revised to show the new anticipated plan of work. That revised network can then be issued as a new network and will at that point serve as a new benchmark from which future work can be measured.

There are presently being considered methods by which the monitoring process can be utilized by all parties to the job. I suggest the monitoring process itself be established as a face-to-face system. Information, in my experience, is best gathered by obtaining it from each individual contractor in conjunction with the lead contractor on the job. Here we are talking about techniques and processes best worked out as the job proceeds by the various parties who must furnish the information on a regular basis.

My usual process of monitoring includes a tour of the job, a post-tour analysis in conjunction with the field managers, a brief evaluation discussion with them, and then whatever detailed conferences they or I may feel desirable with other parties who are involved. This may or may not include the sub-contractors, the owner, the architect, engineer or other people who have input to the job performance.

Whether this process takes the form of a special meeting or whether it is done on an informal and unstructured basis, is strictly up to the parties involved.

7. Computer Use

First, it should be understood that it is not necessary to use a computer to properly utilize a network model. The network model in which manual computations for early and late starts and finishes are shown often is used as a network diagram guide for a good share or sometimes for the entire project. Computerization is an option to be allowed and it quite frequently will be related to the size of the job.

On very small projects, let us say like the centrifuge building, the network model manually computed should be perfectly acceptable and usable. Computerization is most valuable when there are large masses of data to be evaluated.

It would be advisable, in my opinion, not to impose any special computer requirements upon the contractor and, along with the time of submission, negotiate this matter at the pre-award or preconstruction meetings.

This matter should be looked at in some detail since there is a desire, as I understand, to put all network models into a master model run. Depending upon how much inter-relationship there is between the various projects, this may or may not be a useful tool.

Usually it will be found that there will be resistance on the part of those who prepare network models to have other parties than themselves do any network processing on the diagram. I suggest this matter be again discussed in depth because it could cause delays and potentially put the DWSD in liability positions not desirable.

2. Reports

Reports should be obtained monthly from the contractor, outlining material already described above. If computer processing is used, it is entirely possible that the format shown in the project status report illustrated in seminars for the field staff at the waste treatment plant should be used. Mr. Stewart has a copy of this report.

Internally generated reports on projects by DWSD staff (PPWCS and field inspectors and engineers) should normally be kept for DWSD circulation only. If there is a desire to release the report because it could be of help in improving job performance, then that should be considered on an individual basis. However, as a general rule, I suggest these reports not be circulated outside the department.

SUMMARY

Overall, I suggested to the people we met with today, that the best approach for building a good, comprehensive project planning, monitoring and control system, is to start with a clear definition of what is desired; then to build, starting from a very simple system up into the degree of detail that appears appropriate. I suggest the system be constructed on an additive basis, rather than starting with a large complex system and removing elements or substituting other items as it appears necessary.

This is applicable to both large and small contracts. Thus, you can allow smaller contractors, who are perhaps not as well equipped or as knowledgeable about network planning, to be introduced into the system without being overwhelmed.

I think it is important that the network model be considered a day-to-day working tool. It should be used in a positive and constructive sense to assure that the contractor, the architect-engineer, and above all the DWSD is receiving performance consistent with its desires and objectives. Therefore, unreasonable demands on those who must do the work should be avoided.

I will be more than pleased to continue working to prepare the system and approach to construction planning if desired.

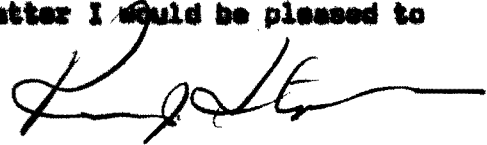
It would be wise in my opinion to at some point soon make a complete reevaluation of the present technique of awarding contracts, soliciting proposals, and tying together the joint efforts of the entire project organization responsible

Page eight

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

for bringing waste treatment plant and water treatment plant facilities on line.

Again if I can be of any assistance in this matter I would be pleased to help.

A handwritten signature in dark ink, appearing to read 'R. J. Stephenson', with a long horizontal flourish extending to the right.

Ralph J. Stephenson, P. E.

RJS:js

August 29, 1979

Subject: Monitoring Report #24
Detroit Water and Sewer Department (DWSD)
Waste Water Treatment Facilities and Water System
Project: 76.45
Date of Monitoring: August 24, 1979 (working day 931)

Actions taken:

- Reviewed waste water treatment water needs and supply
- Prepared network model for final screened effluent improvements (FSEI)
- Discussed post-test activities
- Prepared network model for headworks items to be done at plant to meet 30/30 requirements by January 1, 1980 (working day 1020)

Waste Water Treatment Plant Water Needs and Supply

Attending: Ken Stewart, DWSD
C. Gray, DWSD
John Jester, DWSD
Ken Runkis, DWSD
Geriann Pierce-Cox, DWSD
Jaime Cocadis III, DWSD
Harald Stiller, DWSD
John Wickey, DWSD
William Mortimer, DWSD
Ed Johnsen, DWSD
Donald Stuckel, DWSD
Ralph J. Stephenson, Consultant

At the morning session we first reviewed the characteristics of process water used at the waste water treatment plant. These break into several types including:

Screened final effluent (SFE)

Potable water (PW)

Raw river water (RRW)

Secondary water (SW)

Reclaimed hot water (RHW)

Monitoring Report #24
Waste Water Treatment Facilities
and Water System (DWSD)
Page two

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

There may be some overlapping of the various categories and certainly there are other sub-groups of the major types.

A matrix was prepared listing the types of water on the horizontal axis and the characteristics of the water (pressure, temperature, source of supply, point of use, etc.) on the vertical axis. From the matrix we narrowed the range of discussion and decided that we should concentrate today on the screened final effluent water system.

Problems with the SFE system at present are low pressure, water shortage and no back up system. The conclusion reached at our session today was that the major effort should be to get pumps, motors, valves, strainers, pipes, and electrical equipment at the site as early as possible to supplement present SFE pumping capacity. Pumps would be installed at the SFE pump house.

The procedure was diagrammed on Sheet #1, Issue #1, dated August 24, 1979 (working day 931) in a network model entitled Preliminary Network Model for DWSD - Final Screened Effluent Improvements.

In preparing this network we first diagrammed repairs to the four existing pumps at the SFE pump house. To start these repairs it will be necessary to verify the in-stock parts available for strainers and pump seals, and to issue the necessary orders to get repairs under way.

We next prepared the plan of work to acquire major equipment for adding pump capacity at the SFE pump house. Using grant procedures it probably will take till mid-January 1980 to receive proposals for equipment and installation. Assuming six months for delivery of equipment and four weeks for installation, it could be expected that the additional pumping capacity would be on line at the end of August or early September, 1980.

If we do not use the grant process it is possible we could have the system on line by early May, 1980.

A decision will have to be made on the method to be used immediately since in following the grant route it will be necessary to prepare layouts and specifications in more detail than would be done without the grant process.

It will also be necessary to obtain approval from regulatory agencies if the grant process is to be followed. The project team will review this matter in depth immediately to determine which course of action is to be followed.

**Monitoring Report #24
Waste Water Treatment Facilities
and Water System (DWSD)
Page three**

**RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER**

Meanwhile, long range solutions to plant process water problems are being studied by two consultants; one has the assignment of developing a 100% backup system for SFE water and the other has the responsibility for preparing operation and maintenance manuals and identifying future water needs.

A brief discussion of the feasibility of bringing water from the Rouge or Detroit River was engaged in at the session. The problems of obtaining easements, procuring pipe, valves, and pumps in a timely fashion and the necessity of crossing thoroughfares at key traffic points appear to make this solution one that must be reviewed in more detail if it is to be considered.

At present, major efforts are to be made on repairing existing SFE pumps and rapidly procuring additional pumps and installing them at the pump house.

Post-Test Activities

Attending: Ken Stewart, DWSD
C. Gray, DWSD
John Wickey, DWSD
Ed Johnsen, DWSD
Don Stukel, DWSD
Jim Carethers, DWSD
Darrel Suhre, DWSD
A. C. Davanzo, DWSD
C. Chapin, DWSD
Ralph J. Stephenson, Consultant

Note: There were others present but no record is available at this time of the full attendance.

A preliminary list of plant work items to be carried out in the post-test period was prepared several days ago and formed the basis of our discussions at this session. The headworks list was used as an example to establish how we were to proceed. From the headworks list, the question was asked, "Which of these items must be completed by January 1, 1980 (working day 1020) to achieve the 30/30 requirement?" Those attending decided that the following items were essential:

1. Provide a water booster pump for SFE in the rack and grit room.
5. Inspect and repair (or rebuild) valves and hydraulic operators on discharge piping.

**Monitoring Report #24
Waste Water Treatment Facilities
and Water System (DWSD)
Page four**

**RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER**

7. Replace existing sump pump with submersibles in pump building.
11. Spark test pickle liquor tanks.
12. Install level sensors in pickle liquor tanks.
18. Replace sump pump in grit tunnel.

Mr. Davanse suggested that we diagram these activities even though some were only single task diagrams. The reason for this suggestion was that he had found with the sequence shown on a network model, and with constant monitoring that the work is done much more expeditiously by the plant staff than if it is listed or conveyed by memo. Therefore, we prepared a network model for items 1, 5, 7, 11, 12, and 18.

The most complex of these was item 11, Spark test pickle liquor tank. In the test procedures it is necessary to drain each tank, in order, so that no more than one is out of operation at a time. During the spark test and repair period, item 12, Install level sensors in pickle liquor tanks, will also be accomplished.

In working with item 18, Replace sump pump in grit tunnel, it was not possible to calculate the diagram since additional information must be gathered for some of the tasks. Mr. Stewart will do this during the next few days.

Headworks information is shown on Sheet #1, Issue #1, dated August 24, 1979 (working day 931) entitled, Preliminary Network Model for DWSD - Headworks Plant Work Items. The tracing of this network model was left with Mr. Stewart for distribution.

Diagramming of additional post-test items for the following will be continued over the next few weeks:

- Primary treatment
- Solids handling
- Sludge incinerator and appurtenances
- Secondary treatment
- Incinerators and appurtenances
- Miscellaneous

Monitoring Report #24
Waste Water Treatment Facilities
and Water System (DWSD)
Page five

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

We shall continue to diagram these as appropriate in our monitoring sessions.

The latter part of our meeting on post test activities revolved around shut downs necessary for bringing PC 285 (new secondary clarifiers) on line and for accomplishing work under PC 276 (new primary settling tanks).

Our major goal at the planning session was to prepare a random laundry list of all activities needed during the grant application and acquisition period, the design and approval period, the contract award period, and the equipment and material procurement period. We also identified all major work to be done up to the shut down for PC 285.

Because of the time needed to prepare these laundry lists, it was not possible to prepare the full network models for the actual work. This will be done in subsequent sessions with the various project teams.

From our identification of the lists, it appears we have problems that should be given immediate attention in relation to the apparent long length of the PC 285 shut down. Therefore, planning of these items and their sequencing along with durations should be an ongoing function of the PPMCS effort. The laundry lists were left with Mr. Stewart for his study and use.

We also made a preliminary analysis of the need for installing the grease beaching system at the two existing primary settling tanks. This system has a consent decree deadline and it was clear as we made the project analysis that heavy attention will have to be paid now to getting this project underway ahead of other projects with which it has been associated. Mr. Chapin will give the early program his immediate attention, and I suggest a sequence be worked out as soon as possible by PPMCS regarding issuance of grease beaching contract documents.

General Summary

Our work today indicated that there needs to be intensive and ongoing attention given to identifying future problem areas in the entire waste water plant new construction and renovation programs. A studied and objective evaluation must be continually made so that work to be done one, two and three years from now is introduced into the pipe line early enough to accomplish the enormously time-consuming front end operations. Our biggest difficulties occur in grant processing,

**Monitoring Report #24
Waste Water Treatment Facilities
and Water System (DWSD)
Page six**

**RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER**

contract awards, early procurement, and the sizable number of approvals continually required in grant projects by regulatory agencies. Efforts must be made to streamline this system if we are to shorten up the time from project start to construction start.

Once projects get into the field, we have a separate and different set of conditions that must be met and which generally are difficult but controllable.

I suggest the major thrust of our efforts in the immediate future, however, should be on the medium and long-range planning programs leading back to the short-term, day to day efforts for the early projects.

I shall be in touch with Mr. Stewart shortly to set our next planning and monitoring session.

Ralph J. Stephenson, P.E.

RJS/sps

**cc: Mr. Willie Wilson
Mr. Darrel Suhre**

Original to: Mr. Ken Stewart

September 25, 1979

Subject: Monitoring Report #25

Detroit Water and Sewer Department (DWSD)

Waste Water Treatment Facilities and Water System

Project: 76:45

Date of Monitoring: September 21, 1979 (working day 950)

Actions taken:

- Prepared network model for front end work on secondary system shutdown
- Prepared summary network model for secondary system shutdown activities

General Summary

Those attending: (A.M.)

Mr. Roy, DWSD
Mr. Wickey, DWSD
Mr. Mandavia, DWSD
Mr. Plungis, Lead consultant
Mr. Gray, DWSD
Mr. Mortimer, DWSD
Mr. Gerrig, DWSD
Mr. Runkis, DWSD
Mr. Johnsen, DWSD
Mr. Chapin, DWSD
Mr. Stewart, DWSD
Mr. I'liou, DWSD
Mr. Jester, DWSD

Those attending: (P.M.)

Mr. Wickey, DWSD
Mr. Plungis, Lead consultant
Mr. Berry, DWSD
Mr. Runkis, DWSD
Mr. Chapin, DWSD
Mr. Stewart, DWSD
Mr. McGrail, DWSD
Mr. Connors, Lead consultant

Monitoring Report #25
DWS
Waste Water Treatment Facilities
Page two

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

At our morning session, we used the laundry lists that had evolved from our previous meetings to summarize the major activities prior to and during the plant secondary system shutdown. The list devolved down to ten major activities that will be in progress during these critical periods. They are:

1. Install new RAS system.
2. Make connections for future final clarifier.
3. Install chlorine feed to discharge.
4. Negotiate contract for T-400 (oxygen).
5. Make ILP switchover.
6. Modify level controls.
7. Make chlorine conduit modifications.
8. Install flow meters for tanks A-1 and A-2.
9. Replace stop logs with sluice gates in ML.
10. Make PC-285 connections.

Note: The item number is shown on the network model in the circle on the arrow.

Once we had identified these ten key actions, the project task force began preparing network models for work that must proceed prior to the shutdown. A brief review of each of the items is given below:

1. Install new RAS. The design manual for RAS valve layout is presently being completed and is to be submitted for final review and approval within the next two weeks. Contract documents for the valves to be separately procured, and their installation will be started.

Presently, the plan is to complete contract documents for installation and then to apply for and receive a step 3 grant. This is a long process and present projections show that we will have a contract awarded for RAS installation by about November 7, 1980 (working day 1239). At that point, procurement of long lead time items other than valves can begin. Procurement operations for specialty elements could take as long as 150-200 working days. This becomes serious because it potentially could move the plant shutdown into mid or late 1981.

2. Make connections for future final clarifier - Not diagrammed.
3. Install chlorine feed to discharge. No shutdowns required for this operation; therefore, we deferred preparing a network model to a later date.
4. Negotiate contract for T-400 (oxygen). This could become a very important item since once negotiations for operational assistance on 288A and 283 is obtained, a detailed mini-turnaround plan for T-400 must be prepared and approved. This could take as long as 9 months. The sequence of activities for obtaining operational assistance should be set into motion immediately.
5. Make IIP switchover. For the switchover, it is important to field measure for new cable and then to order and deliver the new cable. Also, the damaged duct bank under the road must be repaired.

Once the shutdown occurs, cable splices can be made and the system re-energized.

6. Modify level controls. The front end procedures for level control work are very similar to those which must be done for item #1 above. The important element here is to insure that concrete embedded items are on the job prior to shutting down the plant.
7. Make chlorine conduit modifications. Not diagrammed.
8. Install flow metering for tanks A-1 and A-2. The process for bringing item #8 into work is substantially the same as for item #1.

Presently, the design report is being reviewed with anticipated approval sometime within the next month. Required design report revisions will be submitted next with a final review of the design reports and their submission to MDNR following.

9. Replace stop logs with sluice gates. Front end work to acquire sluice gates will follow somewhat the same procedures as in item #1. Gate installation will be done during shutdown.
10. Make PC-285 connections. Completing this task will depend upon construction of tanks 12, 13, 15 and 16. Work on these is presently moving well and their installation should impose no foreseeable delay on the job.

Monitoring Report #25
DWSO
Waste Water Treatment Facilities
Page four

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

We next turned to a review of installation of work that could be done prior to the shutdown. Several shutdown related operational activities can be started before the actual shutdown begins.

These must be evaluated carefully since deliveries will frequently be the point from which installation times are measured. We tried to cover this in detail today but unfortunately were not able to set durations on many of the early construction tasks.

It was assumed to shut the plant down would take about 10 working days after the pre-shutdown work has been done. The shutdown of the plant will be done over the 10-day period of time following which construction work will start on items 1, 2, 4, 5, 6, 8, 9 and 10.

The desired date for the shutdown is sometime in late 1980. However, from the present plant it may be considerably later and last longer than originally projected. If this is significant, the present planning philosophy should be gone over with Mr. Stewart and suggestions made now for changes in the relation between front end pre-shutdown and shutdown operations.

Tracings, sheets 1, 2, 3 and 4, Issue #2, dated September 21, 1979 (working day 950) were left with Mr. Stewart for printing and distribution. I strongly recommend that every member of the project team be given a copy of the planning work done to date and become thoroughly familiar with it and the obligations that their department has during this shutdown program.

I shall be in touch with Mr. Stewart shortly to set the next monitoring, diagramming and planning session.

Ralph J. Stephenson, P.E.

RJS:sps

Mr. Ken Stewart (original)

cc: Mr. Willie Wilson
Mr. Darrel Suhre

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

November 20, 1979

Subject: Monitoring Report #26
Detroit Water and Sewer Department (DWSD)
Waste Water Treatment Facilities and Water System

Project: 76.45

Date of Monitoring: October 31, 1979 (working day 978)

Actions taken:

- Made status assessment of capital improvement program items

General Summary

The objective of this session was to initiate a full discussion and planning process for capital improvement programs through 1980 and further as needed. Those attending included:

Mr. K. Stewart
Mr. L. Ilicu
Mr. J. Carethers
Mr. J. Wickey
Mr. F. Pollard
Mr. E. Johnson
Mr. R. Connors
Mr. R. Kellis
Mr. D. Yang
Mr. C. Chapin
Mr. J. Marougy
Mr. D. Cotter
Mr. N. Akkam
Mr. D. Suhre
Mr. G. Gray
Mr. R. Stephenson

The basis of our discussion was the master list of capital improvement projects, prepared by the staff, and identifying each program by cross referenced item numbers. Mr. Suhre requested we begin the discussion by evaluating Mr. Chapin's projects.

Since the discussion was very complex and dealt with a wide-ranging scope of work, it was felt that a detailed summary of the session would best be prepared by the

Monitoring Report #26
DWSD Waste Water Treatment Facilities
Page two

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

PPMCS and staff. Therefore, in my report, I shall only touch briefly on each of the programs reviewed with the expectation that additional data evolving from this meeting will be recorded and reported by members of PPMCS.

Mr. Suhre emphasized the need to maintain communications on these capital improvement programs and to constantly identify the current status of each. He stressed that the DWSD must not lose sight of where it stands on each project. This is particularly important since many of the projects require step 2 or step 3 grant funding.

I shall report below on each program by the item and related item numbers given on sheets 1-13 of the document entitled, Index for Engineers Estimates and Supporting Documentation, (June, 1979 issue). We assigned a degree of criticalness to each project that will allow us to focus attention on the highest priority needs. These were tabulated by the PPMCS staff and are available as required.

The name of the item is not reported below since simple titles to each of these projects are difficult to define. For full descriptions of each, please refer to the capital improvement document noted above.

1-40

Identified as a very critical program. There is a need to diagram the work required up to advertising for proposals.

2-41

A consultant's design project due to be completed by March 1980. Design work is funded but a step 3 grant will be required. The program is moderately critical.

3-42

A program combined with 2-41 and presently in preliminary contract document preparation. Contract documents will be ready by March, 1980.

4-45

In construction.

Monitoring Report #26
DWSD Waste Water Treatment Facilities
Page three

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

5-44

The PC-449 project with contract documents expected to be done by January 2, 1980 (working day 1020) by the consultant. This work must be tied into the projected plant shutdown.

6-146

Also ties in to the total over haul and updating of the plant control system.

It was suggested at the meeting that the matter of control updates at the plant be completely re-examined to determine their status and the method by which renovation will occur.

7-107 (PC-446)

Plans and specifications are in for departmental review and soon will be ready to send out.

8-46 (PC 451)

Program financed for design with design due to be done by late 1980.

13-137

Preliminary design is in for departmental review and should be ready for issue in two weeks. The item is an integral part of the plant shutdown and will require careful in-house management since there are some early procurement items that DWSD is to obtain.

Contract documents for the two valves to be bought by DWSD are expected to be issued in approximately ten working days. A brief decision analysis was made of the step 2 and step 3 grants required for this project. This material is now under study by the project team and PPMCS.

14-138

Some work being done in the field at present. Work plan for the remainder of the program is being reviewed in-house.

15- (53.109)

This program deals with a third power source. We will be ready to apply for the step 2 grant in approximately ten working days.

Monitoring Report #26
DWSD Waste Water Treatment Facilities
Page four

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

28-140

Design work presently in negotiation with the consultant. It will be necessary to get a step 2 grant once modifications to be made have been agreed upon with the consultant.

29-141

A part of consultant's 2-A work (see 28-140).

31-83 (PC-276)

Work is being held by protests relative to primary tanks 15 and 16. There is to be a written disposition by next week.

38-84

Project under construction. Tie ins to the plant will be made during a plant shutdown.

37-85

In construction and according to DWSD staff, on schedule.

39-86

This activity is electrical renovation work and there has been some delays to it due to summer testing. However, the project is moving fairly well now.

40-1, 41-2, 41-3

These items deal with construction of item 1-40, 2-41, and 3-42.

44-5

The construction phase of 5-44.

45-4

The construction phase of 4-45.

46-8

Related to 8-46.

48-148

This program deals with increasing RAS capacity through increasing pump capacity. It will be in 2-B of CS-822 and needs a step 2 grant.

49-149

Project 2B of CS-822.

Monitoring Report #26
DWSO Waste Water Treatment Facilities
Page five

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

50-147

A part of 2B of CS-822.

51- (55.163)

Related to CS-828, the disinfection facility.

53- (15.109)

Deals with the third power source. Related to 15- (53,109).

54-179

Present work is concentrated on setting the location of pump station #2. Will need a step 2 and step 3 grant.

55- (51.163)

A design work report is presently being prepared, with completion of the report depending upon plant staff input. The design report will be completed in about four months. A step 3 grant will be required.

56-22

Related to 22-56.

63-169

A close-circuit TV system study being worked upon now. It is expected the study will be completed in July 1980.

64-164

Part of CS-849. Design work to be completed between January 2, 1980 (working day 1020) and April, 1981. Work deals with a scum transport system.

62-113

A new chemical facility. Contract documents are to be complete December 3, 1979 (working day 1000). They will then be issued for internal review.

65-65

A collection of grant items deferred during the summer test period. Assignments will be made internally.

Monitoring Report #26
DWSO Waste Water Treatment Facilities
Page six

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

69-43

Design complete.

75-112

Final design memo will be available next week. The project deals with renovation of the chlorination system.

114-156

Design is complete and contracts are expected to be issued for internal review by January 2, 1980 (working day 1020.) Installation of this work will probably start next fall. Consists of work on level controls at the aeration basin.

115-142 (CS-822)

The work plan has just been submitted by the consultant.

116-143 (PC-451)

In design. Contract documents to be issued January 2, 1980 (working day 1020.)

117-145

Program is a dissolved oxygen measuring system. The scope of work is to be further identified and clarified.

118-132

Part of the consultant's 2B program. Will be in the future.

119-133

2B work will be done later. The revised study report will be based upon plant testing and the 2B work plan is to be submitted in July 1980. It will be used to obtain a step 2 grant.

120-134

Same status as 119-133.

121-135

In the 2A portion of the program.

Monitoring Report #26
DWSO Waste Water Treatment Facilities
Page seven

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

122-122

Deals with preparation of plant schematics. No report.

123-123

Deals with plant record drawings. No report.

124-124

Program to be done in-house.

130-139

Part of the consultant's 2A work.

131-144

Part of the consultant's 2A work on the back up water system.

136-136

Deck renovation in the 2A scope of work. It must be set up as a design item.

150-150

A part of a long range plan. Mr. Johnson will handle.

177-189

Will be in part 3 of the consultant's program.

182-182

Related to items 48 and 50. Will be in the 2B package.

185-190

Part of the long range planning program.

Although we were not able to accomplish as much of the capital improvements programs as we had desired, a format has been established for maintaining communications regarding the current status of the projects. Mr. Suhre has requested

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

Monitoring Report #26
DWSD Waste Water Treatment Facilities
Page eight

that the PPMCS group in conjunction with the lead consultant focus heavily on obtaining standards of performance from each of the managers in charge so as to identify critical elements in each of the items in the capital improvements program. We shall continue to work on this as directed in future planning sessions.

Ralph J. Stephenson, P.E.

RJS:sps

To: Mr. Ken Stewart (original)

cc: Mr. Darrel Suhre
Mr. Willie Wilson

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

January 13, 1980

Subject: Monitoring Report #27

Detroit Water and Sewer Department (DWSD)

Waste Water Treatment Facilities and Water System

Project: 76:45

Date of Monitoring: January 9, 1980 (working days 1025)

Actions taken:

- Worked on developing plan of internal department organization to perform planning and monitoring and to general control tools, and specific techniques for planning, monitoring, and controlling within the engineering division of DWSD
- Established actions to be taken now to make department functional as an internal planning, monitoring, and control unit within the next 12 months (Note: To avoid premature typing of the nature of the department, we will refer to it in this report as department X.)

General Summary

Those attending the meeting included:

Mr. John Wilburn
Mr. Dave Cotter
Mr. Manesh Mandavia
Mr. Jim Carethers (part-time)
Mr. Willie Wilson
Mr. Don Dix
Mr. Ken Stewart
Mr. Darrel Suhre (part-time)

At the morning session, we established that activities which are the basic responsibility of department X include:

Plan A. To plan project actions (a logic sequence to do the work)

Plan B. To monitor project actions as they actually occur

Plan C. To provide tools for controlling the project actions as required

Plan D. To develop specific techniques to use in planning,

monitoring, and controlling projects

On any given program, department X service could be provided totally or in part.

Next, it was determined that within the DWSD there are several organizations that might ultimately make use of department X's services. These include:

- Engineering
- Construction
- Sewage treatment plant
- Water treatment plant
- Mechanical maintenance (buildings, grounds and equipment)
- Maintenance and construction (distribution system mains)
- Administration and legal
- Accounting
- Commercial
- Personnel

For the time being, it was decided we would concentrate on providing services A, B, C, and D for the engineering and construction function only. We then determined it would be necessary to develop the department X, internal to DWSD, within the next 18 months. To do this, it is essential that the plan of work for setting objectives, goals, responsibilities, authority, procedures and needs along with the organization of department X should be done now.

So we prepared a network model which indicated activities of the present staff of department X needed to generate future internal full scale capabilities. In the network models, sheets 1 and 2, Issue #1 dated January 9, 1980, the activities to accomplish this are shown. Unique responsibility codes for this plan are given in the lower left hand corner of sheet #1. Since each of the activities on the network require further elaboration, a description of each task and what it encompasses is given below. This description refers to the

the letters assigned to the tasks shown on the network modal sheets.

Item A. Prepare and submit rough draft of method to be used to assign project priorities for department X work.

This activity presumes that a list of projects is available to which priorities for department X work could be assigned. The criteria for assignment should be of a nature that allows changes to the priority listing to be made easily as demanded by current needs. The criteria should be fully described and justifiable.

Item B. Review and comment on rough draft of method of assigning project priorities.

It was decided that evaluation of the A draft should be done by a review and comment team to be selected by the staff of the present PPMCS and their management.

Review and comment activity is basically to insure that the methodology of assigning priorities is acceptable to all who must work with the system.

Generally, it should be considered that priorities assigned are for a limited time only and subject to periodic review.

We discussed very briefly the length of review period and established that it could be anywhere between one week and one month. In any event, the period should be long enough so work continuity can be maintained within the period but not so long that it destroys the ability to revise priorities as needs arise.

Items C and D. Prepare and submit final draft of methods to assign project priorities, and to review and approve the final draft of priorities assignment method for department X projects.

At this point, the priority assignment method has been set down in detail, reviewed and commented upon by all, and finally approved by DWSD management. It should now be an operative system to be used immediately to assign work on an ongoing basis.

It should be noted that the objective of this entire sequence of work to get department X on line step by step. Thus, as the priority-setting mechanism has been established, it should be put to use immediately.

Item E. Prepare and submit standard approval logic plans.

These are logic plans, quantified or not showing the approvals required from internal DWSD departments, EPA, DNR, Corps of Engineers, City of Detroit, and all other involved agencies. We already have considerable data on these activities, but diagrams which can be used for standard insertions where approvals are needed should be con-

tinually modified to reflect current information.

It should be kept in mind while preparing the standard laundry lists and logic plans, that department X's objective is to minimize involvement of people who are not concerned or who have little or no input to be given or gain to be realized from the planning session. In other words, department X should be able to begin every planning session with only those people required in attendance so a minimum of lost individual time is experienced.

By pre-establishing the planning and meeting criteria, and data we can optimize and make most effective each person's involvement in that specific meeting since we discuss, as nearly as possible, only those things for which his presence is essential.

Item F: *Review & approve Standard* approval logic plan.

The approval plan may be prepared by department X in conjunction with individuals, *depts, or orgs.* organizations. They may or may not all be at the same meeting *together* so, once the approval diagram is prepared, quantified, and reviewed internally, it should be submitted to those who must be governed by it. This could include EPA, DNR, Corps of Engineers, City of Detroit and others. Responsibility for obtaining this review and approval should be vested with department X.

Items G and H. Prepare and submit consultant procurement logic plans and review and approve consultant procurement logic plan.

Frequently, the DWSD has run into procedural problems in the acquisition of consultants. This is normally a time consuming process and one which must be thought through very carefully if it is to be completed in the proper amount of time and detail. The process is clearly enough defined now, so it was felt that a laundry list for procurement, could be prepared and the activities and relation of these activities combined into a quantified logic plan to produce a standard network model.

Items I and J. Prepare and submit a contract document preparation standard laundry list and review and approve the contract document preparation standard laundry list.

Preparation of contract documents for most facilities, involves certain tasks necessary for every design process. The identification of these tasks is complex since they deal, not only with design of a sheet of tracing paper or a specification page.

In establishing standard laundry lists for preparation of contract documents, it should always be kept in mind that the end product is a set of working drawings and specifications; and it is the production

of these that we are concerned with. However, it will be found that there are certain standard elements of every contract document package such as floor plans, foundation plans, beam and slab schedules, large scale sections, elevations, piping plans, and profiles that the preparation of does repeat from project to project.

Items K and L. Prepare and submit study standard laundry list and review and approve study standard laundry list.

Studies are prepared as a prelude to preparation of contract documents. Most frequently these are a part of the step #1 grant period. They may be done externally or sometimes by DWSD staff. The laundry lists should encompass both procedures. As with other items, a review and approval team should be designated to insure that the proper and appropriate logic and durations are generated for each of the network models.

Items M, N, O, P, Q, and R. Prepare, submit, review, comment, and approve standards for project planning.

The elements included in this series of tasks concern the procedures and guidelines for how projects are to be planned within the DWSD organization.

Items included in the standards might be:

- Steps in the planning process
- The planning techniques to be used
- What is required for the planning meeting?
- Who should attend the planning meetings?
- How do we estimate resources required?
- What is the format, agenda, and purpose of planning meetings?
- What is the memo form for calling the planning meetings?
- What translations are to be made from the network model?
i.e, bar charts, computer runs, slant charts, narrative schedules, item processing schedules, purchasing schedules, procurement schedules or other.
- How to prepare the laundry list prior to the meeting
- What is the end product of the planning meeting?

Page six

- How are interrelationships with other projects determined?
- How are, or where do we obtain authentic data by which to quantify the networks? This might include consideration of cost data, manpower loading requirements, durations allowable, and other constraints that might be a part of the logic planning.

Item 8. Prepare first draft department X organization and operation work plan.

Preparation of the first draft is shown following completion of the rough draft of standards for project planning. At that time, it should be possible to begin projecting the resources required, the organization needed and the authority, responsibility, and duties of department X. Probably a total operational plan for department X cannot be completed until a full evaluation has been made of not only the planning function but monitoring, development of control tools, and the development of specific techniques to plan, monitor and control projects.

* * * * *

At this point in our session, we paused for a review of the methods by which logic plans were prepared, quantified, and translated into schedules. It was pointed out that planning precedes scheduling, and that the scheduling process is where each task is locked into a fixed start and finish planned position.

The network plan quantified and calculated allows the scheduler to select times between the bracket of early and late starts and finishes at which he wishes to actually do the job so as to be effective and profitable.

Next, we discussed phase B of the department X activity. Phase B concerns monitoring. We were not able to diagram preparation of the various steps to be taken in developing a monitoring system; however, a random laundry list was developed from which the department will continue preparing the logic model as started on sheet X-1.

Laundry list items for Phase B include:

- Prepare and submit standards for project monitoring.
- Prepare and submit lead consultant system turnover requirements.
-

- Locate and evaluate available data processing sources.
- Review and evaluate data processing software requirements.
- Prepare and present monitoring system orientation to staff affected.

In the preparation of standards for project monitoring, it is important to remember that monitoring is essentially the comparing of actual project status to the accepted and approved logic plan standard of performance. Monitoring must be done on a constructive rather than destructive basis since it must always lead to improved project performance. Thus, it is a sensitive tool and, when used properly, can be a great force toward a constant raising of performance levels.

It can be used as a motivator and will be effective so long as the monitor uses the network model as a tool rather than as a club.

At our next session, we should plan to evaluate progress made toward producing the long-range plan for making department X operable as an internal planning, monitoring, and control unit over the next 18 months. The amount of work required is large enough so that careful attention will have to be paid day in and day out to preparing the plan as well as carrying out day to day diagramming activities on current critical projects. This is a matter which must be worked out between Mr. Stewart and the DWSD management.

I shall plan in my work to assist to the greatest degree possible in both long and short range planning, with emphasis being placed where specialty diagramming talent is needed on preparation of network models for specific well-identified critical programs.

I shall be in touch with Mr. Stewart shortly to set the next session.

Ralph J. Stephenson, P.E.

RJS/lrm

To: Mr. Ken Stewart (original)

cc: Mr. Willie Wilson
Mr. Darrel Suhre