RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

October 20, 1972

Subject: Monitoring Report #1

Flint River Flood Control Project

Flint, Michigan

Corps of Engineer Contract: DACW35-72-C-0044

Project: 72:49

Date of Monitoring: October 17, 1972 (working day 204)

Monitored from Issue P1 and P2 dated August 28, 1972 and October 17, 1972

Actions taken:

- Continued diagramming project
- Reviewed external influences on project
- Reviewed job planning details with field forces

General Summary

The project has been divided into the following sectors:

- Kearsley Street Bridge
- Second Street Bridge
- Section A (Station 5.00 to 12.85)
- Section B (Station 12.85 - 22.85)
- Section C (Station 22.85 - 34.59)
- Section D (Station 34.59 - 52.97)
- Section E (Station 52.97 - 60.73)

- Section F (New Channel Work - Station 60.73 - 71.50)
- Section G (Station 71.50 - 89.45 POE)
- Section H (Old Channel Work - Station 60.73 - 71.50)

In these monitoring reports, we will evaluate work on each section in accordance with the above designations.

Kearsley Street Bridge

Basic work here involves construction of south and north wing walls. There is a need to relocate an overhead electrical line prior to driving the north half sheet piling. Mr. Wilkins of the City of Flint said that according to latest information, Consumers Power would be able to do this about 1 December 1972 (working day 236) at the earliest. This is a serious problem since construction of the wing walls at the Kearsley Street Bridge is important to releasing other early work in the channel which it spans. Another element restrained by essential start of work at Kearsley Street is relocation of the sanitary sewer after sheet piling has been driven. This sanitary sewer work restrains major riprap work in Section A. Since placement of riprap is a major work item, it is essential that its start be expedited wherever possible. The sequence on the construction of the Kearsley Street wing walls is roughly to lay out and then drive the south and then north half sheet piling after which the wing walls are constructed, cured and stripped.

Second Street Bridge

Operations will move from Kearsley Street to Second Street where again we have a problem of relocation of overhead electrical lines. We are assuming that the north half sheet piling at Second can be started by about November 20 which is when the south half sheet piling at Kearsley Street has been driven. While waiting for overhead electrical lines at Kearsley to be relocated, the rig will move to Second Street and drive both north and south halves, moving back to Kearsley Street in early December. It should be noted that a mix design must be available in order to place concrete at the two bridges.

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Section A (Station 5.00 - 12.85)

It is intended to put this work in the field immediately by completing engineering, clearing and grubbing as quickly as possible and moving on to the shaping of the channel. It would be desirable to relocate the flood lights prior to channel shaping. The city is now getting an estimate from Chevrolet on removing these flood lights and I suggest this be expedited.

After shaping the channel, a plastic filter sheet is laid, followed immediately by placement of riprap. Presently it appears that riprap will start sometime the middle of November, probably about November 9, 1972 (working day 221). As has been mentioned, riprap is a major task and the contractors would like to develop continuity in its placement. Therefore, they are working now to obtain sources that will guarantee this continuity to acceptable standards.

Following placement of riprap and within seasonal time restraints, sodding, seeding and tree planting will follow. Utility modifications in Section A are numerous but small. However, one of these, 13L, is a modification by the city and should be watched so the city is able to construct it when contractors are ready.

Section B (Station 12.85 - 22.85)

Section B is the settling basin area and it is intended that work there will start concurrently with Section A. There are still some items on the site that must be relocated or removed. The major of these is a large concrete mass foundation. There are current discussions about responsibility for removal of this foundation. It should be resolved quickly. Again, the city is getting estimates from Chevrolet on relocating flood lights in the area and Consumers Power is planning relocation of the electrical lines. All of these items restrain completion of the clearing, grubbing and shaping of the channel.

Section C (Station 22.85 - 34.59)

Section C will also be concurrent with Sections A and B. Here the shaping of the channel as restrained by excavation, filling and compaction of the inspection and cutoff trench. Other than that, the procedure is similar to work in other sections.

Section D (Station 34.59 - 52.97)

Section ED is to follow in sequence on engineering, clearing, grubbing, shaping of the channel, and placement of riprap, completion of the corresponding operations in Section C. It should be noted that Section D includes a small 200' plus or minus length of Schwartz Creek to POE at 2.84.

Section E (Station 52.97 - 60.73)

Section E is restrained in engineering, clearing, grubbing, channel shaping and riprap by completion of these items in Section D. Its sequence is similar to D. (Note: Riprap dates for each section are based upon optimum expediting of approval of sources and delivery of appropriately sized rock. Since it is desirable to place riprap early for protection of shaped channel bottom and sides, I suggest that careful attention be paid now to expediting delivery of riprap to the greatest extent possible.)

Section F (New Channel Work - Station 60.73 - 71.50)

This section encompasses the present City of Flint yard which will be abandoned. There is some Consumers Power work, relocating existing utility poles along with other minor operations to be accomplished by others. The construction sequence is similar to other sections except here we are building an inspection trench concurrently with shaping of the channel. The sequencing of Section F relative to other sections has not been established as yet.

Section G (Station 71.50 - 89.45 POE)

Here we move back to a somewhat standard shaping and riprapping operation on through to completion of this section of the channel.

Section H (Old Channel Work - Station 60.73 - 71.50)

Upon completion of Section F and diversion of the Flint Creek to its new channel, the railroad bridge at station 63+, along with the city's existing vehicular bridge, can be removed which will allow work to proceed on the old channel. Operations basically deal with reinstallation of riprap, new rail, new storm drains and filling the present channel.

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General Summary

Work is now actively getting underway for installation of wing walls at Kearsley Street and Second Street, along with start of operations in Sections A, B and C of the new channel work. Critical items presently include:

- Consumers Power work on relocation of overhead lines
- Removing existing foundations in Section B
- Approving riprap sources
- Preparing shop drawings and obtaining approvals for early resteel
- Obtaining approvals on design mixes for concrete
- Installing appropriate safety equipment on major early equipment to be used on the site
- Approving a quality control program

We will now draft the rough network, Issue P2, into final form for continued review and discussion by the contractors. Once the logic plan has been redrafted, durations will be checked and unit costs assigned to each task in the diagram.

Ralph J. Stephenson, P.E.

RJS/m

To: Mr. Joe Pence

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

January 29, 1973

Subject: Monitoring Report #2

Flint River Flood Control Project

Flint, Michigan

Corps of Engineer Contract: DACW35-72-C-0044

Project: 72:49

Monitored from Issue #1 dated 27 November 72

Date of Monitoring: January 24, 1973 (working day 272)

Note: The monitoring was projected to January 25, 1973 for billing purposes

Actions taken:

- Completed assignment of costs and all rough diagramming for D contract work
- Inspected C contract work
- Evaluated job progress
- Reviewed billing report for January 25 with Capt. Lorber
- Evaluated job progress with staff of contractors

General Summary

The number of working days the project is currently ahead or behind the contractor's scheduled dates (early starts and early finishes) is shown on the Mathematical Analysis - Job Status sheet dated as of January 25, 1973. From this analysis the project lags these early start/early finish schedule dates on items to be accomplished in the field from 0 working days on up as high as 117 working days on certain actions to be done by others. The percent of jobs complete on the project has been entered into the montly Pay Estimate sheets which will be submitted with the billing request.

Evaluating each area of the project, we find the following:

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Kearsley Street Bridge

Work at the Kearsley Street bridge has proceeded to a point where it now requires pricing and approval of a current modification. This is in work presently. Work at Kearsley Street is currently 45 working days behind the early start/early finish schedule.

Second Street Bridge

Second Street bridge work is currently 28 working days behind schedule. There is also a modification pending that is currently being priced for approval.

Section A, Station 5.00 - 12.85

This area is currently about 52 working days behind early start/early finish schedule. It has been difficult to initiate work on shaping the channel in this area due to high water and extensive flooding conditions experienced over the past two months. Although the work shows a large lag over early start/early finishes, the contractor believes by some rescheduling and by use of his float time that it can be completed within the schedule limits.

Section B, Station 12.85 - 22.85

This area currently lags from 27 - 45 working days. The smaller lag is in the completion of channel shaping which was restrained by relocation of electrical lines by others. This work was not completed until December 23, 1972 and delayed operations in that area. The longer lag is in construction of utility modifications and there is currently a modification to this task which is in work being priced for approval.

Section C, Station 22.85 - 34.59

This area currently lags by about 54 working days over early start/early finish dates. The problem here has been the lack of suitable material with which to fill the cutoff trench. Delays to approval of this material directly affected the area and

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Section C, Station 22.85 - 34.59 (continued)

forced operations into extremely cold and wet weather which has contributed to very slow field progress and in some cases, difficulty if not impossibility of proceeding.

Section D, Station 34.59 - 52.97

This area is currently 15 days behind in channel shaping due to high water experienced in the last month. This is a critical area and should be re-evaluated along with sections E, F, G and H at an early date.

Section E, Station 52.97 - 60.73

This area is in substantial alignment with early start/early finish schedule dates.

Section F, New Channel Work, Station 60.73 - 71.50

This area is currently 27 working days behind early start/early finish dates, primarily in channel shaping operations. Design here was revised by the Corps of Engineers and processing of this for approval is now in work.

Section H, Old Channel Work, Station 60.73 - 71.50

Work has not yet begun at this area since it is restrained by new channel work.

Section G, Station 71.50 - 89.501 P.O.E.

This area is currently 28 working days behind early start/early finish dates, primarily because it was set as a sequential operation with other areas.

The project is being evaluated in accordance with the early start/early finish dates as shown on the Computer Printouts and on the network drawings where all dates are shown, along with the Job Status and the Pay Estimate evaluation. These documents are all available and are currently being used for evaluation and for preparing pay requests.

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RJS/m

To: Mr. Joe Pence

RALPH J. STEPHENSON, P.E.
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March 1, 1973

Subject: Monitoring Report #3

Flint River Flood Control Project

Flint, Michigan

Corps of Engineer Contract: DACW35-72-C-0044, Sections C and D

Project: 72:49

Date of Monitoring: February 23, 1973 (working day 294)

Monitored from Issue #1 dated 27 November 1972
Section D, sheets 1, 2, 3 and 4

and 27 January 1973 - Section C, sheets 5, 6

Note: The monitoring was projected to February 25, 1973 for billing purposes

Actions taken:

- Inspected project
- Conferred with contractors and Corps of Engineers re job progress
- Evaluated job progress
- Reviewed monitoring status report for February 25 with Captain Lorber

Contract D General Summary

The number of working days the project is currently ahead or behind the contractor's scheduled dates (early starts and early finishes) is shown in the Monitoring Status Report as of February 25, 1973 - Mathematical Analysis - Job Status. From this analysis the project lags early start/early finish schedule dates on items to be accomplished in the field from 0 working days up to as high as 139 working days on certain actions to be done by others. The percent of job complete on the project has been entered into the monthly Pay Estimate Sheets which will be submitted with the billing request. Also to be submitted with this billing request are the Monitoring Status Report and the written monitoring report #3.

Evaluating each area of the project for Contract D, we find the following.

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Kearsley Street Bridge

Work at the Kearsley Street bridge has proceeded to the point where a portion of the early forming, reinforcing and pouring of the south wing walls has been put in work and slightly more than half of the north wing walls have been formed, reinforced and poured. This area currently lags early start/early finish schedule dates by approximately 64 working days.

An evaluation of late starts and late finishes shows that the tasks are using substantial amounts of their float time, however, we still have days available before we pass late starts/late finishes.

Second Street Bridge

Second Street bridge work is currently 53 working days behind early start/early finish schedules. A modification has been priced and will be submitted in the near future.

Evaluating the Second Street bridge against late starts/late finishes, we find that wing walls currently lag by about 35 working days. The reason for this lag is that the south wing wall at Second Street restrains completion of riprap from station 12.85 to 22.85 in section B. This riprap was to be laid sequentially on through section B, section C, section D, section E, section F and in turn, restrains diversion of Thread Creek to the new channel. The diversion allowed the existing railroad bridge at the DPW yard to be reinstalled by August 1, 1973. The lag can be reduced by shifting the end date of putting the railroad bridge at the DPW yards in service to a later date. However, here we must be careful to watch the impact of weather on the placement of riprap and seeding and sodding, particularly that of starting late and running into winter conditions in 1973 - 74.

It should be pointed out that riprap is not yet approved and therefore, there will be delays to delivery of material and placing riprap that will have to be re-evaluated in the very near future.

Section A, Station 5.00 - 12.85

This area currently lags early start/early finish dates by about 75 working days in clearing and grubbing. Also, the section is now beginning, as of February 23rd, to lag late finish dates. (Note that the late finish on task 97 - 71 clearing and grubbing was February 23, 1973 (working day 295). Thus, the lag over late start/late finish dates is currently about two working days.

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Section A, Station 5.00 - 12.85 (continued)

Again, we do have end time restraints on seeding and sodding which are seasonal restraints and which, in turn, are influenced by riprap. The objective is to complete all work by December 1, 1973 and therefore, it would be undesirable to relax any of these seasonal end time restraints on the items that presently restrict and discipline the job.

Section B, Station 12.85 - 22.85

This area currently lags early starts/early finishes by about 49 working days. Shaping the area is the lagging item and it is also behind late start/late finishes, since it is critical. The critical path here runs through completion of shaping and placing of riprap. The discussion of riprap above is applicable here.

Section C, Station 22.85 - 34.59

This area currently lags early starts/early finishes about 73 working days. The lag is in a critical path item and therefore, the lag behind late start/late finish dates is the same. Again, the delay is imposed by the need to maintain a sequence on riprap on through to placement of the railroad bridge at the DPW yards. There is some time that can be taken up by a doubling of crews on placement of riprap. However, it points up the essential nature of carefully replanning installation of riprap at an early date.

Section D, Station 34.59 - 52.97

Section D currently lags by approximately 37 working days over early start/late start:early finish/late finish dates. The lag is in shaping the channel which was restrained by completion of channel work in section C. It is, however, the contractor's intent to start shaping the channel in D immediately without waiting for completion of section C. This should help pick up some of this lag and help ease the difficulties anticipated in meeting seasonal time restraints imposed upon seeding and sodding this year.

Section E, Station 52.97 - 60.73

This area is still in substantial alignment with late start/late finish dates although no work has been done in section E since the last monitoring. Shaping the channel in section F is scheduled for March 1, 1973 and it is critical.

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Section F, New Channel Work, Station 60.73 - 71.50

The work accomplished here over the last month has been to complete driving the steel sheet piling wall at the yard. There is currently in work two modifications on the wall and one modification on the channel dealing with the location and slope of the banks.

The work currently lags early start/early finish dates by about 57 working days.

Section H, Old Channel Work, Station 60.73 - 71.50

Work has not yet begun at this area since it is being restrained by new channel work. This is the section of the project that contains the railroad bridge at the DPW yards which was mentioned earlier as restrained by riprap installation.

Section G, Station 71.50 - 89.501 P.O.E.

This area currently lags early start/early finish dates by 50 working days. However, there is considerable float time available in this section and currently it does not represent a major lag over late start/late finish in evaluations.

Contract C General Summary

Contract C work is underway with mass excavation for the diversion channel a little more than half complete. Currently lags in the Contract C work behind early start/early finish dates range from 0 - 54 working days. This lag is primarily due to some difficulties encountered in rejection of drawings submitted for the GTW bridge temporary structure. We had anticipated in preparing the plan of construction that we would have these available by an early finish of January 16th, at which time it was hoped we could begin fabrication and delivery of the GTW bridge temporary supports. It is possible by reworking the logic to gain a small amount of time. However, we will have to take another close look at the entire sequence on the bridge and the bridge pier structures once we have all approvals in hand. At this time we will re-evaluate and probably update the network.

Ralph J. Stephenson

Ralph J. Stephenson, P.E.

RJS/m

To: Mr. Joe Pence

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER
March 28, 1973

Subject: Monitoring Report #4

Flint River Flood Control Project

Flint, Michigan

Corps of Engineer Contract: DACW35-72-C-0044, Sections C and D

Project: 72:49

Date of Monitoring: March 23, 1973 (working day 314)

Monitored from Issue #1 dated 27 November 1972
Section D, sheets 1, 2, 3 and 4

and 27 January 1973 - Section C, sheets 5, 6

Note: This monitoring was projected to March 26, 1973 for billing purposes

Actions taken:

- Inspected project
- Conferred with contractors and Corps of Engineers re job progress
- Evaluated job progress
- Reviewed monitoring status report and monthly pay requests for March 26th with Captain Lorber

Contract D General Summary

The number of working days the project is currently behind the contractor's scheduled dates (early start and early finish dates) is shown on the Monitoring Status Report as of March 26, 1973. From this analysis the project lags early start/early finish schedule dates on significant work from zero to 107 working days. The percent of work complete has been entered into the monthly pay estimate sheets which will be submitted with the billing request. Also to be submitted with this billing request are the Monitoring Status Report and the written Monitoring Report #4. Evaluating each area of the project for Contract D, we find the following:

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Kearsley Street Bridge

There is still some work to be done on completing pours at the wing walls but here the work is on time in relation to late start/late finish dates except for others relocating sanitary sewer lines. This has been held due to field conditions which make it undesirable to reroute these at the present time. Generally, although the project lags early start/early finish dates by 79 working dates, it still is within the late start/late finish sequence.

Second Street Bridge

This facility is substantially complete with only a small amount of concrete yet to be poured.

Section A, Station 5.00 - 12.85

This area currently lags early start/early finish dates by about 94 working days in clearing and grubbing. It also lags late start/late finish dates with the late finish on start of shaping channel due for February 26, 1973. This work is not yet started and puts the project about one month behind late start/late finishes.

Section B, Station 12.85 - 22.85

This area currently lags early start/early finish dates by about 46 working days. At present the high level of the Flint River prevents major work from proceeding in this area. In addition, construction of outlet structure #1 is held by a modification from the Corps. This must be released and constructed before utility modifications can be built. These, in turn, restrain the laying of plastic filter sheets which constrain riprap.

Section C, Station 22.85 - 34.59

This area lags early start/early finish dates by about 86 working days. The lag is in critical path items, at present, in shaping the channel. As pointed out in Monitoring Report #3, the reason for these lags being serious is the restraint they place upon riprap. On the riprap sequence it ran through placement of the railroad at the DPW yards and proves in the analysis to be a critical item. Since the lag is in critical items, we find the actual lag is the same as the lag over scheduled dates.

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Section C, Station 22.85 - 34.59 (continued)

It should be kept in mind that the lag here has been caused by various reasons, the prime of which was that suitable fill material for the cutoff trench could not be found and approval of a substitute was delayed.

Section D, Station 34.59 - 52.97

Section D currently lags by about 56 working days over early start/early finish dates. This lag is in shaping the channel which was due to start by January 4, 1973. The item was critical and therefore, the 56 working days is also a lag over late start/late finish dates.

It was pointed out in the Monitoring Report #3 that work was to start immediately in Section D; however, soon after equipment was moved to the area, high water prevented establishing a working schedule. It is still the intent to move into Section D as soon as natural conditions permit.

Section E, Station 52.97 - 60.73

This area has now dropped approximately 16 working days behind in the critical start of channel shaping. The channel was due to start on March 1, 1973. It has not as yet started.

Section F, New Channel Work, Station 60.73 - 71.50

Work here has come to a standstill due to excessively wet soil conditions. A late start on excavation of the inspection trench was March 8, 1973. It has not started as yet.

Section H, Old Channel Work, Station 60.73 - 71.50

Work has not yet begun at this area, being restrained by new channel work.

Section G, Station 71.50 - 89.501 P.O.E.

This area currently lags early start/early finish dates by 84 working days. However, there is considerable float time available and the area currently does not lag late start/late finish dates.

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Contract C General Summary

The overall lag in Contract C as of March 26, 1973 is about an actual 48 working days over both early starts and late starts. This is primarily in approval of the temporary structure and its subsequent fabrication and delivery to the job site. Originally this material was due to be delivered on March 7, 1973. Now it will be about 20 working days before final approval is given by the Corps and will require an additional 25 working days after approval to fabricate and deliver to the job site. This produces the approximate 48 working day lag. The reason for the lag was the problem in the design computation which has now been corrected and resubmitted.

Ralph J. Stephenson

Ralph J. Stephenson, P.E.

RJS/m

To: Mr. Joe Pence

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

April 25, 1973

Subject: Monitoring Report #5

Flint River Flood Control Project

Flint, Michigan

Corps of Engineer Contract: DACW35-72-C-0044, Sections D and C1

Project: 72:49

Date of Monitoring: April 24, 1973 (working day 337)

Monitored from Issue #1 dated 27 November 1972 for Section D, sheets 1, 2, 3 and 4
and 27 January 1973 for Section C, sheets 5, 6

Actions taken:

- Inspected project
- Conferred with Bert Forsmark re job progress
- Evaluated job progress
- Reviewed and updated monitoring status report and monthly pay requests for April 25, 1973

Contract D General Summary

The number of working days the project currently lags behind the contractor's scheduled dates (early start and early finish) is shown on the monitoring status report as of April 25, 1973. From this analysis the project lags these early start/early finish dates on significant work from 0 - 118 working days. Percents of work complete have been entered into the monthly pay estimate sheets which will be submitted with the billing request. Also, submitted with this billing request will be the monitoring status report and the written monitoring report #5.

Evaluating each area for Contract D, we find the following:

Kearsley Street Bridge

The only work remaining at the Kearsley Street Bridge is the modification, which has not yet been approved, and some minor stripping and cleanup work. Also, a relocation of the sanitary sewer is to be done by others. This relocation has been held until it is requested by the excavating contractor. Total work at the Kearsley Street Bridge is still within the late start/late finish range.

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CONSULTING ENGINEER

Second Street Bridge

All work at Second Street is complete.

Section A, Station 5.00 - 12.85

No work has been done on this section since the last monitoring and the area currently lags early start/early finish dates by about 118 working days in clearing and grubbing. It also lags late start/late finish dates primarily in shaping the channel. This task was due to start at a late date of February 26, 1973 (working day 295) and currently lags by 42 working days.

Section B, Station 12.85 - 22.85

Section B currently lags early start/early finish dates by approximately 70 working days.

The level of the river has begun to drop and it is possible that work restrained previously by high water can now be initiated. The lag in Section B over late starts and late finishes is the same as the scheduled lag since shaping the channel which is the lagging item is critical.

Section C, Station 22.85 - 34.59

Section C currently lags early start/early finish dates by about 112 working days. The lag is currently in critical items and therefore represents an actual lag over late start/late finishes.

The reason for these lags being critical is that they run through to placement of the railroad at the DPW yard which is a critical item.

The lag here was initiated by suitable fill material for the cutoff trench not being available and approval of a substitute delayed.

Section D, Station 34.59 - 52.97

Station D currently lags by about 80 working days over early start/early finish scheduled dates. This lag is still in shaping of the channel which was due to start on January 4, 1973. The item was critical and therefore, the 80 working day behind-time is also over late starts. High water has prevented work in this area but now that the level has receded, it is expected that field operations can begin very soon.

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CONSULTING ENGINEER

Section E, Station 52.97 - 60.73

Section E has dropped to approximately 40 working days behind the critical start of shaping of the channel. This work was due to start on March 1, 1973.

Section F, New Channel Work, Station 60.73 - 71.50

Work at the DPW yards has stopped due to a pending modification of side slopes on the channel. This should be resolved at the earliest possible date since the section lags early start/early finish dates by about 100 working days and late start/late finish dates by approximately 29 working days. This is a vital section of the entire channel work since Thread Creek must be diverted into a new channel before work can begin on the old channel and removal of the existing railroad bridge started. We had planned to have the railroad track reinstalled by August 1, 1973. Any lag in starting channel work will be reflected directly in an extension of the bridge date into fall weather, and possibly winter.

Section H, Old Channel Work, Station 60.73 - 71.50

Work has not yet begun at this area, being restrained by new channel work.

Section G, Station 71.50 - 89.501 P.O.E.

This area currently lags early start/early finish dates by about 108 working days. There still is some float time available and the area does not lag late start/late finish dates.

Contract C1 General Summary

The overall lag in Contract C1 as of April 24, 1973 is about 55 - 65 working days. The lag is in the fabrication and delivery of the railroad bridge temporary supports and in approval of the GTW temporary support foundations. Either or both of these could be very serious and are presently delaying the project such that they will have a strong impact upon our target completion date. Construction of the bridge temporary foundations was due to start on March 1, 1973 (working day 298). The work currently lags by 39 working days. There has been considerable work done at the diversion channel and the river is now flowing full in the temporary river bed. The dewatering systems are being installed at areas

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CONSULTING ENGINEER

1 and 2 and observation wells are also about to be put in work at this area.

I suggest every effort be made to concentrate on channel paving since it can now proceed without any major foreseeable delays. Then in the event that time can be picked up on construction in the bridge area, the remainder of the channel will be available for the full river flow when needed.

Reviewing monitoring report #4, it was estimated that about 25 working days would be required after approval to fabricate and deliver the bridge temporary structure to the site. If we assume that approval was obtained on Friday, April 20, 1973 (working day 334), the temporary structure will arrive on the job site using the 25 working days as the fabrication delivery time on May 25, 1973 (working day 359). Work on the GTW bridge temporary support structure was due to start on March 7, 1973 (working day 302) so this gives us a projected lag at the bridge area of 57 working days. It will be important to pick up this lag since work following the bridge all lies on the critical path.

Ralph J. Stephenson

Ralph J. Stephenson, P.E.

RJS/m

To: Mr. Joe Pence

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

May 30, 1973

Subject: Monitoring Report #6

Flint River Flood Control Project

Flint, Michigan

Corps of Engineer Contract: DACW35-72-C-0044

Project: 72:49

Date of Monitoring: May 24, 1973 (working day 358)

Monitored from Issue #1 dated 27 November 1972 for Section D, sheets 1, 2, 3 and 4 and 27 January 1973 for Section C, sheets 5 and 6

Actions taken:

- Inspected project
- Conferred with Bert Forsmark and Joe Pence re job progress
- Evaluated job progress
- Reviewed and updated monitoring status report and monthly pay requests for May 24, 1973
- Reviewed monthly pay requests with Captain Lorber of the Corps of Engineers

Contract D General Summary

The project currently lags behind the contractor's scheduled dates (early start and early finish) as shown on the monitoring status report as of May 24, 1973. The project currently lags these scheduled early start/early finish dates on significant work from 0 to 138 working days. Percents of work complete were entered in the monthly pay estimate sheets and these will be submitted with the billing request. Also submitted with the billing request and the monitoring status report will be the written Monitoring Report #5.

Evaluating each area for Contract D, we find the following:

Kearsley Street Bridge

The only work yet remaining at Kearsley Bridge is the modification which will begin shortly and minor stripping on the wing walls. The work at the Kearsley Street Bridge should be fully complete within the next two to three weeks. There

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CONSULTING ENGINEER

Kearsley Street Bridge (continued)

is no major problem and this work is not restraining any other major elements of the job.

Second Street Bridge

All work at Second Street is complete.

Section A, Station 5.00 - 12.85

No work has been done on this section since the Monitoring Report #5 and the area currently lags early start/early finish dates by about 138 working days in clearing, grubbing and the start of shaping. More importantly, it lags current late start/late finish dates in shaping the channel by approximately 64 working days. These lags in shaping which are showing up throughout the job will begin to impose serious restraints upon completion of work by the close of good weather this year. Therefore, if immediate steps are not taken to begin intensive work on major earth moving in contract D, the project will undoubtedly be extended into winter weather once again and delays with incurring of additional costs are likely.

In Section A there is a slight amount of clearing and grubbing left to do after which shaping of the channel can begin. It is expected that work will start sometime late the week of May 29, 1973. Following operations include the plastic filter sheets and riprap and sod.

Section B, Station 12.85 - 22.85

In Section B most of the major shaping has been completed but the stockpiled soil has to be removed. This is an ongoing operation in work at the present time.

The lag in Section B is now approximately 92 working days over late start/late finishes. This area has been hampered by high water but now that the water level has dropped, it is the intent to move in immediately to complete shaping and get the area ready for riprap.

Riprap is a critical item since we had planned to install the material sequentially, starting in Section B and ranging on through to the Section F New Channel work. Some of this sequential operation may be altered to be concurrent if it appears that progress on riprap can be improved.

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Section B, Station 12.85 - 22.85 (continued)

Important to remember here is that there are seasonal limitations on seeding, sodding and planting. In general, the seeding, sodding and other landscape work must be restrained by placement of riprap and thus, it will be critical to concentrate on riprap to avoid extending major work on landscaping into 1974.

Section C, Station 22.85 - 34.59

Section C currently lags the network by about 131 working days. In conversations with the excavating contractor, it is planned to begin placing the dike within the next week. After the dike has been built work will immediately start on shaping the channel and this should start the major sequence on through from Section C to the remainder of the work.

Section D, Station 34.59 - 52.97

Section D currently lags early start/early finish dates by approximately 100 working days. This lag is directly in channel shaping which was planned to be sequential with the Section C channel shaping. However, it is now planned to work Section C and Section D concurrently and this should help considerably in recapturing some of the current lag time.

Section E, Station 52.97 - 60.73

The lag over scheduled dates here is approximately 60 working days and is directly in channel shaping. Concurrent operations in Section C and D in shaping the channel should relieve some of the lag in Section E. It is possible we will have a separate piece of equipment on Section E within the next two weeks to carry on shaping operations.

Section F, New Channel Work, Station 60.73 - 71.50

Work in the DPW yards is still stopped, being held for the pending modification of side slopes on the channel. The current lag at the section over late start/late finish dates is 40 working days. This is very serious since as has been pointed out in previous monitorings, the work directly affects rerouting of the river and removal of the existing railroad bridge for replacement. This currently appears to be a possible extension into winter weather if the work is not resumed at Section F in the very near future.

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Section H, Old Channel Work, Station 60.73 - 71.50

Work has not yet begun at this area, being restrained by new channel work in Section F.

Section G, Station 71.50 - 89.50 P.O.E.

Section G currently lags early start/early finish dates but has not yet fallen behind late start/late finish dates. It is presently not a critical area although work could be done here in channel shaping at any time. It is expected within the next month work will begin at this section.

Contract C1 General Summary

Construction of the bridge temporary support at the Grand Trunk Railroad was due to start on March 1, 1973 (working day 298). However, this construction work has been delayed due to difficulties in obtaining approval on the design of the temporary supports. If it becomes essential, there is an alternate plan of action at the diversion channel which might be utilized to meet the key target date of September 1, 1973 (working day 428) for completion of the filling of the diversion channel and return of the area for sports parking. It was anticipated that the channels at the bridge would be paved before the water was rediverted into the main channel. However, once the main channel has been paved from Stations 66.02 - 73.22 water can be rediverted into this main channel, irrespective of the condition of the two channels at the bridge. Naturally it is intended that paving at the bridge will move as rapidly as possible but because of delays to installation of the temporary supports, this work now lags late starts by about 60 working days and it does not appear feasible at the present time to compress the schedule and recapture this lost time at this area with the present plan. If, however, we are able to reroute the river into the main paved channel upon completion of the paving of that main channel, there is an excellent possibility of completing all refilling of the diversion ditch by the September 1st target.

Presently paving at the main channel area lags by about one month. Late finish of that channel was scheduled for July 18, 1973. With our present lag, if no time is picked up, the finish will be about August 18, 1973 which will give us just enough time to complete refilling of the diversion ditch prior to use of the parking area. This sequence has been generally agreed upon by all parties to the project and if the time cannot be recaptured on the bridge construction, the plan of work as outlined above will be used.

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Contract C1 General Summary (continued)

In general summary, Contracts C and D work lags badly due to very wet weather, high water in the Flint River, and to some extent, modifications to the basic contract. A related problem to the wet and rainy weather has been the condition of the soil which has made handling by job equipment very difficult. However, now that the rain has diminished, dry weather is upon up and the sun is shining once again, equipment assignment to the project will be increased considerably and it is expected that work will begin concurrently in several sectors at the same time.

In the Section C contract, the delay to installation of bridge foundations for the temporary structure may force a revision to the plan and as soon as the main channel is paved, it is expected that the river will be rediverted into this channel and the diversion ditch backfilled. Concurrently with this, paving of the two channels at the bridge will proceed independently of the main paving operation.

Ralph J. Stephenson

Ralph J. Stephenson, P.E.

RJS/m

To: Mr. Joe Pence

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

August 1, 1973

Subject: Monitoring Report #7

Flint River Flood Control Project, Flint, Michigan

Corps of Engineer Contract: DACW35-72-C-0044

Project: 72:49

Date of Monitoring: July 25, 1973 (working day 145)

Monitored from Issue #2 dated 12 June 1973, sheets 2, 3 and 4 for Section D, and 5 and 6 for Section C

Actions taken:

- Inspected project
- Conferred with Bert Forsmark, Joe Pence and Bill Grosser re job progress
- Evaluated job progress
- Reviewed and updated monitoring status relative to Issue #2 dated 12 June 1973
- Reviewed and updated portion of pay request for July 25, 1973 relative to Issue #1 format
- Partially reviewed monthly pay request with Captain Lorber of the Corps of Engineers

Contract D General Summary

Target Date for Contract D Completion: Evening of November 16, 1973 (working day 227)

Shaping of major river channels has moved well over the past month due to a heavy concentration of equipment and manpower on critical areas. The next work sequence that must be concentrated upon is placement of plastic filter sheets and laying of riprap. This work presently lags early start/early finishes in several sections and lags late start/late finishes in Section A (Station 5.00 - 12.85).

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Riprap is the key to continued progress on the job and every effort over the next two months should be aimed at getting as much of this material in place as possible. Sodding and seeding which are subject to seasonal time restraints follow riprap and in order for these to be placed this year in the majority of areas within reasonable time restrictions, it is going to be critical to finish riprap as quickly as possible.

Evaluating each area, we find the following.

Kearsley Street Bridge

A slight amount of rubbing on the bridge abutment still remains to be done. This is no delay to the job.

Second Street Bridge

All work at Second Street is complete.

Section A - Station 5.00 - 12.85

Here the river channel has been shaped and the area is ready for plastic filter material and riprap. This work was due to start at a late date of July 11, 1973 (working day 135). It has not yet begun as of July 25, 1973 (working day 145) so currently lags late start/late finishes in Issue #2 by ten working days.

Section B - Station 12.85 - 22.85

Most major shaping has been completed in Section B and the area is ready for plastic filter sheets and riprap. This work was due to start at an early date of June 26, 1973 (working day 125) and a late start of August 2, 1973 (working day 151). As such, work has not passed the late start date, however, it should be cautioned that the interrelationships relative to the various operations have been generally removed between sections which means that if the contractors work to late start/late finish dates that the buildup of manpower and material deliveries to all areas will be much greater than if spaced over the entire range from the early start to late finish limitations.

Section C - Station 22.85 - 34.59

Channel shaping has been substantially completed here and as with sections A and B, the area is ready for plaster filter sheets and riprap. This work was due for an early start of July 19, 1973 (working day 141) and a late start of August 27, 1973 (working day 168). The area does not have as much riprap as the other sections, however, it is a fairly heavy sodding and planting area.

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Section D - Station 34.59 - 52.97

Shaping has been substantially completed and is far enough along so that filter sheets and riprap could start. This work is due for an early start of August 6, 1973 (working day 153) and according to present field plans, every effort is going to be made to start work by that target.

Section E - Station 52.97 - 60.73

Shaping has not yet started as a major thrust in this area. It was due for an early start of July 18, 1973 (working day 140) and a late start of August 7, 1973 (working day 154).

Section F - New Channel Work - Station 60.73 - 71.50

The channel is substantially completed in this area and is ready for plastic filter sheets and riprap. Work on riprap was due to start at a late start date of July 24, 1973 (working day 144) and so currently lags the Issue #2 network by one working day.

Section H - Old Channel Work - Station 60.73 - 71.50

Work has not begun at this area, being restrained by new channel work in Section F.

Section G - Station 71.50 - 89.50 POE

Shaping is about to begin at the Section G area. It was due for an early start of July 11, 1973 (working day 135) and has a late start of August 15, 1973 (working day 160).

Contract C1 General Summary

Current Target Date for Completion of Parking Lot Work at Diversion Channel - August 24, 1973 (working day 168)

Paving of the channel between stations 66.02 and 73.22 is well in work now with paving at the south half of the channel substantially complete except for a small section at the east end. Paving at the north half of the channel will start almost immediately.

The lag at the paving is approximately 11 working days as of July 25, 1973 (compared to a lag of 13 working days on July 10, 1973). This is lag measured against late starts and late finishes and compared to the previous monitoring is an improvement in performance. However, in order to meet the refill and

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compaction completion at the diversion channel of August 24, 1973 (working day 168), we probably will have to compact the rerouting process of two working days and the refilling and compaction process of ten working days. Mr. Grosser feels some time can be pulled out of these since they are basically heavy equipment operations that require straightforward earth moving, compaction and long hours. Thus, it appears presently that even with the current lag the date of August 24, 1973 could be met with a heavy program as is being maintained presently.

A very serious lag, however, continues to be imposed upon the job at the Grand Trunk bridge temporary support structure. This work was due to begin on July 19, 1973 (working day 141). It is now expected to start on July 30, 1973 (working day 148). This gives a lag of seven working days over the target completion date of December 26, 1973 which was for total completion of concurrent C1 work. The effect of this delay continues to be the forcing of the job further into winter cold weather. Therefore, if this winter work is to be avoided, a compression of the time schedule on this bridge work must be achieved.

General Note Re Monitoring Status Report

The monitoring status report as of this month will be measured against Issue #2 and its content will present the status of work as of the beginning of the pay period July 25, 1973. Percentage of work complete on each task can be obtained from the monthly pay request. The monitoring status measurement will be against early start/early finish dates as job scheduled dates.

Ralph J. Stephenson

Ralph J. Stephenson, P.E.

RJS/m

To: Mr. Joe Pence

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

August 30, 1973

Subject: Monitoring Report #8

Flint River Flood Control Project, Flint, Michigan

Corps of Engineer Contract: DACW 35-72-C-0044

Project: 72:49

Date of Monitoring: August 27, 1973 (working day 168)

Monitored from Issue #2 dated 12 June 1973 sheets 2, 3 and 4 for Section D
and 5 and 6 for Section C

Actions taken:

- Inspected project
- Conferred with Mr. Bert Forsmark and Mr. Joe Pence re job progress
- Evaluated job progress
- Reviewed and updated monitoring status relative to Issue #2 dated 12 June 1973
- Reviewed and updated pay request for August 27, 1973 relative to Issue #1 format
- Reviewed monthly pay request with Captain Lorber of the Corps of Engineers

Contract D. General Summary

Target Date for Contract D Completion: Evening of November 16, 1973
(working day 227)

Major shaping of the entire contract channel is now generally complete and most areas are ready to receive filter sheets and riprap. Delivery of riprap has started and stockpiling is underway at middle stations on the job. The major work ahead for the next few weeks is placement of this riprap and the following sodding and seeding.

It is still the intent to finish major contract work by the above target date. To do this it is going to be critical that placement of riprap be moved immediately and quickly. Job computations indicate it will be necessary to place almost

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400 tons per day which will require careful scheduling and delivery attention.

This is a critical item since we are fast approaching the time of year when time restraints will become severe on seeding and sodding work, the last items to be accomplished in most construction areas.

Kearsley Street Bridge

Kearsley Street bridge work is now complete.

Second Street Bridge

Second Street bridge work is complete.

Section A - Station 5.00 - 12.85

Section A is ready for filter sheets and riprap. This work was due to start on July 11, 1973 (working day 135). It has not yet started as of August 27, 1973 (working day 168). Thus, the lag is 33 working days currently over late start/late finish dates.

The total time allocated to filter sheets and riprap in Section A was 55 working days, but this schedule will have to be considerably compressed to meet current target dates. It is the present intent to increase the work week from 5 to 6 or 7 days and if this can be done, plus increasing equipment available, the necessary compression could take place in part.

I recommend we also pay careful attention to dovetailing activities that can start after restraining work is partially complete. In order for our current targets to be met, it is essential to maintain simultaneously concurrent tasks.

Section B - Station 12.85 - 22.85

In Section B the outlet structure #1 was approved by the Corps of Engineers on August 20, 1973. This work is able to proceed and should be concluded in the time allocated.

Shaping is complete at Section B and the area is ready for filter sheets and riprap. This work was due to start on a late date of August 2, 1973 (working day 151). Therefore, the current lag over the Issue #2 network is 17 working days.

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We had allocated 30 working days for filter sheets and riprap. Compression of this time will be necessary if we are to meet present target schedules.

Section C - Station 22.85 - 34.59

The Court Street storm sewer work has been approved verbally by the Corps of Engineers as of August 20, 1973. This work was due to start no later than August 15, 1973 (working day 160) in accordance with Issue #2 dated 12 June 1973. Filter sheets and riprap are due to start in Section C no later than August 27, 1973 (working day 168) which is the current monitoring date. Therefore, the lag can be measured against today's date. 17 working days have been allocated to filter sheet and riprap operation in Section C.

Section D - Station 34.59 - 52.97

Filter sheet and riprap work was due to start on August 20, 1973 (working day 163). Therefore, the current lag over late start/late finish dates in Section D is five working days. Time allocated for plastic filter sheets and riprap was five working days.

Section E - Station 52.97 - 60.73

Section E is ready to receive filter sheets and riprap. This work was due to begin no later than August 21, 1973 (working day 164) so the current lag is four working days.

Section F - Section 60.73 - 71.50

Work on filter sheets and riprap was due to start here on a late date of July 24, 1973 (working day 144). Therefore, the current lag over today's date, August 27, 1973 (working day 168) is 24 working days.

Section H - Old Channel Work - Station 60.73 - 71.50

Work has not yet begun at this area, being restrained by new channel work.

Section G - Station 71.50 - 89.50 POE

Shaping is substantially complete along with the filling and compaction of the inspection trench. Section G is now ready for riprap work which has a late

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start date of September 13, 1973 (working day 180).

Contract C1 General Summary

Channel work between station 66.02 and 72.22 has been completed and the river rediverted. Filling and compaction of the diversion ditch is within four feet of finish grade and should comfortably meet schedule requirements for provision of parking for sports events at Atwood Stadium this fall.

Work is now concentrated upon construction of the GTW bridge, supports and demolition of the existing piers. Concurrently heavy attention will be given to paving areas 1 and 2 which extend on the Flint River side of the channel from the present earth dike back to the southerly limits of the contract.

Completion of GTW bridge temporary supports was scheduled in Issue #2 for July 25, 1973 (working day 146). Therefore, the current lag in this work is approximately 22 working days. There is a possibility that some compression of time will occur in demolition and construction of the new bridge pier. It does not appear presently that any substantial savings can occur in reconstruction of the bridge pier which restrains construction of the channel in area #2. However, it is the intent to pull as much of areas 1 and 2 as close to the bridge as possible to minimize the amount of work remaining after the bridge pier has been reconstructed. This means it will be necessary to pick up almost one month of time between now and December and it would be wise to selectively concentrate now on where such possible time savings can occur.

General Note Re Monitoring Status Report

The monitoring status report for this month is measured against Issue #2 and its content presents the status of work as of the beginning of the pay period August 27, 1973. Percentage of work complete on each task is shown on the monthly pay request. The monitoring status measurement will be against early start/early finish dates as job scheduled dates.

Ralph J. Stephenson

Ralph J. Stephenson, P.E.

RJS/m

To: Mr. Joe Pence

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

October 30, 1973

Subject: Monitoring Report #9

Flint River Flood Control Project

Flint, Michigan

Corps of Engineer Contract: DACW35 - 72 - C - 0044

Project: 72:49

Date of Monitoring: September 27, 1973 (working day 190)

Monitored from Issue #2 dated 12 June 1973 sheets 2, 3 and 4 for Section D and 5 and 6 for Section C

Actions taken:

- Conferred with Mr. Joe Ponce re job progress

Contract D General Summary

On September 4, 1973 (working day 173) the operating engineers employed by underground contractors went on strike and as of September 27, 1973 (working day 190) had not settled. This, in general, stopped most work on the project. There was some very minor construction done on the combined C and D contracts but to all intents and purposes, the job was completely shut down. As of September 27, 1973, there was no indication as to when the job would restart.

Contract C1 General Summary

The same comments apply to this area as to Contract D.

General Note:

The monitoring status report for the month as of September 27 is measured against Issue #2 and its contents present the status of work as of the beginning of the pay period September 27, 1973. This monitoring status measurement is against early start/ early finish dates.

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RJS/m

To: Mr. Joe Ponce

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October 31, 1973

Subject: Monitoring Report #10

Flint River Flood Control Project

Flint, Michigan

Corps of Engineer Contract: DACW 35 - 72 - C - 0044

Project: 72:49

Date of Monitoring: October 29, 1973 (working day 212)

Monitored from Issue #2 dated 12 June 1973 sheets 2, 3 and 4 for Section D and 5 and 6 for Section C

Actions taken:

- Conferred with Mr. Joe Pence re job progress

Contract D General Summary

As of October 25, 1973 (working day 212) the project is again starting with operating engineers for underground contractors returning to work on or about October 22, 1973 (working day 207). It has taken several days to remobilize and get crews into the general work pattern. Major operations have been concentrated on Contract C work, however, it is expected that very shortly work will also be starting on Contract D.

Contract C1 General Summary

The same general comments apply here as to Contract D. However, there has been some progress in several pay items which are reflected in the pay requests as of October 25, 1973. This pay request is being submitted with this Monitoring Report #10.

General Note:

The monitoring status report for this month is measured against Issue #2 and its contents present the status of work as of the beginning of the pay period October 25, 1973. Percentage of work complete on each task is shown on the monthly pay request. The monitoring status measurement is against early start/early finish dates as job schedule dates.

Ralph J. Stephenson

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RJS/m
To: Mr. Joe Pence

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CONSULTING ENGINEER

December 19, 1973

Subject: Monitoring Report #11

Flint River Flood Control Project

Flint, Michigan

Corps of Engineer Contract: DACW 35 - 72 - C - 0044

Project: 72:49

Date of Monitoring: December 5, 1973 (working day 238)

Note: Monitoring on this report is from information on project work sheets

Monitored from Issue #2 dated 12 June 1973 sheets 2, 3 and 4 for Section D and 5 and 6 for Section C

Contract D General Summary

As of November 26, 1973 (working day 231) no major progress is reported on tasks over the last month. Riprap is ready to be placed but it is now becoming increasingly doubtful that major work can be accomplished on this task due to winter weather. Prospects of the project being completed during this winter appear increasingly dim. Due to the problem of maintaining cold weather operations, a replanning of the work is suggested sometime in the near future.

Contract C1 General Summary

Work over the last pay period continues on demolition of the existing bridge pier. Some additional channel paving has been completed at the east end of the project.

The lag in work at the channel is such that now a re-evaluation of the remaining work should be made sometime in the near future to establish major actions over the next few months. I shall be in touch with Mr. Pence regarding this review.

General Note

The monitoring status report for this month is measured against Issue #2 and its contents present the status of work as of the beginning of the pay period Nov. 25, 1973. Percentage of work complete on each task is shown on the monthly pay request. The monitoring status measurement is against early start and early finish dates as job schedule dates. Note that the maximum lag shown in the printouts due to present EDP limitations is 91 working days.

Ralph J. Stephenson

Ralph J. Stephenson, P.E.

To: Mr. Joe Pence
(11 copies)