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SME MRCS River Seepage
Marion, Michigan

Ralph Stephenson, P. E.
Consulting Engineer

New folder please.

IV. Date of meeting - Monday, August 1, 1994 - 2:02:04 PM

A. Those attending
   1. Larry Shook, P. E. - Project Engineer - SME
   2. Ralph J. Stephenson P. E. - Consultant

B. Agenda
   1. Prepare guidelines for planning, monitoring and managing project
   2. Review network model needs for planning, monitoring, and managing

C. General notes
   1. Guidelines for planning and managing the project
      a) Basic planning and managing document is the network and monitoring plan.
         (1) Should be explained in detail to those who must use it.
            (a) Items needed for discussion
               i) Network models
                  (1) Issue #4
                  (2) Phase 1 near term
                  (3) Phase 1 immediate
                  (4) Phase 2 long term
               ii) Translations
                  (1) Responsibilties for each activity
                     (a) D - Who actually does the job
                     (b) H - Who is responsible for having the job done in accordance with the agreed upon plan of work.
                  (2) Details of each activity
                     (a) Activity 2 - Prepare pilot study work plan
                        i) Estimated duration - 10 working days
                        ii) Actions included
                           (1) Outline of methods and means to perform the pilot study
                           (2) List of equipment required
                           (3) Parameters by which to measure the activity.
                        iii) Responsibilties
                           (1) H - LWS
                           (2) D - JMP and CKD
                     (b) etc.
                  (3) Bar charts
                  (4) Narrative data runs of dates
                  (5) Resource tabulations - disciplines, hours and costs task by task - needed as discussion starting point with CKD.
                  (6) Cash flow curves - early starts only and if time permits.
            (b) CKD
               i) Explain the following
                  (1) How the logic was derived.
                  (2) How the durations were assigned.
                  (3) How the resources were assigned.
                  (4) How revisions can be made if needed.
                  (5) Proposed method of monitoring.
                     (a) Will formally monitor the project bi weekly.

(b) Each monitioring will result in a monitoring report.
(c) Reports will be sent to
i) CKD
ii) REZ
iii) KWK

ii) Discussion questions
(1) What are the revisions she would like to make?
(2) What resources are available?
(3) How do I requisition resources?
(4) Who should brief others working on the project as to the plan of work and details of the monitoring? - LWS to determine with CKD.

(c) Others involved - may or may not be at meeting
i) JMP
ii) DLD
iii) REZ

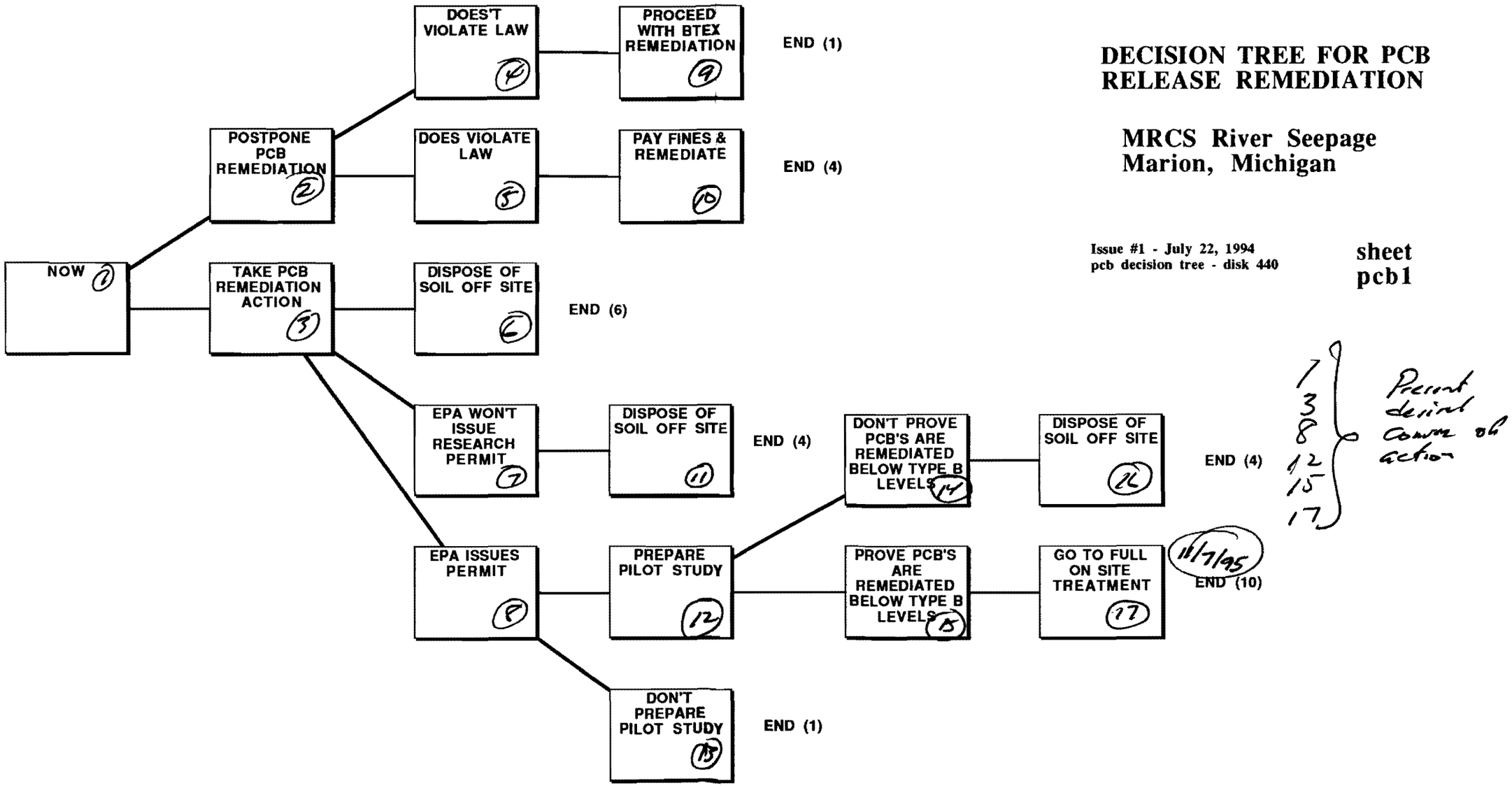
2. Activities LWS must accomplish by August 8, 1994
a) A1 - Prepare pilot study work plan - task #02
(1) 8 hours - product is a written report to guide work up to conduct pilot test - task #13
b) A2 - Purchase compressor, blower, & filter system - activity #09
(1) 6 hours - after consultant provides design and specification.
c) A3 - Complete prepare logic, durations and per day cost networks for: (8 hours + 2 hours printing and assembly)
(1) Phase 1 near term
(2) Phase 1 immediate
(3) Phase 2 long term
d) A4 - Have briefing discussions with CKD
(1) CKD - 2 hours - + 3 hours travel
e) B1 - Prepare change order for PCB release project
(1) 3 hours - to draft, CPCL review, final and send.
f) B2 - Have briefing discussions with REZ
(1) REZ - 1 hour - + 3 hour travel
g) Total = 36 hours

DECISION TREE FOR PCB RELEASE REMEDIATION

MRCS River Seepage
Marion, Michigan

Issue #1 - July 22, 1994
pcb decision tree - disk 440

sheet
pcb1



94:32

Ralph Stephenson, P. E.
Consulting Engineer

SME - MRCS River Seepage - disk 440

I. Date of meeting - Tuesday, July 12, 1994 - 12:28:22 PM

II. Those attending

A. Larry Shook, P. E. - Project Engineer - SME
B. Robert Zayko, P. E. - Vice President - SME
C. Ralph J. Stephenson P. E. - Consultant

III. Those involved

A. Soils & Materials, Inc.
   1. Brian F. Burke - Project Geologist - SME - Lansing, Michigan
   2. Darin Duesenberrry - Associate Engineer - SME- Livonia, Michigan
   3. Cheryl A. Kerhres-Dietrich, CGWP - Senior Consultant - SME - Livonia, Michigan
   4. Tom Pete - Senior Consultant - SME - Lansing, Michigan
   5. Jeffery Pruitt - Senior Project Consultant - SME- Livonia, Michigan
   6. Larry Shook, P. E. - Project Engineer - SME - Bay City, Michigan
   7. Robert Zayko, P. E. - Vice President - SME - Lansing, Michigan

B. Billings & Associates - SVVS Consultants
   1. Gail Billings - Principal
   2. Jeff Billings - Principal
   3. Brad Billings - Principal
   4. (Son) Billings - ?
   5. Scott Griswold - ?

C. Michigan Tech - MTU - Houghton, Michigan
   1. Neil Hutzler, phD, P. E. - consultant - soil vapor & air sparging
   2. James Mehlcic - phD, P. E. - consultant - bioremediation

D. Consumers Power
   1. David Olsen, P. E. - Technical contact in Jackson, Michigan
   2. Bill Voight - Lab supervison - Jackson, Michigan

E. Michigan Gas Storage Company
   1. Ted Wojcik - MRCS site supervisor - Marion, Michigan

F. Michigan Department of Natural Resources
   1. Janice Adams - Project Manager - Grayling, Michigan

IV. General notes

A. If phase 2, near term work is successful it may obviate the need for phase 2, long term.

V. Glossary of terms

A. Remediation
B. Plume
C. BTEX
   Benzene, toluene, ethyl benzene, xylenes - benzene ringed component - volatile aromatics.
D. Gas chromatograph
E. Formation
   A soils condition.

VI. Abbreviations

A. CGWP - Certified Ground Water Professional
B. GC - Gas chromatograph
C. BTEX - Benzene, toluene, ethyl benzene, xylenes
   Benzene ringed component - volatile aromatics.
D. CPCo - Consumers Power

E. MGSCo - Michigan Gas Storage Company
F. MDNR - Michigan Department of Natural Resources
G. SVVS - Sub surface vapor ventilation system

VII. General project characteristics

A. Fee - $3,000,000
B. General scope of work
  1. Stages of work
    a) Phase 1 - Near term - BFB - project geologist in charge in Lansing - reports to LWS on this project.
      (1) Maintenance and operation of existing ground water pump and treat system.
    b) Phase 2 - Near term - LWS - project manager in charge in Bay City - reports to REZ on this project - will be a pilot step to provide guidelines to the long term remediation action.
      (1) Source area remediation.
    c) Phase 2 - Long term - LWS - project manager in charge in Bay City - reports to REZ on this project
      (1) Plume area remediation.
  2. Length of project - 5 years or less.

VIII. Laundry lists

A. Phase 1 - Near term - **Maintenance and operation of existing ground water pump and treat system**
  1. This set of activities is reasonably well established and will be diagrammed later.
B. Phase 2 - Near term - **Source area remediation - will be a pilot step to provide guidelines to the long term remediation action.**
  1. Define and report on vertical and horizontal extent of contamination
    a) Take soil samples - complete
    b) Take ground water samples - complete
    c) Test soil and ground water samples for BTEX - complete
    d) Analyze data and prepare recommendations for source area remediation. - complete
    e) Publish first draft of source area remediation report - complete
      (1) Consumers Power
      (2) Michigan Gas Storage Company
    f) Incorporate comments into first draft of source area remediation report and publish final draft. - currently in progress.
      (1) Consumers Power
      (2) Michigan Gas Storage Company
      (3) Michigan Department of Natural Resources
  2. Design pilot study for source area remediation.
    a) Prepare pilot study work plan.
      (1) Define scope of work.
      (2) Set performance means and methods.
        (a) How to take samples.
        (b) How to analyze data.
        (c) How to perform tests.
        (d) Etc.
      (3) Prepare pilot study work program
        (a) Define schematic concept.
        (b) Make preliminary estimates.

(c) Prepare options analyses.
(d) Etc.
(4) Prepare a plan and schedule for work inculded in scope of work.
(5) Etc.

b) Prepare design documents.
(1) Prepare construction working drawings
(2) Prepare construction specifications.
(3) Etc.

3. Construct facilities to satisfy pilot study work plan.
a) Procure materials and equipment.
b) Solicit and receive construction proposals
c) Award contracts.
d) Mobilize and move on site.
(1) Move SVVS trailer on site and connect.
(2) Move drill rig and crew on site.
(3) Move geologist on site.
(4) Move field gas chromatograph onto site.
e) Construct facilities
(1) Fabricate and assemble mobile SVVS (sub surface vapor ventilation system) - probably in Plymouth and Bay City.
(2) Install extractor/injector nest.
(3) Install monitoring point wells.
(4) Install PVC vacuum and pressure piping
(5) Etc.

4. Perform pilot tests of SVVS to determine formation characteristics.
a) Establish background parameters.
(1) What are the initial BTEX concentration in soil and ground water?
(2) What are the initial dissolved oxygen & carbon dioxide concentrations in ground water?
(3) What are the initial oxygen & carbon dioxide concentrations in soil?
(4) What is the initial pH, dissolved oxygen, & carbon dioxide concentrations in ground water?
(5) Determine micro biological organism type & population.
(6) Prepare background data base.
(7) Etc.

b) Run pilot tests of SVVS
(1) Set up and run vacuum well withour air injection.
(a) Monitor BTEX, oxygen, carbon dioxide flow rate vacuum pressure above water table.
(b) Etc.
(2) Set up and run vacuum well with air injection.
(a) Monitor pH, BTEX, oxygen, carbon dioxide flow rate vacuum pressure & positive pressure above & below water table.
(b) Etc.
(3) Determine micro biological organism type & population.
(4) Establish optimum well location and spacing characteristics.
(5) Prepare and publish report documenting SVVS pilot test results.
(a) Publish first draft of SVVS pilot test report
i) Consumers Power

ii) Michigan Gas Storage Company

(b) Incorporate comments into first draft of SVVS pilot test report and publish final draft.

i) Consumers Power
ii) Michigan Gas Storage Company
iii) Michigan Department of Natural Resources

(6) Etc.

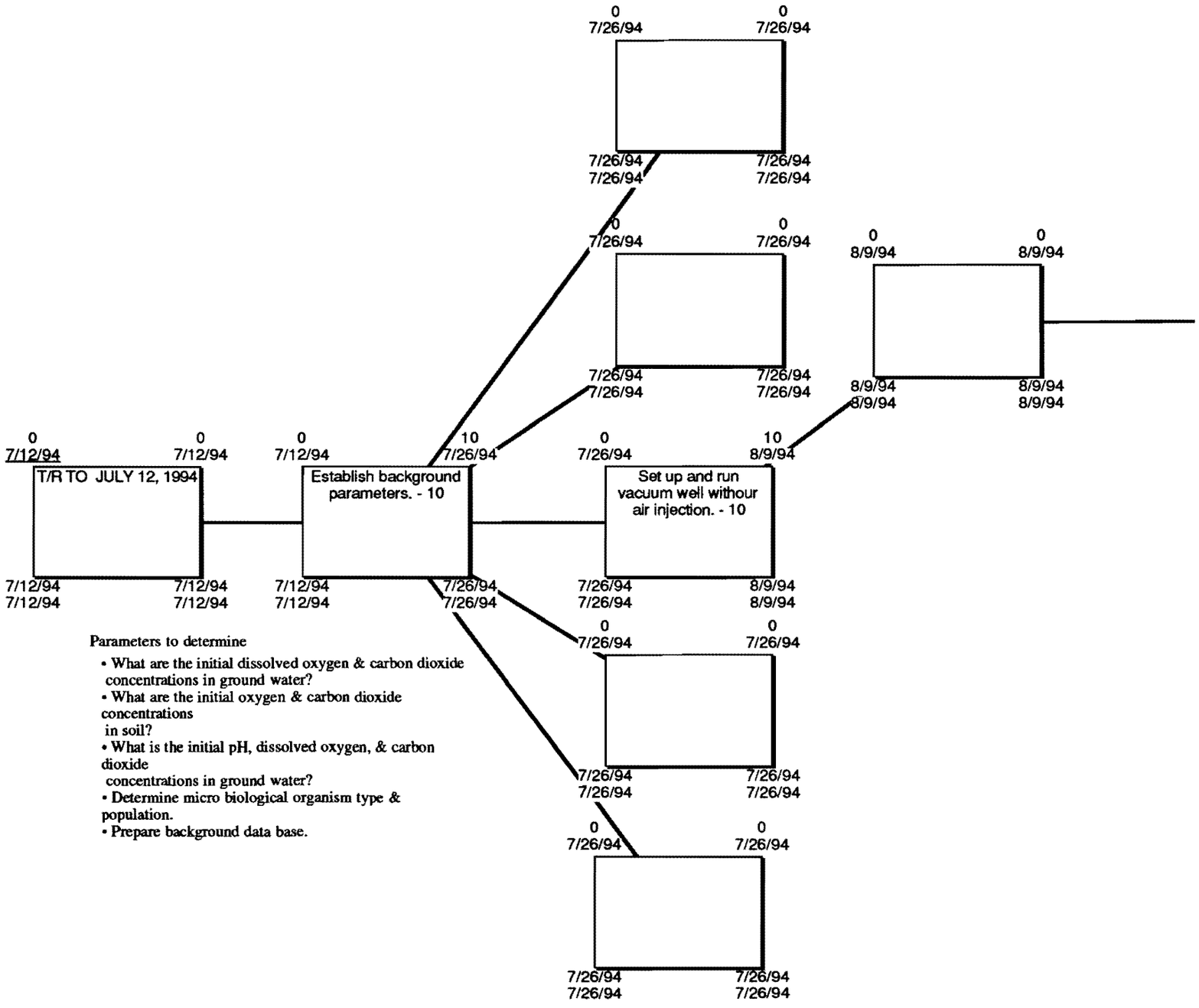
C. Phase 2 - Long term - **Plume area remediation**

1. Design
   a) Prepare SVVS work plan.
   b) Prepare design documents.
2. Construct facilities to satisfy SVVS work plan.
   a) Procure materials and equipment.
   b) Solicit and receive construction proposals
   c) Award contracts.
   d) Mobilize and move on site.
      (1) Move SVVS trailer on site and connect.
      (2) Move drill rig and crew on site.
      (3) Move geologist on site.
      (4) Move field gas chromatograph onto site.
   e) Construct facilities
      (1) Construct SVVS (sub surface vapor ventilation system) vapor control unit building. (15' to 20', 20' x 30')
         (a) Construct building foundations
         (b) Erect and plumb metal building & close in.
         (c) Install underground utilities.
         (d) Construct slab on grade.
         (e) Install mechanical and electrical interior work.
         (f) Install SVVS unit and hook up.
            i) Blowers.
            ii) Pumps.
            iii) Compressors.
            iv) Piping.
            v) Treatment unit (same building or adjacent building).
            vi) Etc.
         (g) Etc.
      (2) Install extractor/injector nest.
      (3) Install monitoring point wells.
      (4) Install PVC vacuum and pressure piping
      (5) Etc.
3. Operate & maintain
   a) Establish background parameters for SVVS operations and maintenance.
      (1) What are the initial BTEX concentration in soil and ground water?
      (2) What are the initial dissolved oxygen & carbon dioxide concentrations in ground water?
      (3) What are the initial oxygen & carbon dioxide concentrations in soil?
      (4) What is the initial pH, dissolved oxygen, & carbon dioxide concentrations in ground water?
      (5) Determine micro biological organism type & population.

(6) Prepare background data base.
(7) Etc.

b) Operate and maintain SVVS. - will be run by SME until remediation has been achieved - type B or C.
(1) Set up and run vacuum well withour air injection.
(a) Monitor BTEX, oxygen, carbon dioxide flow rate vacuum pressure above water table.
(b) Etc.
(2) Set up and run vacuum well with air injection.
(a) Monitor pH, BTEX, oxygen, carbon dioxide flow rate vacuum pressure & positive pressure above & below water table.
(b) Etc.
(3) Determine micro biological organism type & population.
(4) Establish optimum well location and spacing characteristics.
(5) Prepare and publish report documenting SVVS pilot test results.
(a) Publish first draft of SVVS pilot test report
i) Consumers Power
ii) Michigan Gas Storage Company
(b) Incorporate comments into first draft of SVVS pilot test report and publish final draft.
i) Consumers Power
ii) Michigan Gas Storage Company
iii) Michigan Department of Natural Resources
(6) Etc.

4. Verify remediation.
a) Sample soil and ground water.
b) Analyze soil and ground water for BTEX.
c) Publish first draft of remediation closure report. At this point could require a recycling of previous activities.
(1) Consumers Power
(2) Michigan Gas Storage Company
d) Incorporate comments into first draft of remediation closure report and publish final draft.
(1) Consumers Power
(2) Michigan Gas Storage Company
(3) Michigan Department of Natural Resources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Parameters to determine
• What are the initial dissolved oxygen & carbon dioxide concentrations in ground water?
• What are the initial oxygen & carbon dioxide concentrations in soil?
• What is the initial pH, dissolved oxygen, & carbon dioxide concentrations in ground water?
• Determine micro biological organism type & population.
• Prepare background data base.

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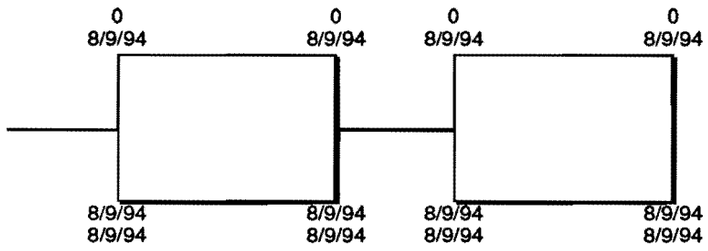
Issue #1 - July 12, 1994
sme mrcs i1 sht 1

NETWORK MODEL FOR MRCS RIVER SEEPAGE PROJECT

MGSCo.. Marion, Michigan

SME Consultants

SHEET #1



4. Perform pilot tests of SVVS to determine formation characteristics.
   a) Establish background parameters.
   (1) What are the initial BTEX concentration in soil and ground water?
   (2) What are the initial dissolved oxygen & carbon dioxide concentrations in ground water?
   (3) What are the initial oxygen & carbon dioxide concentrations in soil?
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   (6) Prepare background data base.
   (7) Etc.
   b) Run pilot tests of SVVS
   (1) Set up and run vacuum well withour air injection.
   (a) Monitor BTEX, oxygen, carbon dioxide flow rate vacuum pressure above water table.
   (b) Etc.
   (2) Set up and run vacuum well with air injection.
   (a) Monitor pH, BTEX, oxygen, carbon dioxide flow rate vacuum pressure & positive pressure above & below water table
   (b) Etc.
   (3) Determine micro biological organism type & population.
   (4) Establish optimum well location and spacing characteristics.
   (5) Prepare and publish report documenting SVVS pilot test results.
   (a) Publish first draft of SVVS pilot test report
   i) Consumers Power
   ii) Michigan Gas Storage Company
   (b) Incorporate comments into first draft of SVVS pilot test report and publish final draft.
   i) Consumers Power
   ii) Michigan Gas Storage Company
   iii) Michigan Department of Natural Resources
   (6) Etc.

MRCS River Seepage - Marion, Michigan
SME - Consultants

Larry Shook, P. E.
Project Manager

Activity	Phase	es	ef	ls	lf	d
001-T/R TO JULY 25, 1994		7/25/94	7/25/94	7/25/94	7/25/94	0
016-T/R TO START OF NETWORK MODEL PLAN ON PCB RELEASE ACTION - 07/25/94	PCB	7/25/94	7/25/94	7/25/94	7/25/94	0
003-CPCo PROVIDE SME WITH REVIEW COMMENTs ON INVESTIGATION REPORT - 5	P2NT	7/25/94	8/1/94	7/25/94	8/1/94	5
020-DNR REVIEW & COMMENT ON THE REMEDIAL INVESTIGATION REPORT - 10	PCB	7/25/94	8/5/94	7/25/94	8/5/94	10
002-PREPARE PILOT STUDY WORK PLAN FOR SOURCE AREA REMEDIATION - 11	P2NT	7/25/94	8/9/94	7/25/94	8/9/94	11
006-SME INCORPORATE CPCo COMMENTS INTO FINAL DRAFT OF SOURCE AREA INVESTGN REPORT - 10	P2NT	8/1/94	8/15/94	8/1/94	8/15/94	10
021-INVESTG POTENTIAL FOR ON-SITE STKPILG OF PCB IMPACTED SOIL SUFF TO PROCEED W BTEX REMEDIATION - 22	PCB	8/8/94	9/7/94	8/8/94	9/7/94	22
005-PREPARE & ISSUE DESIGN DOCUMENTS - 11	P2NT	8/9/94	8/24/94	8/9/94	8/24/94	11
009-SME ASSEMBLE & SUBMIT SOURCE AREA INVESTIGATION REPORT TO CPCo - 3	P2NT	8/15/94	8/18/94	8/15/94	8/18/94	3
012-CPCo TRANSMIT SOURCE AREA INVESTIGATION REPORT TO MDNR - 3	P2NT	8/18/94	8/23/94	8/18/94	8/23/94	3
015-MDNR REVIEW & COMMENT ON SOURCE AREA INVESTIGATION REPORT - 22	P2NT	8/23/94	9/23/94	8/23/94	9/23/94	22
010-MOBILIZE & MOVE ON SITE - 1	P2NT	8/24/94	8/25/94	9/22/94	9/23/94	1
008-PROCURE & DELIVER WELL SUPPLIES & MONITORING INSTRUMENTS - 5	P2NT	8/24/94	8/31/94	8/24/94	8/31/94	5
007-PURCHASE & DELIVER GAC FILTER, COMPRESSOR, BLOWER & GENERATOR - 22	P2NT	8/24/94	9/26/94	8/24/94	9/26/94	22

MRCS River Seepage - Marion, Michigan
SME - Consultants

Larry Shook, P. E.
Project Manager

Activity	Phase	es	ef	ls	lf	d
014-ESTABLISH BACKGROUND PARAMETERS FOR PILOT TESTING - 11	P2NT	8/25/94	9/12/94	9/23/94	10/10/94	11
024-APPLY FOR RESEARCH AND DEVELOPMENT PERMIT FROM EPA TO EVALUATE ALTERNATIVE REMEDIAL - 22	PCB	9/8/94	10/7/94	9/8/94	10/7/94	22
018-DRILL & INSTL PIPING IN PILOT WELL - 2	P2NT	9/12/94	9/12/94	10/10/94	10/10/94	0
019-E T/R TO SET LATE FINISH OF ACTIVITY	P2NT	9/23/94	9/23/94	9/23/94	9/23/94	0
013-ASSEMBLE SVVS MOBILE UNIT IN PLYMOUTH 10	P2NT	9/26/94	10/10/94	9/26/94	10/10/94	10
017-MOVE SVVS MOBILE UNIT ON SITE & CONNECT - 1	P2NT	10/10/94	10/10/94	10/10/94	10/10/94	0
022-MAKE FINAL CONNECTIONS OF PILOT WELL & SVVS MOBILE UNIT - 1	P2NT	10/10/94	10/11/94	10/10/94	10/11/94	1
026-EPA ISSUE PCB RESEARCH & DEVELOPMENT PERMIT - 22 - ITEM 8 IN DECISION TREE	PCB	10/10/94	11/8/94	10/10/94	11/8/94	22
023-CONDUCT PILOT TESTS WITHOUT & WITH AIR INJECTION - 10	P2NT	10/11/94	10/25/94	10/11/94	10/25/94	10
025-ANALYZE DATA FR PILOT TSTS & ESTAB WELL LOCATIONS & DETERMINE BACTERIA TYPE & POPULATION - 10	P2NT	10/25/94	11/8/94	10/25/94	11/8/94	10
029AT THIS POINT PHASE 2 LONG TERM WORK CAN BEGIN (OFF THE END OF THE DIVING BOARD)	P2LT	11/8/94	11/8/94	11/8/94	11/8/94	0
032-P2LT?	P2LT	11/8/94	11/8/94	11/8/94	11/8/94	0
028-PREP & PUBLISH PILOT TEST RESULT REPORT DRAFT & SUBMIT TO CPCo & MGSCo - 22	P2NT	11/8/94	12/9/94	11/8/94	12/9/94	22
027-MAKE FINAL DECISION ON COURSE OF ACTION TO REMEDIATE PCB - 2	PCB	11/9/94	11/10/94	11/9/94	11/10/94	2

MRCS River Seepage - Marion, Michigan
SME - Consultants

Larry Shook, P. E.
Project Manager

Activity	Phase	es	ef	ls	lf	d
030-CONDUCT PCB PILOT STUDY - 255	PCB	11/11/94	11/10/95	11/11/94	11/10/95	255
031-CPCo & MGSCo REVIEW & COMMENT ON PILOT TEST REPORT DRAFT - 10	P2NT	12/9/94	12/23/94	12/9/94	12/23/94	10
034-SME INCORPORATE CPCo & MGSCo COMMENTS INTO FINAL DRAFT OF PILOT STUDY REPORT - 10	P2NT	12/23/94	1/10/95	12/23/94	1/10/95	10
036-SME ASSEMBLE & SUBMIT FINAL DRAFT OF PILOT STUDY REPORT TO CPCo & MGSCo - 3	P2NT	1/10/95	1/13/95	1/10/95	1/13/95	3
037-CPCo TRANSMIT PILOT STUDY REPORT TO MDNR - 3	P2NT	1/13/95	1/18/95	1/13/95	1/18/95	3
038-MDNR REVIEW & COMMENT ON PILOT STUDY REPORT - 22	P2NT	1/18/95	2/17/95	1/18/95	2/17/95	22
039-E T/R TO SET LATE FINISH OF ACTIVITY	P2NT	2/17/95	2/17/95	2/17/95	2/17/95	0
033-IMPLEMENT FULL ON-SITE TREATMENT OF PCB IMPACTED AREA - 510	PCB	11/13/95	11/11/97	11/13/95	11/11/97	510
035-E T/R TO SET LATE FINISH OF ACTIVITY	PCB	11/11/97	11/11/97	11/11/97	11/11/97	0