State of Michigan
Department of Environmental Quality
HAZARDOUS WASTE MANAGEMENT FACILITY EXPANSION OPERATING LICENSE

NAME OF LICENSEE: Wayne Disposal, Inc.

NAME OF FACILITY OWNER: EQ – The Environmental Quality Company

NAME OF FACILITY OPERATOR: Wayne Disposal, Inc

NAME OF TITLEHOLDER OF LAND: Wayne Disposal, Inc.

FACILITY NAME: Wayne Disposal, Inc.

FACILITY LOCATION: 49350 North I-94 Service Drive
Belleville, Michigan 48111

EPA IDENTIFICATION (ID) NUMBER: MID 048 090 633

EFFECTIVE DATE: May 4, 2012

REAPPLICATION DATE: November 5, 2021

EXPIRATION DATE: May 4, 2022

AUTHORIZED ACTIVITIES

Pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), being §§324.11101 to 324.11153 of the Michigan Compiled Laws, and the hazardous waste management administrative rules (hereafter called the "rules") promulgated thereunder, being R 299.9101 *et. seq.* of the Michigan Administrative Code, by the Department of Environmental Quality (DEQ), an operating license (hereafter called the "license") is issued to Wayne Disposal, Inc. (hereafter called the "licensee"), to operate a hazardous waste management facility (hereafter called the "facility") located at latitude 42" 13' 30" N and longitude 83" 31' 0 0 W. The licensee is authorized to conduct the following hazardous waste management activities:

☒ STORAGE	☐ TREATMENT	☒ DISPOSAL	☒ POSTCLOSURE
☐ Container	☐ Container	☒ Landfill	☐ Tank
☒ Tank	☐ Tank	☐ Land Application	☐ Surface Impoundment
☐ Waste Pile	☐ Surface Impoundment	☐ Surface Impoundment	☒ Landfill
☐ Surface Impoundment	☐ Incinerator		☐ Waste Pile
☐ Drip Pad	☐ Other:		

APPLICABLE REGULATIONS AND LICENSE APPROVAL

The conditions of this license were developed in accordance with the applicable provisions of the rules, effective March 17, 2008. The licensee shall comply with all terms and conditions of this license. This license consists of the 32 pages of conditions attached hereto (along with those in Attachments 1 through 16) and the applicable regulations contained in R 299.9101 through R 299.11008, as specified in the license. For purposes of compliance with this license, applicable rules are those that are in effect on the date of issuance of this license in accordance with R 299.9521(3)(a).

This license is based on the information in the license application submitted on March 4, 2011, and any subsequent amendments (hereafter referred to as "the application"). Pursuant to R 299.9519(11)(c), the license may be revoked if the licensee fails, in the application or during the license issuance process, to disclose fully all relevant facts or, at any time, misrepresents any relevant facts. As specified in R 299.9519(1), the facility shall be constructed, operated, and maintained in accordance with Part 111 of Act 451, as amended on December 22, 2010; the rules; and this license.

This license is effective on the date of issuance and shall remain in effect for 10 years from the date of issuance, unless revoked pursuant to R 299.9519 or continued in effect as provided by the Michigan Administrative Procedures Act, 1969 PA 306, as amended (Act 306). Pursuant to R 299.9516, this license shall be reviewed by the DEQ 5 years after the date of issuance and shall be modified as necessary in accordance with the provisions of R 299.9519 and R 299.9520.

Issued this 4th day of May, 2012

by _____

Liane J. Shekter Smith, P.E., Chief
Resource Management Division

PART I
STANDARD CONDITIONS

A. TERMINOLOGY AND REFERENCES

Throughout this license, the term "Division" means the Resource Management Division within the DEQ responsible for administering Part 111 of Act 451 and the rules. Throughout this license, "Director" means the Director of the DEQ or the Director's duly authorized designee such as the Division Chief. All of the provisions of Title 40 of the Code of Federal Regulations (CFR) referenced in this license are adopted by reference in R 299.11003.

B. EFFECT OF LICENSE

Except as otherwise provided by law, any treatment, storage, or disposal of hazardous waste not specifically authorized in this license is prohibited. Issuance of this license does not authorize any injury to persons or property, any invasion of other private rights, or any infringement of federal, state, or local law or regulations {R 299.9516(8)}; nor does it obviate the necessity of obtaining such permits or approvals from other units of government as may be required by law. Compliance with the terms of this license does not constitute a warranty or representation of any kind by the DEQ, nor does the DEQ intend that compliance with this license constitutes a defense to any order issued or any action brought under Act 451 or any other applicable state statute or §106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) {Title 42 of the United States Code (U.S.C.) §9606(a)}, the Resource Conservation and Recovery Act of 1976, as amended (RCRA), and its rules, or any other applicable federal statute. The licensee, however, does not represent that it will not argue that compliance with the terms of this license may be a defense to such future regulatory actions. Each attachment to this license is a part of, and is incorporated into, this license and is deemed an enforceable part of the license.

C. SEVERABILITY

The provisions of this license are severable, and if any provision of this license, or the application of any provision of this license to any circumstance, is held invalid, the application of such provision to other circumstances and the remainder of this license shall not be affected thereby.

D. RESPONSIBILITIES

1. The licensee shall comply with Part 111 of Act 451, the rules, and all conditions of this license, except to the extent authorized by the DEQ pursuant to the terms of an emergency operating license. Any license noncompliance, except to the extent authorized by the DEQ pursuant to the terms of an emergency operating license, constitutes a violation of Part 111 of Act 451 and is grounds for enforcement action, license revocation, license modification, or denial of a license renewal application. {R 299.9521(1)(a) and (c) and (3)(a) and (b) and 40 CFR §270.30(a)}

2. If the licensee wishes to continue an activity regulated by this license after the expiration date of this license, the licensee shall submit a complete application for a new license to the Division Chief at least 180 days before this license expires, November 5, 2021, unless an extension is granted pursuant to R 299.9510(5). To the extent the licensee makes a timely and sufficient application for renewal of this license, this license and all conditions herein will remain in effect beyond the license expiration date and shall not expire until a decision on the application is finally made by the DEQ, and if the application is denied or the terms of the new license are limited, until the last day for applying for judicial review of the new license or a later date fixed by order of the reviewing court consistent with §91(2) of Act 306. {R 299.9521(1)(a) and (c) and (3)(a) and 40 CFR §270.30(b)}

3. The licensee shall comply with the conditions specified in R 299.9521(1)(b)(i) to (iii) and 40 CFR §270.30(c) through (k), (l)(2), (3), (5), (7), and (11), and (m). {§§11123(3), 11146(1) and (2), and 11148(1) of Act 451 and R 299.9501(1), R 299.9516, R 299.9519, R 299.9521(1)(a) and (b) and (3)(a) and (b), R 299.9522, and R 299.9525)

4. The licensee shall give notice to the Division Chief as soon as possible prior to any planned physical alterations or additions to the licensed facility.

E. SUBMITTAL DEADLINES

When the deadline for submittals required under this license falls on a weekend or legal state holiday, the deadline shall be extended to the next regular business day. This extension does not apply to the deadline for financial mechanisms and associated renewals, replacements, and extensions of financial mechanisms required under this license. The licensee may request extension of the deadlines for submittals required under this license. The licensee shall submit such requests at least five business days prior to the existing deadline for review and approval by the Division Chief. Written extension requests shall include justification for each extension. {R 299.9521(3)(a)}

PART II
GENERAL OPERATING CONDITIONS

A. GENERAL WASTE ANALYSIS

The licensee shall ensure that any waste managed at the facility has been properly characterized pursuant to R 299.9302 and comply with the procedures described in the attached Waste Analysis Plan, Attachment 1, of this license. {R 299.9605(1) and 40 CFR §264.13}

B. SECURITY

The licensee shall comply with the barrier, surveillance, and signage requirements of R 299.9605(1) and 40 CFR §264.14.

C. GENERAL INSPECTION REQUIREMENTS

1. The licensee shall inspect the facility in accordance with the Inspection Schedule, Attachment 2, of this license and comply with the inspection requirements of R 299.9605(1) and 40 CFR §264.15.

2. The licensee shall implement the procedure to ensure compliance with the requirements of R 299.9605(2) regarding transport vehicles and other containers leaving the facility.

D. PERSONNEL TRAINING

The licensee shall comply with the personnel training requirements of R 299.9605 and 40 CFR §264.16. The Personnel Training Program, Attachment 3, of this license shall, at a minimum, cover all items in R 299.9605 and 40 CFR §264.16.

E. PREPAREDNESS AND PREVENTION

The licensee shall comply with the preparedness and prevention requirements of R 299.9606 and 40 CFR Part 264, Subpart C.

F. CONTINGENCY PLAN

The licensee shall comply with the contingency plan requirements of R 299.9607 and 40 CFR Part 264, Subpart D. The Contingency Plan, Attachment 4, of this license, and the prescribed emergency procedures shall be immediately implemented by the licensee whenever there is a fire, explosion, or other release of hazardous waste or hazardous waste constituents that threatens or could threaten human health or the environment, or if the licensee has knowledge that a spill has reached surface water or groundwater.

G. DUTY TO MITIGATE

Upon notification from the Division Chief or his or her designee that an activity at the facility may present an imminent and substantial endangerment to human health or the environment, the licensee shall immediately comply with an order issued by the Division Chief to halt such activity and conduct other activities as required by the Division Chief to eliminate the said endangerment. The licensee shall not resume the halted activity without the prior written approval from the Division Chief. {§11148 of Act 451 and R 299.9521(3)(b)}

H. MANIFEST SYSTEM

The licensee shall comply with the manifest requirements of R 299.9304, R 299.9305, and R 299.9608.

I. RECORD KEEPING AND REPORTING

1. The licensee shall comply with the written operating record and monthly operating report (EQP 5142 form) requirements of R 299.9609 and 40 CFR §264.73 and Part 264, Appendix I, and R 299.9610(3), respectively. The monthly operating report shall be submitted on EQP 5142 form provided by the Division Chief, or an equivalent form that has been approved by the Division Chief.

2. The licensee shall comply with the biennial report requirements of R 299.9610. {R 299.9521(1)(a) and 40 CFR §270.30(l)(9)}

3. The licensee shall submit the results of all environmental monitoring required by this license and any additional environmental sampling or analysis conducted beyond that required by this license, in the form of an Environmental Monitoring Report to the Division Chief within 60 days after any sample collection. Such increased frequency shall be indicated in the Environmental Monitoring Report. {R 299.9521(1)(a) and R 299.9521(3)(b) and 40 CFR §270.30(l)(4)}

4. The licensee shall provide environmental monitoring information or data that is required pursuant to this license, to an authorized representative of an environmental or emergency response department of the Van Buren Charter Township or Wayne County who requests such information or data and that has jurisdiction over the facility. Such information or data shall be made available on the same day the licensee forwards this information to the Division Chief. {R 299.9521(3)(b)}

5. The licensee shall immediately report to the Division Chief any noncompliance with the license that may endanger human health or the environment by doing both of the following:

   (a) The licensee shall immediately notify the Division Chief at 517-335-2690, if the noncompliance occurs Monday through Friday during the period of 8:00 a.m. to 5:00 p.m., except state holidays, or by calling the DEQ Pollution Emergency Alerting System (PEAS) at 1-800-292-4706 during all other times. This notice shall include the following:

      (i) Information concerning the fire, explosion, release, or discharge of any hazardous waste or hazardous waste constituent that could threaten human health or the environment, that has reached surface water or groundwater, or that may endanger public drinking water supplies or the environment; and

      (ii) A description of the occurrence and its cause, including all of the information outlined in R 299.9607(2)(a)-(i).

   (b) The licensee shall also follow up the verbal notice by providing a written report to the Division Chief within five days of the time the licensee becomes aware of the circumstances. The written report shall contain all of the information in Condition II.I.5.(a)(i)-(ii) of this license along with a description of the noncompliance and its cause; the periods of noncompliance (including exact dates and times); whether the noncompliance has been corrected and, if not, the anticipated time it is expected to

continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance and when those activities occurred or will occur. The Division Chief may waive the five-day written notice requirement if the licensee submits a written report containing this information within 15 days of the time the licensee becomes aware of the circumstances.

{R 299.9521(1)(a) and R 299.9607 and 40 CFR §270.30(l)(6)}

6. The licensee shall report all other instances of noncompliance with this license, Part 111 of Act 451, the rules, and any other applicable environmental laws or rules that apply to the licensed facility, at the time monitoring reports required by this license are submitted or within 30 days, whichever is sooner. The reports shall contain the information listed in Condition 11.I.5. of this license. {R 299.9521(1)(a) and 40 CFR §270.30(l)(10)}

7. The licensee may make minor modifications to the forms contained in the attachments to this license. The modifications may include changing the format, updating existing references and information, adding necessary information, and changing certification and notification information in accordance with Part 111 of Act 451 and its rules and RCRA and its regulations. The licensee shall submit the modifications to the Division Chief prior to implementing the use of the modified form(s). If the Division Chief does not reject or require revision of the modified form(s) within 14 days of receipt, the licensee shall implement use of the modified form(s) and the form(s) shall be incorporated into this license as a replacement for the existing form(s).

J. CLOSURE

The licensee shall comply with the closure requirements of R 299.9613. The licensee shall close the facility in accordance with the Closure Plan, Attachment 5, of this license, all other applicable requirements of this license, and all other applicable laws. {R 299.9613 and 40 CFR Part 264, Subpart G, except 40 CFR §§264.112(d)(1), 264.115, and 264.120)

K. POSTCLOSURE

The licensee shall comply with the postclosure monitoring requirements of R 299.9613 and monitor and maintain the facility in accordance with the Postclosure Plan, Attachment 6, of this license. The licensee shall submit a certification of postclosure in accordance with R 299.9613(5). {R 299.9613 and 40 CFR 99264.116 through 264.119}]

L. FINANCIAL ASSURANCE FOR CLOSURE

1. On the effective date of this license, the facility closure cost estimate is $8,975,765. The licensee shall keep this estimate current as required under R 299.9702 and 40 CFR 9264.142.

2. The licensee shall continuously maintain financial assurance for the current closure cost estimate as required under R 299.9703.

M. FINANCIAL ASSURANCE FOR POSTCLOSURE

1. On the effective date of this license, the facility postclosure cost estimate is $9,791,490. The licensee shall keep this estimate current as required under R 299.9702 and 40 CFR 9264.144.

2. The licensee shall continuously maintain financial assurance for the current postclosure cost estimate as required under R 299.9703.

N. FINANCIAL ASSURANCE FOR CORRECTIVE ACTION

On the effective date of this license, the cost of pelforming any corrective action at the facility is currently unknown. If at any time during the operation or postclosure of the facility it is determined that corrective action work is needed, then at each phase of the corrective action process as defined in Part VI of this License, the facility must develop and maintain current financial assurance for corrective action as required under R 299.9712 and R 299.9713.

O. FINANCIAL REPSONSIBILITY FOR LIABILITY COVERAGE

The licensee shall continuously maintain liability coverage for sudden and accidental occurrences and nonsudden accidental occurrences, as required by R 299.9710.

P. WASTE MINIMIZATION

The licensee shall certify, at least annually, that the licensee has a hazardous waste minimization program in place. {R 299.9609(1)(a), 40 CFR §264.73(b)(9) and §3005(h) of RCRA, and 42 U.S.C. §6925(h)}

Q. LAND DISPOSAL RESTRICTIONS

The licensee shall comply with all of the requirements of 40 CFR Part 268. {R 299.9627 and 40 CFR Part 268}

R. AIR EMISSION STANDARDS

The licensee shall notify the Division Chief of any waste management units that become subject to the requirements of 40 CFR Part 264, Subparts AA, BB, and/or CC within 30 days of the start of the regulated activity.

{R 299.9630, R 299.9631, and R 299.9634 and 40 CFR Part 264, Subparts AA, BB, and CC}

S. DOCUMENTS TO BE MAINTAINED AT THE FACILITY

The licensee shall maintain at the facility the following documents and amendments required by this license, until closure/postclosure is completed and certified by an independent registered professional engineer, and the facility is released from financial assurance requirements for closure/postclosure by the Director:

1. Waste Analysis Plan, including Quality Assurance/Quality Control (QNQC) Plans.
2. Inspection Schedules and records.
3. Personnel Training Program documents and records.
4. Contingency Plan.
5. Closure and Postclosure Plans.
6. Cost estimates for facility closure, postclosure, and copies of related financial assurance documents.
7. Operating record.
8. Site Security Plan.
9. Facility engineering plans and specifications.
10. Record keeping procedures.
11. Environmental monitoring plans, including Sampling and Analysis Plans and QNQC Plans.
12. Environmental monitoring data and statistical records.

13. Preventative procedures (Personnel Protection Plan).
14. Hazardous waste minimization program certification.
15. Standard Operating Procedures

{R 299.9521(3)(a)}

T. ENGINEERING PLANS AND CONSTRUCTION

1. The licensee shall construct, operate, and maintain the facility in accordance with the Engineering Plans, Attachment 7, of this license, and any modifications to those plans shall be made in accordance with this license.

2. Within 90 days of the effective date of this license, the licensee shall submit engineering plans for the design of the new haul road from the unloading tank to Master Cells (MC) VI F and G for review and approval. Upon approval the plans will become part of Attachment 7.

3. The licensee shall provide quarterly progress reports during construction regarding the engineering plans and specifications approved under this license to the Division Chief. The first report shall be submitted within 90 days of issuance of this license and then every 90 days thereafter until submission of the final as-built plans and construction certification documents. The licensee shall provide documentation regarding completion of the engineering modifications approved under this license, including a report, as-built drawings, equipment specifications, and updated certifications of construction and capability, to the Division Chief for review and approval in accordance with Condition IV.C. of this license. {R 299.9521(3)(b)}

PART III
TANK SYSTEM STORAGE CONDITIONS

A. COVERAGE OF LICENSE

The hazardous waste unloading tank system storage area at the facility shown in Drawings C-100 through C-106 is covered by this license. Any expansion or enlargement beyond the facility boundary or beyond the 1,000 cubic yards tank system storage design capacity requires a new expansion license from the Director. Drawings C-100 through C-106 are incorporated into this license as part of Attachment 7. {R 299.9521(1)(b)}

B. WASTE IDENTIFICATION AND QUANTITY

The licensee may store no more than a total volume of 1,000 cubic yards of the hazardous wastes listed in the Acceptable Wastes Types, Attachment 8, of this license in the tank system identified as Transfer Box in Attachment 7, subject to the terms of this license. {R 299.9521(2)(d)}

C. DESIGN, CONTAINMENT, AND ASSESSMENT OF TANK SYSTEMS

The licensee shall construct, operate, and maintain all tank systems in accordance with the applicable requirements of R 299.9615, 40 CFR §§264.192, 264.193, and 264.194, and in accordance with the attached plans and specifications in Attachment 7 of this license.

D. MANAGEMENT OF TANK SYSTEMS

The licensee shall label and manage the tank systems in accordance with the requirements of R 299.9615 and R 299.9627, 40 CFR §§264.194, 264.196, and 268.50(a)(2)(ii), and R 29.4101 to R 29.4504 pursuant to the provisions of the Fire Prevention Act, 1941 PA 207, as amended, National Fire Protection Association (NFPA) Standard No. 704. The licensee may add non-biodegradable sorbent, cement kiln dust, or lime in the unloading tank to improve the structural consistency of received waste that is not optimum for placement and compaction in the landfill.

E. PROHIBITION ON STORING IGNITABLE OR REACTIVE WASTES OR MATERIALS

The licensee is prohibited from storing ignitable or reactive wastes or materials in tank systems at the facility. {R 299.9521(2)(d) and (3)(b)}]

F. PROHIBITION ON STORAGE OF INCOMPATIBLE WASTES OR MATERIALS

The licensee shall not place incompatible wastes, or incompatible wastes and materials, in the same tank system or place hazardous waste in a tank system that has not been decontaminated and that previously held an incompatible waste or material {R 299.9609 and R 299.9615 and 40 CFR §§264.17(c), 264.73(b)(3), and 264.199)

G. DISPOSITION OF ACCUMULATED LIQUIDS

The licensee shall remove spilled or leaked waste and accumulated precipitation from the tank system within 24 hours of detection and manage it in accordance with the requirements of Part 111 of Act 451 and the rules. {R 299.9521(3)(b) and R 299.9615 and 40 CFR §264.193(c)(4)}

PART IV
LANDFILL DISPOSAL CONDITIONS

A. COVERAGE OF LICENSE

The hazardous waste landfill and related appurtenances (piping, pumps, operation and maintenance buildings, etc.) at the facility shown in General Site Plan Drawing 02 are covered by this license. The capacity of the currently constructed landfill is 10.72 million cubic yards and the proposed additional capacity is 11.73 million cubic yards. Any expansion or enlargement beyond the total design capacity of 22.45 million cubic yards or beyond the area shown in General Site Plan Drawing 02 requires a new expansion license from the Director. General Site Plan Drawing 02 and the attached plans and specifications are incorporated into this license as Attachment 7. {R 299.9521(1)(b)}

B. WASTE IDENTIFICATION AND QUANTITY

1. The licensee, except to the extent prohibited under Condition IV.B.3. below, may dispose a total volume of 22.45 million cubic yards of hazardous and compatible nonhazardous waste in the landfill, subject to the terms of this license. The license shall not dispose of any hazardous waste not listed in Attachment 8 of this license, unless the Division Chief approves the disposal of such waste types through an amendment to this license. {R 299.9521(2)(d)}

2. The licensee, except to the extent prohibited under Condition IV.B.3., below, may dispose of polychlorinated biphenyl (PCB) wastes listed in Attachment 8 of this license. This license constitutes authorization pursuant to Part 147, PCB Compounds, of Act 451 to dispose of PCB wastes. The licensee must also obtain written approval from the U.S. Environmental Protection Agency (U.S. EPA) pursuant to the federal Toxic Substances Control Act (TSCA) prior to disposing of any PCB waste in MCs VI F and G of the landfill.

3. The licensee shall not accept for disposal any hazardous waste not listed in Attachment 8 of this license or any incompatible nonhazardous wastes or materials that meet any of the following criteria {R 299.9521(2)(d)}:

   (a) Ignitable wastes as described in R 299.9212(1). {R 299.9619)

   (b) Reactive wastes as described in R 299.9212(3). {R 299.9619}

   (c) Bulk or noncontainerized liquid waste or waste containing free liquids. {R 299.9619(2) and 40 CFR §264.314(b)}

   (d) Containers holding free liquids. {R 299.9619(5) and 40 CFR §264.314(d)}

   (e) Waste that will:

      (i) Adversely affect the permeability of the clay liner, {R 299.9521(3)(b), R 299.9619, and R 299.9620 and 40 CFR §264.301}

      (ii) Produce a leachate that is incompatible with the clay liner, leachate collection system piping, or the off-site sewer system. {R 299.9521(3)(b), R 299.9619, and R 299.9620(3) and 40 CFR §264.301}

      (iii) Generate gases that will adversely affect the permeability of the clay cap or create a violation of Part 55, Air Pollution Control, of Act 451. {R 299.9602 and R 299.9619(5)(c)}

R 299.9619(5)(c)}

4. The licensee shall provide a written notification to the transportation companies that deliver to the facility that:

   (a) Wastes shipped to the facility must be placed in closed containers or otherwise totally contained or covered during transportation.

   (b) All trucks transporting hazardous waste to or from the facility shall use Rawsonville Road to enter and exit the facility.

   (c) Trucks transporting hazardous waste to or from the facility shall not park or stand on the 1-94 Service Drive.

5. All containers on site shall be closed or otherwise totally contained or covered unless they are being sampled and/or visually inspected or in the process of being filled or emptied. {R 299.9521(3)(b)}

C. **DESIGN, CONSTRUCTION, AND RUN-ON, RUNOFF, AND CONTAMINANT CONTROL**

1. The licensee shall construct and maintain a liner system in accordance with the engineering plans and specifications in Attachment 7 of this license and R 299.9619, R 299.9620, R 299.9621, and R 299.9622. {R 299.9619, R 299.9620, R 299.9621, and R 299.9622 and 40 CFR §§264.301 and 264.303)

2. The licensee shall submit a certification for each phase of the construction of MCs VI F and G. No waste shall be placed in a newly-constructed portion of MCs VI F and G until the certification is approved by the Chief of the Hazardous Waste Section.

3. The licensee shall submit post construction documentation to the Division Chief following construction of each phase of the expanded facility pursuant to § 11125 of Part 111 of Act 451, as amended.

3. The licensee shall insure that all uncovered portions of the constructed liners, leak detection systems, and leachate collection systems are adequately protected from vegetation, desiccation, clogging, freeze-thaw effects, weathering, and all other deterioration processes. {R 299.9619 and R 299.9620 and 40 CFR §§264.301 and 264.303)

4. The licensee shall have a licensed professional engineer inspect any portions of the natural or recompacted clay not protected from weathering for more than 90 days and the leachate collection system not protected from clogging and weathering for more than 90 days. If repair is necessary the engineer shall specify repair of any areas in accordance with the approved plans and specifications where he or she determines by visual inspection that desiccation, erosion, clogging, or weathering has occurred to the extent that the design specifications are no longer met. The results of these inspections shall be maintained in accordance with Condition II.I. of this license. {R 299.9619, R 299.9620, R 299.9621, and R 299.9622 and 40 CFR §§264.301 and 264.303)

5. All areas repaired in accordance with Condition IV.C.4. of this license must be recertified by a licensed professional engineer. The licensee shall submit the recertification to the Division Chief. {R 299.9619, R 299.9620, R 299.9621, and R 299.9622 and 40 CFR §§264.301 and 264.303)

6. The licensee shall operate and maintain a run-on control system capable of preventing storm water flow onto the active portions of the landfill during peak discharge from at least a 24-hour, 25-year storm, as specified in the approved Storm Water Management System Evaluation Report and in accordance with the Storm Water Management Standard Operating Procedure (SOP) approved by the Hazardous Waste Section Chief and as depicted in Figures 2A and 2B of that report. {R 299.9604(1)(a)}

7. The licensee shall operate and maintain a runoff management system to collect and control the storm water volume resulting from at least a 24-hour, 100-year storm, as specified in the approved Storm Water Management System Evaluation Report and in accordance with the Storm Water Management SOP approved by the Hazardous Waste Section Chief and as depicted in Figures 2A and 2B of that report. {R 299.9604(1)(a)}

8. The licensee may not install interim and final cover and other structures authorized by the Division Chief in the course of normal landfill operations until receiving:

   (a) A license modification authorizing a change or changes in the storm water runoff management system; or

   (b) Division Chief approval of a closure plan report submitted pursuant to this license that demonstrates that all detectable levels of PCBs in soil and/or sediments have been removed from Area A (Figure 1 of Attachment 11 of this license) and paved areas; that demonstrates that PCBs in soils and/or sediments in Area A have been remediated to meet an approved site specific cleanup criteria established by the licensee pursuant to Part 201, Environmental Remediation, of Act 451 and that all detectable levels of PCBs have been removed from paved areas; or that the untreated discharge of storm water from Area A and paved areas at the facility comply with Part 31, Water Resources Protection, of Act 451. {R 299.9602 and R 299.9604)

9. The licensee shall maintain an effective National Pollutant Discharge Elimination System (NPDES) permit for the storm water discharge that requires the treatment of Area A and Area B (Figure 1 of Attachment 11 of this license) storm water to remove any PCBs prior to discharge to Quirk Drain. The licensee shall notify the Division Chief at least 60 days in advance of any proposal to remove the requirement to treat the Area A and/or Area B storm water to remove any PCBs prior to discharge to Quirk Drain. Concurrently, the licensee shall submit a license modification to the Division Chief establishing alternate systems to prevent PCBs from the Area A and/or Area B watersheds from being discharged uncontrolled to off-site surface waters. Nothing in this license should be construed by the licensee to authorize any violation of Part 31 of Act 451.

10. The licensee shall notify the Division Chief at least 60 days in advance of any proposal to remove any sediment or surface water sampling locations from the Pollution Minimization Plan (PMP) enforceable under the effective NPDES permit. Concurrently, the licensee shall submit a license modification to the Division Chief requesting that the license be revised to incorporate any sampling locations removed from the PMP into the appropriate monitoring programs of this license as a minor modification.

11. The licensee shall expeditiously empty or otherwise manage collection and holding facilities (e.g., tanks or catch basins) associated with run-on and runoff control systems after storms to maintain the design capacity of the system. {R 299.9619 and 40 CFR §264.301(h))

12. The licensee shall cover or otherwise manage the landfill to control dispersal of particulate matter in accordance with a Fugitive Dust SOP approved by the Hazardous Waste Section Chief. The daily cover shall consist of ConCover 180, at least 15 centimeters of clean soil, or an equivalent other material approved by the Division Chief. {R 299.9619 and 40 CFR 9264.301(i))

13. The licensee shall monitor wind speed and direct the placement of waste in accordance with a Wind Speed SOP approved by the Hazardous Waste Section Chief.

14. The licensee shall operate and maintain a vehicle wash facility. The licensee shall ensure that all vehicles traveling on active portions of the site are cleaned and decontaminated at this facility before leaving the active area. {R 299.9521(3)(b)}

15. The licensee shall operate all vehicles in a manner that will minimize the contamination of internal haul roads in accordance with a Trackout SOP approved by the Hazardous Waste Section Chief. {R 299.9521(3)(b) and R 299.9604(1)(c)}

16. The licensee shall operate and maintain a leachate collection and removal system in accordance with R 299.9619, 40 CFR 9264.301(a)(2), and the plans and specifications in Attachment 7 of this license. The leachate captured by this system shall be treated as necessary and discharged to the municipal sewer system in accordance with the applicable pretreatment standards. The licensee shall request a minor modification in accordance with R 299.9519 for any equipment replacement or upgrading with functionally equivalent elements of the system that is not being performed as part of routine maintenance of the system.

17. The licensee shall operate and maintain a contact water collection and removal system in accordance with the plans and specifications in Attachment 7 of this license. The contact water captured by this system shall be treated as necessary and discharged to the municipal sewer system in accordance with the applicable pretreatment standards. The licensee shall request a minor modification in accordance with R 299.9519 for any equipment replacement or upgrading with functionally equivalent elements of the system that is not being performed as part of routine maintenance of the system.

18. The licensee shall operate and maintain the leachate and contact water collection and removal systems in MC VI-ESE in accordance with a 6E-SE Leachate and Contact Water System SOP approved by the Hazardous Waste Section Chief.

19. The licensee shall conduct all construction and maintenance activities in accordance with an Earthwork Clearance SOP approved by the Hazardous Waste Section Chief.

20. The licensee shall maintain the leak detection and collection system (LDCRS) in accordance with a LDCRS Riser Maintenance SOP approved by the Hazardous Waste Section Chief.

21. With the initiation of construction on each new phase of MCs VI F and G, or more frequently if necessary, the licensee shall evaluate each of the following SOPs to determine if they require revisions to reflect the current landfill operation; Stormwater Management, Fugitive Dust, Wind Speed, Trackout, Contact Water System, LDCRS Riser Maintenance, and Earthwork Clearance. If revision of any of the SOPs is required they shall be submitted within 60 days of the initiation of that construction to the Hazardous Waste Section Chief for approval.

D. WASTE PLACEMENT

1. The licensee shall ensure that the placement of all hazardous waste in the landfill is conducted in accordance with 40 CFR §§264.17(b), 264.313, 264.315, and 264.316. If containers of hazardous waste are crushed at the facility, the containers shall be crushed only inside the active landfill cell. {R 299.9521(2)(d) and (3)(b) and R 299.9619)

2. The licensee shall record the contents, quantity, and location of each daily waste deposit and place this documentation in the operating record. This information shall be recorded on a map or diagram of the landfill and shall include cross references to specific manifest document numbers, if the waste was accompanied by a manifest. {R 299.9609 and R 299.9619 and 40 CFR §§264.73(b)(2) and 264.309)

3. After waste placement reaches the grade of the perimeter of the active landfill cell, the licensee shall annually survey and record the elevations of waste in the cell to insure that final grades as shown in Drawing 7 in Attachment 7 of this license are not exceeded. The results of the survey shall be submitted to the Division Chief within 30 days of completion of the survey. {R 299.9521(1)(b) and (3)(a)}

4. The licensee shall only place macroencapsulated waste in the landfill in accordance with "special burial" procedures approved in writing by the Division Chief.

E. CLOSURE

1. The licensee shall complete closure in accordance with the engineering plans and specifications and the construction quality assurance plan in the approved Closure Plan, Attachment 5, of this license. {R 299.9613 and R 299.9619(1) and (5) and 40 CFR §264.310}

2. The licensee shall notify Division, Southeast Michigan District staff, and Lansing Hazardous Waste Section staff, at least one week in advance of key events, to enable staff to be present to observe and/or take samples during the final cover placement activities. Key events include test fill construction, placement of clay liner, placement and seaming of synthetic liner, and placement of drainage media and topsoil. {R 299.9521(1)(a) and (3)(a) and 40 CFR §270.30(i)}

3. The licensee shall construct the clay component of the final cover by using the same materials, equipment, and methods used in constructing the test fill. If the materials, equipment, or methods change significantly, a new test fill shall be constructed. {R 299.9521(3)(a) and (b), R 299.9619(5), R 299.9620, and R 299.9621)

4. After completion of the final cover, the licensee shall survey the benchmarks and final cover once every two years. A contour map of the final cover shall be submitted to the Division within 30 days of the completion of the survey. {R 299.9619 and 40 CFR §264.310(b)(1), (5), and (6)}

F. ADDITIONAL REPORTING

The licensee shall submit an annual inspection and maintenance summary report to the Division by March 1st of each year during the active life of the landfill and the postclosure care period. The annual inspection and maintenance report shall include a summary of all maintenance activities performed by the licensee to maintain the integrity of the active landfill and the final cover of closed cells such as mowing, fertilization, and liming and a copy of the associated inspection logs.

{R 299.9521(2)(a) and (b) and 40 CFR $270.31)

PART V
ENVIRONMENTAL MONITORING CONDITIONS

A. GROUNDWATER MONITORING PROGRAM

1. The licensee shall conduct a detection monitoring program in the glacial sand and bedrock aquifers for primary, secondary, tertiary, and field monitoring parameters. Under this program, the licensee shall operate and maintain a groundwater monitoring system in accordance with the Groundwater Monitoring Program Sampling and Analysis Plan (GWMP SAP), Attachment 9, of this license. {R 299.9611(2)(a) and (b), R 299.9612, and R 299.9629 and 40 CFR Part 264, Subpart F, excluding 40 CFR §§264.94(a)(2) and (3), 264.94(b) and (c), 264.100, and 264.101)

2. With the initiation of construction on each new phase of MCs VI F and G, or more frequently if necessary, the licensee shall evaluate the monitoring locations specified in the GWMP SAP to determine if any additional monitoring wells are required to be installed or any existing monitoring wells need to be decommissioned. If revision of the GWMP SAP is required it shall be submitted within 60 days of the initiation of that construction to the Hazardous Waste Section Chief for approval as a minor license modification.

3. All new monitoring wells shall be installed and constructed in accordance with American Society of Testing and Materials (ASTM) standard D5092-90 or a plan approved by the Director. Any monitoring well that must be decommissioned shall be done in accordance with ASTM standard D5299-92 or a plan approved by the Director. {R 299.9612(1)(b)}

4. Water removed from each monitoring well shall be managed as specified in Section VI of Attachment 9 of this license. {R 299.9521(3)(b)}

5. The licensee shall submit an annual groundwater report to the Division Chief no later than March 1st of each year for the previous calendar year's activities. At a minimum, the report shall include the following information:

   (a) A narrative summary of the previous calendar year's sampling events, including sampling event dates, the identification of any significant problems with respect to GWMP SAP procedures, a summary of newly-installed and/or decommissioned monitoring wells, and copies of field log sheets.

   (b) A determination of the groundwater flow rate and direction in the monitored zones (drift aquifer, and bedrock aquifer), including the preparation of a groundwater level contour map from this data.

   (c) A summary evaluation of groundwater quality data results, including narrative, tabular, and graphical summaries of results and trends of primary, secondary, and tertiary parameters, and a summary of current background concentrations of applicable parameters.

   (d) A presentation of the statistical analysis of the data and the identification of any statistically significant increases (and/or pH decreases) pursuant to Condition V.A.7 of this license.

   (e) An analysis and discussion of laboratory and field related QA/QC information. This shall include results of equipment, field, and trip blanks and a discussion and

evaluation of the adequacy of the data with respect to the GWMP SAP specifications and requirements.

{R 299,9521(3)(b) and R 299.9612(1) and 40 CFR, §264.97(j)}

6. The licensee shall establish background groundwater quality values at monitoring wells as specified in Section 3.0 of Attachment L of Attachment 9 of this license. {R 299.9612(1)(c), (d), and (e) and 40 CFR §264.97(a) and (g)}

7. Within 60 days after each sampling of each monitoring well, the licensee shall determine if a statistically significant increase (or change in pH) has occurred compared to background levels for each primary and secondary parameter listed in Attachment H of Attachment 9 of this license. For the primary parameters, any occurrence above the laboratory detection limit(s) for the parameters shall be considered statistically significant. {R 299.9612(1)(c) and (e) and 40 CFR §264.97(h) and (i))

8. If a statistically significant increase (or change in pH) is detected for any primary or secondary parameter, the licensee shall notify the Division, Hazardous Waste Section, Permit and Corrective Action Unit, by telephone within one working day and arrange a resampling as soon as possible to confirm if a statistically significant increase (or change in pH) exists. Resampling must include not less than four replicate samples at the affected well(s) for the parameter(s) in question. For the primary and any other nonnaturally occurring parameters, a statistically significant increase shall be confirmed if at least two of the four resample results are detected above the laboratory detection limit(s) for the parameter(s), or if at least one of the resample results is detected at five times the laboratory detection limit. For the naturally occurring secondary parameters, a statistically significant increase shall be confirmed using the average concentration of the four confirmation samples as the analytical result in the statistical procedures specified in Attachment L of Attachment 9 of this license. {R 299.9612 and 40 CFR §264.97(g)}

9. If the licensee determines pursuant to Conditions V.A.7, and V.A.8, of this license that a statistically significant increase has been confirmed for any primary parameter, the licensee shall address the increase in accordance with the requirements specified in R 299.9612 and 40 CFR §264.98(f) and (g). Additionally, the licensee shall:

   (a) Within 1 working day, notify the Division Chief or the appropriate Division Supervisor, or if unavailable, the DEQ Pollution Emergency Alerting System (PEAS) at 1-800-292-4706.

   (b) Immediately take steps to determine the cause of the contamination and eliminate the source of discharge.

   (c) Prior to a license modification requiring a compliance monitoring and corrective action, the licensee shall provide the Division Chief, or his or her designee, with weekly telephone updates and written reports every two weeks regarding the progress to date in determining the cause of contamination and eliminating the discharge. The written report shall include the results of all samples from environmental monitoring conducted by the licensee. {R 299.9521(3)(b)}

   (d) Within 90 days after the confirmation of a statistically significant increase, submit to the Division Chief an application for a license modification to establish a compliance monitoring or corrective action meeting the requirements of R 299.9612 and 40 CFR §264.98(g)(4).

(e) Within 180 days after the determination, submit to the Division Chief a detailed description of corrective actions that shall achieve compliance with applicable laws and rules, including a schedule of implementation. Corrective action shall also meet the requirements of R 299.9629 and include a plan for a groundwater monitoring program that shall demonstrate the effectiveness of the corrective action. Such a groundwater monitoring program may be based on a compliance monitoring program developed to meet the requirements of 40 CFR §264.99.

(f) If the licensee determines pursuant to Conditions V.A.7. and V.A.8. of this license that a statistically significant increase in primary parameters has been confirmed in groundwater, the licensee may demonstrate that a source other than the licensed facility or an error in sampling, analysis, or evaluation solely caused the identification of a statistically significant increase. While the licensee may make a demonstration under this condition in addition to, or in lieu of, submitting a license modification application and implementing corrective action within the time specified in Conditions V.A.9.(d) and V.A.9.(e) of this license, the licensee is not relieved of the requirement to submit a license modification application and implement corrective action within the time specified, unless the DEQ finds that the demonstration made under this condition successfully shows that a source other than the licensed facility caused the statistically significant increase or that the statistically significant increase resulted from an error in sampling, analysis, or evaluation. In making a demonstration under this condition, the licensee shall:

(i) Notify the Division Chief in writing within 7 days of determining a statistically significant increase pursuant to Condition V.A.9, of this license that it intends to make a demonstration under this condition.

(ii) Within 60 days after determining that a statistically significant increase has occurred pursuant to Conditions V.A.7. and V.A.8. of this license, submit a report to the Division Chief that demonstrates a source other than the licensed facility solely caused the statistically significant increase, or that the statistically significant increase was caused by an error in sampling, analysis, or evaluation.

(iii) Continue to monitor groundwater in compliance with this license.

10. If the licensee determines pursuant to Conditions V.A.7. and V.A.8. of this license that a statistically significant increase (or change in pH) has occurred for any secondary parameter, the licensee shall address the increase (or change in pH) in accordance with the requirements specified in R 299.9612. Additionally, the licensee shall:

(a) Immediately take steps to determine the cause of contamination and eliminate the source of the discharge.

(b) Within 60 days after the determination, submit to the Division Chief a detailed report that explains the chronology of events, investigative methods, all laboratory analyses, calculations, field activities, and findings related to this determination.

(c) The licensee may demonstrate that a source other than the licensed facility or an error in sampling, analysis, or evaluation solely caused the identification of a statistically significant increase. In making a demonstration under this condition, the licensee shall:

(i) Notify the Division Chief in writing within 7 days of determining a statistically significant increase pursuant to Condition V.A.9. of this license that it intends to make a demonstration under this condition.

(ii) Within 60 days after determining that a statistically significant increase has occurred pursuant to Conditions V.A.9. and V.A.8. of this license, submit a report to the Division Chief that demonstrates a source other than the licensed facility solely caused the statistically significant increase, or that the statistically significant increase was caused by an error in sampling, analysis, or evaluation.

(iii) Continue to monitor groundwater in compliance with this license,

11. In the event that the Division Chief determines from the findings of Conditions V.A.7 and V.A.8 of this license that a statistically significant increase (or change in pH) in hazardous constituents has occurred in the groundwater, and the Director finds, in accordance with § 11148 of Act 451, that the increase (or change in pH) may present an imminent and substantial hazard to the health of persons or to the natural resources, or is endangering or causing damage to public health or the environment, the licensee shall immediately comply with an order issued by the Director pursuant to § 11148(1) of Act 451 to cease waste receipt, storage, and treatment at the affected units and conduct other activities as required by the Director to eliminate the said endangerment. {R 299.9612(1)(g)}

12. The licensee shall report all groundwater detection monitoring and hydraulic monitoring results as required by Condition 1113 of this license. This information shall be signed and certified in accordance with Condition I.D.3. of this license.

B. **AMBIENT AIR MONITORING PROGRAM**

1. The licensee shall conduct ambient air monitoring in accordance with the program specified in the Ambient Air Monitoring Program Sampling and Analysis Plan, Attachment 10, of this license. {R 299.9611(2)(c)}

2. The licensee shall report ambient air monitoring results as required by Condition 1113. of this license. This information shall be signed and certified in accordance with Condition I.D.3. of this license.

C. **SOIL MONITORING PROGRAM**

1. The licensee shall conduct a semiannual corrective action soil monitoring program for PCBs in Area A and a detection soil monitoring program for PCBs in Area B as specified in the Soil Monitoring Program Sampling and Analysis Plan (SM SAP), Attachment 11, of this license.

2. With the initiation of construction on each new phase of MCs VI F and G, or more frequently if necessary, the licensee shall evaluate the soil monitoring locations specified in the SM SAP to determine if any additional soil monitoring locations are required to be added or removed. If revision of the SM SAP is required it shall be submitted within 60 days of the initiation of that construction to the Hazardous Waste Section Chief for approval as a minor license modification. {R 299.9611(2)(d)}

3. Within 60 days of each soil sampling event, the licensee shall determine if an apparent threshold limit exceedance (ATLE) for PCBs has occurred as specified in Section 7.0 of

3. If an ATLE for PCBs is detected, the licensee shall verbally notify the Division, Hazardous Waste Section, Permit and Corrective Action Unit, within 1 working day and collect verification samples within 7 working days to determine if a confirmed threshold limit exceedance (CTLE) for PCBs has occurred as specified in Section 8.0 of Attachment 11 of this license.

4. If it is determined that a CTLE for PCBs has occurred pursuant to Conditions V.C.3. and V.C.4. of this license, the licensee shall:

   (a) Take immediate steps to eliminate the source of the contamination and prevent further releases.

   (b) Within 1 working day after the determination, verbally notify the Division, Hazardous Waste Section, Permit and Corrective Action Unit.

   (c) Within 5 days after the determination, submit a written report to the Division, Hazardous Waste Section, Permit and Corrective Action Unit, that includes the findings from the resampling and a map showing the proposed locations for collecting delineation phase samples as specified in Section 8.0 of Attachment 11 of the license.

   (d) Within 14 days after the determination, collect the first phase of delineation samples to determine the extent of the areas exceeding the CTLE as specified in Section 8.0 of Attachment 11 of this license.

   (e) Within 14 days after receiving the delineation phase sampling results, evaluate the data and submit a plan to remove soils/sediments and to determine the source(s) or expected source(s) of the PCBs to the Division, Hazardous Waste Section, Permit and Corrective Action Unit, as specified in Section 8.0 of Attachment 11 of this License.

   (f) Contaminated soils/sediments shall be properly characterized and managed as waste in accordance with Part 3 of the Part 11▮ Rules, and cleanup to the levels specified in Section 7.0 of Attachment 11 of this License shall be verified by soil sampling. Any nonhazardous soils/sediments containing 5 parts per million (ppm) or less of PCBs shall be disposed of at a licensed solid waste disposal facility or in a WDI licensed hazardous waste cell. Any soils/sediments containing more than 5 ppm of PCBs or that are hazardous waste shall be disposed of at a licensed hazardous waste facility. Any soil/sediments containing more than 50 ppm of PCBs shall be disposed at a TSCA authorized facility. The waste characterization records shall be maintained for a minimum of 3 years from the date of disposal. The licensee shall maintain a log at the facility for any soil/sediments that are disposed of in the WDI hazardous waste disposal cell providing the date and amount excavated, the date and location within the cell where they were disposed, and sufficient information to locate the waste characterization data maintained by the licensee.

   (g) Within 60 calendar days after determining that a CTLE has occurred, implement the plan required in Condition V.C.5(e) and submit a final report to the Division, Hazardous Waste Section, Permit and Corrective Action Unit that includes:

      (i) The chronology of events.

      (ii) Investigative methods.

(iii) All laboratory analyses.

(iv) Calculations.

(v) Field activities related to the determination.

(vi) The corrective measures/remedies.

5. The licensee shall report all soil monitoring results as required by Condition 1113 of this license. This information shall be signed and certified in accordance with Condition I.D.3. of this license.

D. **SURFACE WATER MONITORING PROGRAM**

1. The licensee shall conduct a quarterly surface water detection monitoring program as described in the Surface Water Monitoring Program Sampling and Analysis Plan (SW SAP), Attachment 12, of this license.

2. With the initiation of construction on each new phase of MCs VI F and G, or more frequently if necessary, the licensee shall evaluate the surface water monitoring locations specified in the SW SAP to determine if any additional surface water monitoring locations are required to be added or removed. If revision of the SW SAP is required it shall be submitted within 60 days of the initiation of that construction to the Hazardous Waste Section Chief for approval as a minor license modification. {R 299.9611(5)}

3. Within 60 days of each sampling event, the licensee shall determine if an apparent statistically significant increase (ASSI) has occurred as specified in Section 7.0 of Attachment 12 of this license.

4. Duplicate samples shall be collected at each sampling location for volatile organics, PCBs, and metals. Initially, the licensee is required to analyze only one of the two samples. The licensee shall hold the duplicate sample pending the results of the initial sample. The duplicate sample for PCBs shall be extracted when it arrives at the laboratory and the extract held in case a confirmation analysis is required. If a statistically significant increase is detected in a monitoring parameter(s), the duplicate sample/sample extract shall be analyzed for confirmation purposes.

5. If an ASSI is detected, the licensee shall verbally notify the Division, Hazardous Waste Section, Permit and Corrective Action Unit, within one working day and determine if a confirmed statistically significant increase (CSSI) has occurred as specified in Section 8.0 of Attachment 12 of this license.

6. Within 30 days of a determination that a CSSI has occurred pursuant to Conditions V.D.3. and V.D.5. of this license, the licensee shall determine whether a discharge of hazardous waste and/or hazardous waste constituents to off-site surface waters is occurring, determine the source, and take immediate steps to eliminate and prevent any such discharge. If a discharge of PCBs to off-site surface water occurs the licensee shall implement the Contingency Plan, Attachment 4, of this license, unless the discharge is specifically authorized by and is in compliance with the effective NPDES permit for the facility.

7. Within 60 days of a determination that a CSSI has occurred pursuant to Conditions V.D.3. and V.D.5. of this license, the licensee shall submit a written report to the Division Chief documenting the investigation, response, and any proposed actions to prevent future releases.

8. The licensee shall report surface water monitoring results as required by Condition 11.13. of this license. This information shall be signed and certified in accordance with Condition I.D.3. of this license.

{R 299.9521(3)(a) and (b) and R 299.9611(5)}

E. LEACHATE MONITORING PROGRAM

1. With the construction on each new phase of MCs VI F and G, the licensee shall include additional leachate monitoring locations as defined in the Leachate Monitoring Program Sampling and Analysis Plan (LMP SAP) as new cells are certified and approved for disposal by the Hazardous Waste Section Chief. The revision of the LMP SAP shall be submitted at the time of the construction certification to the Hazardous Waste Section Chief for approval as a minor license modification.

2. The licensee shall measure the leachate level in each collection sump on a weekly basis and verify that the leachate pump and flow meter are operating properly during that field event. The procedures for conducting the inspection are specified in Section 3.0 of the LMP SAP, Attachment 13, of this license.

3. The licensee shall inspect the leachate collection sumps on a weekly basis for deterioration and/or damage and monitor the total monthly volume of leachate pumped from each collection sump and record this information on the operating record for the facility. {R 299.9609(1)(b) and R 299.9619(4)(c)(iii)}

4. The licensee shall jet out the leachate collection system through the leachate clean-out pipes once every two years, or more frequently if needed, to minimize blockage that could cause leachate to build up on the base of the disposal cells.

5. The licensee shall conduct an annual leachate monitoring program on each of the constructed and certified leachate collection sumps within MCs V, VI, and VII as described in the LMP SAP, Attachment 13, of this license.

   (a) Samples shall be collected in accordance with the procedures specified in the LMP SAP, Attachment 13, of this license, and they shall be analyzed for the parameters listed on Figure 7 of Attachment 13 of this license.

   (b) In addition to monitoring the leachate for the parameters identified in Condition V.E.5.(a), above, the licensee shall collect annual samples from two of the constructed and certified sump locations in MCs V, VI, and VII and analyze the samples for a modified 40 CFR Appendix IX parameters specified in Figure 8 of the Attachment 13 of this license. Following completion of the initial approximately 8-year cycle, the Appendix IX sampling shall continue on this schedule for each open cell.

   (c) If, based on the results of the modified Appendix IX monitoring required by Condition V.E.5.(b), it is determined that the leachate contains organic constituents other than those that are routinely monitored under Condition V.E.5.(a) of this license, the licensee shall submit a written report to the Division stating whether or not the parameter should be added to the leachate program. If, upon review of the report, the Division determines that the parameter is present in significant concentrations in the leachate and/or may pose a serious environmental hazard due to the nature of the

constituent, the licensee shall be required to add the parameter to the annual leachate monitoring list, and it shall become a routine leachate indicator. In addition, any such parameters shall also be added to the groundwater, lysimeter, surface water, and leak detection monitoring programs as specified in Condition V.E.6.(b), below.

6. The licensee shall submit an annual leachate monitoring report to the Division by March 1st of each year during the active life of the landfill and the postclosure care period.

   (a) The annual leachate monitoring report shall be signed and certified in accordance with Condition I.D.3. of this license.

   (b) During the active life of the landfill, the annual leachate monitoring report shall summarize the results of the leachate analytical data that was collected at the facility and recommend any refinements deemed necessary to the leachate and the groundwater and leak detection/lysimeter monitoring programs. If the licensee determines that organic chemicals are newly present or present at increased concentrations in the leachate and a determination is made to add the parameter(s) to the leachate monitoring program, the parameters shall also be added to the groundwater and the leak detection monitoring programs, and they shall be sampled on at least an annual basis.

   (c) During the active life of the landfill and during the postclosure care period, the annual leachate monitoring report shall include:

      (i) Leachate volume calculations.

      (ii) A graphical presentation of the monthly and yearly quantities of leachate being generated and pumped from each leachate sump at the landfill.

      (iii) A graphical comparison between leachate quantities purnpedlgenerated at each leachate sump during the reported year and the leachate quantities pumpedlgenerated from previous years.

      (iv) Reasons for increases/decreases in leachate quantities at each leachate sump. If there is an increase in leachate quantities, the source shall be indicated in the leachate monitoring report.

7. The licensee shall report leachate monitoring results as required by Condition 11.13. of this license. This information shall be signed and certified in accordance with Condition I.D.3. of this license.

{R 299.9521(3)(a) and (b) and R 299.9611(5))

F. LEAK DETECTION SYSTEM MONITORING PROGRAM

1. With the construction on each new phase of MCs VI F and G, the licensee shall include additional leak detection monitoring locations as defined in the Leak Detection Monitoring Program Sampling and Analysis Plan (LDMP SAP) as new cells are certified and approved for disposal by the Hazardous Waste Section Chief. The revision of the LDMP SAP shall be submitted at the time of the construction certification to the Hazardous Waste Section Chief for approval as a minor license modification..

2. The licensee shall conduct a quarterly leak detection monitoring program as specified in the LDMP SAP, Attachment 14, of this license. In addition, the licensee shall:

   (a) Inspect each of the constructed and certified leak detection system sumps in MC VI on a weekly basis to confirm that the pump system is operating properly and that there is no evidence of damage or tampering that could allow waste or waste constituents to have entered the system. Information from this inspection shall be reported on the weekly/after storm inspection form required by Condition II.C.I. of this license.

   (b) Record the volume of liquid withdrawn from each of the constructed and certified leak detection system sumps in MC VI on a weekly frequency and analyze in the field the liquid from each of the leak detection system sumps in MC VI on a monthly frequency for pH and specific conductivity. This information shall be reported on the form that is included as Attachment C of Attachment 14 of this license.

   (c) If any sump yields volume measurements above the maximum expected volume, calculated as per Section 7.1 in Attachment 14 of this license, or conductance values exceed the mean plus three standard deviations, as calculated from the last eight conductance values, samples shall be collected from the affected sump and analyzed as soon as practicable for the full list of quarterly parameters specified in Condition V.F.3. of this license.

3. The licensee shall collect samples from the constructed and certified sump locations in MC VI on a quarterly basis and analyze the samples for the parameters listed in Attachment E of Attachment 14 of this license.

4. The background statistical value for the organic monitoring parameters is defined as the reported detection limit specified in Attachment E of Attachment 14 of this license.

5. If additional parameters must be added to the leak detection monitoring program in accordance with Condition V.E.5.(c) of this license, the licensee must provide written notification to the Division Chief requesting modification to the program. If background has not already been established for these additional parameters, the notification must include a proposed plan to determine background for these constituents on an accelerated schedule.

6. The licensee shall provide written notification to the Division Chief requesting any changes that need to be made to the approved LDMP SAP, Attachment 14, of this license and obtain written approval prior to implementation.

7. The licensee shall, within 60 calendar days of the sampling, report in writing to the Division Chief the laboratory data and the results from the statistical evaluation performed in accordance with Attachment 14 of this license.

8. If a statistically significant increase is detected in any of the monitored parameters, the licensee shall immediately notify the Division that this situation has occurred and arrange for a resampling as soon as possible to confirm if the statistical increase exists. If adequate water can be obtained from the system, confirmation samples shall be collected in quadruplicate.

9. If the licensee confirms that a statistically significant increase in a monitored parameter has occurred, the following actions must be taken:

   a. Immediately notify the Director by calling the Division Chief or the Division Southeast Michigan District Supervisor, in accordance with Condition II.I.5. of this license.

b. Provide follow-up notification to the Division Chief in writing within 5 calendar days of the telephone call in accordance with Condition II.I.6.(b) of this license.

c. Begin immediate action to implement the current Contingency Plan, as appropriate.

d. Determine, within 30 calendar days of notification, whether a failure in the liner system has occurred.

e. Provide the Division Chief, or his or her designee, with weekly telephone updates and written reports every two weeks regarding the progress to date in determining the cause of contamination and the results of all samples from environmental monitoring conducted by the licensee.

10. If the determinations made pursuant to Condition V.F.9.(d) of this license indicate a release of contaminants from the MC VI primary liner system, the licensee shall do either of the following:

a. Begin immediate action to repair failures in the liner system or otherwise correct the problem and demonstrate to the Division Chief within 72 hours that the action being taken will contain the release of contaminants and maintain the capability of the system to detect contaminants that may enter the leak detection system. The licensee shall complete the repair and corrective activities pursuant to a schedule approved by the Division Chief and shall obtain the certification of a registered professional engineer that, to the best of his or her knowledge or opinion, the remedial actions have been completed. If the Division Chief determines that the failure cannot be corrected on a schedule that insures the protection of human health and the environment, the licensee shall comply with Condition V.F.10.(b) of this license.

b. Cease placing waste into the affected area in MC VI and take action to prevent the migration of hazardous waste and hazardous waste constituents from the area on a schedule approved by the Division Chief, and propose a plan to address any environmental damages that may have occurred as a result of the failure.

11. If the licensee determines pursuant to Conditions V.F.8. and V.F.9. of this license that a statistically significant increase in hazardous constituents has occurred in the leak detection system, it may demonstrate that a source other than the licensed facility caused the increase or that the increase resulted from error in sampling, analysis, or evaluation. In making a demonstration under this condition, the licensee shall:

a. Notify the Division Chief within 7 days of the determination that it intends to make a demonstration under this condition.

b. Within 90 days of the determination, submit a report to the Division Chief that demonstrates that a source other than the licensed facility solely caused the increase or that the increase was caused by error in sampling, analysis, or evaluation. The report shall be signed and certified in accordance with Condition I.D.3. of this license.

c. Continue to monitor the leak detection system in compliance with this license.

12. The licensee shall report leak detection monitoring results as required by Condition II.I.3. of this license. In addition to these requirements, the licensee shall provide the Division Chief with a written annual report by March 1st of each year summarizing the data and the monitoring program results from the previous calendar year. The annual report shall include graphical

presentations summarizing volume pumped from each leak detection system sump per month and volume pumped from the leak detection system versus volume pumped from the leachate collection system. The annual report shall reference and be part of the annual leachate monitoring report required in Condition V.E.6. of this license. All monitoring reports shall be signed and certified in accordance with the requirements in Condition I.D.3. of this license.

13. The licensee shall report leak detection monitoring results as required by Condition 11.13. of this license. This information shall be signed and certified in accordance with Condition I.D.3 of this license.

{R 299.9521(3)(a) and (b) and R 299.9611(5)}

G. LYSIMETER MONITORING PROGRAM

1. The licensee shall conduct a semiannual detection monitoring program as specified in the Lysimeter Monitoring Program Sampling and Analysis Plan (LM SAP), Attachment 15, of this license.

2. The background statistical value for the organic monitoring parameters is defined as the reported detection limit specified in Figure 3 of Attachment 15 of this license.

3. If additional parameters must be added to the lysimeter monitoring program in accordance with Condition V.E.5.(c) of this license, the licensee must provide written notification to the Division Chief requesting modification to the program. If background has not already been established for these additional parameters, the notification must include a proposed plan to determine background for these constituents on an accelerated schedule.

4. The licensee shall provide written notification to the Division Chief requesting any changes that need to be made to the approved LM SAP, Attachment 15, of this license and obtain written approval prior to implementation.

5. The licensee shall, within 60 calendar days of the sampling, report in writing to the Division Chief the laboratory data and the results from the statistical evaluation performed in accordance with Attachment 15 of this license.

6. If a statistically significant increase is detected in any of the monitored parameters, the licensee shall immediately notify the Division that this situation has occurred and arrange for a resampling as soon as possible to confirm if the statistical increase exists. If adequate water can be obtained from the system, confirmation samples shall be collected in quadruplicate.

7. If the licensee confirms that a statistically significant increase in a monitored parameter has occurred, the following actions must be taken:

   (a) Immediately notify the Director by calling the Division Chief or the Division Southeast Michigan District Supervisor, in accordance with Condition II.I.5. of this license.

   (b) Provide follow-up notification to the Division Chief in writing within 5 calendar days of the telephone call in accordance with Condition II.I.5.(b) of this license.

   (c) Begin immediate action to implement the current Contingency Plan, as appropriate.

   (d) Determine, within 30 calendar days of notification, whether a failure in the liner system has occurred.

(e) Provide the Division Chief, or his or her designee, with weekly telephone updates and written reports every two weeks regarding the progress to date in determining the cause of contamination and the results of all samples from environmental monitoring conducted by the licensee.

8. If the determinations made pursuant to Condition V.G.7.(d) of this license indicate a release of contaminants from MCs V or VII, the licensee shall do the following:

Begin immediate action to repair or otherwise correct the problem and demonstrate to the Division Chief within 72 hours that the action being taken will correct the release of contaminants and clean up contaminants that may have leaked from the system. The licensee shall complete the repair and cleanup activities pursuant to a schedule approved by the Division Chief and shall obtain the certification of a registered professional engineer that, to the best of his or her knowledge or opinion, the remedial actions have been completed.

9. If the licensee determines pursuant to Conditions V.G.7. and V.G.8. of this license that a statistically significant increase in hazardous constituents has occurred in the lysimeter monitoring program, it may demonstrate that a source other than the licensed facility caused the increase or that the increase resulted from error in sampling, analysis, or evaluation. In making a demonstration under this condition, the licensee shall:

(a) Notify the Division Chief within 7 days of the determination that it intends to make a demonstration under this condition.

(b) Within 90 days of the determination, submit a report to the Division Chief that demonstrates that a source other than the licensed facility solely caused the increase or that the increase was caused by error in sampling, analysis, or evaluation. The report shall be signed and certified in accordance with Condition I.D.3. of this license.

(c) Continue to monitor the lysimeter system in compliance with this license.

10. The licensee shall report lysimeter monitoring results as required by Condition 11.3 of this license. In addition to these requirements, the licensee shall provide the Division Chief with a written annual report by March 1st of each year summarizing the data and the monitoring program results from the previous calendar year. The annual report shall reference and be part of the annual leachate monitoring report required in Condition V.E.6. of this license. All monitoring reports shall be signed and certified in accordance with the requirements in Condition I.D.3. of this license.

11. The licensee shall report lysimeter monitoring results as required by Condition 11.3 of this license. This information shall be signed and certified in accordance with Condition I.D.3. of this license.

{R 299.9521(3)(a) and (b) and R 299.9611(5)}

H. SEDIMENTATION BASIN MONITORING PROGRAM

1. The licensee shall conduct an annual sedimentation basin monitoring program for the north sedimentation basin (NSB), south sedimentation basin (SSB), and the northwest sedimentation basin (NWSB) as specified in the Sedimentation Basin Monitoring Program Sampling and Analysis Plan (SB SAP), Attachment 16, of this license.

2. Within 60 days of each sampling, the licensee shall determine if an ASSI has occurred as specified in Section 7.0 of Attachment 16 of this license.

3. If an ASSI is detected, the licensee shall verbally notify the Division, Hazardous Waste Section, Permit and Corrective Action Unit, within one working day and collect verification samples within seven working days to determine if a CSSI has occurred as specified in Attachment 16 of this license.

4. If the licensee determines pursuant to Conditions V.H.2. and V.H.3. of this license that a CSSI has occurred, the licensee shall:

(a) Take immediate steps to eliminate the source of the contamination and prevent further releases.

(b) Within 1 working day after the determination, verbally notify the Division, Hazardous Waste Section, Permit and Corrective Action Unit.

(c) Within 5 calendar days after the determination, submit written notification of the CSSI to the Division, Hazardous Waste Section, Permit and Corrective Action Unit. The notification shall be signed and certified in accordance with Condition I.D.3. of this license.

(d) In addition, within 30 days after the determination, implement the response actions defined in Section 8.0 of Attachment 16 of this license depending upon the CSSI location and parameter.

5. The licensee shall report sedimentation basin monitoring results as required by Condition II.I.3. of this license and as specified in Section 9.0, of Attachment 16 of this license. This information shall be signed and certified in accordance with Condition I.D.3. of this license.

{R 299.9521(3)(a) and (b) and R 299.9611(5)}

PART VI
CORRECTIVE ACTION CONDITIONS

A. CORRECTIVE ACTION AT THE FACILITY

The licensee shall implement corrective action for all releases of a contaminant from any waste management unit (WMU) at the facility, regardless of when the contaminant may have been placed in or released from the WMU. For the purposes of this license, the term "corrective action" means an action determined by the Division Chief to be necessary to protect the public health, safety, welfare, or the environment, and includes, but is not limited to, investigation, evaluation, cleanup, removal, remediation, monitoring, containment, isolation, treatment, storage, management, temporary relocation of people, and provision of alternative water supplies, or any corrective action allowed under Title II of the federal Solid Waste Disposal Act, PL 89-272, as amended, or regulations promulgated pursuant to that act. For the purposes of this license, the process outlined in Part 111 of Act 451 and the environmental protection standards adopted in R 299.9629 shall be used to satisfy the corrective action obligations under this license. {§§11102 and 11115a of Act 451 and R 299.9629)

2. To the extent that a release of a hazardous substance, as defined in 920101(t) of Act 451, that is not also a contaminant, as defined in §11102(2) of Act 451, is discovered while performing corrective action under this license, the licensee shall take concurrent actions as necessary to address the Part 201 of Act 451 remedial obligations for that release. {R 299.9521(3)(b)}

B. CORRECTIVE ACTION BEYOND THE FACILITY BOUNDARY

The licensee shall implement corrective action beyond the facility in accordance with §11115a of Act 451 and R 299.9629(2).

C. IDENTIFICATION OF WASTE MANAGEMENT UNITS

The WMUs at the facility are identified below and shown in Drawing 1 in Attachment 7 of this license.

1. The following WMU, identified in the Draft Report on RCRA Facility Investigation Release Assessment for Wayne Disposal Site # 1 Landfill, October 7, 1992, requires further corrective action at this time that includes, at a minimum, further investigation to determine if a release of a contaminant has occurred and, if a release has occurred, the nature and extent of the release.

   (a) WMU 1 — Site # 1 Landfill

2. The following WMUs, identified in the RCRA Corrective Action Plan RFI Phase 1 Environmental Monitoring Report for Wayne Disposal Site # 2 Landfill, July 17, 1990, do not require corrective action at this time based on the design of the units and available information that indicates that no known or suspected releases of contaminants from the units have occurred.

   (b) WMU 2 — Site # 2 Landfill

{§§11102 and 11115a of Act 451 and R 299.9521(3)(b) and R 299.9629}

3. Within 30 days of discovery of a new WMU or a release of a contaminant from a new WMU, the licensee shall provide written notification to the Division Chief. The written notification shall include all of the following information:

   (a) The location of the unit on the facility topographic map.

   (b) The designation of the type of unit.

   (c) The general dimensions and structural description, including any available drawings of the unit.

   (d) The date the unit was operated.

   (e) Specification of all waste(s) that have been managed in the unit.

   (f) All available information pertaining to any release of a contaminant from the unit.

4. Based on a review of all of the information provided in Condition VI.C.3. of this license, the Division Chief may require corrective action for the newly-identified WMU. The licensee shall submit a written remedial investigation (RI) Work Plan to the Division Chief within 60 days of written notification by the Division Chief that corrective action for the unit is required.

{§§11102 and ▮1115a of Act 451 and R 299.9504(1), R 299.9508(1)(b), and R 299.9629 and 40 CFR §270.14(d)}

D. CORRECTIVE ACTION INVESTIGATION

Within 60 days of the licensee's receipt of the Division's comments on the review of the Draft Report on Corrective Action Investigation (CAI) Release Assessment for Wayne Disposal Site # 1 Landfill, October 7, 1992, which was submitted to the U.S. EPA, the licensee shall submit a CAI Work Plan to conduct additional investigation to determine if a release of a contaminant(s) from of the WMU 1 identified in Condition VI.C. of this license has occurred and, if a release(s) has occurred, evaluate the nature and extent of the release(s). The licensee shall submit a written CAI Work Plan, CAI Final Report documenting compliance with the approved CAI Work Plan and supporting further corrective action at the facility, and CAI progress reports to the Division Chief for review and approval in accordance with Condition VI.K. of this license. The Division Chief will approve, modify and approve, or provide a Notice of Deficiency (NOD) for the CAI Work Plan and CAI Final Report. Upon approval, the CAI Work Plan and CAI Final Report become enforceable conditions of this license. {§§11102 and 11115a of Act 451 and R 299.9629)

E. INTERIM MEASURES

The licensee shall conduct interim measures (IM) at the facility, if determined necessary by the licensee or the Division Chief, to clean up or remove a released contaminant or to take other actions, prior to the implementation of a remedial action, as may be necessary to prevent, minimize, or mitigate injury to the public health, safety, or welfare, or to the environment. The licensee shall submit a written IM Work Plan, IM Final Report documenting compliance with the approved IM Work Plan and supporting further corrective action at the facility, and IM progress reports to the Division Chief for review and approval in accordance with Condition VI.K. of this license. The Division Chief will approve, modify and approve, or provide an NOD for the IM Work Plan and IM Final Report. Upon approval, the IM Work Plan and IM Final Report become enforceable conditions of this license.

{§§11102 and 11115a of Act 451 and R 299.9629)

F. DETERMINATION OF NO FURTHER ACTION

1. The licensee shall continue corrective action measures to the extent necessary to ensure that the applicable environmental protection standards established under Part 201 of Act 451, as adopted in Part 111 of Act 451, are met, if the limits are not less stringent than allowed pursuant to the provisions of RCRA.

2. Based on the results of the CAI and other relevant information, the licensee shall submit a written request for a license minor modification to the Division Chief if the licensee wishes to terminate corrective action for a specific WMU identified in Condition VI.C. of this license. The licensee must demonstrate that there have been no releases of a contaminant(s) from the WMU and that the WMU does not pose a threat to public health, safety, welfare, or the environment.

3. Based on the results of the CAI and other relevant information, the licensee shall submit a written request for a license major modification to the Division Chief if the licensee wishes to terminate facility-wide corrective action. The licensee must conclusively demonstrate that there have been no releases of a contaminant(s) from any of the WMUs at the facility and that none of the WMUs pose a threat to public health, safety, welfare, or the environment.

4. If, based upon a review of the licensee's request for a license modification pursuant to Condition VI.F.2. or VI.F.3. of this license, the results of the completed CAI, and other relevant information, the Division Chief determines that the releases or suspected releases of a contaminant(s) do not exist and that the WMU(s) do not pose a threat to public health, safety, welfare, or the environment, the Division Chief will approve the requested modification.

5. A determination of no further action shall not preclude the Division Chief from requiring continued or periodic monitoring of air, soil, groundwater, or surface water, if necessary to protect public health, safety, welfare, or the environment, when facility-specific circumstances indicate that potential or actual releases of a contaminant(s) may occur.

6. A determination of no further action shall not preclude the Division Chief from requiring further corrective action at a later date, if new information or subsequent analysis indicates that a release or potential release of a contaminant(s) from a WMU at the facility may pose a threat to public health, safety, welfare, or the environment. The Division Chief will initiate the necessary license modifications if further corrective action is required at a later date.

{§§11102 and 11115a of Act 451'and R 299.9629(2)}

G. CORRECTIVE MEASURES STUDY

If the Division Chief determines, based on the results of the CAI and other relevant information, that remedial activities are necessary, the Division Chief will notify the licensee in writing that a Corrective Measures Study (CMS) is required. If required by the Division Chief, the licensee shall conduct a CMS to develop and evaluate the corrective measures alternative(s) necessary to address the release(s) of a contaminant(s) or hazardous substances and the WMU(s) that are identified in the approved CAI Final Report as requiring final remedial activities. The licensee shall submit a written CMS Work Plan, a CMS Final Report documenting compliance with the approved CMS Work Plan and supporting further corrective action at the facility, and CMS progress reports to the Division Chief

for review and approval in accordance with Condition VI.K. of this license. The Division Chief will approve, modify and approve, or provide an NOD for the CMS Work Plan and CMS Final Report. Upon approval, the CMS Work Plan and CMS Final Report become enforceable conditions of this license {§§11102 and 11115a of Act 451 and R 299.9629)

H. CORRECTIVE MEASURES IMPLEMENTATION

The licensee shall conduct final corrective measures based on the CMS Final Report approved by the Division Chief. The licensee shall submit a written Corrective Measures Implementation (CMI) Work Plan to the Division Chief for review and approval. The licensee shall also submit a written CMI Final Report documenting the compliance with the approved CMI Work Plan and providing justification that the corrective actions may cease, and CMI progress reports to the Division Chief for review and approval in accordance with Condition VI.K. of this license. The Division Chief will approve, modify and approve, or provide an NOD for the CMI Work Plan and CMI Final Report. Upon approval, the CMI Work Plan and CMI Final Report become enforceable conditions of this license.

2. The Division will provide notice of its draft decision on the CMI Work Plan to persons on the facility mailing list and an opportunity for a public hearing.

3. The licensee shall implement the approved CMI Work Plan within 60 days of receipt of the Division Chief's written approval of the CMI Work Plan.

{§§11102 and 11115a of Act 451 and R299.9629)

I. CORRECTIVE ACTION MANAGEMENT UNITS

If applicable, the licensee shall comply with the requirements of R 299.9635 in order to designate an area at the facility as a corrective action management unit for implementation of response activities. {R 299.9521(3)(a)}

J. TEMPORARY UNITS

If applicable, the licensee shall comply with the requirements of R 299.9636 in order to designate tank or container storage units used for the treatment or storage of remediation wastes as temporary units for implementation of response activities. {R 299.9521(3)(a)}

K. SUMMARY OF CORRECTIVE ACTION SUBMITTALS

The licensee shall submit the required corrective action documents in accordance with Conditions II.N., VI.D., VI.E., VI.G., and VI.H. of this license and the schedule below.

CORRECTIVE ACTION DOCUMENT	SUBMITTAL DEADLINE
Written notification of a new release of a contaminant from an existing WMU, a new WMU, or a release of a contaminant from a new WMU	Within 30 days of discovery
CAI Work Plan for a newly-identified release of a contaminant from an existing WMU, a new WMU, or a release of a contaminant from a new WMU	Within 60 days of receipt of written notification that response activity is required
CAI Work Plan for existing WMU 1	Within 60 days of approval of the Draft Report on RCRA Facility Investigation Release Assessment for Wayne Disposal Site # 1 Landfill,
Revised CAI Work Plan for WMU 1	Within 45 days of receipt of CAI Work Plan NOD
CAI progress reports	Within 30 days of initiation of the CAI and every 30 days thereafter
CAI Final Report for WMUs and contaminant releases	Within 60 days of completion of CAI
Revised CAI Final Report for WMUs and contaminant releases	Within 45 days of receipt of CAI Final Report NOD
IM Work Plan for WMUs and contaminant releases	Within 60 days of receipt of notification that IM Work Plan is required
Revised IM Work Plan for WMUs and contaminant releases	Within 30 days of receipt of IM Work Plan NOD
IM progress reports	Within 30 days of initiation of the IM and every 30 days thereafter
IM Final Report for WMUs and contaminant releases	Within 60 days of completion of the IM
Revised IM Work Plan for WMUs and contaminant releases	Within 45 days of receipt of IM Final Report NOD
CMS Work Plan for WMUs and contaminant releases	Within 60 days of receipt of notification that CMS is required
Revised CMS Work Plan for WMUs and contaminant releases	Within 45 days of receipt of CMS Work Plan NOD
CMS progress reports	Within 30 days of initiation of the CMS and every 30 days thereafter

CORRECTIVE ACTION DOCUMENT	SUBMITTAL DEADLINE
CMS Final Report for WMUs and contaminant releases	Within 60 days of completion of the CMS
Revised CMS Final Report for WMUs and contaminant releases	Within 45 days of receipt of CMS Final Report NOD
CMI for WMUs and contaminant releases	Within 90 days of approval of the CMS Final Report
Revised CMI for WMUs and contaminant releases	Within 45 days of receipt of CMI NOD
CMI progress reports	Within 60 days of implementation of the CMI and every 30 days thereafter, unless otherwise approved
Completion Report for remediated WMUs and contaminant releases	Within 60 days of the remedial actions have been completed and cleanup criteria have been met
Revised Completion Report for WMUs and contaminant releases	Within 45 days of receipt of Completion Report NOD

L. CORRECTIVE ACTION DOCUMENTS RETENTION

The licensee shall maintain all corrective action documents required by this license at the facility. The documents shall be maintained for the operating life of the facility or until the facility is released from financial assurance requirements for corrective action by the Director, whichever is longer, The licensee shall offer such documents to the Division Chief prior to discarding those documents. {§§11102 and 11115a of Act 451 and R 299.9521(3)(b) and R 299.9629)

Attachment 1

Waste Analysis Plan

WASTE ANALYSIS PLAN

40 CFR 264.13b & c

AND

MI ACT 451 R504(1)c

Wayne Disposal Inc. (WDI) & Michigan Disposal Waste Treatment Plant (MDWTP)
49350-North I-94 Service Drive
Belleville, Michigan 48111

USEPA ID No. MID 048 090 633 (WDI)
USEPA ID No. MID 000 724 831 (MDWTP)

WAP – Table of Contents

1.0 INTRODUCTION

The purpose of this Waste Analysis Plan (WAP) is to identify and document the overall operational procedures, analytical techniques, and the necessary sampling methodologies which are undertaken for hazardous wastes that are received by the **Michigan Disposal Waste Treatment Plant (MDWTP)** for treatment and/or storage and Wayne Disposal, Inc (WDI) for disposal as required by Part 111 of Act 451 of the Public Acts of 1994, the Natural Resources and Environmental Protection Act (NREPA), Administrative Rule 299.9504(1)(c).

Per 40 CFR 264.73, the required information will be kept as part of the operating record.

The forms referenced within this WAP are typical forms currently used by the facility. These forms will periodically require updating based upon changes in regulations, customer needs, operations, or as company policy dictates.

2.0 FACILITY DESCRIPTION

2.1 Description of General Processes

Wayne Disposal, Inc. (WDI)

The Wayne Disposal Site #2 Hazardous Waste Landfill (WDI) operations include the landfill disposal of hazardous and non-hazardous wastes permitted by the MDEQ under the facility operating license and the USEPA under a Resource Conservation and Recovery Act (RCRA) permit (MID 048 090 633).

The specific routine operations and work areas include:

- Waste receiving and Quality Control (QC);
- Waste unloading;
- Container staging; and
- Hazardous waste landfill and related appurtenances (pipings, pumps, operation and maintenance, truck wheel wash buildings located within the area bounded by North Interstate 94 (I-94) Service Drive and Willow Run Airport).

The landfill is currently permitted with a design capacity of 11,000,000 cubic yards (cy) of in-place waste.

The requirements for operations in these areas are defined in and regulated by the operating license and permit. Non-hazardous wastes are managed in accordance with Part 115. The Wayne Disposal Site #2 Hazardous Waste Landfill (WDI) - MID 048 090 633) is co-located at the same site as the Michigan Disposal Waste Treatment Plant (MDWTP) – MID 000 724 831. The WDI operations are supported by the MDWTP office/laboratory and waste receiving, storage, and treatment operations located near the entrance to the facility. These operations assist to control and evaluate shipments received for conformance with pre-approval information regarding the specific properties, treatment, and documentation requirements. The WDI waste analysis records are maintained at the receiving building and laboratory areas.

Michigan Disposal Waste Treatment Plant (MDWTP)

The MDWTP operations include receiving, storage, and treatment of hazardous wastes permitted by the MDEQ under the facility operating license and the USEPA under a Resource Conservation and Recovery Act (RCRA) permit (MID 000 724 831). The routine operations and work areas include:

- Waste receiving and Quality Control (QC);
- Waste loading and unloading;
- Reagent unloading and tank storage;
- Waste storage in tanks;
- Waste treatment in tanks;
- Container staging/storage; and
- Shipment of wastes off-site to treatment, storage, and disposal facilities (TSDFs).

Non-hazardous wastes are managed in accordance with the Solid Waste Processing and Transfer Facility Operating License issued under Part 115 of Act 451 of 1994, the Natural Resources and Environmental Protection Act (NREPA).

2.2 Waste Identification and Classification

The waste types acceptable for treatment and storage at MDWTP or disposal at WDI are defined in Appendix A of this WAP.

In addition, at WDI the following waste types **NOT ACCEPTABLE** for disposal:

- Ignitable wastes as described in R299.9212(1);
- Reactive wastes as described in R299.9212(3);
- Bulk or non-containerized liquid waste or waste containing free liquids;
- Containers holding free liquids, including laboratory packs;
- Wastes which will:
  a. Adversely affect the permeability of the clay liner;
  b. Produce a leachate that is incompatible with the synthetic liner, leachate collection system (LCS), discharge piping, and the off-site sewer system;
  c. Generate gases which will adversely affect the permeability of the clay cap; and
  d. Create a violation of 1975 PA 348 and rules promulgated thereunder;
- Waste which are banned from landfilling by regulations promulgated under 40 Code of Federal Regulations (CFR) Part 268 unless the wastes meet the applicable Land Disposal Restriction (LDR) treatment standards or a variance has been obtained from the USEPA.

2.3 Description of Waste Management Units

Wayne Disposal, Inc. (WDI)

The Wayne Disposal Site #2 Hazardous Waste Landfill includes a permitted hazardous waste landfill with primary and secondary liner systems, a leachate collection and removal system, and a leak detection, collection and removal system. The landfill operations also include run-on, run-off, and contaminant control systems including a vehicle wash facility and other landfill-related appurtenances and support buildings. When placed in the landfill, containers are at least 90-percent full or crushed, shredded, or similarly reduced in volume before burial in the landfill.

Michigan Disposal Waste Treatment Plant (MDWTP)

The MDWTP is a liquid and solid hazardous waste storage and treatment facility. Containerized wastes may be staged/stored on-site before and after treatment in one of the following areas:

- East Container Staging Area (ECSA)
- North Container Storage Area (NCSA)
- East and West Loading/Unloading Bays
- Southeast Container Storage Area (SECSA)

Wastes are placed directly into the waste treatment tanks, and mixed, with modifiers for deactivation, neutralization, chemical oxidation, and chemical reduction or stabilization reagents, as required for the specific wastes being treated. The facility currently uses a backhoe shear attachment to size solid containers. Prior to being sized over and into a treatment tank the containers are staged on the paved floor in front of the treatment tanks.

Liquid hazardous wastes to be treated in the pozzolanic stabilization process may be stored in four, 20,000-gallon, vertical storage tanks (16 through 19) or placed directly into treatment tanks A – H (formerly tanks 7A, 7B, 8A, 8B, 9A, 9B, 10A and 10B respectively). Liquid reagents are stored in two, 20,000-gallon vertical tanks (25 and 27).

Dry flowable bulk solid hazardous wastes may be stored in three 100 cubic yard (CY) silos (2, 3 and 6). Lime kiln flue dust, cement kiln flue dust, lime and fly ash are also used for stabilization and may be stored in all six silos (1 through 6). The dusts are fed from the silos to the closest pugmill and treatment tank at a controlled rate to effect treatment of liquid and solid wastes. Other reagents, such as ferrous sulfate, may be added directly to the tanks in bag, container, or bulk quantities.

Hazardous waste and non-hazardous waste are stored and treated in treatment tanks A, B, C, D, E, F, G and H (formerly treatment tanks 7A, 7B, 8A, 8B, 9A, 9B, 10A and 10B respectively) and Pugmills 14 and 15. Treatment consists of blending the wastes and treatment reagents in the storage/treatment tanks.

Tanks will be decontaminated if changed from the storage/treatment of listed wastes to characteristic wastes. Decontamination consists of water washing and/or dry decontaminating the tank. The rinse waters and/or dry decontamination material is directed to a listed batch tank (containing a compatible waste). The decontamination step is noted on the Batch Ticket for the tank receiving the rinse waters and/or dry decontamination material.

Containerized hazardous waste and non-hazardous wastes are staged/stored on concrete pads at the East Container Staging Area (ECSA), North Container Storage Area (NCSA), Southeast Container Storage Area (SECSA) and inside the bays the East and West Treatment Buildings at MDWTP prior to placement in one of the tanks. Drainage trenches/sumps are constructed within the NCSA and ECSA to contain and control liquid runoff. Containers are handled by removing the tops or bungs and emptying the contents with a vacuum truck or directly into one of the treatment tanks using a forklift, or pump.

The following wastes are stored in closed containers (such as drums) and/or in tarped bulk (such as roll-off boxes or trailers):	NCSA	ECSA	SECSA (see Section 2.d.1 of the Container Storage Attachment)	East and/or West Bays Temp Storage (< 8 hrs) -
Untreated hazardous waste	Yes	Yes	Yes	Yes
Untreated solid hazardous waste bulked into roll-offs boxes or trailers (see Section 3.5)	Yes	No	No	Yes
Treated hazardous waste awaiting analytical results	Yes	No	No	Yes
Decharacterized waste awaiting analytical results	Yes	No	No	Yes
Decharacterized waste with analytical data demonstrating compliance with LDRs	Yes	Yes	Yes	Yes

3.0 OPERATIONAL PROCEDURES

3.1 Pre-Approval Procedures

3.1.1 Generator-Supplied Information – MDWTP/WDI

The pre-approval process is a waste evaluation procedure that takes place prior to receiving hazardous and non-hazardous wastes at the MDWTP for storage or treatment and WDI for disposal. The initial step of the waste stream approval process is a review of the waste characterization as prepared by the generator.

The facility requires that the generator characterize their waste stream, in order to comply with 40 CFR Parts 261 and 268.

For the purposes of compliance with 40 CFR Part 268 or if the waste is not listed in Subpart D of 40 CFR Part 261 (R299.9213), per 40 CFR 262.11, the generators must determine whether their waste is identified in Subpart C of 40 CFR Part 261 (R299.9212) by either:

- Testing the waste according to the methods set forth in Subpart C (of 40 CFR Part 261) or according to an equivalent method approved by the Director of the MDEQ; or
- Applying knowledge of the hazard characteristic in light of the materials or processes used. Material Safety Data Sheets (MSDS) of products in combination with information provided by the generator on the GWCR are acceptable to properly characterize the waste stream.

The generator must complete a Generator Waste Characterization Report (GWCR) or equivalent form. The facility will accept other forms of documentation of waste characterization than the GWCR as long as all pertinent information is included. GWCRs are supplied to the generators in hard copy or online at www.eqonline.com. The elements of the GWCR include:

- Generator name, address, and telephone number;
- USEPA ID Number;
- Description of Generating Process;
- USEPA and/or Michigan Hazardous Waste Codes;
- Hazardous & Toxicity Characteristics;

- Actual &/or Potential Constituents;
- Fingerprint parameters as described in this WAP; and
- Generator's Written or Electronic Signature or a signed statement from the generator giving permission to a 3rd party to act on their behalf.

The GWCR, with the supporting analytical data where required, forms the basis of information upon which the facility determines if the waste can be accepted for disposal at WDI or storage, transshipment and treatment at MDWTP. Waste streams are also reviewed with respect to the Land Disposal Restrictions (LDR) requirements in 40 CFR Part 268. The analytical data, waste type, process description, waste chemical and physical characteristics, or a representative sample provide the facility with sufficient information to decide if the waste can be accepted or if additional data is required before a decision can be reached. If the generator does not provide sufficient information, the generator or their representative is contacted and requested to provide further information before the approval process will continue.

3.1.2 Special Conditions –MDWTP/WDI

Exceptions for the requirement of a sample of waste for acceptance at the facility (WDI/MDWTP) include the following waste types:

- Articles, equipment, clothing (such as personal protective equipment (PPE)) contaminated with chemicals;
- Empty containers which once held waste, commercial chemical products, or chemicals (small tanks, containers, bags, boxes, liners, cans, pails, etc.). Containers are considered "empty" according to the criteria specified in R299.9207;
- Asbestos-containing waste from cleaning or demolition activities that is properly bagged/containerized;
- Spent activated carbon, filters from inside tanks, ion-exchange resins, molecular sieves, filters/ cartridges;
- Hazardous contaminated debris and demolition wastes (40 CFR 268);

- Chemical-containing devices/articles, such as cathode ray tubes (CRTs), fluorescent lights, batteries;
- Discarded, off-specification, or out-dated commercial products. A MSDS will be provided or made available for review;
- Wastes from food or animal processing;
- Animal feces
- Selected wastes from medical, veterinarian, taxidermy, or mortuary facilities;
- Septage or sewer treatment plant sludge from domestic users; and
- Tanks (whole or cut);
- Equipment, machinery, pumps, piping, etc.; and
- Waste streams approved by MDEQ on a case-by-case basis.

For wastes from which no samples will be taken prior to disposal, a visual inspection will be performed to determine if the waste resembles the description provided in the approval. Double contained asbestos waste will not be opened for visual inspection. However, during the pre-approval process, the generator must verify that the asbestos contains no free liquids and it is so stipulated on the GWCR for that waste stream.

3.1.3 Special Wastes

3.1.3.1 Source Material, NORM or TENORM – MDWTP/WDI

Waste streams containing NORM, TENORM, and exempted radioactive material may be managed at the facility (MDWTP/WDI) provided the following steps are taken:

1. During the facility pre-approval process, obtain a radiochemical analysis and/or other appropriate radiological information on each (NORM, TENORM, and exempted radioactive material) proposed waste stream as well as any other information required by this WAP including the WCR. No material classified as low-level radioactive waste pursuant to Title 42 of the United States Code, Chapter 23, Development and Control of Atomic Energy, Section 2021b, Definitions, is allowed at the site.

2. The radiochemical analysis and appropriate information are evaluated to determine if they can be accepted at the site. All material accepted at the site shall be in at least one of the following categories:

State of Michigan regulated materials

a. Exempt concentrations: IRR Rule 65
b. Exempt quantities: IRR Rule 74(1)
c. NORM: The DNRE's *Cleanup and Disposal Guidelines for Sites Contaminated with Radium-226* (EQC 1602)
d. Other material as specifically approved.

Note: For the purposes of interpreting the State of Michigan's *Ionizing Radiation Rules (IRR) Governing Radioactive Material,* refer to the definitions contained in IRR Rules 3 thru 20.

U.S. Nuclear Regulatory Commission (NRC) regulated materials

a. Exempt concentrations: 10 CFR parts 30.14 and 40.13
b. Exempt quantities: 10 CFR part 30.18
c. Specific exemptions: 10 CFR parts 20.2005, 30.11, 30.15, 30.16, 30.19, 30.20, 30.21, and 40.14

Note: For the purposes of interpreting title 10 of the U.S. Code of Regulations (10 CFR), refer to the definitions contained in 10 CFR parts 20.1003, 30.4, and 40.4.

Disclaimer: This in no way represents approval or authorization for receipt of NRC regulated material. If you have questions about radioactive material regulated by the NRC, contact the NRC regional office at 630-829-9500.

3. A sample is obtained from the generator, if appropriate, to determine if the level of radioactivity, based on a gamma radiation reading, will be above Site 2's background limit. The reading will be recorded for that (NORM, TENORM, and exempted radioactive material) EQ waste stream.

4. WDI and/or MDWTP may approve for receipt each (NORM, TENORM, and exempted radioactive material) proposed waste stream that meets the above criteria.

5. A (NORM, TENORM, and exempted radioactive material) waste stream may not be received by the facility (WDI and/or MDWTP) until steps 1-4, above, have been followed.

Questions about radioactive material regulated by the State of Michigan should be directed to the DEQ.

3.1.3.2 Asbestos Waste Containing PCBs and/or RCRA Hazardous Waste - WDI

Asbestos containing waste that also contains PCBs and/or is also a RCRA hazardous waste is exempt from the requirement of a sample of waste for review and acceptance and visual inspection at the facility if all of the following conditions are met:

- The waste contains ≥ 1% asbestos;
- The waste is properly bagged/containerized;
- Bulk asbestos waste will be handled in such a manner as to not cause any visual emissions;
- The generator verifies that the asbestos containing waste contains no free liquids and it is so stipulated on the approval.

3.1.4 Generator Waste Characterization Report (GWCR) Review – MDWTP/WDI

After the generator-supplied information is received, trained personnel (which may include, but is not limited to, the Laboratory Manager, Technical Support Manager, Approvals staff and facility (Operations Management & Supervisors or their designee) review the information then determine if additional information or analyses are required.

"Trained personnel" refers to those persons authorized to do a task based on the ISO Job Descriptions maintained on-site. These ISO Job Descriptions are considered living documents will be updated as needed and maintained at the facility and can be reviewed upon request at the facility.

Representative samples of waste may be provided by the generator, may be subject to the fingerprint analysis (see Sections 4.0, 5.0 and Table 3), except where noted in Section 3.1.2. Supplemental analysis (indicated with a "O" in Table 3) may also be performed at the direction of trained personnel based upon the available information provided by the generator, USEPA, or Michigan hazardous waste numbers and the facility's operating requirements.

If, during the review, trained personnel determine that the waste characteristics do not conform to the information provided on the GWCR, the generator or their representative is notified in order to attempt

to resolve the discrepancy. If the inconsistency is not resolved, the waste will be rejected and not approved.

3.1.5 Treatment, Storage, and Disposal Approval – MDWTP/WDI

When it is determined that a waste stream can be safely handled at the facility in accordance with the operating license requirements, it is assigned a unique approval number. An approval letter is sent to the generator, serving as notification that the waste as represented may be shipped to the facility, and that the facility has the appropriate permit(s) to accept the waste. All approval files are maintained in the facility operating record in a paper or other archival form. Approval files with no shipments before expiration will not be kept in the facility operating record.

Section 4 details the testing procedures and criteria utilized by trained personnel to evaluate waste as part of the pre-approval process. Once the generator has received the approval to ship, the generator or their representative arranges for transportation and delivery by a licensed waste transporter.

3.1.6 Waste Approval Re-Evaluation – MDWTP/WDI

The facility requires that the GWCR, supporting information, and/or documentation be updated whenever any one of the following occur:

- There has been a change in the process generating the waste;
- Inspection of a waste shipment reveals that the waste does not meet the description/classification of the current approval record for the waste; or
- One year has passed since the last approval of the waste.

3.2. Incoming Load Pre-Acceptance Procedures

The procedures for incoming wastes are designed to assure that loads received for treatment and/or storage have been previously approved for acceptance, and are representative and consistent with the information submitted with the GWCR.

3.2.1 Inbound Load Procedure – MDWTP/WDI

When a shipment of waste arrives at the facility, the following step-wise procedure is followed:

- The driver proceeds to the inbound scale where the weight and truck number are recorded. The driver then proceeds to the sampling station (for containerized loads, this step may be omitted);
- The driver presents the manifest and any other shipping documents to trained personnel in the Receiving Building; and
- Trained personnel examine the manifest and other shipping documents, for manifests discrepancies, completeness and to ensure that the shipment was intended for treatment and/or storage at MDWTP and/or disposal at WDI.

3.2.2 Waste Inspection and Sampling

After reviewing the documents and determining that the waste stream has been approved, trained personnel check the computer or manual records for any notes or special handling instructions for the shipment and create a Post-Inspection Form (PIF). For bulk shipments, the sampler visually examines the load, pulls a sample, and submits the sample for testing.

For container loads, the driver is given a copy of each manifest and corresponding lab worksheet, PIF and drum log. For MDWTP, the vehicle is directed to the container truck dock where the containers are removed from the vehicle and placed into the staging/storage area(s). Trained personnel visually examine the load, pull a sample, and then submit the samples for testing. All waste streams are sampled as described under "Sampling Methodologies" in Section 6.0.

For WDI, container loads are delivered to the container unloading area at the waste transfer box. Here each container is opened, inspected and sampled in accordance with a standard operating procedure for non-bulk waste unloading. At least 10% of the containers must be sampled. The containers can only be left in the unloading area for the time it takes to clear or reject the load for disposal.

3.2.3 TSDF Evaluation and Approval

Trained personnel conduct the analytical tests and required observations specified for the particular waste stream as described in Section 5.1. If the results of the pre-acceptance fingerprint testing and observations agree with the pre-approval screening data, the waste load is approved for receipt. If the results fall outside the profiled range of variability, the procedures in Section 3.3.1 – Off- Specification and Rejected Load Procedures are followed.

For bulk shipments, the designated treatment and/or storage location is stamped on the PIF, it is handed to the driver, and then the vehicle is directed to the assigned tank located at the MDWTP East or West Treatment Buildings. For container loads, the PIF is handed to the driver at the Receiving Building, then the vehicle is directed to MDWTP and the load can be accepted.

3.2.4 Off-Site Inspection and Sampling - WDI

For some projects, it may be necessary to conduct the weight measurement (or volume estimate), waste inspection (section 3.2.2) and/or fingerprinting tests (section 3.2.3) at an off-site location, such as the site of generation. These activities must be performed by properly trained (by EQ) personnel using the methods and forms in the WAP. The results of the inspection and testing must be transmitted to the Receiving Department prior to the waste being accepted by WDI (i.e. with the waste shipment or before). For these projects, a description of the off-site testing must be submitted to MDEQ for review and approval prior to the start of the project. The description must include a summary of the project, how the sampling/testing will be conducted, post sampling waste security measures (if necessary) and a discussion of the paperwork flow.

3.3 Procedure for Unloaded Trucks – MDWTP/WDI

After unloading, vehicles are directed through the Truck Wash. Containerized loads wait in the holding area until cleared to leave. Bulk shipments proceed to the outbound scale. The driver returns the completed PIF to the Receiving Building and the outbound weight and truck number are recorded.

The manifest is signed, dated, disassembled, and the driver is given the "Transporter" copy. Remaining copies of the manifest are placed in a holding file for later distribution according to the instruction on the manifest form. In the event an electronic manifest is used, the established electronic manifest procedures are followed.

3.3.1 Off-Specification and Rejected Load Procedures – MDWTP/WDI

The facility will follow 40 CFR 264, Subpart E in determining if a significant discrepancy exists.

Discrepancies that do not fall within these criteria are considered to be "minor" and are not subject to a re-characterization review unless the facility has reason to believe that the variation is a continuing deviation and that a particular waste stream is indeed different from the waste approved. Significant inconsistencies in waste type, as defined in 40 CFR 264 Subpart E, result in re-characterization if the inconsistency cannot be reconciled with the generator or the facility has reason to believe that the waste composition has changed.

If a significant discrepancy is revealed during the incoming load procedure, the generator or their representative is contacted to resolve the problem. If the discrepancy is reconciled, the load may be received and the details of the reconciliation are recorded. If the discrepancy is not resolved, the shipment is rejected per 40 CFR 264, Subpart E. The appropriate manifest documents are then returned to the driver.

3.4. Storage - MDWTP

Stored containerized liquid and solid wastes are segregated following USDOT segregation and separation requirements (see Table 1). Liquid wastes, which are transferred from containers, portable tanks or tank trucks, may be transferred to storage tanks prior to subsequent treatment.

Prior to wastes being placed in any storage unit, facility (MDWTP) personnel will determine the compatibility of the waste with the storage unit materials of construction and with wastes already stored therein. The evaluation is based upon vendor/engineering data, materials of construction, and

knowledge of the waste and its characteristics from the GWCR. If such data are not available, compatibility testing will be performed prior to storage.

3.4.1 Container Storage - MDWTP

Containerized wastes in storage are segregated according to 49 CFR Subpart C—Segregation and Separation Chart of Hazardous Materials segregation rules. (See Table 1) Based on the hazard assessment of the waste, the containerized waste is organized into segregated storage areas within the NCSA, ECSA, SECSA and the East and West Loading/Unloading Bays.

3.4.2 Tank Storage - MDWTP

Wastes to be stored in tanks will undergo the fingerprint analyses, including a waste compatibility test. Additional testing will be based on the targeted treatment or disposal requirements.

Liquid wastes, delivered in bulk form by tank trucks or decanted from containers or portable tanks, are placed in bulk storage tanks or directly into treatment/storage tanks prior to treatment.

3.4.3 Lab Compatibility Test - MDWTP

Prior to transferring any wastes into a storage tank, the compatibility of the waste, with the material already in the tank, will be determined by mixing in a "mock tank" a waste sample from the tank with samples of waste to be added to the tank. Following the preliminary screening and compatibility testing, specific storage and process compatibility will be determined. The current version of the Work Plan for the Lab Compatibility Test is maintained on-site. The parameters used to determine compatibility are briefly outlined below

- Gas Evolution - Materials that upon mixing, appear to liberate significant amounts of vapors, fumes, or mists, will not be combined.
- Heat Generation - Materials that, upon mixing, would generate excessive amounts of heat will not be combined.
- Adverse Reactions - Materials that, upon mixing, result in the formation of a large amount of sludge, or solidify or gel may not be combined if this causes a removal or subsequent handling problem.

When a bulk shipment is to be unloaded into a tank, a representative sample will be collected from the tank into which the waste is to be unloaded. The sample will be evaluated for the compatibility characteristics listed above. If it is determined that the mixture is incompatible, the waste will not be placed into that receiving tank. If the waste is determined to be incompatible with the tank materials of construction or with the tank contents, the procedure will be repeated, as needed, until a compatible tank is available. If no compatible tank is available, the load may be rejected and returned to the generator or transshipped off-site to another TSDF.

3.5 Waste Bulking and/or Consolidation - MDWTP

Wastes that are bulked and mixed, (excluding empty containers, site generated debris or closed and intact containers of non-hazardous waste), are subjected to the same compatibility and waste code evaluations as applied to wastes that are mixed in the treatment tanks. The following includes a list of items that may be bulked or consolidated.

- Empty Containers – as defined in Part 111, under Specific Conditions and are bulked in a roll-off container.
- Site Generated Debris – includes articles, equipment, clothing (such as personal protection equipment); ringbolts and rings from containers; pallets and pieces of pallets, etc., which are bulked in a roll-off container.
- Closed and intact containers of non-hazardous waste –non-hazardous solid waste in which all openings on the containers are closed.
- Liquid or solid hazardous waste containers being consolidated into larger or fewer containers (not for treatment at MDWTP)
    I. Containers may need to be combined into larger or fuller containers (such as prior to transshipment)
    II. If Roll-off containers or trailers will be used for consolidation, a liner will be utilized when bulking listed hazardous waste to prevent contamination from listed wastes to characteristic wastes.
    III. All of the waste consolidated into a different container will only be done in the NCSA, the East Bay or West Bay.
    IV. Compatibility - Waste to be consolidated will be from the same waste stream or will be evaluated to ensure that the waste being consolidated is compatible. If not from the same waste stream, samples will be added to a mock tank for compatibility prior to being consolidated.

V. The following waste streams will not be consolidated: reactives, ignitables, cyanides, incompatibles and odorous.

- Solid (non-liquid) hazardous waste containers being bulked into a batch for treatment at MDWTP

I. All of the waste bulked into a roll-off or trailer will only be done in the NCSA, the East Bay or West Bay.

II. The roll-off or trailer will utilize a liner when bulking listed hazardous waste to prevent contamination from listed wastes to characteristic wastes.

III. The containerized waste to be bulked in a roll-off or trailer will be pre-assigned to batch.

IV. Compatibility - Samples from the containers will be added to a mock tank for compatibility prior to being bulked into a roll-off or trailer.

V. After all of the containers assigned to that batch are bulked, the batch in the roll-off or trailer will be transferred to an assigned storage/treatment tank for treatment.

VI. The following waste streams will not be bulked: reactives, ignitables, cyanides, incompatibles and odorous.

3.6 Procedures for Ignitable, Reactive, and Incompatible Wastes

The facility (WDI/MDWTP) utilizes waste characterization data provided by the generator as well as analytical screening and testing procedures to obtain information regarding waste ignitability, reactivity, or incompatibility prior to treatment and/or storage. MDWTP also evaluates this information relative to waste compatibility with the facility equipment and treatment processes. Containerized wastes are segregated for storage following the DOT Segregation Chart (See Table 1 of the WAP). Wastes that are incompatible will not be stored adjacent to each other.

MDWTP does not accept for treatment ignitable wastes having a flashpoint less than 90°F. Ignitability data for wastes is obtained through process knowledge and/or performing flashpoint or ignitability screening tests, as described in Section 4. Ignitable wastes with a flash point less than 90°F may be received and subsequently transshipped. Containers accepted at MDWTP for transshipment are uniquely marked so that they can easily visually identified as a transship waste stream.

MDWTP does not accept for treatment wastes exhibiting the characteristic of reactivity. D003 (deactivated) waste may be accepted for treatment. Reactive wastes identified in R299.9212(3)(b-e)

may be received for storage in the NCSA and subsequently transshipped. Reactive wastes identified in R299.9212(3)(a, f, g, h) are prohibited. MDWTP evaluates potential reactivity characteristics through the use of process knowledge and for potential cyanide (CN) or sulfide-containing wastes, through analysis for total, amenable and reactive CN, and reactive sulfide. To evaluate the potential for incompatibility of wastes with the facility equipment, treatment processes, or with other wastes upon mixing/blending, MDWTP uses process knowledge, and compatibility testing described in Sections 3.4.1 – Container Storage, 3.4.2 – Tank Storage and 3.4.3 – Lab Compatibility Test. If the review of the waste characterization data and/or compatibility testing indicates a potential for incompatibility and unacceptability at the MDWTP, the wastes will be either rejected and returned to the generator or transferred to another permitted TSDF capable of managing the waste in accordance with the procedure outlined in Section 3.3.1 – Off-Specification and Rejected Load Procedures.

The Vertical Liquid Tanks are equipped with combination pressure relief valves/flash arrestors on top and high temperature cut-off valves at the bottom. These tanks are constructed and located in compliance with NFPA Chapter 30 regulations for flammable liquids, or in the vicinity of loading flammable liquids.

Wastes received in containers will be staged and stored in accordance with DOT Separation Requirements. Containers remain closed during storage except for during sampling. In addition to being physically separated from incompatible waste, containerized ignitable waste will not be stored within 50 feet of the property line, and will be stored in such a manner as to prevent fires or explosions. Reactive wastes received for transship to another facility will be physically separated from incompatible wastes and stored in a manner as to prevent fires, explosions, or release of toxic fumes, dusts, or gases that could threaten human health.

Smoking is allowed at the facility (MDWTP/WDI) only at a few designated areas. Maintenance work done at MDWTP follows the same standards described above for operation work. Hot Work Permit will be granted in advance and air monitoring testing will go on to prevent a flammable atmosphere before any operation goes underway.

3.7 Waste Treatment Technologies - MDWTP

3.7.1 Chemical Stabilization - MDWTP

The facility (MDWTP) treats wastes that require treatment to comply with the LDRs through chemical stabilization using a pozzolanic-type process incorporating CKD, lime, and other select reagents. Certain wastes may require more than one type of treatment, including neutralization, deactivation, chemical oxidation, and/or chemical reduction using reagents such as lime, oxidizing or reducing agents, to convert selected waste constituents into a physical or chemical form that is less soluble, less hazardous and/or more suitable for subsequent stabilization.

3.7.2 Chemical Oxidation - MDWTP

Hazardous wastes containing organic constituents above the LDR levels are chemically oxidized at the facility (MDWTP). The chemical oxidation process is described below and detailed in Figure 2. Chemical oxidation is also discussed as one of the Best Demonstrated Available Technologies (BDAT) for managing organic contaminated waste in 40 CFR 268.42 and Appendix VI.

Oxidation is the process in which an atom or compound acquires electrons (the oxidizing agent or oxidant) and reduction is the process in which an atom or compound loses electrons (the reducing agent or reducant). The two processes always occur simultaneously with one compound acting as the oxidant and the other the reductant.

For the treatment of hazardous organic containing waste, the facility (MDWTP) typically uses a sodium hypochlorite solution as the oxidizing agent. While sodium hypochlorite is the predominant oxidant used, the facility (MDWTP) may occasionally use other oxidizing agents, including but not

limited to hydrogen peroxide and potassium permanganate. In the oxidation process, electrons are stripped from the organic molecules to the extent that the carbon-to-carbon bonds are broken and carbon dioxide, sodium chloride and water are formed. Organic compounds are destroyed in this mildly exothermic reaction.

The amount of oxidant used in the treatment is determined by trained personnel and is a function of 1) the concentration of all organics in the waste, or 2) the treatability study run on the waste, and/or 3) the trained personnel's previous experience with the waste. Batches treated by chemical oxidation must be solidified by chemical stabilization before landfilling and must also be determined to pass the LDR standards as described in Section 3.8.

3.7.3 Treatability Studies (see Table 2, Table 3 & Section 4) - MDWTP

The pre-approval analyses for specific wastes to be treated to meet the applicable LDR(s) are specified in Table 3 and Section 4 – Waste Analysis Parameters. A bench-scale treatability study is performed to verify acceptability with the facility (MDWTP) treatment process and the treatment "recipe" required to meet the applicable treatment standards. The treated waste samples are analyzed as specified in Table 2, Table 3 and Section 4.

These pre-approval treatability studies are used to adjust the treatment processes for specific waste types and batches. Example treatment approaches for typical hazardous waste types are presented on Figures 1 through 4.

These treatment operations may combine several wastes or shipments from various generators to facilitate operational efficiency and utilization of available processing capacity. Batch treatment of multiple wastes and/or shipments will be based on chemical compatibility, USEPA hazardous waste numbers, and treatment requirements.

Post-treatment analyses, includes the TCLP and, where applicable, specific constituent analyses are performed on each batch of hazardous waste prior to landfill disposal. This post-treatment analysis is used to demonstrate that the treatment residue meets the LDRs. (See Table 2 and Table 3)

The facility (MDWTP) conducts treatability testing to ensure that wastes can be treated to the required LDR levels prior to acceptance of the waste. Examples of possible triggers for a treatability study are listed below:

- The waste type not previously treated at MDWTP
- The waste is generated by a process not previously treated at MDWTP
- The waste has levels of constituents outside the range normally treated at MDWTP
- The waste codes or constituents not previously treated at MDWTP

Tables 2 and 3 are provided to assist in guiding the chemists and technicians in determining if a treatability test is needed.

The treatability test involves simply mixing waste and treatment reagents in a ratio developed by the laboratory. Measured volumes of the waste are mixed with the treatment agents. Mixing is designed to emulate retention time in the pugmill mixer and mixing time per unit of waste in the treatment tanks. After mixing, a sample of the waste is collected for analysis for the constituents of concern. A treatability report is then prepared showing the after treatment concentrations of the constituents of concern. This report is placed into the waste stream technical approval file prior to acceptance of the waste.

To successfully treat certain waste streams, a modification of the standard process may be required. Modified treatments are first verified in the laboratory, and then implemented at the plant once the

waste is received. Modified treatments are considered Confidential Business Information. It is important to note that all treatments are verified through actual post treatment analysis of treatment residue, prior to disposal of the waste.

3.7.4 Mixing, Blending, & Commingling of Wastes for Treatment - MDWTP

As part of the treatment and storage process, various individual waste streams are mixed, blended, and/or commingled. The blending operations are conducted by the facility (MDWTP) Operations personnel under the direction and careful supervision of the facility's laboratory and treatment chemists.

3.7.5 Authorization to Mix or Blend - MDWTP

See Section 3.4.3, "Lab Compatibility" for a detailed discussion.

3.8 Land Disposal Restrictions (LDRs)

3.8.1 Waste Not Subject to the LDRs - MDWTP

The MDWTP stabilization process will also be utilized to treat wastes not subject to the LDRs, to solidify free liquids and render the waste more suitable for handling and landfill disposal.

The post-treatment analyses will include a visual observation, to ensure no free liquid is present. A paint filter test may be performed on selected loads when determined necessary by visual inspection.

3.8.2 Wastes Meeting the LDRs

Wastes that are certified, through analysis, to meet the LDRs specified in 40 CFR 268 may be directly landfilled at WDI or another off-site TSDF. The LDR certification and notification, and analytical documentation will be provided for each waste stream disposed of at WDI or shipped to another TSDF. Per 40 CFR 264.73, the required information will be kept as part of the operating record.

3.8.3 Wastes Requiring Treatment & LDRs - MDWTP

Wastes requiring deactivation, chemical oxidation, chemical reduction, and/or stabilization at the facility (MDWTP) will be treated in batch operations. Each batch may contain multiple USEPA hazardous waste numbers and treatment standards. The treated batches will be held in the treatment/storage tanks or in roll-off boxes or trailers while testing is performed prior to disposal (see Section 2.3). Treatment batch residues will be sampled and analyzed to determine whether the batch meets the applicable treatment standards defined in 40 CFR 268. Treatment batch residues, resulting from the treatment operations that exceed the applicable LDRs, will be reevaluated. Options include re-testing after additional cure time, retreating on-site until the LDRs are achieved or sent off-site for further treatment to meet the LDRs. Any off-site shipments will be accompanied by the LDR notification, a manifest, and data for the waste for the off-site TSDF in accordance with 40 CFR 268.7(a)(1).

Treatment residues that meet the applicable LDRs, will be disposed at WDI or another TSDF. The LDR certification, notification and analytical documentation will be provided for each waste disposed of at WDI or shipments to another TSDF. Per 40 CFR 264,73, the required information will be kept as part of the operating record.

3.8.4 Characteristic Wastes & LDRs

Characteristic wastes, which are batch-treated separately from listed wastes, may be disposed of in a solid waste/Subtitle D landfill, if it is determined that the LDRs have been achieved and the treatment residue no longer exhibits the characteristics of hazardous waste and all applicable underlying hazardous constituents (UHCs), have been treated in accordance with the Universal Treatment Standards (UTS) at 40 CFR 268.

3.8.5 Hazardous Debris & LDRs

As stated in 40 CFR 268.45, Hazardous debris (>60mm) must be treated prior to land disposal, unless the debris is no longer contaminated with hazardous waste or the debris is treated to the waste-specific treatment standards specified in 40 CFR 268.45 using technologies identified in Table 1 of 268.45. MDWTP will ensure that debris requiring treatment to the waste specific treatment standards is treated to those standards or that the technology standard is met. MDWTP anticipates receiving hazardous debris that may be contaminated with any code or codes identified in Appendix A of the WAP.

Characteristic ignitable or corrosive hazardous debris will be deactivated at MDWTP during the micro-encapsulation process prior to landfill disposal. If immobilization, such as micro-encapsulation or macro-encapsulation, is used in a treatment train, it will be the last treatment technology applied. This requirement also will apply to debris contaminated with two or more contaminants subject to treatment. Hazardous debris will be treated for each contaminant, subject to treatment as specified by 40 CFR 268.45(b) for toxicity characteristic debris and debris contaminated with listed wastes. CN reactive debris will not be accepted by MDWTP.

MDWTP uses the micro- and macro-encapsulation immobilization technologies listed in 40 CFR 268.45 to achieve the performance standard of reduced leachability of the hazardous contaminants, in the case of micro-encapsulation, and completely encapsulates debris with a material(s) that is resistant to degradation by the debris and its contaminants and the material into which it may come into contact after placement (leachate, other waste, microbes), in the case of macro-encapsulation.

Treated hazardous debris will be managed as specified in 40 CFR 268.45. When treating debris in accordance with the alternative treatment standards for debris, the MDWTP uses only the immobilization technologies of micro and macro-encapsulation. Hazardous debris contaminated with listed or characteristic waste that is treated by micro or macro-encapsulation at the MDWTP are properly disposed in licensed Subtitle C landfills and are accompanied by an LDR notification and certification form in accordance with 40 CFR 268.7(b)(5). Treatment of debris using one of the

technology specific immobilization treatment standards at 40 CFR 268.45, constitutes compliance with the LDRs and no testing after treatment is required prior to disposal.

3.9 Macro-encapsulation

3.9.1 Description of the Macro-encapsulation Unit

The macro-encapsulation unit is made of approximately one-inch thick polyethylene using an injection molding process to create a rigid, one-piece "tub" that fits within a roll-off or is self-supporting. The macro-encapsulation units can be manufactured in any size but are most commonly manufactured to fit within a 20-yard roll-off. To seal the unit, a sheet of the same polyethylene in approximately the same thickness is screwed onto the lip of the tub using approximately 120 self-tapping screws. Screwing the down the lid provides a watertight seal that may be augmented with caulking or glue.

Debris placed within the macro-encapsulation units are jacketed within the polyethylene in an inert, durable, watertight material that will substantially reduce surface exposure to potential leaching media. The inert polyethylene material will completely encapsulate the debris and is resistant to degradation by the debris and debris contaminants managed by MDWTP and the wastes, leachate, or microbes with which it will contact once landfilled in a licensed hazardous waste cell.

3.9.2 Description of the Macro-encapsulation Process

Macro-encapsulation will be performed as follows:

1) Debris will be placed into one of the treatment tanks, Tanks A – H (formerly tanks 7A, 7B, 8A, 8B, 9A, 9B, 10A, 10B), or directly into a macro-encapsulation unit.

2) In the treatment tank, the debris is mixed, as needed, with an inert, finely divided material to fill the void spaces when encapsulated and to provide cushioning material. The inert filler includes cement kiln dust, sand, solidified non-hazardous waste, waste treated to the LDRs, or other non-biodegradable sorbent or fixation media. Fill material is also added directly to the macro-encapsulation units.

3) The debris is lifted from the tank with a backhoe and placed into a macro-encapsulation unit or is placed directly into the unit. As with dump trailers and dump trucks currently loaded with treated waste within MDWTP, the macroencapsulation units are also loaded within MDWTP.

4) The lid is screwed into place on the macroencapsulation unit.

5) Macroencapsulation approvals will specify "special burial" in the licensed hazardous waste cell. The special burial designation will ensure that the macroencapsulation units are carefully placed in the cell to ensure that they are not ruptured during placement or after placement. For macroencapsulated debris shipped to other permitted TSDF, guidance will be provided, to extent needed so that the macroencapsulation unit can be unloaded without rupturing.

3.9.3 Macro-encapsulation Capacity

Macro-encapsulation treatment capacity is a function of available tank space. Macro-encapsulation of hazardous debris will be counted against the permitted treatment capacity of the MDWTP on a daily basis as are all other hazardous wastes treated in the tanks. All permitted tank treatment methods, including micro- and macro-encapsulation, are performed within the state license and federal permit capacity limitations as stipulated in Section A-1 of this application.

4.0 WASTE ANALYSIS PARAMETERS

4.1 Criteria for Parameter Selection and Rationale – MDWTP/WDI

The parameters selected for analysis of wastes managed by the facility and the rationale for their selection is based on the physical/chemical characteristics of the waste, the regulatory and operating license requirements for treatment and/or storage of the waste at MDWTP or disposal at WDI, the information and analytical data supplied to the facility by the waste generator and the process control data necessary to manage the waste by the MDWTP's treatment and/or storage operations or disposal at WDI. The waste analysis used by the facility to manage wastes for treatment and/or storage include the following:

4.1.1 Fingerprint Analyses – MDWTP/WDI

These analyses may be performed on generator samples for pre-approval of the waste for management at the facility and are also performed on samples of each waste load prior to load acceptance, except for those listed in section 3.1.2. These analyses may also be performed if the generator or the facility determines that there is a change in the process generating the waste. The fingerprint analyses include screening procedures to provide data regarding the general physical and chemical characteristics of the waste. Table 3 indicates which tests will be used and under which conditions.

4.1.2 Supplemental Analyses (indicated with a "O" in Table 3) – MDWTP/WDI

These analyses are generally waste-specific based on the physical/chemical characteristics of the waste, the USEPA or Michigan hazardous waste number (determined by the generator), the process

generating the waste, treatment, storage, or disposal process control requirements, and regulatory treatment requirements (such as the LDR or facility operating license conditions).

These analyses may be performed to supplement the generator-supplied information regarding the waste and the fingerprint analyses and include standard analytical USEPA and/or American Society for Testing and Materials (ASTM) methods.

Waste characterization data is provided by the generator using the GWCR, as described in Section 3.1.1. The generator data and analyses provide the facility with the information needed to properly manage a waste and ensure that the waste shipment received matches the identity and characteristics of the waste approved and designated on the accompanying Hazardous Waste Manifest (manifest) or shipping papers.

4.2 Analytical Parameter Descriptions – MDWTP/WDI
(Pre-Approval/Re-Approval, Pre-Acceptance & Post-Treatment)

The analytical parameters used to manage wastes for treatment, storage and disposal include the fingerprint analyses or supplemental analyses (if necessary) are described below. Table 3 indicates which tests will be used and under which conditions.

Color	This procedure evaluates the color of waste samples/information presented for pre-approval and compares the color of incoming loads of waste.
Consistency	A comparison of the incoming wastes consistency of originally approved material. Consistency descriptors are as follows: Dust, Solid, Semi-Solid, Sludge, Liquid and debris.
Compatibility Test	The procedures will be followed as outlined in the current version of the Work Plan for the Lab Compatibility Test that is maintained on-site.
Cyanide	A determination that the waste does not meet the criteria set forth in 40 CFR 261.23(a)(5). The test method to be used is the Total and Amenable Cyanide Method 9010, found in SW-846 or Method 7.3.3.2 for Reactive CN. Untreated waste containing more than 250 ppm of reactive or releasable CN is not accepted for treatment but may be stored in containers and transshipped.

Flashpoint / Ignitability	Used to determine the flash point of a liquid to verify approval under limits of acceptable only above 90°F flashpoint. **Test Methods for Liquids:** a. Setaflash Closed Cup Tester - American Society for Testing and Materials (ASTM) Standard D-3278-78 b. Pensky-Martin Closed Cup Tester - ASTM D-93-79 or D-93-80 **Test Methods for Sludges / Solids:** 5 plus or minus (≠) 1 grams of waste is placed in a small container. Ignition is attempted with a match for 5 seconds. If ignition occurs and the waste burns vigorously and persistently, the waste is not acceptable for treatment but may be stored prior to transshipment.
Hexavalent Chromium	The waste is screened using either a Hach® type chromate test kit or equivalent, or USEPA Method 7196. This method is used to screen for the presence or absence of hexavalent chromium (Cr^{+6}).
Hydrogen Sulfide	A test to determine if the specific rate of release of hydrogen sulfide in waste is above 500 ppm upon contact with an aqueous acid. (SW-846, Section 7.3.4.2).
Odor (Incidental)	Potentially problematic odors detected in the routine laboratory handling of a sample may result in rejection of the load unless the waste can be managed in such a way as to minimize odor emissions.
Oxidizer	No method for the oxidizer screen was provided in USEPA SW-846. The procedure used is as follows: Potassium iodide starch (KI) indicator paper is used to determine the presence of organic peroxides or other oxygen donors in aqueous wastes. A sample is considered an oxidizer if a reaction occurs when the addition of concentrated sulfuric acid produces orange gas (NOX). A SOP called "Screening of Possible Oxidizers (as defined by 40 CFR 173.151)" is used by the facility laboratory in performing this test. The current version of this SOP is maintained on-site.
Paint Filter Test	This method (USEPA 9095) may be used to determine if free liquid is present in a waste, if this is not apparent by visual inspection.
PCBs	This method (SW-846 8082) is used to detect Polychlorinated Biphenyls (PCBs). PCB analysis will be conducted on all wastes that contain oily residue, or are suspected of containing PCBs. Oily residue is defined as waste streams containing over 50 percent oil, no matter the origin.
pH	A comparison of the pH of the incoming waste with the pH range of the originally approved material is performed. pH methods used include SW-846 9040B, 9041A, 9045C.

Radiation Screen	A sample is passed near the detector window of a geiger counter, and the reading of the meter is noted and compared to the background reading. (See Section 3.1.3 Special Wastes; Section 3.1.3.1 Source Material, NORM or TENORM)
Reactivity - Water	A determination that the waste does not react violently with water during processing. In the course of this test water reactivity is addressed. The test method is as follows: Approximately ten milliliters (mls) or equal volume of waste is mixed rapidly with approximately ten mls of water solution in a beaker, the waste is compatible with the process if no incompatible waste reaction occurs as defined in 40 Code of Federal Regulations (CFR) 264, Appendix B, paragraph 1. The testing materials are identified water reactivity.
Reactivity – Acid	Standard Method 2310 (current Edition) is used to measure the acid content in waste in either mg/L (for aqueous samples) or mg/kg (for solid samples). Acidity is determined by potentiometric titration.
Suspended Solids	Is used to determine suspended solid content of aqueous wastes or sludge for the purpose of determining wastewater or non-wastewater categories under 40 CFR Part 268. This is performed using generator-provided information / analysis or from data obtained from the preparation of TCLP extracts (Method 1311).
TCLP	A Toxicity Characteristic Leachate Procedure (TCLP) test is used to determine if a solid waste meets or exceeds the maximum concentrations extractable of contaminants listed in 40 CFR 261.24, Table I. The test methods to be used are described in 40 CFR Part 261, Appendix II, Method 1311. Equivalent methods must be approved by the Director. (See Section 3.0)
Total Metals	A test to determine the total metal (i.e., constituent concentration in waste) content of wastes (USEPA SW-846 Methods 6000, 7000).
VOCs	This SW-846 (USEPA) analytical method (8260, 8021B or 8015BA) is used to determine the total concentration of volatile organic compounds (VOCs) in waste matrices. Only the constituents identified for a particular waste stream are analyzed.

40 CFR Part 261, Appendix VII	The hazardous constituents for which a waste is listed. The Appendix VII constituents are presumed to be present by facility personnel, and the waste handled accordingly. Specific information on a particular waste stream is normally supplied by the generator, based either on analysis or from the 40 CFR 261 background documents, which describe the basis of listing in accordance with 264.13(a)(2). If analysis is performed by the facility (on-site or by contract laboratory), one of the methods listed below is used, depending on the constituent of interest. These methods are provided in US EPA's "Test Methods for Evaluating Solid Waste," SW-846 (current Update). ❑ Total Semi Volatiles (8100, 8060, 8270) ❑ Total Volatiles (8260, 8021, 8015) ❑ Total Metals (6000,6010,7000 series) ❑ Total Herbicides (8151A) ❑ Total Pesticides (8081)

4.3 Receiving - MDWTP/WDI

The analytical parameters used for pre-acceptance may include fingerprint and/or supplemental analyses for each incoming shipment of wastes arriving at the facility are indicated in Table 3. Supplemental analyses performed, is a function of the designated USEPA or Michigan hazardous waste numbers and waste characteristics. The analytical parameters performed for receiving incoming shipments of waste -are indicated in Table 3 except as noted in Section 3.1.2.

4.4 Post-Treatment - MDWTP

The analytical parameters that are used for post-treatment may include fingerprint and/or supplemental analyses. These parameters are defined by the waste codes and UHC associated with the waste in process and are summarized in Tables 2 and 3. Post treatment testing will not be performed on micro or macro-encapsulated debris.

5.0 ANALYTICAL TEST METHODOLOGIES

5.1 Fingerprint Parameters and Methods – MDWTP/WDI

The "fingerprint" parameters include screening procedures and test methods that have been developed within the waste management industry to provide a general identification of specific physical and chemical characteristics of wastes handled. These parameters are presented in Table 3 and are described above in Section 4.2.

5.2 Supplemental Parameters and Methods (indicated with a "O" in Table 3) – MDWTP/WDI

The additional parameters include commonly accepted standard analytical methods developed by the USEPA, ASTM, or as a standard waste management industry procedure. These parameters, presented in Table 3 and described above in Section 4, are used, as necessary, for additional characterization of the waste and determination of specific properties and/or constituents to ensure proper treatment, and/or storage in accordance with current regulations and the operating license.

Fingerprint analysis and additional analyses (if necessary) are used to ensure that restricted wastes are not accepted by the facility and that incompatible wastes are not commingled. Specific analyses may be used for various waste matrices.

5.3 Laboratory Capabilities – MDWTP/WDI

An analytical laboratory is maintained on-site for the purpose of conducting the analytical procedures associated with this WAP to evaluate, approve, and monitor the characteristics of waste received from their customers and managed by the facility. The laboratory utilizes modern analytical equipment and facilities in the analysis of waste samples. In addition, trained chemists are employed (individuals that possess educational and/or work experience qualifications necessary to be proficient in performing waste analysis) who utilize standardized procedures for maintaining quality assurance (QA) and quality control (QC) requirements associated with the analytical procedures.

The laboratory is currently capable of performing the fingerprint analyses, as described in this WAP, as well as standard USEPA and ASTM methodologies for analyses of a variety of parameters in the following general categories:

1) Water quality parameters/inorganics, non-metallics;
2) RCRA hazardous waste characteristics;
3) Organic Constituents:
    (a) VOCs;
    (b) Semi-VOCs;
    (c) Pesticides, herbicides; and
    (d) PCBs.
4) Metals.

The Laboratory's capabilities may be subject to change as necessitated by regulations, operating requirements, or advances in analytical methodologies and equipment.

5.4 Quality Control/Quality Assurance – MDWTP/WDI

The Laboratories maintain a Laboratory Quality Assurance Program (LQAP) to insure the accuracy, precision, and reliability of the laboratory results produced for our customers, or at the request of regulatory or accrediting bodies. Management, administrative, statistical, investigative, preventive, and corrective techniques are employed to maximize the reliability of the analytical data.

This LQAP establishes the policies and procedures regarding:

- Glassware preparation;
- Reagents, solvents, gases, and standards;
- Samples and sampling;
- Instrument calibration procedures;
- Analytical procedures;
- QC checks;
- Data handling and reporting;
- Preventative maintenance;
- Corrective actions;
- Orientation and training;
- Performance and system audits; and
- Subcontracted laboratories.

The Laboratory uses standard analytical procedures developed by the USEPA and ASTM. The Laboratory equipment maintained on-site is calibrated within acceptable limits, according to USEPA and ASTM or the manufacturer specifications prior to use. The Laboratory instruments are periodically inspected, maintained, and serviced according to manufacturer specifications. Reference standards and QC samples (i.e., checks, spikes, laboratory blanks, duplicates, and splits) are used to determine the accuracy and precision of procedures, instruments, and operators. Quality assurance/quality control (QA/QC) data is recorded with the test results. Records of all pertinent laboratory calibration, analytical, and QC activities and data are maintained by the laboratory.

The laboratory QA/QC procedures used by the facility assist in assuring that the data obtained are precise, accurate, and representative of the waste stream analyzed.

The analytical QA/QC procedures follow the method-specific requirements specified in "Test Methods for Evaluating Solid Waste: Physical Chemical Methods," SW-846, where applicable.

6.0 SAMPLING METHODOLOGIES

6.1 General Methodologies

Each incoming shipment of non-hazardous and hazardous waste is inspected and sampled, except those listed in section 3.1.2, to ensure that the waste received for matches the waste reviewed during the pre-approval process. The sampling techniques described herein are performed in accordance with the techniques outlined in USEPA's SW-846.

6.2 Sampling Program and Equipment

USEPA SW-846 will be followed, whenever possible, when choosing sampling equipment and methodologies. If a method is not provided in USEPA SW-846, then a different method will be used as outlined in Section 4.2. The person sampling is trained in the selection and use of the sampling device and is thoroughly familiar with the sampling requirements.

Sampling equipment is constructed of non-reactive materials such as glass, polyvinyl chloride (PVC) plastic, aluminum, or stainless steel. Care is taken in the selection of the sampler to prevent cross-contamination of the sample and to ensure compatibility of materials.

Sampling is performed for each waste in a manner that ensures the samples are as representative as possible under the conditions of the sampling event. All bulk and containerized hazardous waste loads will be sampled prior to acceptance, except for waste specified in Section 3.1.2. All samples must be appropriately labeled. The following information is included on the label:

Type of Sample	**Label Requirements:**
Bulk Loads	Transporter Name Truck #
Container Loads	Waste Code Manifest # Approval # Drum # and/or barcode
Treatment Tanks	Batch ID # Date Time Sampler

Observations or unusual conditions during sampling are noted as comments on the label. No chain-of-custody (COC) form is used with samples on-site, since the samples are relinquished directly to the on-site Laboratory. A COC will accompany any sample being sent to an off-site Laboratory.

6.3 Specific Sampling Procedures

6.3.1 Containerized Waste – MDWTP/WDI

Each incoming stream of waste in containers (non-hazardous/hazardous) will be sampled, except those listed in section 3.1.2, and the parameters according to Table 3 performed on each sample.

The containers are labeled with an EQ identification label, which numbers each container per manifest line item. Alternately, the numbers will be spray painted on each container. Once numbered, the containers to be sampled will be determined using www.random.org or an equivalent method listed in SW-846. Each hazardous waste stream will be sampled at 10-percent of the total number of containers.

The separate samples collected will be composited by waste stream in the facility laboratory to form a single sample for analysis. Individual samples that are visually dissimilar will not be composited.

Samples will be collected from containers by utilizing the sampling equipment recommended by the USEPA in USEPA, SW-846 and Section 6.2. Facility personnel will usually utilize container thieves or coliwasas to sample aqueous waste (MWTP only) and trier or scoops to sample granular or solid, sludge matrices (MDWTP/WDI).

6.3.2 Bulk Waste – MDWTP/WDI

Each incoming stream of waste received at the facility in a bulk form, except those listed in Section 3.1.2 will have a sample collected and analyzed for the fingerprint parameters in Table 3. Samples will be collected from each vehicle. A clean carbon steel, stainless steel auger or disposable PVC trier will be utilized to collect solid samples. Bulk aqueous tankers will be grab sampled utilizing a thief or coliwasa-type sampler to collect the sample from varying depths for analysis.

6.3.3 Treatment/Storage Tanks - MDWTP

Treated, stabilized waste will be sampled from the MDWTP treatment tanks in order to verify that the waste meets the LDRs prior to land disposal with the exception of microencapsulated and macroencapsulated debris. Samples of treated, stabilized waste will be collected from random vertical and horizontal locations.

A grab sample will be collected from a random vertical and horizontal location using a backhoe to reach the selected sampling point, collecting the sample from the backhoe bucket with a disposable scoop or cup. The sample is then taken to the laboratory for analysis. The location from which the random grab sample is taken will be marked in a grid in the Batch packet.

6.3.4 Transshipped Wastes - MDWTP

Any waste to be transshipped off-site to other permitted TSDF's will be received under a valid MDWTP approval and management will comply with this WAP.

6.3.5 Waste Materials Utilized as Treatment Reagents - MDWTP

MDWTP will obtain a chemical assay of waste materials such as lime or cement kiln dust (CKD) from the material source/vendor for evaluation prior to approval for use at MDWTP.

6.4 Equipment Decontamination

All equipment used in the collection of waste samples will either be disposable (e.g., scoops or container thieves) or sufficiently cleaned to remove observable contamination prior to sampling.

6.5 Sample Preservation and Storage

- Hazardous waste samples are generally not amenable to preservation;
- Samples for volatile organics are refrigerated at 4-degrees Celsius (°C) until analyzed and must be analyzed within seven days;
- Samples for semi-volatiles, if necessary, must be extracted within seven days and analyzed within 40 days;
- Aqueous samples for total organic carbon (TOC) analyses are refrigerated at 4°C until analysis and aliquots for metals analysis are preserved by the addition of HNO_3 to pH <2; and
- Samples are stored in the laboratory refrigeration unit.

6.6 Quality Control/Quality Assurance

Sampling QA/QC policies are found in the QA/QC manual, which is maintained by the Laboratory.

6.7 Health and Safety Protocols

During sampling and laboratory-related activities, personnel will utilize precaution to reduce the potential for incidents, injuries, or accidents. The facility has established a Hazardous Waste Operations (HAZWOPER) Facility Health and Safety Plan (HSP) in accordance with Michigan Occupational Safety and Health Administration (MIOSHA) Act 154 and R325.52129 for operations at TSDFs.

Facility personnel are HAZWOPER trained in accordance with the provisions of R325.52129(8) and follow health and safety (H&S) requirements, including PPE requirements specified in the facilities' standard operating procedures (SOPs).

REFERENCES

American Society for Testing and Materials, "Annual Book of ASTM Standards."

United States Environmental Protection Agency, "Test Methods for Evaluating Solid Waste: Physical Chemical Methods." SW-846, Third Edition, September 1986 as amended by Update I, (July, 1992), II (September 1994), IIA (August 1993), IIB (January 1995), III (June, 1997)

United States Environmental Protection Agency, Office of Solid Waste and Emergency Response, April 1994, "Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Waste;" A Guidance Manual.

Standard Methods for the Evaluation of Water and Waste Water, 18th Edition

Note: For Industry Standards see the QA/QC Program Manual.

TABLE 1 - SEGREGATION AND SEPARATION CHART OF HAZARDOUS MATERIALS

CLASS OR DIVISION		2.1	2.2	3	4.1	4.3	5.1	5.2	6.1*	8A	8B	9
Non-Flammable Gases	2.1	C	C	C	C	C	C	C	C	C	C	C
Non-Toxic, Non-Flammable Gases	2.2	C	C	C	C	C	C	C	C	C	C	C
Flammable Liquids	3	C	C	C	C	C	X	C	C	C	C	C
Flammable Solids	4.1	C	C	C	C	C	C	C	C	X	X	C
Dangerous when wet materials	4.3	C	C	C	C	C	C	C	C	X	X	C
Oxidizers	5.1	C	C	X	C	C	C	C	C	X	X	C
Organic Peroxides	5.2	C	C	C	C	C	C	C	C	X	X	C
Poisonous Liquids (NOT PG I, Zone A materials)	6.1*	C	C	C	C	C	C	C	C	C	C	C
Corrosive Liquids-Acids	8A	C	C	C	X	X	X	X	C	C	X	C
Corrosive Liquids-Bases	8B	C	C	C	X	X	X	X	C	X	C	C
Other Regulated Materials and Non-Hazardous Wastes	9	C	C	C	C	C	C	C	C	C	C	C

Notes:

- ✓ This chart is from the USDOT Segregation and Separation Chart of Hazardous Materials, 49 CFR Subpart C (177.848) & additionally segregates the corrosive wastes into acids and bases.
- ✓ Acids have a pH $\leq$ 2.0 and bases have a pH $\geq$ 12.5.

* = Other than Poisonous Liquids PG I, Zone A will not receive wastes with Class 1, or Division 2.3, 4.2, 6.1 PG I, Zone A Hazardous Material classifications.

C = Compatible
X = Non-Compatible

TABLE 2 – PROCESS LOGIC

TARGET CONSTITUENTS	TYPICAL WASTE CODES	TREATMENT TRAIN	POST- TREATMENT PARAMETERS
Arsenic	D004	STABL	TCLP Metals
Barium	D005	STABL	TCLP Metals
Cadmium	D006	STABL	TCLP Metals
Chromium (Hexavalent)	D007 (Cr+6)	CHRED fb STABL	TCLP Metals
Lead	D008	STABL	TCLP Metals
Mercury	D009	STABL	TCLP Metals
Selenium	D010	CHRED fb STABL	TCLP Metals
Silver	D011	STABL	TCLP Metals
Nickel	F006-F009, F011, F012 F006, F007 F008, F009 F011, F012 F019	STABL CHOXD fb CHRED fb STABL	TCLP Metals T-CN A-CN TCLP Metals
Low [CN-] with Metals and Cr+6			
Low [CN-] No Metals/ Organics	F010	CHOXD	T-CN A-CN TCLP Metals
Metals, Zinc	K061	STABL	TCLP Metals
Ignitable Low TOC Subcategory <10% TOX	D001	DEACT/CHOXD fb STABL	Ignitability
Ignitable High TOC Compressed Gases Strong Oxidizers Ignitable Solids	D001	Transshipment	NA
Oxidizers (No Strong Oxidizers Except for Transshipment)	D001	DEACT/CHRED fb STABL	Ignitability
Corrosives With Metals, Organics	D002/ICR	DEACT/NEUT fb CHOXD fb CHRED fb STABL	PH* TCLP Metals Total Organics
Low [ ] Organics	F001 – F005	CHOXD fb STABL	Total Organics
Low [ ] Organics Hazardous Waste	D018 – D043 All Codes & Contaminants Subject to Treatment	CHOXD fb STABL MICRO	Total Organics NA
Debris Hazardous Waste	All Codes & Contaminants Subject to Treatment	MACRO	NA
Debris Non-Hazardous Waste		STABL for Free Liquids	Visual Inspection

NOTES:

- ✓ Verify treatment process conditions, sequence, reagents and dosage rates with Trained MDWTP Personnel prior to processing any wastes (Refer to batch sheet.)
- ✓ All hazardous wastes must meet LDRs prior to disposal.
- ✓ The post-treatment analyses will also include a visual observation, to ensure no free liquid is present.

ABBREVIATIONS & SYMBOLS

A-CN = Amenable Cyanide
CHOXD = Chemical Oxidation
CHRED = Chemical Reduction
DEACT = Deactivation
fb = followed by
MICRO = Microencapsulation
MACRO = Macroencapsulation
NEUT = Neutralization
STABL = Stabilization
TCLP = Toxicity Characteristic Leaching Procedure
T-CN = Total Cyanide
< = Less than
> = Greater than
[ ] = Concentration

TABLE 3 – ANALYTICAL PARAMETERS & TESTING METHODS

PARAMETER	ANALYTICAL METHOD (1)	PRE-APPROVAL	PRE-ACCEPTANCE	POST-TREATMENT
Color	See Section 4.2	R	R	
Consistency	See Section 4.2	R	R	
Ignitability	See Section 4.2	R	R	
pH	See Section 4.2	R	R	
Radiation Screen	See Section 4.2	R	R	
Reactivity – Water	See Section 4.2	R	R	
Cyanide (Spot Test)	See Section 4.2	R	O	
Odor	See Section 4.2	R	O	
Sulfide (Spot Test)	See Section 4.2	R	O	
Compatibility Test	See compatibility work plan	O	R	
Cyanide (Reactive)	See Section 4.2	O	O	
Flash Point	See Section 4.2	O	O	
Hexavalent Chromium	See Section 4.2	O	O	
Oxidizer	See Section 4.2	O	O	
PCBs	See Section 4.2	O	O	
Reactivity – Acid	See Section 4.2	O	O	
Hydrogen Sulfide (Reactive)	See Section 4.2	O	O	
Total Organic Carbon - TOX	See Section 4.2	O	O	
Paint Filter Test (1)	See Section 4.2	O	O	M
Cyanide (Total)	See Section 4.2	O	O	M
Cyanide (Amenable)	See Section 4.2	O	O	M
TCLP	See Section 4.2	O	O	M
40 CFR 261 Appendix VII Constituents:	See Section 4.2	O	O	M
- Total Semi-Volatiles	See Section 4.2	O	O	M
- Total Volatiles	See Section 4.2	O	O	M
- Total Metals	See Section 4.2	O	O	M
- Total Herbicides	See Section 4.2	O	O	M
- Total Pesticides	See Section 4.2	O	O	M

NOTES:

(1) =	Visual inspection to ensure no free liquids are present prior to disposal is performed on each load. Paint filter tests are performed on selected loads if deemed necessary by visual inspection.
PCBs =	Polychlorinated Biphenyls
TCLP =	Toxicity Characteristic Leaching Procedure
R =	Required analysis
M =	Mandated to meet treatment standards
O =	Optional (or if no designation indicates the analysis is optional)

FIGURE 1

TECHNOLOGY NAME
Deactivation (DEACT)

APPLICABLE WASTE TYPES
Wastes exhibiting the characteristics of Ignitability, Corrosivity, or Reactivity such as D001, D002, and D003 hazardous waste numbers.

PRE-TREATMENT REQUIREMENTS
Waste Specific

CRITICAL DESIGN PARAMETERS
- Dependent on which characteristic is exhibited.
- Deactivation technologies include those recommended in 40CFR Part 268 Appendix VI.

WASTE CHARACTERISTICS AFFECTING PERFORMANCE

- STATE - solid, liquid, or sludge
- ALKALINITY, ACIDITY, AND pH
- FLASH POINT
- CONCENTRATION OF OTHER CONSTITUENTS PRESENT.
- DEACTIVATION BY-PRODUCTS.

NOTE: MDWTP DOES NOT ACCEPT REACTIVE WASTES

UNDERLYING PRINCIPLE OF OPERATION

The treatment standard for many subcategories of characteristic hazardous D001, D002, and D003 wastes remove the characteristic of Ignitability, Corrosivity, or Reactivity. EPA has determined that many technologies such as those listed below, when used alone or in combination can achieve the treatment standard. Example deactivation technologies include:

Stabilization (STABL)
Neutralization (NEUTR)

FIGURE 2

TECHNOLOGY NAME

Chemical Oxidation (CHOXD)

APPLICABLE WASTE TYPES

Wastes containing organics, organo-metallics, cyanides, or sulfides. Oxidize arsenic to insoluble form in waste waters or inorganic sludges from metal plating/finishing. Typical hazardous waste numbers include F006, F007, F008, F009, F011, F012, F010, F019, F001-F005, D018-D043.

PRE-TREATMENT REQUIREMENTS

Frequently requires raising pH to alkaline range.

CRITICAL DESIGN PARAMETERS

- Oxidation/reduction potential.
- Residence time.
- Amount and type of oxidizing agent - add excess and monitor ORP.
- Degree of mixing.
- pH - optimize (moderately alkaline ~10-11.5).
- Oxidation temperature.
- Amount and type of any catalyst.
- TOC may be used as surrogate parameter for organics.

WASTE CHARACTERISTICS AFFECTING PERFORMANCE

- CONCENTRATION OF OTHER OXIDIZABLE COMPOUNDS. Increases demand in reagent; high sulfide may require additional reagent.
- CONCENTRATION OF METAL SALTS (especially Pb and Ag) Can cause excess consumption of reagent. Metal-cyanide complexes are more difficult to oxidize.

UNDERLYING PRINCIPLE OF OPERATION

The basic principle of chemical oxidation is that inorganic cyanides, selected dissolved organic compounds and sulfides can be chemically oxidized to yield carbon dioxide, nitrogen, water, salts, simple organic acids and in the case of sulfides, sulfates. Typical oxidants and reactions using sodium hypochlorite are:

Cyanide

$CN^- + NaOCl \rightarrow OCN^- + NaCl$

$2OCN^- + 3NaOCl \rightarrow CO_3^{-2} + CO_2 + N_2 + 3NaCl$

Phenol

$C_6H_5OH + 14NaOCl \rightarrow 6CO_2 + 3H_2O + 14NaCl$

Sulfide

$S^{-2} + 4NaOCl \rightarrow SO_4^{-2} + 4NaCl$

FIGURE 3

TECHNOLOGY NAME

Chemical Reduction (CHRED)

APPLICABLE WASTE TYPES

Reduce hexavalent chromium and selenate ions. Treat oxidizing wastes containing reducible organics, inorganic oxidizers from plating, metal finishing, chromium pigments, mining, ore processing, or chemical manufacturing. Typical hazardous waste numbers include D007, D010, F006-F009, F011, F012, and F019.

PRE-TREATMENT REQUIREMENTS

Frequently requires lowering pH to acidic range.

CRITICAL DESIGN PARAMETERS

- Oxidation/reduction potential.
- Residence time.
- Amount and type of reducing agent - add excess and monitor ORP.
- Degree of mixing
- pH - usually at lower pH; <4.
- Reduction temperature.

WASTE CHARACTERISTICS AFFECTING PERFORMANCE

- CONCENTRATION OF OTHER REDUCIBLE COMPOUNDS. Increases demand in reagent. If TOC or inorganic oxidizer concentration is high, may not be applicable technology.
- CONCENTRATION OF OIL AND GREASE. Causes monitoring problems/fouling. If high, may not be applicable technology.

UNDERLYING PRINCIPLE OF OPERATION

The basic principle of chemical reduction is to reduce the valence of oxidizers and other constituents such as metals through oxidation-reduction reactions. Reducing agents such as ferrous sulfate or sodium sulfite are used to reduce specific constituents such as hexavalent chromium:

$$H_2(Cr^{+6})_2O_7 + 3Na_2SO_3 + 3H_2SO_4 \text{ ---- } (Cr^{+3})_2(SO_4)_3 + 3Na_2SO_4 + 4H_2O$$

FIGURE 4

TECHNOLOGY NAME

Stabilization (STABL) / Microencapsulation (MICRO)

APPLICABLE WASTE TYPES

Wastes and hazardous debris containing leachable metals, high filterable solids content, low total organic content,
and low oil and grease content. These include residuals from treatment of electroplating waste waters, characteristic and listed metal wastes.
Typical hazardous waste numbers include D004-D011, F006-F009, F011, F012, F019, K061, F001-F005, and D018-D043.

PRE-TREATMENT REQUIREMENTS

- May require reducing or oxidizing metals to lower solubility states.
- May require reducing oil and grease or organic content.

CRITICAL DESIGN PARAMETERS

- Amount and type of stabilizing agent and additives.
- Degree of mixing.
- Residence time.
- Temperature and humidity
- Form of metals
- Oxidation state.
- Solubility.

WASTE CHARACTERISTICS AFFECTING PERFORMANCE

- CONCENTRATION OF FINE PARTICLES.

Very FINE particles (<No. 200 mesh) may weaken chemical bonds and increase leachability.

- CONCENTRATION OF OIL AND GREASE.

High OIL AND grease content coat particles, weaken chemical bonding, and increase leachability.

- CONCENTRATION OF ORGANIC COMPOUNDS.

High ORGANIC content (TOC) and organic compounds can inhibit curing and increase leachability.

- CONCENTRATION OF SULFATE AND CHLORIDE COMPOUNDS.

High sulfate or chloride content may interfere with chemical reactions,
weaken bond strength, affect cure time, strength, and increase leachability.

- SOLUBILITY OF METAL COMPOUNDS. Metals should be present in most insoluble form.

UNDERLYING PRINCIPLE OF OPERATION

The basic principle of operation for stabilization is that leachable metals and
low levels of selected organics are immobilized by the addition of stabilization reagents.
The leachability is reduced by the formation of a lattice structure and/or
chemical bonds that bind the contaminants into a solid matrix thereby
limiting the concentrations of contaminants that can be leached when water contacts the waste material.
Stabilization of metals is most effective when the metal is in its least soluble state.
Typical stabilization reagents include Portland cement, lime and cement kiln dust.
Micro encapsulation involves stabilization of hazardous debris such that the leachability of hazardous contaminants are reduced.

APPENDIX A

MDWTP - MID 000724831

Waste Types Acceptable for Storage, Treatment &/or Transshipment

Special Notes Regarding Permitted Waste Types (see Section 3.7)

The following Waste Code List includes all United States Environmental Protection Agency (USEPA) and Michigan Department of Environmental Quality (MDEQ) hazardous waste codes, with the following exceptions:

Ignitability –

Waste accepted for Treatment - Flash point of all wastes shall be > (greater than) = 90 °F.

Waste accepted for Storage and Transshipment - Flash point of all wastes shall be > (greater than), < (less than), or = 90 °F. Containers accepted at MDWTP for transshipment are uniquely marked so that they can easily visually identified as a transship waste stream.

Reactive wastes - (D003, K027, K044, K047, K161, and K045)

D003 (deactivated) waste may be accepted for storage, treatment and/or transshipment. These D003 deactivated waste (that may retain the code) will only be received as certified treatment residues, contaminated soil, contaminated debris, or spill residues that do not exhibit the characteristic of reactivity.

Reactive wastes identified in R299.9212 (3)(b-e) may be received for storage in the NCSA will be uniquely marked and subsequently transshipped. Reactive wastes identified in R299.9212 (3)(a, f, g, h) are prohibited.

Dioxin-containing wastes - (F020-F023, F026-F028, K043, and K099)

Dioxin-containing wastes shall not be accepted.

LDR –

Any waste codes that have a Land Disposal Restriction (LDR) technology-based treatment standard, other than Deactivation (DEACT), Chemical Reduction (CHRED), Chemical Oxidation (CHOXD), or Stabilization (STABL) cannot currently be treated by the facility, except as certified treatment residues. Hazardous waste debris may be treated as a waste stream or by micro-encapsulation or macro-encapsulation.

Attachment 2

Inspection Schedule

GENERAL INSPECTION SCHEDULE

40 CFR 264.15b

AND

NREPA 451, Part 111 R504(1)c

WAYNE DISPOSAL SITE #2 LANDFILL

GENERAL INSPECTION SCHEDULE

40 CFR 270.14(b)(5) and MI Act 64 R504(1)c

Purpose:

The employees designated by the Owner or Operator as the Inspector(s) will inspect the facility for malfunctions and deterioration, operator errors, and discharges which may be causing -- or may lead to -- (1) release of hazardous waste constituents to the environment or (2) a threat to human health. The Inspector conducts these inspections often enough to identify problems in time to correct them before they harm human health or the environment.

Inspection Categories:

The Operator has developed and the Inspector follows a written schedule for inspecting:

1) Monitoring equipment;

2) Safety and emergency equipment;

3) Security devices; and

4) Operating and structural equipment important to preventing, detecting, or responding to environmental or human health hazards.

The inspection schedule is kept at the facility. The inspections are to be conducted at the times indicated below:

1. Annual - May of each year.
2. Quarterly - May, August, November, February.
3. Weekly - Monday or Tuesday of each week.
4. Daily - Each day the facility is handling hazardous waste.
5. After Storm - Within 24 hours following 0.5" precipitation.

Inspection Frequency:

The frequency of inspection is based on the rate of possible deterioration of the equipment and the probability of an environmental or human health incident if the deterioration, or malfunction, or any operator error goes undetected between inspections.

Inspection Requirements for Waste Handling Areas:

As applicable to the facility, the inspection schedule meets the following requirements:

Areas subject to spills: (40 CFR 264.15) Areas subject to spills, such as loading and unloading areas, are inspected daily when in use.

Inspection Requirements for Landfills:

As applicable to the facility, the inspection schedule meets the following requirements for all landfill units storing hazardous wastes:

In accordance with 40 CFR 264.303(b), while a landfill is in operation, it must be inspected weekly and after storms to detect evidence of any of the following:

(1) Deterioration, malfunctions or improper operation of run-on and run-off control systems. These systems are designed to control the volume of water from a 24-hour, 100 year storm. Associated collection and holding facilities must be emptied after storms to maintain design capacity of the system;

(2) Proper functioning of wind dispersal control systems;

(3) The presence of leachate in and proper functioning of leachate collection and removal systems. The design of each sump and removal system must provide a method for measuring and recording the volume of liquids present in the sump and of liquids removed. Ensure that leachate depth over the liner does not exceed 30 cm. (one foot).

In accordance with 40 CFR 264.303(c), a landfill with a leak detection system must:

(1) Record the amount of liquids removed from each leak detection system sump at least once a week during the active life and closure period.

(2)After the final cover is installed, the amount of liquids removed from each leak detection sump must be recorded at least monthly. If the liquid level in the sump stays below the pump operating level for two consecutive months, the amount of liquids in the sumps must be recorded at least quarterly. If the liquid level in the

sump stays below the pump operating level for two consecutive quarters, the amount of liquids in the sumps must be recorded at least semiannually. If at any time during the post-closure operating period the pump operating level is exceeded at units on quarterly or semiannual recording schedules, the owner or operator must return to monthly recording of amounts of liquids removed from each sump until the level again stays below the pump operating level for two consecutive months.

Inspection Records:

The Inspector records inspections in an Inspection Log or Summary by compiling all completed Inspection Report forms into a binder kept on-site. These records are kept for at least three years from the date of inspection. These records, at a minimum, include the date and time of the inspection, the name of the inspector, a notation of the observations made, and the date and nature of any repairs or other remedial actions.

The following Inspection Report Forms are currently in use at the facility:

1) Daily Inspection Report (Form LOM-FM-002-BEL)

2) Weekly / After Storm Inspection Report (Form LOM-FM-003-BEL)

3) Quarterly / Annual Post-Closure Inspection Report (Form LOM-FM-008-BEL)

4) Quarterly/Annual Inspection Report (Form LOM-FM-006-BEL)

5) Storm Water SOP Inspection Form (Form LOM-FM-009-BEL)

6) Weekly Inspection Checklist for Leachate Collection System (Form QES-FM-005-BEL)

7) Waste Transfer Tank Inspection Report (LOM-FM-XXX-BEL)

These Inspection Report forms list and describe items to be examined at a specific frequency. On the notes on each form (bottom or reverse side of the form), the inspection items and acceptable or unacceptable conditions for each inspection item are identified. Some parts of each report form may not be applicable during the course of an inspection. For example, the weekly report includes a number of specific items that must be evaluated only in the event of a storm. If no storm has occurred the status of that item would be not applicable (N/A).

In addition to the inspection forms, the following SOPs are in place that include operating, inspection and training requirements:

1) Standard Operating Procedure for Storm Water Management (LOM-OP-011-BEL)
2) Standard Operating Procedure for Track-out Management (LOM-OP-012-BEL)
3) Standard Operating Procedure for Fugitive Dust Management (LOM-OP-009-BEL)
4) Standard Operating Procedure for Wind Speed Monitoring (LOM-OP-013-BEL)
5) Earthwork Clearance Permit (ECP) Procedure (LOM-OP-003-BEL)
6) LDCRS Riser Maintenance Procedure (LOM-OP-010-BEL)

These SOPs in some cases have associated forms and instructions for record keeping. The SOPs may also refer to the stand alone forms listed above.

Groundwater monitoring equipment will be inspected during sampling events, which may not coincide with this schedule. When this occurs the information is recorded on the Quarterly / Annual Inspection Report form closest in time to the actual inspection.

A revised or improved version of any Inspection Report form may be implemented upon proper administrative change notification to Michigan Department of Environmental Quality, Waste & Hazardous Materials Division.

Inspection Response and Corrective Action:

The Operator remedies any deterioration or malfunction of equipment or structures, which the inspection reveals on a schedule which ensures that the problem does not lead to an environmental or human health hazard. Where a hazard is imminent or has already occurred, remedial action is taken immediately.

If an unacceptable condition is detected, the Inspector reports it to the facility manager in charge at that time. The facility manager assigns responsibility for corrective action and a deadline by which corrective action has to be taken on the condition.

On subsequent daily inspections, the Inspector monitors the condition until the situation is completely rectified. Once it is rectified, the Inspector notes the date and time that the correction was made on all previous Reports mentioning the defect.

WAYNE DISPOSAL, INC. SITE #2
ACTIVE HAZARDOUS WASTE LANDFILL OPERATIONS
DAILY INSPECTION REPORT

Item	Description	Yes	No*	If "No" is checked, state required corrective action	Completed
1	Daily cover properly applied to new waste at end of work day and to previously covered areas where re-cover necessary due to weathering? Integrity of daily cover acceptable in all areas?[1]				
2	Perimeter fence, gates and locks intact and secure?[2]				
3	No spilled or tracked waste in area around transfer station?[3]				
4	After-Hours Waste Transfer Log is up to date?				
5	Wind speed monitoring equipment is on and properly functioning?				
6	Wind Speed Monitoring Equipment Downtime Log is up to date?				
7	Wind speed sensor is no more than 10 ft below the elevation at which waste is currently being placed in the landfill, is located on the southwest slope of Master Cell VI, and is approximately vertical?				
8	Is each Radio / Telephone operational: Security, Receiving, Lab, MDWTP Spotter's Shack & WDI Spotter's Shack				
9	Is the Wheel Wash Operational?				
10	Is the Wash Building equipped for decontamination of material?				
11	Is the Landfill Fire Extinguisher present and charged?				
12	Is the Sweeper or Water Truck operational?				
13	Is the South Sedimentation Basin gate valve operational?				
14	Is there sufficient silt fencing equipment available on site?				
15	Is there sufficient spill absorbent materials available on site (1 pallet minimum)				

Signature of operator responsible for Item 1: _____

Operating date: _____

Date and time cover application completed for specified operating date: _____

_____

Signature of Inspector for Items 2-7 (Landfill Manager or designated alternate): _____

Date of inspection for Items 2-7: _____

Time of inspection for Items 2-7: _____

[1]Daily cover is ConCover or 6 inches of soil. ConCover application in accordance with manufacturer's specification and of sufficient thickness and coverage to control dust emissions. New waste covered at end of each day. Previously covered waste that is becoming exposed due to weathering of cover material must be re-covered to required specification.

[2]Inspect for vandalism, deterioration, or damage that could result in unauthorized entry to the active disposal area. Verify gates are locked.

[3]Inspect for proper housekeeping around the truck transfer area (sweeping and shoveling of any waste material that may have fallen from truck bed onto the ground surface). Site personnel shall also follow the Track-out Management SOP (LOM-OP-012-BEL) and the Bulk Waste Unloading SOP (LOM-OP-001-BEL) to minimize or eliminate spillage/track-out.

WAYNE DISPOSAL, INC. SITE #2
ACTIVE HAZARDOUS WASTE LANDFILL OPERATIONS
WEEKLY AND AFTER-STORM INSPECTION REPORT

Description	Yes	No	If "No", Explain. State Corrective Action.
Is this a WEEKLY Inspection?			**If yes, complete ENTIRE FORM**
Is this an AFTER-STORM Inspection?			**If yes, complete ONLY Sections C & D**
A. Leachate and Contact Water Collection Systems			**Section A Inspected By:** _____ **Date:** _____
Leachate collection sump riser covers present and properly seated (if applicable)?			
Condition of leachate collection sump risers acceptable?			
Leachate depths in each collection sump in compliance?			
Pumps functioning properly?			
Condition of flow meters acceptable?			
Secondary containment monitoring sumps for leachate and contact water force mains free of liquid?			
B. Leak Detection, Collection, and Removal System			**Section B Inspected By:** _____ **Date:** _____
Sump riser caps present and properly seated?			
Condition of sump risers acceptable?			
No evidence of tampering?			
Is the top of the riser and sample port protected from direct contact with waste?			
Motor controller condition acceptable? Protected from weathering?			
C. Storm Water Structural Controls			**Section C Inspected By:** _____ **Date:** _____
Contact water pumps and pump controls are properly functioning?			
Contact water high level alarms are functional?			
Contact water loss of power alarms are functional?			
Backup batteries for contact water alarm systems have proper voltage?			
Contact water is contained in the cell by separator berms and condition of berms is acceptable?			
D. Dike and Interim Cover Systems			**Section D Inspected By:** _____ **Date:** _____
Interim cover free of signs of erosion which could leave waste exposed?			
Condition of perimeter dike acceptable? Able to prevent run-on into cell and runoff out of cell?			
Is the perimeter free of signs of waste outside of the active cell?			
Is the visual boundary around the active cell in tact?			

Specify Type of Inspection

Check yes for the appropriate type of inspection (i.e. a weekly or an after-storm inspection).

For weekly inspections, complete all sections.

If it is an after-storm inspection, complete Sections C & D only.

A. Leachate and Contact Water Collection Systems

Top cover is required only if riser rim is low enough to be a fall hazard. If present, verify that cover is properly seated.

Inspect aboveground exterior and visible interior portions of risers for damage, stress (buckling) and deterioration.

Measure depth to leachate in each collection sump. If leachate head is non-compliant, immediately notify the Landfill Manager (or designee).

Inspect flow meters for damage or malfunction. Report meter readings to Landfill Manager (or designee).

Check for liquid in the secondary containment monitoring sumps for both the leachate and contact water force mains. If liquid is present, determine whether it is condensate, groundwater or leachate/contact water. If condensate, no action required. If groundwater, there is a leak in the secondary pipe. If leachate or contact water, there is a leak in the primary pipe. Any leaks must be reported to the Landfill Manager immediately and repaired.

B. Leak Detection, Collection, and Removal System

Caps required at all times to prevent contaminants from entering the sumps. Check that caps are present and properly seated.

Inspect aboveground exterior of sump risers for damage, buckling and deterioration.

Note if there is any evidence of tampering that could introduce contamination into the sump.

Waste must not be in contact with the sample port or in the vicinity of the riser opening.

If present, the pump control box must be closed and protected from weathering. If not in use the controller should be moved indoors.

C. Storm Water Structural Controls

Inspect containment berms for damage and wear that could result in failure to contain runoff either due to leakage, permeation, spillage over, or slope failure. Immediately report to the Landfill Manager (or designee) erosion, soil displacement, equipment-induced damage, cracks, wet soil during dry weather, etc.

D. Dike and Interim Cover Systems

Inspect interim cover soil for erosion which could lead to waste exposure.

Inspect the perimeter dike for erosion and vehicle/equipment damage that could weaken the dike and/or allow runon into the cell or runoff out of the cell. Report any exposed geosynthetics. Report tire rutting which may have damaged underlying geosynthetics.

Inspect the perimeter of the active cell for debris that has blown outside of containment. Collect immediately and return to landfill.

Verify visual boundary around the active cell is intact.

WAYNE DISPOSAL, INC. SITE #2 CELLS V, VII, AND IX
QUARTERLY/ANNUAL POST-CLOSURE INSPECTION CHECKLIST

Month (Feb, May, Aug, or Nov) and Year: _____

Names of Inspectors: _____

Inspection Dates	Inspection Item	TRUE	FALSE***
	Security System		
Feb/May/Aug/Nov (Quarterly)	Gates and Perimeter fence secure and intact		
Feb/May/Aug/Nov (Quarterly)	All warning signs present and legible		
	Gas Dike and Perimeter Dewatering Tile System		
Feb/May/Aug/Nov (Quarterly)	No surface evidence of damage / deterioration		
Feb/May/Aug/Nov (Quarterly)	Free-flowing conditions exist at both discharge outlets		
May Only (Annual)	No damage / deterioration or evidence of tile blockage in manholes. Water levels and flow conditions in manholes acceptable.		
	Final Cover System		
Feb/May/Aug/Nov (Quarterly)	No significant erosion		
Feb/May/Aug/Nov (Quarterly)	No settling or water ponding		
Feb/May/Aug/Nov (Quarterly)	Cover properly vegetated		
Feb/May/Aug/Nov (Quarterly)	No rodent holes		
Feb/May/Aug/Nov (Quarterly)	Cover drain pipes intact, no flow obstructions		
Feb/May/Aug/Nov (Quarterly)	No evidence of leachate seeps (if seeps observed, immediate corrective action required)		
	Leachate Collection System		
Feb/May/Aug/Nov (Quarterly)	Standpipes/manholes/covers present, secure, and undamaged		
Feb/May/Aug/Nov (Quarterly)	Water column in each subcell collection sump acceptable		
Feb/May/Aug/Nov (Quarterly)	Pump systems (electrical, meters, pumps, piping) operational and undamaged		
Feb/May/Aug/Nov (Quarterly)	No surface evidence of damage to leachate discharge lines		
Feb/May/Aug/Nov (Quarterly)	No liquid in leachate force main secondary containment monitoring sumps		
	Monitoring Wells		
May and Nov Only (Semi-annual)	Well security devices present and undamaged		
May and Nov Only (Semi-annual)	Aboveground portion of well casings intact, properly seated, and undamaged.		
May and Nov Only (Semi-annual)	Grout seal and concrete pad a base of wells intact, no evidence of water infiltration		
May and Nov Only (Semi-annual)	No ponded water around well heads		
May and Nov Only (Semi-annual)	Conditions of lysimeters acceptable (MC V and VII only)		
	Gas Venting System (Cells V and VII only)		
Feb/May/Aug/Nov (Quarterly)	Vent pipes undamaged and properly seated in cell covers		
Feb/May/Aug/Nov (Quarterly)	Positive pressure exists at vent outlets.		
	Benchmarks		
May Only (Annual)	Monuments undisturbed. Manholes centered over monuments.		

*** If "false" is entered for any inspection item, list the required corrective action in the Maintenance Log.

WAYNE DISPOSAL SITE #2 LANDFILL QUARTERLY / ANNUAL INSPECTION REPORT			Quarterly ☐ Annual ☐		Date/Time: _____ Inspector: _____	
INTERVAL	**DESCRIPTION**	**LOCATION**	**ACCEPTABLE?**		**CORRECTIVE ACTION (Who, What)**	**COMPLETED (When)**
			Yes	No		
	I. Monitoring Equipment					
	Groundwater					
Quarterly	Monitor Well -- Security					
Quarterly	Monitor Well -- Integrity					
Quarterly	Pump System -- Integrity					
	II. Structures/Appurtenances					
	Perimeter Edge Drain					
Annually	Manhole Covers -- Security					
Annually	Manhole Covers -- Integrity					
Annually	Manhole Sections -- Integrity					
Annually	Sumps -- Integrity					

INSPECTION CRITERIA

I. Monitoring Equipment

Groundwater

Inspect individual well security devices (caps, covers, locks) for malfunctions, deterioration, vandalism, or damage.

Inspect observable portion of well casing for deterioration or damage such as cracks, casing alignment (damage from vehicle contact), insect, or animal infestation.

Check grout at base of casing for proper seal to prevent surface water infiltration down on the side of the casing.

Inspect/operate pump and pump control unit for damage deterioration and malfunction.

Perimeter Edge Drain

Verify manhole covers are in-place and are not damaged or have deteriorated to a point that would allow for accidental entry.

Inspect above ground portion and interior for evidence of damage or deterioration such as cracking or spauling that would lead to sediment infiltration.

Inspect sump for excessive sediment build-up that could result in flow blockage. Inspect for line blockage, i.e., water accumulating above pipe elevation.

WEEKLY INSPECTION CHECKLIST FOR LEACHATE COLLECTION SYSTEM
WAYNE DISPOSAL, INC. SITE #2 HAZARDOUS WASTE LANDFILL MASTER CELLS

Inspector: _____

Date: _____

Cell	Meter Reading	Meter Advance?		Compliance Depth to Leachate (ft)	Actual Depth to Leachate (ft)	Level in Complaince?		Pump Functioning?		Meter Functioning?	
		Y	N			Y	N	Y	N	Y	N
V-A				68.8							
V-B				62.5							
V-C				55.9							
V-E				61.2							
VI-AS				127.0							
VI-AN				128.3							
VI-B				135.2							
VI-C				102.1							
VI-D				130.9							
VI-ENE											
VI-ENW				80.0							
VI-ESW				26.0							
VI-ESE				37.0							
VI-CONTACT											
VII-A				37.5							
VII-BN				49.3							
VII-BS				51.8							
VII-C				46.2							

Comments/Action Taken _____

Note: Report items needing immediate attention to the Site Manager
Inspection sheet current as of 9/18/08 change to compliance levels DTL (MC-VI)

WAYNE DISPOSAL SITE #2 LANDFILL
WASTE TRANSFER TANK INSPECTION REPORT

Daily ☐ Weekly ☐ Annual ☐

Date: _____
Time: _____
Inspector: _____

INTERVAL	DESCRIPTION	ACCEPTABLE?		CORRECTIVE ACTION (Who, What)	COMPLETED (When)
		Yes	No		
Daily	Cement Floor				
	Steel Walls				
	Sump				
Weekly	Leak Detection Observation Well				
	Run-on Control				
	Retaining Wall				
	Integrity of Contact Water Piping				
Annually	Cement Thickness				
	Steel Thickness				

INSPECTION CRITERIA

Daily

Cement Floor - Check for cracks, gaps, or damage to integrity of concrete surface.
Steel Walls - Check for damage to steel, loose bolts, and displacement along seams.
Sump - Check for water in sump. If water present, pump to contact water pond.

Weekly

Leak Detection Observation Well - Check for presence of water in leak detection well with electronic sounding device.
Run-on Control - Check curbs, gutters, speed bumps, and asphalt surface for damage or obstructions.
Retaining Wall - Check for erosion of earth or displacement of seams.
Integrity of Contact Water Piping - Check for water discharge within the contact water sump at the transition of the double-contained HDPE conveyance piping to the primary pump discharge pipe.

Annual

Cement Floor Thickness - Survey floor to determine how much wear has occurred, at 4-inches of wear the surface should be repaired.
Steel Thickness - Measure thickness to determine degree of degradation. Replace if less than two-thirds of the original plate thickness.

Training and Amendment of Inspection Checklists and SOPs:

All of the inspection checklists included in this section cannot be revised without the revisions being submitted to and approved by the MDEQ. This also holds for many of the SOPs listed in this document. Each SOP will contain a requirement for regulatory approval if necessary. The checklists and SOPs need to be reviewed to determine if modification is warranted any time there a new disposal area is constructed or any major change is made to the site infrastructure that are subject to inspection. When modifications to any checklist or SOP are made and approved, training of relevant personnel must be conducted before implementation

Attachment 3

Personnel Training Program

SITE 2 (MDWTP/WDI) PERSONNEL TRAINING PROGRAM

PERSONNEL TRAINING FOR SAFE FACILITY OPERATION AND MAINTENANCE

40 CFR 270.14(b)(12), 40 CFR 264.16, and Part 111

CORPORATE OBJECTIVES TARGET SAFETY AND COMPLIANCE

EQ completes all required compliance training for associates in a timely manner. In order to accomplish this a comprehensive training plan is followed which encompasses safety, compliance with environmental standards, and job-specific training such as adherence to the waste analysis plan (WAP). One module found within this training plan is the training required under RCRA for persons who work at a hazardous waste facility. The requirements in 40 CFR 264.16 state that workers will be given a baseline awareness of potential hazards at the facility and how to respond to an incident involving the release of waste following the site Contingency Plan. This training program, the RCRA Contingency Plan and Emergency Response Procedures is described below.

THE RCRA CONTINGENCY PLAN AND EMERGENCY RESPONSE PROCEDURES

This section provides an outline of both introductory and continuing training programs provided by the facility owners and operators to prepare persons to operate or maintain the Hazardous Waste Management facility in a safe manner as required to demonstrate compliance with 40 CFR 264.16. The title of this training program is RCRA Contingency Plan and Emergency Response Procedures. This training is designed to meet actual job tasks in accordance with RCRA regulatory requirements in 40 CFR 264.16(a)(3).

GENERAL METHOD AND CONTENT OF TRAINING

Facility personnel shall successfully complete a program of classroom instruction and on-the-job training that teaches them to perform their duties in a way that ensures the facility's compliance with the requirements of this part. The curriculum includes all the elements to fulfill both introductory and continuing training that will be given to each person filling a position related to hazardous waste management at the facility. An associate who is trained in hazardous waste management procedures, normally the Regulatory or Health & Safety Representative, directs this training.

Each manager is responsible for identifying the initial and continuing training needs of his/her employees to ensure facility compliance with RCRA. This information is communicated to the Regulatory or Health & Safety Representative who registers the employee into training classes. The manager also provides instruction on job-related standard operating procedures and other on-the-job training. This program includes instruction, which teaches facility personnel hazardous waste management procedures, including contingency plan implementation relevant to the position in which they are employed.

A. TRAINING CURRICULUM:

The training program is designed to ensure that facility personnel are able to respond effectively to emergencies by familiarizing them with emergency procedures, emergency equipment, emergency systems including;

(i) Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment;

(ii) Communications or alarm systems;

(iii) Responses to fires or explosions;

(iv) Responses to spill incidents; and

(v) Shutdown of operations

B.TRAINING TIMING AND FREQUENCY

Each affected person completes the program within six months after the effective date of these regulations or six months after the date of their employment or assignment to a facility, or to a new position at a facility, which ever is later. Employees hired after the effective date of these regulations must not work in unsupervised positions until they have completed the training requirements of the RCRA Contingency Plan and Emergency Response Procedures.

C. ANNUAL REVIEW

All facility personnel take part in an annual RCRA Contingency Plan and Emergency Response Procedures review.

D. DOCUMENTATION AND RECORD KEEPING:

The owner or operator maintains the following documents and records at the facility:

(1) Job Title and Employee List:

The job title for each position at the facility related to waste management, and the name of each employee filling each job; - per 40 CFR 264.16(d)(1)

(2) Job Description:

A written job description is provided for each position is listed above. This description may be consistent in its degree of specificity with descriptions for other similar positions in the same company location or bargaining unit, u must include the requisite skill, education, or other qualifications, and duties of employees assigned to each position; - per 40 CFR 264.16(d)(2) –

(3) Training Requirements:

A written description of the type and amount of both introductory and continuing training that will be given to each person filling a position listed; - per 40 CFR 266.16(d)(3)

(4) Records:

Records that document the RCRA Contingency Plan and Emergency Response Procedure training or job experience has to be given to, and completed by, facility personnel; - per 40 CFR 264.16(d)(4)

E. RECORD MANAGEMENT

Training records on current personnel are kept until closure of the facility. Training records on former employees are kept for at least three years from the date the employee last worked at the facility. Such records are maintained on-site.

Personnel training records may accompany personnel transferred within the same company to another facility.

Attachment 4

Contingency Plan

EQ -- THE ENVIRONMENTAL QUALITY COMPANY

PRESENTS

RCRA CONTINGENCY PLAN

AND

EMERGENCY PROCEDURES

FOR

MICHIGAN DISPOSAL WASTE TREATMENT PLANT

&

WAYNE DISPOSAL, INC. SITE #2

AT

BELLEVILLE, MICHIGAN

As revised February 2011
(Discard all previous versions)

RCRA CONTINGENCY PLAN PURPOSE

"Contingency Plan" means document that sets out an organized, planned, and coordinated course of action to be followed in case of a fire, explosion, or release of hazardous waste or hazardous waste constituents that could threaten human health or the environment." (R299.9102(p), 40 CFR 260.10)

The contingency plan has been designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water.

The provisions of the plan are to be carried out immediately whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment(40 CFR 264.51(b))

TABLE OF CONTENTS

A1. Description of Operations - Michigan Disposal Waste Treatment Plant (MDWTP)

The MDWTP operations include receiving, storage, and treatment of hazardous wastes permitted by the MDEQ under the facility operating license and the USEPA under a Resource Conservation and Recovery Act (RCRA) permit (MID 000 724 831).

The specific routine operations and work areas for MDWTP include:

- Waste receiving & quality control(QC)
- Waste loading/unloading
- Reagent unloading & tank storage
- Waste storage in tanks
- Waste treatment in tanks
- Container staging & storage and
- Shipment of waste off-site to permitted treatment, storage, and disposal facilities (TSDFs)

The requirements for operations in these areas are defined in and regulated by the facility operating license.

Waste Identification and Classification - MDWTP

The waste types acceptable for treatment and storage at the facility are defined in Part 111 of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451 (Act 451) and 40 CFR regulations at part 261. The wastes acceptable for treatment listed in Appendix A of MDWTP's WAP.

Description of Waste Management Units - MDWTP

The MDWTP facility is a liquid and solid hazardous & non-hazardous waste storage and treatment facility. Containerized wastes may be stored on-site before and after treatment in one of five hazardous waste storage areas: the North Container Storage Area (NCSA), the East Container

Storage Area (ECSA), the Southeast Container Storage Area (SECSA) and the East and West Treatment Building Bays. The facility is equipped with pollution control systems for particulate, odor, and emission control.

Liquid hazardous wastes to be treated in the pozzolanic stabilization process may be stored in four, 20,000 gallon and vertical storage tanks (T-16 through T-19). Liquid reagents are stored in two, 15,000 gallon vertical tanks (T-25 and T-27).

Hazardous Waste dust may be stored in three 100 cubic yard (cy) silos of the plant. Lime kiln flue dust, cement kiln flue dust, and lime are also used for stabilization and may be used in all six silos (T-1 through T-6). The dusts are fed from the silos to the closest pugmill and treatment tank at a controlled rate to effect treatment of liquid and solid wastes. Other reagents, such as ferrous sulfate, may be added directly to the tanks in bag or bulk quantities.

Listed and characteristic hazardous wastes are stored and treated in sludge receiving tanks, sludge storage tanks, and pugmills on the west side of the plant and similarly stored and treated on the east side of the plant. In both cases, treatment consists of blending the waste in sludge feed tanks prior to treatment in the pugmills or mixing and treatment directly in the sludge storage/treatment tanks. Other chemical reagents may be selectively added in drum or bulk quantities.

Containerized hazardous waste and non-hazardous wastes are staged and stored on concrete pads at the NCSA, ECSA, SECSA and the East and West Treatment Building Bays. Drainage trenches constructed within the containment areas contain and control liquid runoff. Drums are transported from the pad into the plant using a barrel forklift. Then they are opened by carefully removing the tops or bungs and immediately emptying the contents with a vacuum truck or pouring contents directly into the sludge boxes or treatment tanks using the barrel forklift. The empty drums are placed into a roll-off box or other similar container for subsequent disposal.

The disposal operations are supported and directed from the office/lab and waste receiving site located near the entrance to the facility. These support operations assist to control and evaluate shipments received for conformance with pre-approval information regarding the specific properties, treatment, and documentation requirements. The facility waste characterization and analysis records are maintained on-site.

A2. Description of Operations - Wayne Disposal, Inc. Site #2 (WDI)

The WDI operations include the landfill disposal of hazardous and non-hazardous wastes permitted by the MDEQ under the facility operating license USEPA under a Resource Conservation and Recovery Act (RCRA) permit (MID 048 090 633).

The specific routine operations and work areas for WDI include:

- Waste receiving and quality control
- Waste unloading
- Hazardous waste landfill and related appurtenances (piping, pumps, operation and maintenance, truck wheel wash buildings located within the area bounded by North Interstate 94 (I-94) Service Drive and Willow Run Airport)

Work areas are shown in Figure 4.

The landfill is currently permitted with a design capacity of 11,000,000 cubic yards (cy) of in-place waste. The requirements for operations in these areas are defined in and regulated by the Hazardous Waste Treatment, Storage and Disposal Facility operating license. Non-hazardous wastes are managed in accordance with the facility's Part 115 of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451 (Act 451). The WDI landfill is-located at the same site as the MDWTP treatment and storage facility (MID 000 724 831). The WDI landfill disposal operations are supported by the MDWTP office/lab and waste receiving, storage, and treatment operations located near the entrance of the facility. These operations assist to control and evaluate shipments received for conformance with pre-approval information regarding the specific properties, treatment, and documentation requirements. The WDI facility waste analysis records are maintained on-site.**Waste Identification and Classification - WDI**

The waste types acceptable for treatment and storage at the facility are defined in Parts 111 and 115 of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451 (Act 451) and 40

CFR Regulations at Part 261. Acceptable hazardous waste codes are identified in Section 8 of the Hazardous Waste Treatment, Storage and Disposal Facility Operating License.

The facility (WDI) license has specific restrictions regarding the following waste types NOT ACCEPTABLE for disposal:

- Ignitable wastes as described in Michigan Act 451 rule R 299.9212
- Reactive wastes as described in Michigan Act 451 rule R 299.9212
- Bulk or noncontainerized liquid waste or waste containing free liquids
- Containers holding free liquids, including laboratory packs
- Wastes which are banned from landfilling by regulations promulgated under 40 Code of Federal Regulations (CFR) Part 268 unless the wastes meet the applicable Land Disposal Restriction (LDR) treatment standards or a variance has been obtained from the USEPA
- Waste which will:
  - (1) Adversely affect the permeability of the clay liner.
  - (2) Produce a leachate that is incompatible with the clay liner, leachate collection system piping, or the off-site sewer system.
  - (3) Generate gases that will adversely affect the permeability of the clay cap or create a violation of the air pollution control requirements of Part 55 of Act 451.

Description of Waste Management Units - WDI

The WDI facility includes a permitted hazardous waste landfill with primary and secondary liner systems, a leachate collection and removal system, and a leak detection, collection and removal system. The landfill operations also include run-on, run-off, and contaminant control systems including a vehicle wash facility and other landfill-related appurtenances and support buildings. When placed in the landfill, containers are at least 90% full or crushed, shredded, or similarly reduced in volume before burial in the landfill. The waste management units are identified in Figure 4.

PLAN SCOPE (264.52)

264.52(a). Emergency Response Actions--All Personnel

All MDWTP and WDI personnel are instructed to respond, in case of emergency, as follows:

1. Alert the shift supervisor or the emergency coodinator of the hazard(s).
2. If any persons in the immediate area are potentially endangered, advise them to leave immediately.
3. If any person has been seriously injured call 911 for EMT support.
4. Contact the Emergency Coordinator(s) in person, as necessary, by radio or phone (See Section 264.52(d), page 15 for the list of Emergency Coordinators).
5. Indicate nature of emergency and stand by to receive instructions from Emergency Coordinator or evacuate.
6. Shut down, as necessary, all processing and ancillary equipment per manufacturers instructions, associated with the incident.

The Emergency Coordinator will direct actions of all facility personnel to:

1. Identify hazards and assess extent of potential harm to human health or the environment.
2. Notify, as necessary, the appropriate Emergency Response Contacts listed in this Plan.
3. Respond in cooperation with outside agencies to minimize hazards.
4. Follow up response actions with required reports (verbal and written). This includes internal incident reports and providing information to regulatory staff to prepare the incident report(s).

If there is a fire, explosion, or other release of hazardous waste or hazardous waste constituents that could threaten human health or the environment, or a spill that reached surface water or ground water, then immediately notify the DEQ's pollution emergency altering system (PEAS) - telephone number

800-292-4706 if after hours, and the DEQ directly if between 8-5. The notification shall include all of the following information:

(a) The name and telephone number of the person who is reporting the incident.

(b) The name, address, telephone number, and EPA Identification No. of the facility.

(c) The name, address, and telephone number of the owner or operator.

(d) The date, time, and type of incident.

(e) The name and quantity of the material or materials involved and released.

(f) The extent of injuries, if any.

(g) The estimated quantity and disposition of recovered material that resulted from the incident.

(h) An assessment of actual or potential hazards to human health or the environment.

(i) The immediate response action taken.

264.52(b). Emergency Response Planning

This RCRA Contingency Plan is a part of the overall effort at the facility to predict, prevent, and properly respond to incidents. The RCRA Contingency Plan satisfies RCRA requirements for responses to emergencies involving hazardous waste.

264.52(c). Arrangements with Emergency Response Agencies

(a) The following are arrangements agreed to by local fire departments, police, hospitals, contractors, state and local emergency response teams to coordinate emergency services.

1) Local police, fire departments, and emergency response teams are made familiar with the layout of the facility (by independent review of copy of this contingency plan and upon response by ER contact and tours of the facility), properties of hazardous waste handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to and roads inside the facility, and possible evacuation routes.

2) The Primary emergency authority of the local police and fire department is set forth by state and local law or ordinance. The Van Buren Fire Department is deemed the primary emergency contact for situations related to this site's operations. The Van Buren Fire Department will make other emergency team contacts at their discretion, usually asking for the assistance of the Van Buren Police Department/Michigan State Police. This, of course does not preclude MDWTP and WDI personnel from exercising the option of contacting additional emergency units depending on the circumstances (A list of Emergency Response Contacts is provided in this section). Any others providing support to the primary emergency authority will follow the direction of the local police and fire departments.

3) All necessary support by emergency response teams, emergency response contractors, and equipment suppliers has been documented in this Plan.

4) Information to familiarize hospital staff with the properties of wastes involved in an injuries, incident, or illness resulting from fires, explosions, or releases will be provided at the time of response to an incident.

5) EQ is continuing to work with the Van Buren Township (VBT) Fire Department to further develop and maintain emergency response activities (i.e. joint training, periodic drills and evacuation planning with local emergency response agencies) and better communication.

(b) No state and local authorities have declined to enter into such arrangements; if such refusal occurs it would be documented.

264.52(c). Emergency Response Agency and Regulatory Contacts

Agency	Contact #	Emerg. #
Ambulance Services		
1. Huron Valley Ambulance Service, Inc. 2215 Hogback Road Ann Arbor, MI 48105 Contact: Mr. Dale Berry, Executive Director	(734) 971-4733	(734) 994-4111
Emergency Medical Services		
1. St. Joseph Mercy Hospital 5301 E. Huron River Drive Ann Arbor, MI 48106 Contact: Dr. John McCabe, MD - Emergency Room	(734) 712-3456	(734) 712-3000
2. Midwest Health Center, P.C. 9301 Middlebelt Road Romulus, MI 48174 Contact: Dr. R.T. Nolta, MD FACPM		(734) 941-1000
3. Concentra Medical Center 11700 Metro Airport Center Drive Romulus, MI 48174 Contact: Mr.Mark Weiner, MD, Medical Director		(734) 955-7000
Poison Information		
1. Poison Control Center Children's Hospital of Michigan Harper Professional Office Building 4160 John R, Suite #616 Detroit, MI 48201 Contact: Dr. Suzanne White, Medical Director	(313) 745-5335	(800) 222-1222

Agency		Contact #	Emerg. #
Fire Departments			
1.	Van Buren Township Fire Department 46425 Tyler Road Belleville, MI 48111	(734) 699-8930	911
2.	Willow Run Airport Fire Department P.O. Box 801 Ypsilanti, MI 48198 Contact: Mr. Tim Hoeft, Fire Chief	(734) 485-6660	Metro Dispatch (734) 942-3600 Control Tower: (734) 480-9247
3.	Ypsilanti Township Fire Department 222 South Ford Boulevard Ypsilanti, MI 48198	(734) 544-4225	(734) 544-4224
Police Departments			
1.	Van Buren Township Police Department 46425 Tyler Road Belleville, MI 48111 Contact: Mr. Gerald Champagne, Public Safety Director	(734) 699-8930	911
2.	Taylor - State Police Post 12111 Telegraph Road Taylor, MI 48180 Contact: First Lieutenant Lynne Huggins	(734) 287-5000	911
State and Federal Emergency Reporting			
1.	State of Michigan: Pollution Hotline	(800) 292-4706	
2.	Federal: National Response Center	(800) 424-8802	

Agency	Contact #	Emerg. #
Van Buren Township Government		
1. Van Buren Township 46425 Tyler Road Belleville, MI 48111	(734) 699-8900	911
Special Agencies		
1. Western Wayne County Hazardous Incident Response Team (H.I.R.T) 14910 Farmington Rd Livonia, MI 48154 Note: Hazmat Team may only be activated by an on-scene Fire Department Officer.	(734) 466-2431	911
2. Sara Title III Local Emergency Planning Committee Wayne County Emergency Management Office of Wayne County Executives 10250 Middlebelt Road Detroit, MI 48242 Contact: Mr. Mark Sparks, Director of Emergency Management	(734) 942-5289	(734) 942-3600

264.52(d). On-Site Emergency Coordinator Contacts

The Emergency Coordinators are listed below in the order in which they will assume responsibility.

264.52(d). Emergency Coordinators for MDWTP & WDI Facilities

Emergency Coordinators	Site phone number: (734) 699-6201	
Primary:		
Kerry Durnen Director of Operations	Office: Cellular: Home:	(734) 699-6265 (734) 576-0189 (734) 439-1690
Tom Caswell Operations Mgr	Office: Cellular: Home:	(734) 699-6213 (734) 576-0420 (248) 573-5113
Alternates:		
Tony Patrick Plant Supervisor	Office: Cell: Home:	(734) 699-6226 (734) 576-0382 (734) 865-5983
Paul Haratyk Plant Supervisor	Office: Pager: Cell: Home:	(734) 699-6214 (800) 250-4182 (734) 576-0142 (734) 844-1128
Michael L. Porath Operations Manager	Office: Cell: Home:	(734) 699-6239 (734) 576-0179 (517) 423-6996
Ken Weber WWTP Mgr	Office: Cell: Home:	(734) 699-6280 (734) 576-0153 (734) 464-0310

264.52(e). Emergency and Decontamination Equipment

The Health and Safety Manager ensures that the Emergency and Decontamination Equipment on-site is maintained. Locations of emergency and decontamination equipment are shown in Figures 1, 2 and 3. Some of this equipment may be serviced and/or monitored by an outside contractor. Routine training is provided to appropriate EQ Personnel on the operation and use of certain emergency equipment.

264.52(f). Evacuation Plan Clearing Immediate Area

If any employee in the active hazardous waste treatment area or waste reception area encounters an emergency situation which they believe to present an imminent threat to human health or the environment, the individual employee is authorized to leave the area immediately and tell others to leave the area immediately.

Any available route away from the hazard may be used either on foot or by vehicle. The employee should proceed out the main gate to the service drive or out Denton Road to the service drive and notify security to contact the Emergency Coordinator. If security has been disabled use radio or first available phone to contact the Emergency Coordinator.

Evacuation of Entire Facility

Evacuation Signal: If in the opinion of the Emergency Coordinator a general evacuation of the entire site is warranted, he will notify all persons on-site by radio and PA systems. All employees work under supervision of a supervisor in public address system range or direct radio contact with the Emergency Coordinators. Evacuation notice will be given verbally to these employees.

Primary Evacuation Route:

Upon receiving the evacuation order by radio, all employees, including persons in the non-hazardous areas, must immediately proceed out Denton Road to the service drive and congregate at that point. The security guards' list of persons on-site will be used for roll call.

Alternate Evacuation Route:

If wind direction and location of hazard blocks the Denton Road gate, the employees must exit the main gate to service drive and congregate east of the entrance. The security guards' list of persons on-site will be used for roll call.

Return to Site:

Employees should not return to the site until instructed to do so by the Emergency Coordinator, or until a general all clear signal is given over the radio/PA system.

264.53. Plan Distribution

1. On-Site Copy Locations: Official Copies of the Contingency plan can be found in the following locations on-site:

   a) MDWTP/WDI Spotter's Shed

   b) Guard Office

   c) Safety Office

   d) Administrative Building

   e) Receiving Building

   f) Lunchroom/Training Center

2. Off-Site Copy Locations: Official Copies of the Contingency Plan have been sent to the following agencies off-site:

   a) EQ Main Office (Wayne, MI)

   b) Each of the Emergency Response Contacts with addresses listed in section 264.52(c) of this plan.

264.54. Plan Revision

The contingency plan must be reviewed, and immediately amended, if necessary, whenever:

(a) The facility permit is revised;

(b) The plan fails in an emergency;

(c) The facility changes - in its design, construction, operation, maintenance, or other circumstances - in a way that materially increases the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency;

(d) The list of Emergency Coordinators changes; or

(e) The list of emergency equipment changes.

The Emergency Coordinator(s) will coordinate with the Quality Environmental Health & Safety Department (QEHS) to initiate an update of the Contingency Plan whenever it becomes outdated.

Whenever the Contingency Plan is modified, the Emergency Coordinator(s) must provide the emergency response agencies with a copy of the modified plan. Send these copies with a letter of transmittal, by certified mail, with instructions to destroy all previous copies.

264.55. Responsibility, Qualifications and Authority of Emergency Coordinator

At all times there is at least one employee, either on the facility premises or on call and within reasonable travel distance of the facility, with the responsibility for coordinating all emergency response measures. These personnel are known as on-site Emergency Coordinator(s). They must be fully qualified for this responsibility and be knowledgeable of this Contingency Plan, the facility's operations and activities, and how these operations and activities are impacted by RCRA obligations." They must also be knowledgeable of the location and characteristics of waste handled, the location of all records within the facility, and the facility layout.

The Emergency Coordinator must be contacted immediately in the occurrence of any situation that may result in potential or actual threats to human health or the environment. The Emergency Coordinator must implement this plan whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents that could threaten human health or the environment. The Emergency Coordinator is authorized to commit any necessary resources of the company that may be needed to carry out this Contingency Plan.

264.56. Emergency Response Procedures by the Emergency Coordinator

264.56(a). At Tine of Incident

Whenever there is an imminent or actual emergency situation, the Emergency Coordinator (or his designee) immediately:

(1) Activates internal communication systems (Radio/ PA System) to notify all facility personnel; and

(2) Notifies appropriate state or local agencies with designated response roles if their help is needed.

264.56(b). In the Event of Release, Fire or Explosion

The Emergency Coordinator must coordinate with QEHS to immediately identify the character, exact source, amount and extent of any released materials. They may do this by observation and/or review of the facility records or manifests, and if necessary, by chemical analysis.

264.56(c). Assessment of Possible Hazards

The Emergency Coordinator must assess possible hazards to human health or the environment that may result from the release, fire, or explosion. This assessment must consider both direct and indirect effects of the release, fire, or explosion (e.g., the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water run-off from water or chemical agents used to control fire and heat-induced explosions). Should the release, fire or explosion present a significant **off-site** risk, SOP QES-OP-010-BEL (an MDNRE approved SOP) must be implemented to provide a timely assessment of off-site risk.

Sudden Release (Spill) Control, Containment, Cleanup, and Disposal

In the event of a spill or release which could threaten human health or the environment, the following steps should be taken:

1. Contact the Emergency Coordinator for instructions.

2. The Emergency Coordinator shall give directions to:

a) Isolate the area of the spill to prevent contact with any personnel.

b) Determine whether the spilled material may enter or is entering the sedimentation basin, and if the potential exists, the discharge point from the sedimentation basin to the Quirk Drain must be closed.

c) Determine the characteristics of the spilled waste for any special handling requirements. If feasible and safe, stop the release at the source of the flow by overpacking or uprighting containers, using valves, shut off switches, patches, lids or other mechanical devices. Drains or sumps may be sealed using visqueen and a weight such as a bag of absorbent.

d) Vacuum any available spilled waste with the vacuum truck. Any remaining residue should be contained with absorbents and shoveled into containers in preparation for disposal. Solid wastes may be front-end loaded into containers or waste hauling vehicles.

e) If the spill occurred in a paved area, the pavement should be cleaned with water and detergent solution, under high pressure and then rinsed twice with clean water, being sure to collect all spent cleaning and rinsing solutions with the vacuum truck. After the spill has been cleaned up, the spill area will be inspected for cracks, fissures or any other imperfection that might allow the spilled material to reach the subsoil. In the event that any cracks or fissures are found, three one-inch holes will be drilled through the concrete. The holes will be along the cracks or fissures and spaced to represent the area. A thin wall tube will be pounded at least six inches into the soil. The soil collected in the tube will be analyzed for the spilled constituents. If hazardous levels of spill constituents are detected, the concrete in the area should be removed and the area remediated as though the spill had occurred in an unpaved area. When completed, the new replacement concrete should include water stop. If hazardous levels of spill constituents are not detected, the holes

should be filled with Emanco T-430 or equivalent in accordance with manufacturer's instructions.

f) In the event the spill occurs in an unpaved area, all visible contamination should be removed. At least six inches of "clean" soils surrounding the contaminated area should also be removed. Samples should then be taken for chemical analysis to confirm the absence of any contaminants from the spilled waste.

g) Containers of Hazardous Waste are properly labeled and marked and managed in generation accumulation areas. They are properly characterized and disposed of at a properly licensed waste management facility. A properly completed manifest is used if transport of liquids or hazardous waste to an off site destination is necessary.

3. The Emergency Coordinator shall assist QEHS in the preparation of the appropriate reports described below.

264.56(d). Notification of Regional Authorities If the Emergency Coordinator determines the facility has had a release, fire, or explosion which could threaten human health or the environment outside the facility, he will report such findings and act as follows:

1. If the Emergency Coordinator suspects that the evacuation of surrounding local areas is advisable, he will inform Van Buren Fire Department, or Van Buren Police Department or MI State Police and assist the appropriate officials in deciding whether evacuation is necessary and, if so, assist in determining what areas should be evacuated. According to R 299.9607 and 40 CFR 264.56(d), the decision making authority to evacuate the local areas belongs to the appropriate local authorities (i.e. Van Buren Township) based on the EQ's assessment of the release.
2. In the event of fire, the Emergency Coordinator gives special consideration to potential impact of smoke or fumes on I-94 freeway traffic.

3. If there is a fire, explosion, or other release of hazardous waste that could threaten human health or the environment, or a spill that reached surface water or ground water, the Emergency Coordinator will immediately notify the DEQ's pollution emergency alerting system (PEAS) - telephone number 800-292-4706. The notification shall include all of the following information:

(a) The name and telephone number of the person who is reporting the incident;

(b) The name, address, telephone number, and EPA Identification No. of the facility;

(c) The name, address, and telephone number of the owner or operator;

(d) The date, time, and type of incident;

(e) The name and quantity of the material or materials involved and released;

(f) The extent of injuries, if any;

(g) The estimated quantity and disposition of recovered material that resulted from the incident, if any;

(h) An assessment of actual or potential hazards to human health or the environment;

(i) The immediate response action taken.

If any threat to human health or to the environment extends **off-site**, the Emergency Coordinator will also contact the National Response Center (800-424-8802) and report the following:

1. Name and phone number of reporter;
2. Name and address of facility;
3. Time and type of incident;
4. Name and quantity of material involved, to the extent known;
5. The extent of injuries, if any;
6. Possible hazards to human health or the environment outside the facility.

264.56(e). Preventing the Spread of Hazards

During an emergency, the Emergency Coordinator must take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other hazardous waste at the facility. These measures must include, where applicable, stopping processes and operations, collecting and containing released waste, and removing or isolating containers.

264.56(f). Response to Fire, Explosion or Release

If the facility stops operations in response to a fire, explosion, or release, the Emergency Coordinator must monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes or other equipment, whenever this is appropriate.

264.56(g). Provision for treatment, storage, and disposal of waste generated in emergencies

Immediately after an emergency, the Emergency Coordinator must provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire, or explosion at the facility.

[Comment: Unless the owner or operator can demonstrate, in accordance with Section 261.3(c) or (d) of 40 CFR, that the recovered material is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements of Parts 262, 263, and 264 of 40 CFR.]

264.56(h). Prevention of and Preparation for future incidents

The Emergency Coordinator must ensure that, in the affected area(s) of the facility:

(1) No waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and

(2) All emergency equipment listed in the contingency plan is cleaned and fit for its intended use before operations are resumed in the affected area(s) of the facility.

(3) EQ is continuing to work with the Van Buren Township (VBT) Fire Department to further develop and maintain emergency response activities (i.e. joint training, periodic drills and evacuation planning with local emergency response agencies) and better communication.

264.56(i). Notification of Compliance with section 264.56(h)

Notification must be given to the Regional Administrator, and appropriate state and local authorities, that the facility has taken the necessary steps to prevent and prepare for future incidents (as described in 40 CFR 264.56(h)) before operations are resumed in the affected area(s) of the facility.

264.56(j). Post Emergency Documentation and Reporting

Documentation:

The Emergency Coordinator will note in the Operating Record the time, date, and details of any incident that requires implementing the Contingency Plan. The Operating Record is maintained at the Wayne Disposal, Inc. Site No. 2 facility in Belleville, Michigan.

Reporting:

Within **15 days** of any situation requiring implementation of the Contingency Plan, the Emergency Coordinator shall prepare a report to be submitted to the Regional Administrator (EPA) and DEQ District Supervisor, Waste Management Division, SE Michigan District (Warren). At a minimum, the report shall detail the following:

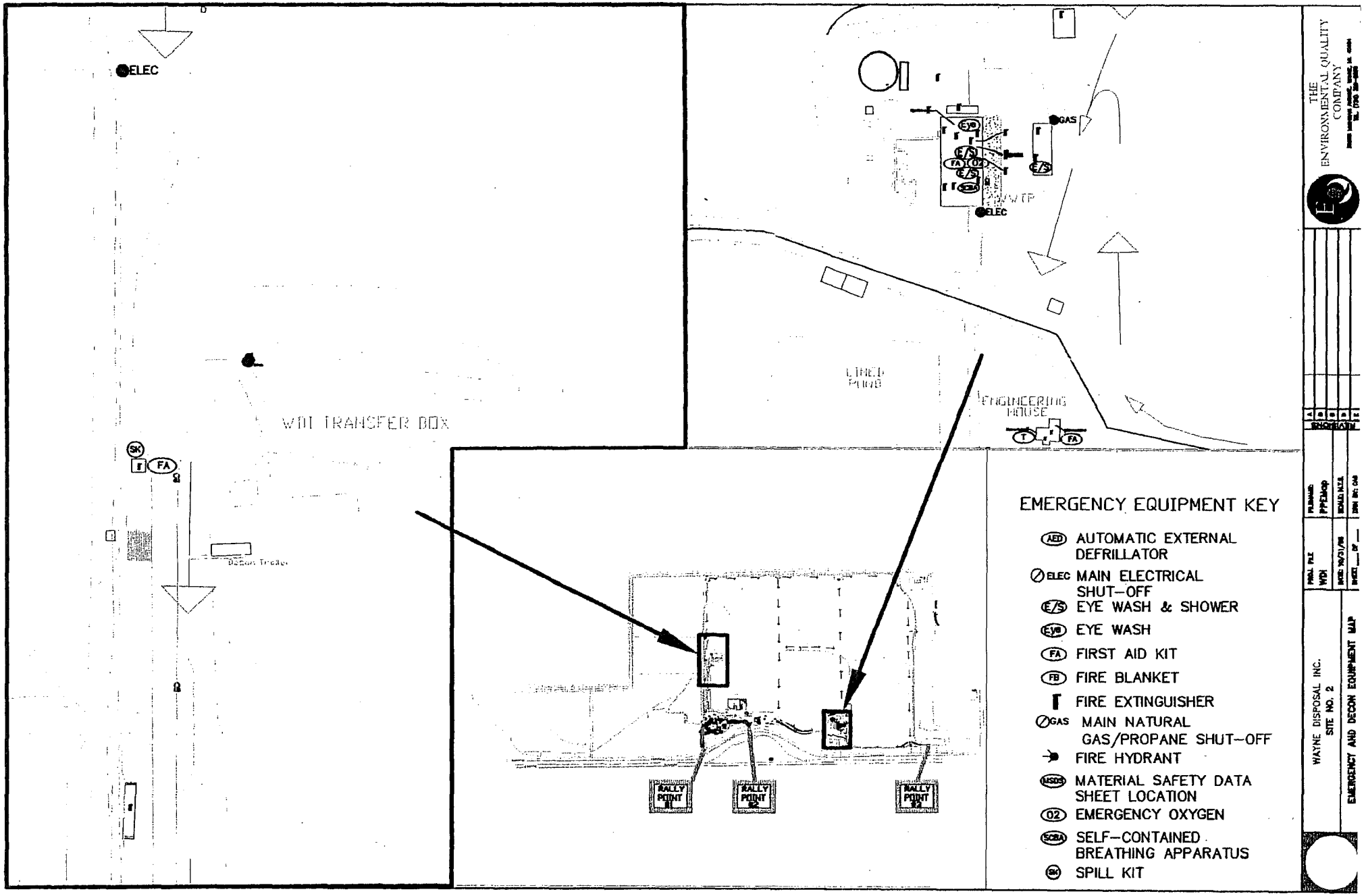
1. Name, address and phone number of the operator;
2. Name, address, and telephone number of the facility;
3. Date, time, and type of incident (e.g. fire, explosion);

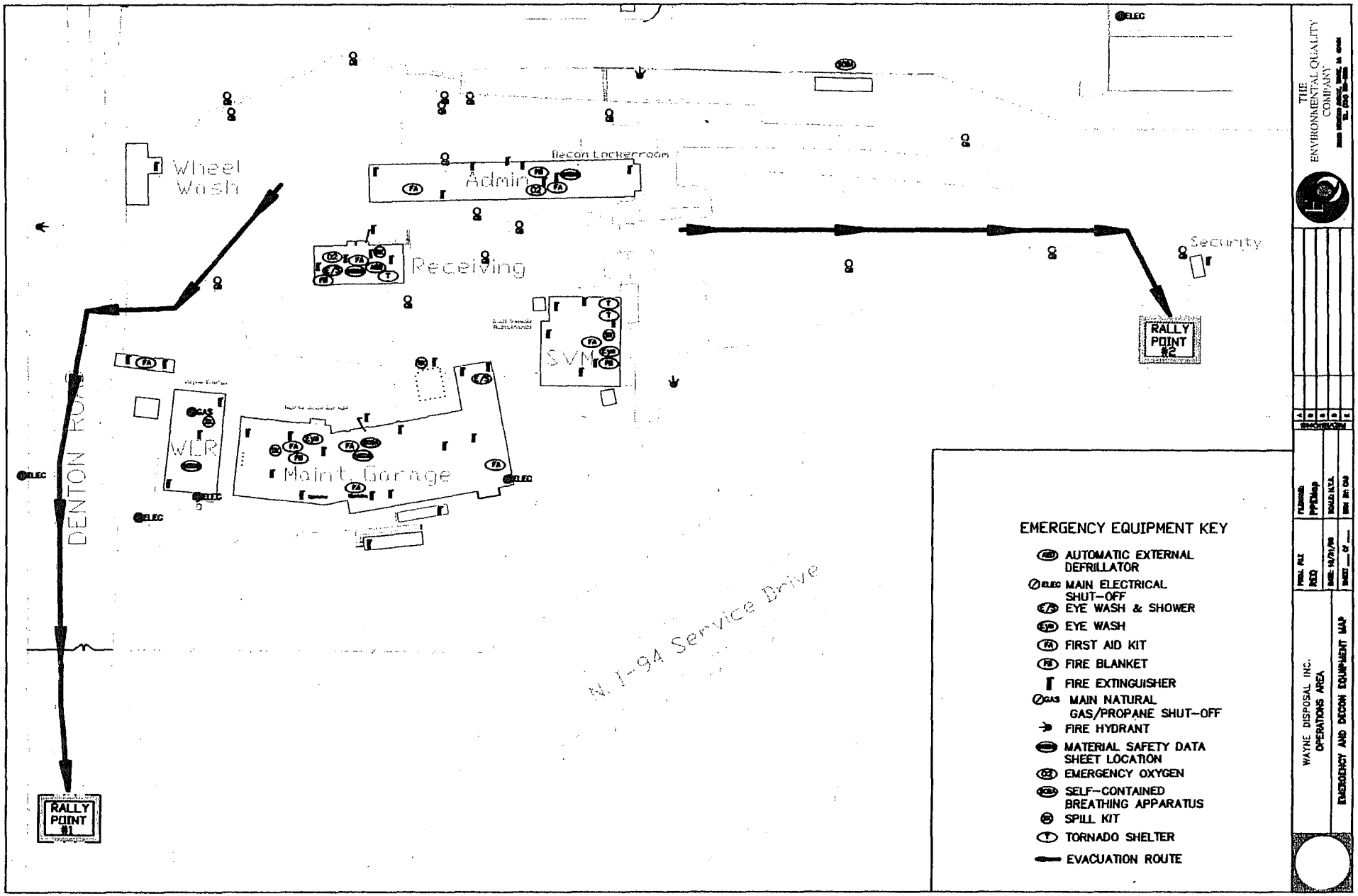
4. Name and quantity of material(s) involved;

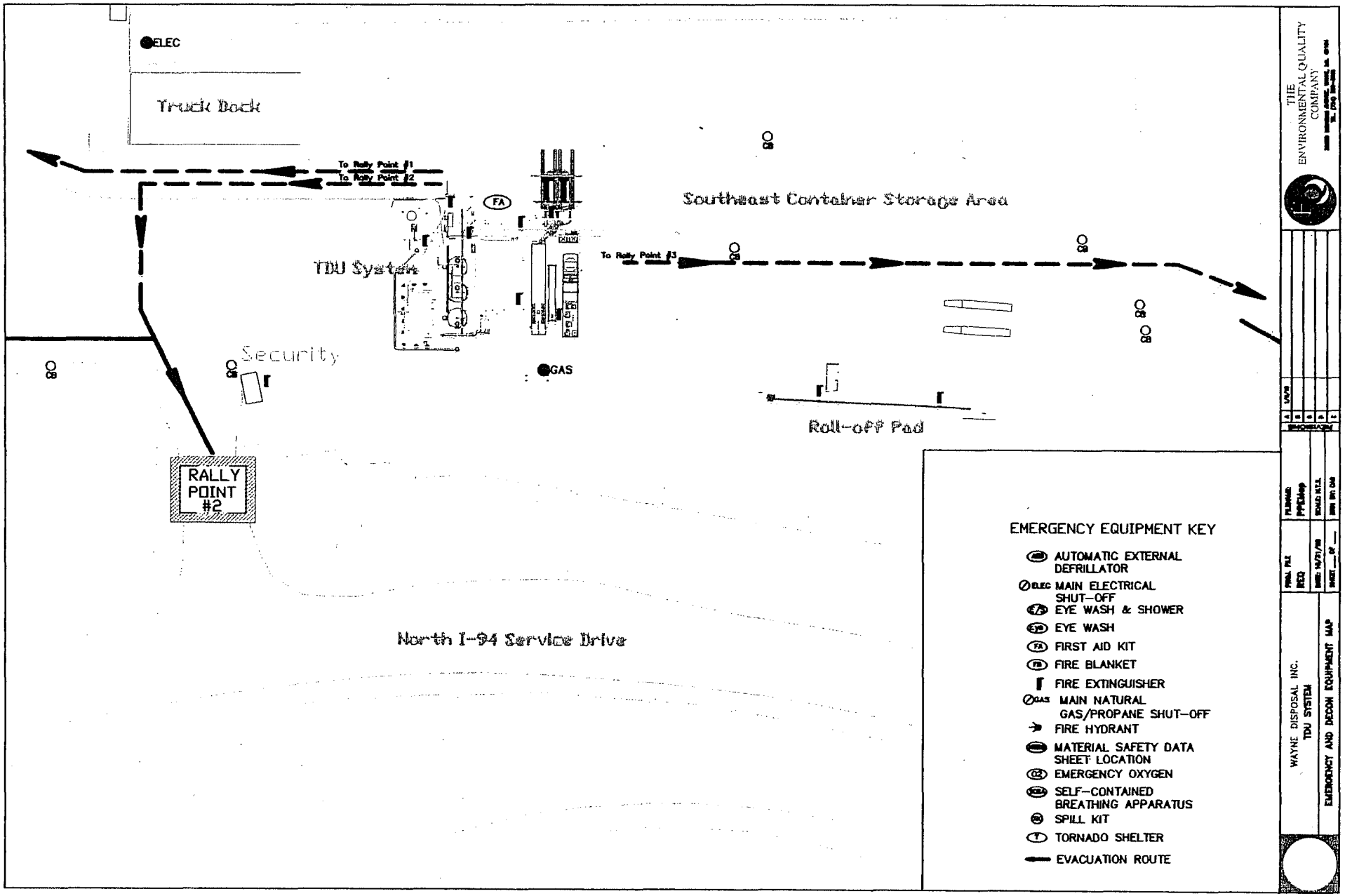
5. The extent of injuries, if any;

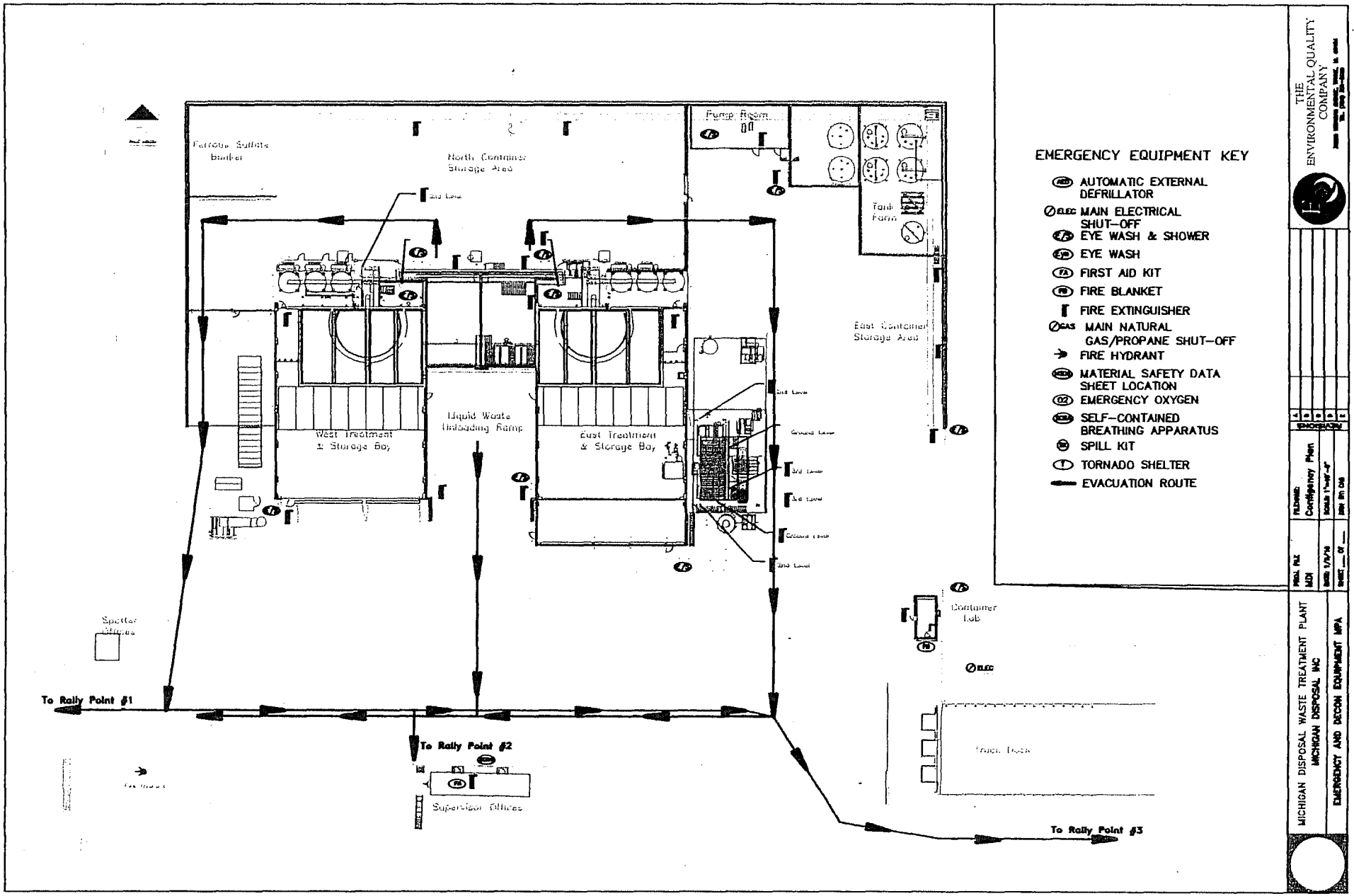
6. An assessment of actual or potential hazards to human health or the environment, where this is applicable; and

7. Estimated quantity and disposition of recovered material that resulted from the incident.


ELEC
WDI TRANSFER BOX
LINED POND
ENGINEERING HOUSE
GAS
WTP
ELEC
RALLY POINT #1
RALLY POINT #2
RALLY POINT #3
EMERGENCY EQUIPMENT KEY
AED AUTOMATIC EXTERNAL DEFRILLATOR
ELEC MAIN ELECTRICAL SHUT-OFF
E/S EYE WASH & SHOWER
EYE WASH
FA FIRST AID KIT
FB FIRE BLANKET
FIRE EXTINGUISHER
GAS MAIN NATURAL GAS/PROPANE SHUT-OFF
FIRE HYDRANT
MSDS MATERIAL SAFETY DATA SHEET LOCATION
O2 EMERGENCY OXYGEN
SCBA SELF-CONTAINED BREATHING APPARATUS
SK SPILL KIT
THE ENVIRONMENTAL QUALITY COMPANY
WAYNE DISPOSAL INC. SITE NO. 2
EMERGENCY AND DECON EQUIPMENT MAP


Wheel Wash
Admin
Recon Lockerroom
Receiving
Security
RALLY POINT #2
SVM
WCR
Maint. Garage
DENTON ROAD
N. I-94 Service Drive
RALLY POINT #1
ELEC
EMERGENCY EQUIPMENT KEY
AED AUTOMATIC EXTERNAL DEFRILLATOR
ELEC MAIN ELECTRICAL SHUT-OFF
E/S EYE WASH & SHOWER
EYE WASH
FA FIRST AID KIT
FB FIRE BLANKET
FIRE EXTINGUISHER
GAS MAIN NATURAL GAS/PROPANE SHUT-OFF
FIRE HYDRANT
MSDS MATERIAL SAFETY DATA SHEET LOCATION
EMERGENCY OXYGEN
SCBA SELF-CONTAINED BREATHING APPARATUS
SPILL KIT
T TORNADO SHELTER
EVACUATION ROUTE
THE ENVIRONMENTAL QUALITY COMPANY
WAYNE DISPOSAL INC.
OPERATIONS AREA
EMERGENCY AND DECON EQUIPMENT MAP


ELEC
Truck Dock
To Rally Point #1
To Rally Point #2
FA
TDU System
Southeast Container Storage Area
To Rally Point #3
Security
GAS
Roll-off Pad
RALLY POINT #2
North I-94 Service Drive
EMERGENCY EQUIPMENT KEY
AUTOMATIC EXTERNAL DEFRILLATOR
ELEC MAIN ELECTRICAL SHUT-OFF
EYE WASH & SHOWER
EYE WASH
FIRST AID KIT
FIRE BLANKET
FIRE EXTINGUISHER
GAS MAIN NATURAL GAS/PROPANE SHUT-OFF
FIRE HYDRANT
MATERIAL SAFETY DATA SHEET LOCATION
EMERGENCY OXYGEN
SELF-CONTAINED BREATHING APPARATUS
SPILL KIT
TORNADO SHELTER
EVACUATION ROUTE
THE ENVIRONMENTAL QUALITY COMPANY
WAYNE DISPOSAL INC.
TDU SYSTEM
EMERGENCY AND DECON EQUIPMENT MAP


Ferrous Sulfate Bunker
North Container Storage Area
Pump Room
Tank Farm
East Container Storage Area
West Treatment & Storage Bay
Liquid Waste Unloading Ramp
East Treatment & Storage Bay
Container Lab
Truck Dock
Supervisor Offices
To Rally Point #1
To Rally Point #2
To Rally Point #3
EMERGENCY EQUIPMENT KEY
AUTOMATIC EXTERNAL DEFRILLATOR
MAIN ELECTRICAL SHUT-OFF
EYE WASH & SHOWER
EYE WASH
FIRST AID KIT
FIRE BLANKET
FIRE EXTINGUISHER
MAIN NATURAL GAS/PROPANE SHUT-OFF
FIRE HYDRANT
MATERIAL SAFETY DATA SHEET LOCATION
EMERGENCY OXYGEN
SELF-CONTAINED BREATHING APPARATUS
SPILL KIT
TORNADO SHELTER
EVACUATION ROUTE
THE ENVIRONMENTAL QUALITY COMPANY
MICHIGAN DISPOSAL WASTE TREATMENT PLANT
MICHIGAN DISPOSAL INC
EMERGENCY AND DECON EQUIPMENT MPA

Appendix A--Letters of Transmittal of Contingency Plan

WAYNE DISPOSAL, INC.

October 6, 2011

Dr. John McCabe
St. Joseph Mercy Hospital
5301 E. Huron River Drive
Ann Arbor, MI 48106

Re: Contingency Plan
Wayne Disposal, Inc.

Dear Dr. McCabe:

As a listed member of an Emergency Response Agency enclosed please find an updated Contingency Plan for Wayne Disposal, Inc.'s Hazardous Waste Facility in Belleville, Michigan. The updated plan is being sent to all listed Emergency Response Agencies to ensure that up to date information is contained in all files.

Please dispose of any earlier copies of this plan that you may possess and if you have any questions please contact me at (734) 699-6286.

Sincerely,

Michael J. Takacs
Environmental Manager

enclosures

WAYNE DISPOSAL, INC.

October 6, 2011

Dr. Mark Weiner, MD
Concentra Medical Center
11700 Metro Airport Center Drive
Romulus, MI 48174

Re: Contingency Plan
Wayne Disposal, Inc.

Dear Dr. Weiner:

As a listed member of an Emergency Response Agency enclosed please find an updated Contingency Plan for Wayne Disposal, Inc.'s Hazardous Waste Facility in Belleville, Michigan. The updated plan is being sent to all listed Emergency Response Agencies to ensure that up to date information is contained in all files.

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Sincerely,

Michael J. Takacs
Environmental Manager

enclosures

WAYNE DISPOSAL, INC.

October 6, 2011

Dr. R.T. Nolta, MD FACPM
Midwest Health Center, P.C.
9301 Middlebelt Road
Romulus, MI 48174

Re: Contingency Plan
Wayne Disposal, Inc.

Dear Dr. Nolta:

As a listed member of an Emergency Response Agency enclosed please find an updated Contingency Plan for Wayne Disposal, Inc.'s Hazardous Waste Facility in Belleville, Michigan. The updated plan is being sent to all listed Emergency Response Agencies to ensure that up to date information is contained in all files.

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Sincerely,

Michael J. Takacs
Environmental Manager

enclosures

WAYNE DISPOSAL, INC.

October 6, 2011

Dr. Suzanne White
Poison Control Center
Children's Hospital of Michigan
Harper Professional Office Building
4160 John R, Suite #616
Detroit, MI 48201

Re: Contingency Plan
Wayne Disposal, Inc.

Dear Dr. Weiner:

As a listed member of an Emergency Response Agency enclosed please find an updated Contingency Plan for Wayne Disposal, Inc.'s Hazardous Waste Facility in Belleville, Michigan. The updated plan is being sent to all listed Emergency Response Agencies to ensure that up to date information is contained in all files.

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Sincerely,

Michael J. Takacs
Environmental Manager

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WAYNE DISPOSAL, INC.

October 6, 2011

Mr. Dale Berry, Executive Director
Huron Valley Ambulance Service, Inc.
2215 Hogback Road.
Ann Arbor, MI 48105

Re: Contingency Plan
Wayne Disposal, Inc.

Dear Mr. Berry:

As a listed member of an Emergency Response Agency enclosed please find an updated Contingency Plan for Wayne Disposal, Inc.'s Hazardous Waste Facility in Belleville, Michigan. The updated plan is being sent to all listed Emergency Response Agencies to ensure that up to date information is contained in all files.

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Sincerely,

Michael J. Takacs
Environmental Manager

enclosures

WAYNE DISPOSAL, INC.

October 6, 2011

Public Safety Director
Van Buren Township Police Department
46425 Tyler Road
Belleville, MI 48111

Re: Contingency Plan
Wayne Disposal, Inc.

Dear Director McClanahan:

As a listed member of an Emergency Response Agency enclosed please find an updated Contingency Plan for Wayne Disposal, Inc.'s Hazardous Waste Facility in Belleville, Michigan. The updated plan is being sent to all listed Emergency Response Agencies to ensure that up to date information is contained in all files.

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Sincerely,

Michael J. Takacs
Environmental Manager

enclosures

WAYNE DISPOSAL, INC.

October 6, 2011

Van Buren Township Fire Department
46425 Tyler Road
Belleville, MI 48111

Re: Contingency Plan
Wayne Disposal, Inc.

Dear Chief Loyer:

As a listed member of an Emergency Response Agency enclosed please find an updated Contingency Plan for Wayne Disposal, Inc.'s Hazardous Waste Facility in Belleville, Michigan. The updated plan is being sent to all listed Emergency Response Agencies to ensure that up to date information is contained in all files.

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Sincerely,

Michael J. Takacs
Environmental Manager

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WAYNE DISPOSAL, INC.

October 6, 2011

Mr. Mark Sparks, Director of Emergency Management
Wayne County Emergency Management
Office of Wayne County Executives
10250 Middlebelt Road
Detroit, MI 48242

Re: Contingency Plan
Wayne Disposal, Inc.

Dear Mr. Sparks:

As a listed member of an Emergency Response Agency enclosed please find an updated Contingency Plan for Wayne Disposal, Inc.'s Hazardous Waste Facility in Belleville, Michigan. The updated plan is being sent to all listed Emergency Response Agencies to ensure that up to date information is contained in all files.

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Sincerely,

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Environmental Manager

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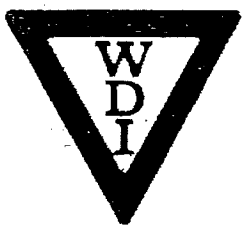

WAYNE DISPOSAL, INC.

October 6, 2011

Western Wayne County Hazardous
Incident Response Team
14910 Farmington Road
Livonia, MI 48154

Re: Contingency Plan
Wayne Disposal, Inc.

To Whom It May Concern:

As a listed member of an Emergency Response Agency enclosed please find an updated Contingency Plan for Wayne Disposal, Inc.'s Hazardous Waste Facility in Belleville, Michigan. The updated plan is being sent to all listed Emergency Response Agencies to ensure that up to date information is contained in all files.

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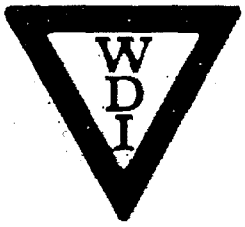

WAYNE DISPOSAL, INC.

October 6, 2011

First Lieutenant Lynne Huggins
Taylor State Police Post
12111 Telegraph Road
Taylor, MI 48180

Re: Contingency Plan
Wayne Disposal, Inc.

Dear First Lieutenant Huggins:

As a listed member of an Emergency Response Agency enclosed please find an updated Contingency Plan for Wayne Disposal, Inc.'s Hazardous Waste Facility in Belleville, Michigan. The updated plan is being sent to all listed Emergency Response Agencies to ensure that up to date information is contained in all files.

Please dispose of any earlier copies of this plan that you may possess and if you have any questions please contact me at (734) 699-6286.

Sincerely,

Michael J. Takacs
Environmental Manager

enclosures

WAYNE DISPOSAL, INC.

October 6, 2011

Ypsilanti Township Fire Department
222 South Ford Boulevard
Ypsilanti, MI 48198

Re: Contingency Plan
Wayne Disposal, Inc.

To Whom it May Concern:

As a listed member of an Emergency Response Agency enclosed please find an updated Contingency Plan for Wayne Disposal, Inc.'s Hazardous Waste Facility in Belleville, Michigan. The updated plan is being sent to all listed Emergency Response Agencies to ensure that up to date information is contained in all files.

Please dispose of any earlier copies of this plan that you may possess and if you have any questions please contact me at (734) 699-6286.

Sincerely,

Michael J. Takacs
Environmental Manager

enclosures

WAYNE DISPOSAL, INC.

October 6, 2011

Mr. Tim Hoeft, Fire Chief
Willow Run Airport Fire Department
PO Box 801
Ypsilanti, MI 48198

Re: Contingency Plan
Wayne Disposal, Inc.

Dear Hoeft:

As a listed member of an Emergency Response Agency enclosed please find an updated Contingency Plan for Wayne Disposal, Inc.'s Hazardous Waste Facility in Belleville, Michigan. The updated plan is being sent to all listed Emergency Response Agencies to ensure that up to date information is contained in all files.

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Sincerely,

Michael J. Takacs
Environmental Manager

enclosures

Attachment 5

Closure Plan

CLOSURE PLAN

40 CFR 270.14b (13) & PART 111, R504(1)c

CLOSURE PLAN

40 CFR 270.14(b)(13)
Part 111 R504(1)c
TABLE OF CONTENTS

CLOSURE PLAN

40 CFR 270.14(b)(13)

I. INTRODUCTION

A. Facility Conditions

Originally Wayne Disposal, Inc. Site #2 was a 427 acre facility with approximately 360 acres available for co-disposal of both hazardous and non-hazardous waste via landfill.

Wayne Disposal Site#2 Landfill has set aside Master Cells (MC) V, VI and VII for hazardous waste disposal. The hazardous waste boundary which circumscribes MC V, VI and VII contains 120 acres of which 105.6 are actual disposal area. Since the Fall of 1982, the co-disposal of hazardous and non-hazardous waste has been discontinued, with the remaining capacity in MCs V, VI, and VII reserved for hazardous waste.

All hazardous waste cells have leachate collection and removal systems. MC V and MC VII have been closed with multilayer final cover systems. This closure plan was developed to describe closure activities for cells VI-AS through VI-E. Cells VI-F and VI-G, which have not been constructed, must be incorporated into this Plan incrementally as each phase is constructed and licensed. Updates to the closure plan must include an updated sampling plan based on the configuration of the landfill licensed at the time. The updated closure plan and closure cost estimate must be submitted to MDEQ along with the construction certification for each phase. Financial assurance must also be adjusted at this time.

The base of the existing portions of the disposal area, as licensed under Michigan Natural Resources and Environmental Protection Act, (Act 451) of 1994, consist of clay soils with an average permeability of less than 5 X 10^{-8} cm/sec, underlain in most areas by varying thickness of CL-ML or ML soil with permeabilities in the 10^{-6} to 10^{-7} range, followed by a water bearing sand formation.

B. Scope

This document is the Closure Plan for the cells of the Wayne Disposal, Inc. Site #2, Van Buren Township, Michigan, EPA facility ID number MID048090633. It is organized to address 40 CFR Subpart G: Closure and Post-closure, and 40 CFR 264.310: Closure and Post-closure Care for Landfills.

The plan describes activities related to construction of the cover system, decontamination of remaining facility areas and equipment, and long term monitoring, inspection and maintenance activities required during post-closure. The plan is intended to satisfy the requirements for closure of the cells in accordance with State and Federal regulations.

II. CLOSURE PERFORMANCE STANDARD (40 CFR 264.111)

The Closure Plan for the cells is designed to ensure that after closure, minimum maintenance and controls will be required. The plan is also designed to minimize or eliminate threats to human health and the environment by preventing release of hazardous waste or hazardous waste constituents into the ground, groundwater, surface water, or air.

III. CLOSURE PLAN ACTIVITIES (40 CFR 264.112 (b))

The Closure Plan for the cells requires that completed areas be finished with final cover, topsoil, and vegetative growth. The Closure Plan minimizes the need for further maintenance. This reduces the potential for contamination and allows a monitoring record to be established before

post-closure monitoring begins. The plan identifies the steps that will be necessary to close the cells at the facility.

IV. SITE PREPARATION (40 CFR 264.112 (b))

The cells to be closed will be prepared for clay capping by shaping and grading to meet the desired subgrade profile. The existing clay dike will be located before grading and shaping. The dike will serve as the baseline and starting point for constructing the clay cap. Surveyors will place corner stakes to mark the dike initially. All subsequent field stakes will be placed by Wayne Disposal, Inc. Site #2. Wayne Disposal, Inc. Site #2 will shape and grade an area capable of being capped with the FML foundation layer.

V. FINAL COVER (40 CFR 264.310 (a))

A. Purpose

The purposes for the final cover are (1) to provide long-term minimization of percolation from precipitation into the waste, (2) to function with a minimum level of maintenance, (3) to promote drainage while minimizing erosion, (4) to maintain integrity in the event of limited settlement of the waste surface, and (5) to achieve a permeability less than or equal to the bottom liner system or natural subsoils present.

B. Design Elements

The final cover system must consist of the following elements as approved by the Michigan Department of Environmental Quality (MDEQ), Waste and Hazardous Materials Division on June 4, 2004:

1. A leveling layer over the waste shall be installed per the Engineering Plans and Report on Basis of Design for Master Cell VI Cover Design Modification (11/20/02, with comment response of 4/27/04). This layer shall be installed above the surface of the waste consisting of a minimum of 12-inches of silt, clayey silt, or silty clay with a classification of ML, CL-ML, or CL as determined by ASTM Method D2487-83. This layer shall be installed in general accordance with section VI.A. of this plan;

2. A geosynthetic clay layer (GCL), placed directly over the leveling layer, consisting of a layer of sodium bentonite encapsulated between two geotextiles at least one of which shall be non-woven, and shall meet the requirements of Table 7.1 of the approved Engineering Plans and Report on Basis of Design for Master Cell VI Cover Design Modification. The lower and upper geotextiles should be either stitch bonded or needle punched together to provide stability. The manufacturers recommended overlap distance shall be marked on the GCL;

3. A 40-mil thick high density polyethylene (HDPE), very low density polyethylene (VLDPE), or linear low density polyethylene (LLDPE) flexible membrane liner (FML) installed per section VI C;

4. A double-bonded geocomposite drainage layer as specified in section VI D. of this plan;

5. A general soils layer, placed directly over the drainage blanket layer, consisting of a minimum of 30 inches of soil as described in section VI E. of this plan;

6. A layer of topsoil, placed directly over the compacted clay layer, consisting of a minimum of 6 inches of loamy sand as described in section VI F. of this plan;

7. A vegetative crop to be established per section VI G. of this plan.

C. Final Contours - Erosion Prevention (40 CFR 264.310 (b)(5))

The final contours of the constructed final cover will result in slopes between 4% and 25% and must conform to the topography for Master Cell VI as shown on Sheet 7 of the Engineering Plans for Design Modification, November 2002. Deviations from the elevations are permitted to the extent they are necessitated by complying with the thickness requirements stipulated for the clay liner, general soils and topsoil in sections VI B., VI E. and VI F. of this plan.

D. Gas Vents

At the time of closure Wayne Disposal, Inc. will develop a procedure to ensure that landfill cell(s) to be final capped will be evaluated to determine if a landfill gas collection system should be installed. Should the evaluation indicate that a landfill gas collection system is required; Wayne Disposal, Inc. will submit the evaluation and an updated landfill gas system design for MDEQ approval. However, if the evaluation indicates that the landfill gas collection system is not necessary the passive gas vents, as currently approved in the Design Modification, will be installed at the appropriate locations.

VI. CONSTRUCTION SPECIFICATIONS FOR FINAL COVER OF MASTER CELL VI

A. Construction of Intermediate Cover Layer

1. The layer upon which the geosynthetic clay liner is to be placed must consist of a minimum of 12-inches of compacted silt, clayey silt, or silty clay with an ASTM Method D2487-83 classification of ML, CL-ML or CL.

2. The CQAC or WDI will confirm the slope and correct elevations for the leveling layer surface by survey at a rate of at least once per half-acre over the entire master cell area. This survey, combined with a previous survey of top of waste elevations, will be used to confirm the thickness of the leveling layer and to determine if additional leveling osils are required. Alternatively, the required thickness of the leveling layer will be confirmed by soil borings conducted on a frequency of at least one per half-acre of final cover to be constructed. The thickness of the leveling layer shall not be less than one (1) foot.
3. The CQAC will confirm the classification of the leveling layer. A sample will be taken for every 25,000 cubic yards placed or change in borrow soil character and classified by the USCS (ASTM D2487). Additionally, the sample will be tested for gain size distribution by sieve analysis and hydrometer (ASTM D4222), and for Atterberg Limits (ASTM D4318). A test result not meeting those requirements will be reported immediately to the CQA officer.
4. The leveling layer will be smooth drum rolled in the presence of the CQAC to identify areas of excessive deflection and to prepare the surface for placmement of the GCL.

B. Installation of Geosynthetic Clay Liner (GCL)

1. The CQAC and the geosynthetics installer shall visually inspect the finished leveling layer surface and document unsuitable conditions such as soft or wet spots, large clay clods, and sharp rocks or other objects that could puncture or otherwise damage the GCL.
2. The geosynthetics installer shall supply and install the GCL in accordance with Section 7 of the approved CQA Plan.

C. Synthetic Liner

1. Introduction

The top of the geosynthetic clay liner (GCL) serves as the foundation for the synthetic liner and will be finished to the required elevations.

The synthetic liner will be a 40 mil (minimum) HDPE, VLDPE, or LLDPE.

The 40 mil (minimum) synthetic liner is placed upon the foundation materials. The individual sections of synthetic liner are welded together to form one continuous liner. During the installation of the synthetic liner, the seams will be tested with non-destructive methods.

2. Pre-Testing

Test seams shall be made on fragment pieces of geomembrane liner to verify that seaming conditions are adequate. Test seams shall also be made at the beginning of each seaming period, at the Inspector's discretion, and at least once each 4 hours, for each piece of seaming apparatus used that day.

The test seam sample shall be at least 2 feet long by 1 foot wide with the seam centered lengthwise. Two specimens 1 inch wide shall be cut from opposite ends of the test seam by the Contractor. These specimens shall be field tested by the contractor for shear and peel strength using a tensometer. If a test seam fails, the test shall be repeated in its entirety. If the additional test seam fails, the seaming apparatus or seamer shall not be accepted and shall not be used for seaming until

the deficiencies are corrected and two consecutive successful full test seams are achieved.

3. Non-Destructive Seam Testing

The Contractor shall non-destructively test all field seams over their full length using a vacuum test unit. Continuity of testing shall be done as the seaming work progresses, not at the completion of all field seaming.

a. Air Vacuum Testing Process Equipment

- A vacuum box assembly consisting of a rigid housing, a transparent viewing window, a soft neoprene gasket attached to the bottom, port hole or valve assembly, and a vacuum gauge.
- A steel vacuum tank and pump assembly equipped with a pressure controller and pipe connections.
- A rubber pressure/vacuum hose with fittings and connections.
- An air pressurized solution spraying apparatus.
- A soapy solution.

b. Air Vacuum Testing Procedure

- Energize the vacuum pump and reduce the tank pressure to approximately -5 psi (gauge pressure).
- Wet a strip of geomembrane approximately 12 inches by 96 inches with the soapy solution.
- Place the box over the wetted area and compress.
- Close the bleed valve and open the vacuum valve.

- Ensure that a leak tight seal is created between the FML and neoprene gasket.
- Examine the geomembrane through the viewing window for the presence of soap bubbles.
- If no bubble(s) appear after a leak tight seal is formed, close the vacuum valve and open the bleed valve, move the box over the next adjoining area with a minimum 3 inches overlap and repeat the process.
- All areas where soap bubbles appear shall be marked and repaired and then retested.

The following procedures shall apply to situations where seams cannot be non-destructively tested, as determined by the Inspector:

- All such seams shall be cap-stripped with the same geomembrane where possible.
- If the cap strip is accessible to testing equipment, the seam shall be non-destructively tested.
- If the cap strip seam is not accessible for testing, the seaming and cap-stripping operations shall be observed by the Inspector for uniformity and completeness.

4. Destructive Seam Testing

a. Location and Frequency

The Contractor shall conduct a minimum of one destructive test per 500 feet of seam length. The Contractor shall not be informed in advance of the locations where the seam samples will be taken.

b. Sampling Procedure

Samples shall be cut by the Contractor at times and locations designated by the Inspector as the seaming progresses in order to obtain test results prior to completion of liner installation. The Inspector must witness the procurement of all field test samples and the Contractor shall mark all samples with that location and sample number. The Contractor shall also record in written form the date, time, location, sample number, ambient temperature, number of seaming unit, name of seamer, welding apparatus temperatures and pressures, and pass or fail description, and attach a copy of each sample portion.

All holes in the geomembrane resulting from obtaining the seam samples shall be immediately repaired in accordance with repair procedures. The integrity of the new seams in the repaired area shall be tested.

c. Size and Disposition of Samples

The samples shall be 12 inches wide by 24 inches long with the seam centered lengthwise. The sample shall be cut into two equal length pieces, half to be retained by the Contractor and the other half to be given to the Owner's Representative for archive storage and/or independent testing

d. Field Testing

The Contractor shall cut five 1-inch wide replicate specimens from his sample and these shall be tested by the Contractor. The Contractor shall test the five

specimens from the seam sample for seam shear and peel, in accordance with the specified material tests and procedures. To be acceptable, four out of the five replicate test results must pass the material specification requirements. The results of these tests shall be provided to the Inspector by the conclusion of the second work day following the procurement of the field seam sample.

e. Independent Laboratory Testing

The Owner's Representative will require the Inspector to package and ship at least two seam samples received from the Installer to an independent laboratory for determination of seam shear and peel. Four of five specimens per sample must pass the material specifications requirements for the installation to be acceptable.

5. Procedures In The Event Of Destructive Test Failure

The following procedures shall apply whenever a sample fails the field destructive test. The Contractor shall have two options:

(a) The Installer can reconstruct the seam between the failed location and any passed test location.

(b) The Installer can retrace the welding path to an intermediate location (at 10 feet minimum from the location of the failed test) and take a small sample for an additional field test. If this additional sample passes the test, then the seam is reconstructed between that location and the original failed location. If this sample fails, then the process is repeated.

The Installer shall determine the length of seam failure to the satisfaction of the Inspector by additional tests or assume the seam is unacceptable between the two successful test locations, which bracket the test failure.

Over the length of seam failure, the Installer shall either cut out the old seam, reposition the panel and reseam or add a cap strip, as approved by the Inspector.

After reseaming or placement of the cap strip, one additional destructive test shall be taken within the reseamed area, and if test results are not acceptable, this process shall be repeated until the reseamed length is judged satisfactory by the Inspector.

In any case, all acceptable seams must be bounded by two passed test locations (i.e., the above procedures shall be followed in both directions from the original failed location), and one successful test must be obtained within the reconstructed area.

The Inspector shall document all actions taken in conjunction with destructive test failures.

Patches shall be round or oval in shape, made of the same geomembrane, and extend a minimum of 6 inches beyond the edge of defects.

Patches shall be applied using approved methods only. Small patches (less than 6 inches in least dimension) will require a cooling period after extruded welding half of the patch to prevent a burn through the liner before welding the second half of the patch.

6. Defects And Repairs

a. Identification

All seams and non-seam areas of the geomembrane shall be inspected by the Inspector for identification of defects, holes, blisters, undispersed raw materials and any sign of contamination by foreign matter. Because light reflected by the geomembrane helps detect defects, the surface of the geomembrane shall be clean at the time of inspection. The geomembrane surface shall be brushed, blown or washed by the Installer if the amount of dust or mud inhibits inspection.

b. Evaluation

Each suspect location in seam and non-seam areas shall be non-destructively tested. Each location which fails the non-destructive testing will be marked by the Contractor.

Where extrudate surface drifting occurs beyond 25 percent of the seam width, the affected seam length will be cap stripped as required by the Inspector. Reseaming over an existing seam will not be permitted, as it may be conducive to capillary leakage.

c. Repair Procedures

- Defective seams shall be restarted/re-seamed.
- Small holes shall be repaired by extrusion cap welding. If the hole is larger than ¼ inch, it must be patched.
- Blisters, larger holes, undispersed raw materials, and contamination by foreign matter shall be repaired by patches.

Surfaces of FML, which are to be patched, shall be abraded and cleaned no more than one hour prior to the repair.

7. Restart/Re-seaming Procedures

Restart of the extrusion welding process shall be achieved by grinding the existing seam and rewelding a new seam 2 inches from the termination of the previous seam and commencing at the start of grinding.

Re-seaming for the fusion welding process shall be achieved by cutting out the existing seam and welding in a replacement strip or if possible, cut the sheet next to the failed seam, move the panel over and seam with a single seam.

a. Verification of Repairs

Each repair shall be non-destructively tested using the methods described. Repairs which pass the non-destructive test shall be taken as an indication of an adequate repair. Failed tests shall indicate that the repair shall be redone and retested until a passing test results.

b. Record of the Results

Daily documentation of all non-destructive and destructive testing shall be provided to the Inspector by the Installer. This documentation shall identify all seams which initially failed the test and include evidence that these seams were repaired and retested successfully.

D. Construction of the FML Protection/Drainage Blanket Layer

1. The drainage layer must be a double-bonded geocomposite with a transmissivity of at least 1×10^{-5} m^2/sec when tested at a gradient of 25% under a normal load of 1,000 lbs/ft^2.
2. The perimeter drain pipe must consist of 4 inch diameter corrugated perforated pipe and 4 inch diameter non-perforated outlet pipe placed as shown in Sheet 13 of the Engineering Plans.
3. The perimeter drain pipe must be wrapped with geotextile filter material possessing an equivalent opening size of #70 standard sieve.
4. The double-bonded geocomposite comprising the layer must be placed on the FML in a manner that does not damage it or the drainage pipe system.
5. Initial double-bonded geocomposite placement must be done by placing the material at the toe of the lined slope and pushing the material up the side slope with appropriate equipment.

6. The full design thickness of the double-bonded geocomposite layer must be maintained when spreading the material and for any construction traffic on the layer.

7. Wayne Disposal, Inc. Site #2 must obtain direct layer thickness measurements at a rate of at least once per every half acre verify conformance with design requirements.

E. Construction of General Soil Layer

1. A layer of general soils a minimum of 30 inches in thickness must be placed over the granular material described in section VI D. of this plan.

2. General soils will consist primarily of inorganic soil constituents free of stumps, large roots, and other deleterious materials.

3. General soils shall not be compacted and shall be placed in such a manner as to cause minimum disturbance to the granular layer.

4. No frozen soil may be used in any lift, nor may any soil be placed on frozen base.

5. Wayne Disposal, Inc. Site #2 must obtain direct layer thickness measurements at a rate of at least once per every half-acre to verify conformance with design requirements.

F. Topsoil Specifications

- A layer of topsoil at least 6 inches thick after grading must be placed over the general soil layer described in section VI E of this plan.

- The topsoil must be a loamy sand, and confirmed by grain size analyses conducted according to ASTM Method D 422-63 at least once per 3,000 cubic yards to be placed.
- The top ½ inch of the topsoil layer must be loosely packed to provide an acceptable seed bed.
- Wayne Disposal, Inc. Site #2 must obtain direct measurements of topsoil thickness at the rate of at least once per half-acre to verify conformance with F1.

G. Vegetative Cover Specifications

1. The topsoil described in VI F. must be fertilized with 12-12-12 N-P-K at the rate which provides approximately 240 pounds per acre of total available nutrients, i.e. 80 pounds. per acre of available nitrogen, phosphoric acid, and potash, or an equivalent.
2. The following seed mix must be sown into the topsoil:

Seed	Percent by Weight
a. perennial rye	20 to 30
b. common creeping red fescue	20 to 30
c. common Kentucky bluegrass	5 to 10
d. Kentucky 31 tall fescue	100 to (a+b+c)

3. The seed mix must have a germination rate of at least 80%.
4. The seed mix must be applied at the rate of not less than 100 pounds per acre.
5. The seedbed must be rolled during or immediately after seed application unless a hydroseeding method is used to apply the seed.

6. Straw mulch/hay must be applied to the seedbed at the even rate of not less than 1.5 tons per acre in a manner that will minimize subsequent displacement by wind.

VII. FINAL COVER DESIGN BASIS (40 CFR 270.21(e))

The following is an evaluation of the proposed final cover to be used for the disposal cells in the hazardous waste management area at Wayne Disposal, Inc. Site #2. This evaluation is required under provision of 40 CFR 270.14(b)(13) and 270.21(e). Provisions relating to the cover requirements are included in 40 CFR 264.310(a). The proposed final cover is evaluated herein with respect to its ability to 1) provide long-term minimization of percolation into the landfilled waste, 2) function with a minimum of maintenance, 3) promote drainage while minimizing erosion, and 4) maintain integrity despite settlement of the landfilled waste surface. Additionally, 40 CFR 264.310 (a) requires that the cover possess a permeability less than or equal to the permeability of the leachate containment system at the base of the landfill.

A. Description of Design

The proposed cover system, exclusive of the vegetative cover, is presented in Sheet 10 (Liner and Final Cover System Details) of the Engineering Plans. The proposed cover consists of six elements. From the ground surface downward, these are 1) a minimum of 6 inches of topsoil, 2) a minimum of 30 inches of general soil, 3) a drainage layer consisting of a double-bonded geocomposite material, 4) a flexible membrane liner 40 mils in thickness, 5) a geosynthetic clay liner (GCL), and 6) a leveling layer consisting of at least 12-inches of compacted silt, clayey silt, or silty clay possessing a Unified Soil Classification of ML, CL-ML, or CL. The proposed

surface slopes will range generally from 4 to 15 percent. The proposed vegetative cover will include a mixture of rye, fescue and bluegrass.

Additionally, it is proposed that the drainage blanket layer placed above the flexible membrane liner will be drained at the master cell boundaries and at diversion berms located along the slope of the final cover. The geocomposite will daylight in the various diversion berms along the slope and that water will be conveyed to the associated spillway to the perimeter. The lowest slope section of geocomposite will daylight at the perimeter toe drain which will allow the water to be conveyed through the peastone to the perimeter surface water ditches. See Sheets 11 and 12 of the Engineering Plans.

B. Function of System Components

The function to be served by the topsoil is self evident. It will provide the medium for vegetative root establishment and nourishment. The vegetative cover which will be supported by the topsoil will be essential to minimize soil erosion. The general soils will provide protection for the deeper FML and will provide soil moisture storage for support of the vegetative cover. The geocomposite drainage blanket will serve to transmit water which has percolated through the general soil layer off the landfill cells into the surrounding surface drainage ditches. The FML will serve to interrupt downward percolating moisture so that the drainage blanket can transmit the moisture off the cell cover. The geosynthetic clay liner (GCL) beneath the FML will serve as a barrier layer to minimize percolation and serve as a compacted, stable bedding on which to place the FML. Lastly, the underlying fine-grained soil layer will provide a stable base for geosynthetics placement.

C. **Minimization of Percolation** (40 CFR 264.310(a)(1))

Percolation of precipitation into the landfill is minimized by three components of the proposed cover system. The general soil just beneath the topsoil will provide soil moisture storage for the vegetative cover. This general fill will therefore minimize the percolation of moisture into the drainage blanket beneath it. The FML which will lie beneath the drainage blanket will maximize runoff and serve to prevent the vertical migration of moisture which reaches the drainage blanket from above. Similarly, the geosynthetic clay liner will serve as an additional barrier to prevent the vertical migration of moisture. This system therefore combines the beneficial, low permeability aspects inherent in both the FML and the GCL.

Hence, the proposed cover system should provide for short and long term minimization of percolation. As will be discussed later, this conclusion is dependent upon proper installation and construction techniques, the establishment of the vegetative cover, and the diligent application of a long term inspection and maintenance program.

D. **Maintenance** (40 CFR 264.310 (a)(2))

The proposed system will require regular maintenance only insofar as the vegetative cover is concerned. Proposed maintenance of the vegetative cover will be performed to minimize the establishment of native, undesirable species such as deep rooted, woody plants. Other potential efforts might include occasional mowing, fertilization, or even reseeding if determined to be necessary as described below.

Maintenance efforts will generally be limited to careful, periodic inspections (condition surveys) and repair of any problems identified during these inspections. Proposed inspections will

specifically be directed toward the identification of: invasion by undesirable plant species; deterioration of the vegetative cover; areas of surface erosion; soft, or unstable areas of the cover; damage to the dikes; obstructions, erosion or deterioration of the surface drainage ditches; obstructions or damage to the discharge pipes for the drainage layer; burrowing by animals; or surface disturbance due to unwarranted vehicle traffic.

Detection of problems such as those presented above will require remedial efforts. The proposed remedial efforts will be undertaken to bring the cover back to the original designed condition insofar as possible.

E. <u>Drainage and Erosion</u> (40 CFR 264.310(a)(3))

Generally uniform slopes are planned for the proposed cover system. These slopes will range from approximately 4 percent to 25 percent. Slopes should be no less than 3 percent in order to minimize the impact of surface irregularities. The use of FML beneath the general soil and topsoil will promote runoff. Control and discharge of any runoff through ditches is described elsewhere in the permit application of which this report is a part.

Establishment and maintenance of a vegetative cover will serve to minimize erosion due to both runoff and wind. It is proposed that this vegetative cover will consist of a hardy grass mixture which will require a minimum of effort to maintain in full, thick growth on the entire cover surface. Deep rooted woody plants will not be used and their future establishment will be discouraged through a long term inspection and maintenance program. As previously discussed, placement of topsoil for the establishment of the vegetative cover is planned.

The universal soil loss equation has been applied to the proposed cover system. The analysis is presented in Appendix A of the Engineering Report on Basis of Design, MCVI Design Modification, March 2001. The analysis resulted in an estimate of soil erosion due to rainfall runoff of less than 2 tons per acre per year.

F. Cover Integrity During Settlement (40 CFR 264.310 (a)(4))

A large portion of the fill settlement will occur before cell closure. Nevertheless, the analysis attached herein provides an estimate that the maximum post-closure settlement of the final cover should be approximately 8 to 15 feet. This settlement will be greatest beneath the highest portions of the cover surface. Hence, some surface slopes may be reduced to approximately 3%. The cover will be inspected during the condition surveys discussed above to detect areas where the uniform surface grade may be disrupted, possibly impending surface drainage. Such a condition will be corrected by placing additional compacted clay fill (after stripping the topsoil) on the cover to restore the original grade insofar as necessary to reestablish proper drainage. Subsequent replacement of the topsoil and revegetation in the affected area will be undertaken.

The proposed cover system will have much more capability to maintain integrity during fill settlement than covers consisting of only compacted soil. This is because FML materials can withstand extensive elongation or strain (up to 700%) in comparison with soil materials. Nevertheless, it is intended that local differential settlements will be minimized by compaction during waste placement and prevention of major voids within the fill. It is anticipated that

recommendations by the FML manufacturer will be followed regarding the provisions for sufficient excess material (slack) during placement of the FML.

The proposed final cover system is expected to accommodate settling and subsidence in a manner such that cover integrity is maintained, as required by 40 CFR 264.310 (a)(4).

G. Cover Permeability (40 CFR 264.310 (a)(5))

The use of membrane for one component of the cover system, if constructed properly, effectively reduces the potential leakage through the cover to a negligible level. As stated previously, 40 CFR 264.310 (a) requires that the cover possess a permeability less than or equal to the permeability of the leachate containment system at the base of the landfill. Since a synthetic membrane is proposed for use in both cases, the permeability of each can be considered roughly equivalent, as suggested in 40 CFR 264 Preamble (47 FR 32314). Further, the effective "leakage" rate through any barrier is related to the hydraulic gradient. The drainage blanket above the cover membrane and the leachate collection system on the base liner should both effectively reduce hydraulic gradients through the membranes to a negligible level.

The use of a flexible, synthetic membrane as one component of the cover system, if manufactured and installed properly, should effectively reduce the potential leakage through the cover system to a negligible level. There is a scarcity of hydraulic conductivity data for synthetic membrane materials. Gas transmission rates (specifically water vapor transmission rates) through these membrane materials nevertheless suggest that such materials possess equivalent hydraulic conductivities 4 or more orders of magnitude less than that of compacted

clay soils. Therefore, polymeric membranes can be expected to be the controlling factors in liner or covers system permeability. Regardless of their hydraulic conductivities relative to each other, the polymeric membranes should effectively reduce the direct transmission of fluid through the cover and liner systems to a negligible level. Because of the low conductivity in these membranes, the prevention of membrane defects during manufacturing and installation is of relatively greater concern than direct fluid transmission through the polymeric materials. Hence, the quality control/assurance measures to be taken on this project will concentrate upon minimizing these defects.

H. Freeze-Thaw Effects (R299.9619(5)(a)(ii))

With regard to the potential depth of seasonal frost penetration and its effects upon the final cover, the proposed cover is expected to function as designed to provide long-term minimization of percolation with a minimum of maintenance. The expected depth of frost penetration in the region where the subject facility is located may be approximately 25 to 42 inches. The synthetic membrane and GCL layers in the cover system are both below this depth. Hence, neither will be directly subjected to seasonal frost.

The principal frost-heave effect which frost penetration may have upon a near-surface soil layer is through the formation of ice lenses. These lenses are caused by the tendency for capillarity to draw available moisture to the freezing front. Hence, ice lenses usually form parallel to this freezing front, i.e., horizontally. The direct effects of these lenses are generally horizontal zones of soil separation or increased porosity.

In order for these ice lenses to form, however, three conditions are necessary. These are a supply of moisture, freezing temperatures and a frost susceptible soil. With regard to the former, the moisture supply must generally be below the freezing front because moisture above this front will either be frozen and unavailable for capillary attraction or will be present because of thawing, i.e. freezing temperatures will not be present to create ice lenses.

The proposed cover system is designed with the purpose of eliminating the underlying supply of moisture available for ice lens formulation, thereby eliminating one of the fundamental, necessary conditions described above. As presented, the drainage blanket below the general soil layer will have more than sufficient capacity to transmit percolation off the cell in question. In addition, the geomembrane will serve as an effective barrier to upward moisture migration from the underlying soil and/or waste. Hence, the freezing front in the proposed final cover will be denied the moisture necessary for ice lens formation.

The proposed final cover which is expected to function as designed according to the requirements of 40 CFR 265.310 (a) and provide long-term minimization of percolation with a minimum of maintenance.

VIII. EQUIPMENT DECONTAMINATION (40 CFR 264.112 (a)(4))

All equipment used during the closure activity to install the leveling layer cover soils or other equipment that is in contact with hazardous waste will be thoroughly cleaned before being allowed to leave the facility. The cleaning will be conducted at the facility vehicle wash building using pressurized water. All equipment will be washed until visibly clean.

All wash water will be handled consistent with current wastewater discharge permits or transported to an appropriate hazardous waste treatment facility.

IX. DISPOSAL OR DECONTAMINATION OF EQUIPMENT, STRUCTURES, SOILS (40 CFR 264.114)

A. Access Road

This closure plan is intended to assess the impact that site operations may have had on the soils adjacent to the on-site haul/access roads. This plan is written to address the access roads currently utilized for waste operations. Should new access routes open to accommodate changes in operations, provisions in this plan must be expanded to include the new roads. These areas are not expected to be areas of significant contamination, as waste is only transported, not actively handled, on the road. Impact to soils around the access road would be limited to those caused by fugitive dust, small spills, etc. Metals and/or PCBs are the primary potential contaminants of concern. The sampling and data evaluation described in this plan will either be performed by Wayne Disposal, Inc. Site #2 staff or by a consultant retained by Wayne Disposal, Inc. Site #2. Analyses will be conducted by a qualified contract laboratory.

The first step in the closure of the access roads will be to wash the pavement to remove soil and dust. The transport road from the North I-94 Service Drive, through the reception area and to the Northwest corner of Master Cell VI will be thoroughly washed and swept with a wet vacuum sweeper. These paved roads will remain intact for post-closure activity access. The second step will be to sample soils adjacent to the paved

roads. The procedures used to sample, analyze and evaluate soil data are described below.

Sampling Locations - The sampling locations have been chosen to identify the chemical characteristics of the surface soils in the shoulders of the on-site haul/access roads. There is approximately 2000 feet of roadway from the entrance to the waste unloading area at the northeast corner of Master Cell VI. The total length of roadway will be divided in 10 segments of approximately 200 foot intervals. Out of each 200 foot segment, three soil samples will be collected from the shoulder of the roadway. At least one sample will be collected from each side of the roadway in each segment. On the side where one sample is collected, the sample will be collected in the approximate mid-point of segment. On the side where two samples are collected, the segment will be divided in half with one sample collected in each half of the segment. The proposed approximate sampling locations are shown on Figure 1.

Sampling Method - The upper 6 inches of the soil surface will be sampled using a small stainless steel trowel or shovel. Large stones (greater than 1 inch in diameter) and vegetative matter will be removed by hand at the time of sampling. The shovel will be carefully cleaned between each sampling location with a mild detergent followed by a distilled water rinse. All soil samples will be individually placed in specially prepared glass containers. These containers will be obtained from the laboratory and will remain unopened until used in the field. Each container will be marked with the sample number, date, and time immediately after receiving its sample. Each sample will be temporarily

stored in the field in an iced cooler until the sample can be placed into an on-site refrigerator. All collected samples will be stored in a secure location until transfer/transport to the laboratory. A Chain-of Custody form will be maintained for all samples obtained under the monitoring program. The form will, at a minimum, identify the sample number, sampling location, date, time, sampling individual, and amount/type of sample. A record of the sample handling and shipment, including the transfer of custody from one individual and organization to another, will also be maintained on the form. Signatures of each individual directly involved in the chain-of-custody will complete the form.

Sample Analysis - Each soil sample collected will be analyzed for the metals, Total PCB, volatile and semi-volatile organic parameters listed on Table 1. Analyses will be performed using the procedures outlined on Table 1. Target reporting limits are also listed on the table. If the laboratory is unable to meet the target detection limits, rationale must be provided to MDEQ. Results will be reported on a dry weight basis in units of mg/kg. The analyses will be conducted in accordance with standard laboratory QA/QC protocols.

Data Evaluation - The volatile, semi-volatile organics and metals data from each of the samples will be compared to the Part 201 Generic Cleanup Criteria (GCC) to determine if any standard has been exceeded. Data will be compared with residential or commercial & industrial risk-based clean-up standards or whatever standards are in use at the time of closure depending on which standards are appropriate for the future land use at the

facility. If the applicable Part 201GCC standard is exceeded for any metal, WDI can, at its discretion, demonstrate that the concentration is within the normal background concentration for soils at the site. If WDI elects to make this demonstration, a plan will be submitted to MDEQ that outlines the strategy for collecting and analyzing native background samples and for establishing a statistically valid range for background concentrations. If the concentrations are found to be within native background ranges, then no corrective action will be required. PCB analysis results will be compared to a non-detect standard and will be remediated to meet that standard at the time of landfill closure.

If the applicable standards for Volatile and semi-volatile compounds are exceeded and a site-specific background demonstration is either not successful or not possible, WDI will submit a plan to mitigate the contaminated area to MDEQ. The plan shall include a description of the apparent extent of the problem, a proposed remedy, and methods for demonstrating clean closure.

TABLE 1. SOIL MONITORING PARAMETERS

Parameter	Analytical Method	MDEQ Target Detection Limit (mg/kg)
Metals		
Arsenic	7061	0.5
Antimony	7041	N.A.
Barium	6010/6020	1.0
Cadmium	6010/6020	0.5
Cobalt	6010/6020	5.0
Chromium(total)	6010/6020	2.0
Copper	6010/6020	1.0
Iron	6010/6020	2.5
Lead	6010/6020	1.0
Mercury	7470	0.1
Molybdenum	6010/6020	5.0
Nickel	6010/6020	5.0
Selenium	7741	0.5
Silver	6010/6020	0.25
Thallium	6010/6020	N.A.
Vanadium	6010/6020	1.0
Zinc	6010/6020	1.0

Volatile Organic Parameters (analyzed by method 8260)

Parameter	TMDL	Parameter	TMDL
Acteone	0.05	1,2-Dichloropropane	0.005
Bromodichloromethane	0.005	1,3-Dichloropropane	N.A.
Bromoform	0.005	1,1,2,2-Tetrachloroethane	0.005
Carbon Tetrachloride	0.005	Tetrachloroethane	N.A.
Chlorobenzene	0.005	Tetrachloroethene	0.005
2-Chloroethylvinyl Ether	N.A.	1,1,2-Trichloroethane	0.005
Chloroform	0.005	1,1,1-Trichloroethane	0.005
Chloromethane	0.010	Trichloroethene	0.005
Dibromodifluoromethane	N.A.	Trichlorofluoromethane	0.010
1,2 Dichlorobenzene	0.005	Vinyl Chloride	0.010
1,3 Dichlorobenzene	0.005	Methylene Chloride	0.010
1,4 Dichlorobenzene	0.005	Methyl Ethyl Ketone	0.010
Dichlorodifluoromethane	0.010	Benzene	0.005
1,1-Dichloroethane	0.005	Ethylbenzene	0.005
1,2-Dichloroethane	0.005	Toluene	0.005
1,1-Dichloroethene	0.005	Xylenes	0.010
1,2-Dichloroethene	0.005		

Parameter	Analytical Method	MDEQ Target Detection Limit (mg/kg)
Total PCBs	8082	0.5

Semi-Volatile Organic Compounds (analyzed by method 8270)

Parameter	TMDL	Parameter	TMDL
Acenapthene	0.100	Hexachlorobenzene	0.100
Acenapthylene	0.100	Hexachlorobutadiene	0.200
Anthracene	0.100	Hexachlorocyclopentadiene	0.200
Benzidene	N.A.	Hexachloroethane	0.100
Benzo(a)anthracene	0.100	Indeno (1,2,3-cd) pyrene	0.500
Benzo(b)fluoranthene	0.200	Isophorone	0.100
Benzo(k)fluoranthene	0.200	2-Methylnapthalene	N.A.
Benzo(ghi)perylene	0.500	Napthalene	0.100
Benzoic Acid	N.A.	2-Nitroaniline	N.A.
Benzo(a)pyrene	0.200	3-Nitroaniline	N.A.
Benzyl alcohol	N.A.	4-Nitroaniline	N.A.
Bis (2-chloroethoxy) methane	0.200	Nitrobenzene	0.200
Bis (2-chloroethyl) ether	0.100	N-Nitrosodiphenylamine	0.500
Bis (2)chloroisopropyl) ether	0.100	N-Nitroso-di-n-propylamine	0.200
Bis (2-ethylhexyl) phthalate	0.200	Phenanathrene	0.100
4-Bromo phenyl ether	0.200	Pyrene	0.100
Butyl benzyl phthalate	0.100	1,2,4-Trichlorobenzene	0.200
4-Chloroaniline	N.A.	4-Chloro-3-methylphenol	N.A.
2-chloronapthene	0.200	2-Chlorophenol	N.A.
4-Chlorophenyl phenyl ether	0.100	2,4-Dichlorophenol	N.A.
Chrysene	0.100	2,4-Dimethylphenol	N.A.
Dibenz (a,h) anthracene	0.500	4,6-Dinitro-2-methylphenol	N.A.
Dibenzofuran	N.A.	2,4-Dinitrophenol	N.A.
Di-n-butyl phthalate	0.100	2-Methylphenol	N.A.
1,2-Dichlorobenzene	0.100	4-Methylphenol	N.A.
1,3-Dichlorobenzene	0.100	2-Nitrophenol	N.A.
1,4-Dichlorobenzene	0.100	4-Nitrophenol	N.A.
3,3'-Dichlorobenzene	N.A.	Pentachlorophenol	N.A.
Diethyl pthalate	0.100	Phenol	N.A.
Dimethyl pthalate	0.200	2,4,5-Trichlorophenol	N.A.
2,4-Dinitrotoluene	0.500	2,4,6-Trichlorophenol	N.A.
2,6-Dinitrotoluene	0.500		
Di-n-octyl phthalate	0.200		
Fluoranthene	0.100		
Fluorene	0.100		

Note: MDEQ target detection limits may not be attainable. At the time of closure; the analytical methods listed above, the detection limits, and provisions to use alternate detection limits must be negotiated with MDEQ based upon regulatory criteria in place at the time of closure. (N.A.) indicates no MDEQ target MDL for soils is available at this time.

B. Vehicle Wheel Wash

In the event that Michigan Disposal Waste Treatment Plant ceases operations at the same time or prior to final closure of the Wayne Disposal, Inc. Site #2, the wheel wash building will be spray washed until visibly clean. Wash water will be handled as stated in Section VIII above. Solids retained in the holding tank will be buried in the landfill. The structure and the cleaned equipment would remain on site pending a determination on its disposition.

After the wheel wash building has been spray washed until visibly clean, the building's holding tank and floor will be inspected at closure for cracks and other signs of deterioration. If there are visible impacts to the holding tank and/or floor that could potentially breach the containment of the building, then soil sampling shall be conducted. Soil sampling should be performed in accordance with current MDEQ guidance at the time of closure for VOCs, SVOCs, PCBs and metals similar to that provided in the discussion in Section IX.A of this closure plan. Field QA/QC procedures for these sample activities will be in accordance with the Soil Monitoring SAP previously approved by the MDEQ.

If Michigan Disposal Waste Treatment Plant continues hazardous waste activities after closure of the Wayne Disposal, Inc. Site #2 operation, cleaning of the wheel wash building and disposal of cleaning residues will be the responsibility of Michigan Disposal Waste Treatment Plant.

C. Lined Pond

In the event that Michigan Disposal Waste Treatment Plant ceases operations at the same time or prior to final closure of the Wayne Disposal, Inc. Site #2, the lined pond will be spray washed until visibly clean. Wash water will be handled as stated in Section VIII above. Solids retained in the lined pond will be buried in the landfill.

After the lined pond has been spray washed until visibly clean, the geosynthetic liner will be inspected for rips, tears, holes and other signs of deterioration. If there are visible impacts to the geosynthetics liner that could potentially breach the containment of the lined pond, then soil sampling shall be conducted. Soil sampling should be performed in accordance with current MDEQ guidance at the time of closure for VOCs, SVOCs, PCBs and metals similar to that provided in the discussion in Section IX.A of this closure plan

If Michigan Disposal Waste Treatment Plant continues hazardous waste activities after closure of the Wayne Disposal, Inc. Site #2 operation, cleaning of the lined pond

and disposal of cleaning residues will be the responsibility of Michigan Disposal Waste Treatment Plant.

D. Area A Soils

At the time of closure, WDI will make a final assessment of the level of metals and PCBs in the soil within Area A. Also, ten percent (10%) of the soil samples analyzed for the Area A characterization will be analyzed for the same expanded parameter list as along the roadway (metals, PCBs, VOCs, and SVOCs). Area A is a section of WDI defined in the WDI Soil and Sediment Sampling and Analysis Plan approved by the Waste and Hazardous Materials Division of the Michigan Department of Environmental Quality (WHMD/MDEQ). Area A includes, among other areas, the shoulder of the haul road leading to the WDI transfer station, and sediment in the on-site surface water ditches and storm sewers. The purpose of this final assessment is to determine if there are areas where analytical concentrations exceed applicable cleanup criteria. The cleanup criteria will be non-detect concentrations, or statutory equivalent at the time of closure.

The sample location plan will be prepared in accordance with the relevant guidance at the time of closure and in consideration of historical soil monitoring data collected in accordance with the Soil and Sediment Sampling and Analysis Plan, which may provide data from which to develop a biased sampling strategy.

On-site areas exceeding applicable cleanup criteria will be remediated by removing the top six inches of soil and disposing of the soil on site in a licensed landfill before the final cell is closed. After removal, the area will be sampled again to ensure applicable cleanup criteria are no longer exceeded. If analytical concentrations are found that exceed applicable cleanup criteria, another six inches will be removed and so on until analytical concentrations are verified below the applicable cleanup criteria. Then, clean soils will replace the soil that was removed and the clean backfill revegetated.

The following assumptions were made in preparing the cost estimate for sampling, analysis and remediation:

1. At the time of closure Area A will be 141 acres including the shoulder of the haul road leading to the WDI transfer station.
2. A biased sampling program will be developed resulting in an estimated 150 samples.
3. Assessment and Verification samples for Area A will be analyzed for PCBs and metals, with ten percent (10%) also being analyzed for VOCs and SVOCs.

   Remediation of Area A will consist of excavating one acre, six inches deep, 807 bank cubic yards – about 1,290 tons.

E. Waste Transfer Box Decommission

This closure plan is intended to assess the impact that site operations may have had on the soils adjacent to the on-site waste transfer box. This plan is written to address the waste transfer box utilized for waste operations in a position outside the limits of the hazardous waste landfill boundary. Should alternate waste transfer box positions open to accommodate

changes in operations, provisions in this plan must be expanded to include the new positions. Impact to soils around the waste transfer box positions would be limited to those caused by fugitive dust, small spills, etc. Metals, VOCs, SVOCs, and PCBs are the primary potential contaminants of concern. The sampling and data evaluation described in this plan will either be performed by Wayne Disposal, Inc. Site #2 staff or by a consultant retained by Wayne Disposal, Inc. Site #2. Analyses will be conducted by a qualified contract laboratory.

The first step in the closure of the waste transfer box will be demolition of the steel clad concrete walls and concrete floor of the receiving slab, and the demolition and removal of the tipping slab/access ramp. The soils, aggregate, and geosynthetics installed as part of the secondary containment structures for the receiving slab and access corridor between the waste transfer box and the landfill would be removed and disposed as part of the decommissioning of the waste transfer box. The secondary containment structure material will be cleaned of any visible liquids and the materials will be separated from the leachate collection system of Master Cell 6B at the anchor trench tie-in point. The remaining access pavement will be washed in a manner consistent with the wheel wash activities to remove soil and dust. The paved roads will remain intact for post-closure activity access. All demolition materials will be transported to the final active area of the hazardous waste landfill for disposal immediately prior to the landfill's final closure activities.

The second step will be to sample soils immediately adjacent to the paved surface and at a single point below the geomembrane of the secondary containment system. The procedures

used to sample, analyze and evaluate soil data are described below and are similar in nature to the above referenced process for the paved roadway surfaces.

Sampling Locations - The sampling locations have been chosen to identify the chemical characteristics of the surface soils in the immediate vicinity of the waste transfer box. There is approximately 20,000 square feet of roadway from the tipping slab ramp to the actual waste transfer and unloading area. The proposed sampling locations would be along the east side of the tipping slab ramp at a point halfway between the roadway grade break to the actual push wall of the waste transfer box and just off the pavement. A second sample would be collected from the soils beneath the receiving slab of the waste transfer box after removal of the secondary containment geomembrane. The sample location will be beneath the collection sump and any additional samples would be collected, as necessary, wherever a potential crack or other breach was identified by inspection of the containment structures (floor and walls). These samples would only require collection and analysis if contaminated liquids were detected within the receiving slab secondary monitoring sump during the useful life of the structure.

Sampling Method - The upper 6 inches of the soil surface will be sampled using a small stainless steel trowel or shovel. Large stones (greater than 1 inch in diameter) and vegetative matter will be removed by hand at the time of sampling. The shovel will be carefully cleaned between each sampling location with a mild detergent followed by a distilled water rinse. All soil samples will be individually placed in specially prepared glass containers. These containers will be obtained from the laboratory and will remain unopened until used in the

field. Each container will be marked with the sample number, date, and time immediately after receiving its sample. Each sample will be temporarily stored in the field in an iced cooler until the sample can be placed into an on-site refrigerator. All collected samples will be stored in a secure location until transfer/transport to the laboratory. A Chain-of Custody form will be maintained for all samples obtained under the monitoring program. The form will, at a minimum, identify the sample number, sampling location, date, time, sampling individual, and amount/type of sample. A record of the sample handling and shipment, including the transfer of custody from one individual and organization to another, will also be maintained on the form. Signatures of each individual directly involved in the chain-of-custody will complete the form. Field QA/QC procedures for these sample activities will be in accordance with the Soil Monitoring SAP previously approved by the MDEQ.

Sample Analysis - Each soil sample collected will be analyzed for the metals, the Total PCB, volatile and semi-volatile organic parameters listed on Table 1. Analyses will be performed using the procedures outlined on Table 1. Target reporting limits are also listed on the table. If the laboratory is unable to meet the target detection limits, rationale must be provided to MDEQ. Results will be reported on a dry weight basis in units of mg/kg. The analyses will be conducted in accordance with standard laboratory QA/QC protocols.

Data Evaluation - The volatile, semi-volatile organics and metals data from each of the samples will be compared to the Part 201 Generic Cleanup Criteria (GCC) to determine if any standard has been exceeded. Data will be compared with residential or commercial & industrial risk-based clean-up standards or whatever standards are in use at the time of

closure depending on which standards are appropriate for the future land use at the facility. If the applicable Part 201 GCC standard is exceeded for any metal, WDI can, at its discretion, demonstrate that the concentration is within the normal background concentration for soils at the site. If WDI elects to make this demonstration, a plan will be submitted to MDEQ that outlines the strategy for collecting and analyzing native background samples and for establishing a statistically valid range for background concentrations. If the concentrations are found to be within native background ranges, then no corrective action will be required. PCB analysis results will be compared to a non-detect standard and will be remediated to meet that standard at the time of landfill closure.

If the applicable standards for Volatile and semi-volatile compounds are exceeded and a site-specific background demonstration is either not successful or not possible, WDI will submit a plan to mitigate the contaminated area to MDEQ. The plan shall include a description of the apparent extent of the problem, a proposed remedy, and methods for demonstrating clean closure.

X. MAXIMUM INVENTORY OF WASTES (40 CFR 264 112(b)(3))

Waste is not stockpiled at the facility for future disposal. Waste is brought to the facility only after construction of the cell in which it is to be disposed is completed. No storage or treatment occurs at the facility.

The total volume of waste that will be placed in the cells will vary according to the size of the cells. All wastes placed in the landfill are recorded in the operating log.

XI. GROUNDWATER MONITORING, RUN-OFF CONTROL (40 CFR 264.112(b)(5))

1. Groundwater monitoring, in accordance with the permit, outlined for the active facility life will be continued through partial and final closure activities.

2. Leachate collection systems will be monitored and maintained as required during the active life of the facility, including the closure period.

3. Control of run-on and run-off will be monitored and maintained as required during the active life of the facility, including the closure period.

XII. GAS VENTING SYSTEM (R299.9619(3)(c))

The gas venting system is designed to prevent the accumulation of gas generated in closed cells. Details of the gas venting system are shown on Sheet 10 of the Engineering Plans for Design Modification, November 2002. These details show that the installation does not effect the permeability of the final cover system. Gases, if generated, can be collected and discharged through this system. If required under Part 111, gas emissions will be monitored, collected and treated.

XIII. ESTIMATED DATES OF CLOSURE ACTIVITY (40 CFR 264.112 (b)(7))

H.W. Unit	Type of Closure	Anticipated Closure Date
MC V	Partial	Closed
MC VII	Partial	Closed

*Closure schedule may change depending on usage rate.

XIV. ANTICIPATED FINAL/PARTIAL CLOSURE SCHEDULE (40 CFR 264.112(b)(6))

Activity	Time Required
1. Receive of Final Volume of Hazardous Waste	N/A
2. Decontaminate Haul Road, Area A, and demolition of the Waste Transfer Box	45 Days
3. Survey Benchmarks	Concurrent with #2 above
4. Construct Intermediate Cover	30 Days
5. Install Gas Vent System	Concurrent with #4 above
6. Decontamination of Equipment	5 Days
7. Construct Leveling Layer and Install GCL	108 Days
8. Install FML	54 Days
9. Construct Drainage Layer	54 Days
10. Construct General Soils Layer	54 Days
11. Place Top Soil	54 Days
12. Apply Vegetative Cover	27 Days
13. Complete Fence-Barrier around Perimeter of Hazardous Waste Management Area	27 Days
14. Complete and Submit Closure Certification	108 Days
TOTAL TIME	**566 Days**

XV. EXTENSION FOR CLOSURE TIME (40 CFR 264.113 (b))

It is anticipated that partial/final closure activities will exceed 180 days due to the substantial size of Master Cell VI and the uncertainty of the seasonal date when the final volumes of hazardous waste are received and the impact of that date on the sequencing of

construction related closure activities. Therefore, the closure schedule assumes less than ideal conditions (see Section XIII). We therefore request an extension of the 180-day closure period. Steps necessary to prevent threats to human health and the environment from the unclosed but terminated hazardous waste management unit, including compliance with all applicable permit requirements, will be taken.

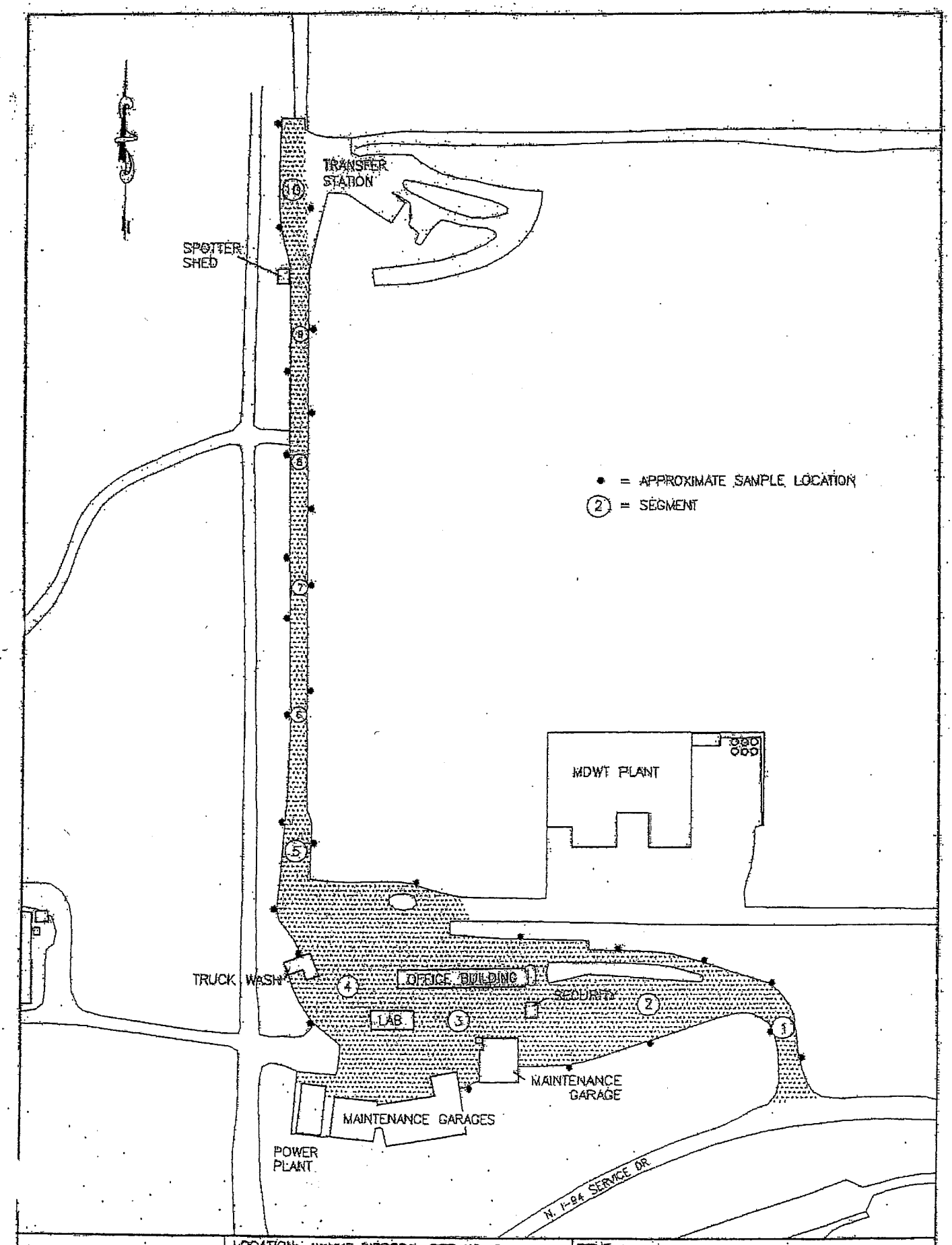
XVI. CERTIFICATION OF CLOSURE (40 CFR 264.115)

Within 60 days of the completion of final closure, certification will be submitted to the MDEQ Director by Wayne Disposal, Inc. Site #2 and an independent registered professional engineer that closure was completed in accordance with the specifications of this plan and Part 111 Rule 613 (3) and (4).

XVII. CLOSURE COST ESTIMATE (40 CFR 264.142, 264.112 (b)(2))

The closure cost estimate and associated information as presented is submitted in accordance with the requirements of 40 CFR 220.14 (b)(15), 264.142 and 264.143. These costs have been previously submitted and are updated each year using the Gross Nation Product (GNP) inflation factor and are presented in Section 39 "Financial Mechanism".

As identified in Section XIV, partial closure of Master Cell V and Master Cell VII is complete and final closure of Master Cell VI is expected in June 2015. Therefore the closure cost estimate includes the closure cost of MC VI, comprising 60.4 acres, and the final facility closure costs; i.e., haul road decontamination, Area A soil remediation, decommissioning of the Waste Transfer Box, and completion of hazardous boundary fencing, etc.



THE ENVIRONMENTAL QUALITY COMPANY	LOCATION: WAYNE DISPOSAL SITE NO. 2	TITLE: CLOSURE PLAN FIGURE 1
	SCALE: 1" = 200' DATE: 1/31/96 by J.C.B.	FILENAME: WDITSCA1

ORIGINAL

Attachment 6

Post Closure Plan

POST-CLOSURE PLAN

40 CFR 264.117(a)(1), 40 CFR 270.14(b)(13)

PART 111, R504(1)c

POST-CLOSURE PLAN

40 CFR 264.117(a)(1), 40 CFR 270.14(b)(13)
PART 111, R504(1)c

TABLE OF CONTENTS

POST-CLOSURE PLAN

40 CFR 264.117, 40 CFR 270.14(b)(13), PART 111, R504(1)c

1.0 GENERAL INFORMATION

This Post-closure Plan is prepared pursuant to requirements under 40 CFR Part 264.117 and 40 CFR 270.14(b)(13). This plan addresses those activities necessary for the proper management of the facility during the 30-year post-closure period (40 CFR Part 264.117(a)(1)]. Should the post closure plan need to be revised, an amendment to the plan shall be requested according to the provisions of 40 CFR 264.118(d).

The primary areas of responsibility include monitoring, inspection, and maintenance activities and their frequencies. During post-closure, damaged or malfunctioning equipment or structures will be repaired or replaced as necessary to maintain the facility in proper condition.

Included in this Permit Application is the post-closure cost estimate, which details the expenses associated with the management and execution of the post-closure plan. In accordance with 40 CFR part 264.118(b)(3), the person to contact regarding Wayne Disposal Site #2 Landfill during the post-closure care period is:

David Lusk
Wayne Disposal, Inc.
Phone:(734) 329-8000
36255 Michigan Avenue
Wayne, MI 48184

In accordance with 40 CFR Part 264.120, no later than 60 days after the completion of the 30-year post-closure care period, Wayne Disposal Site #2 Landfill will submit to the MDEQ, by registered mail, a certification that the post-closure care activities were performed in accordance with this plan.

In accordance with 40 CFR Part 264.119(a), no later than 60 days after the certification of closure of each hazardous waste cell, WDI will submit to the MDEQ and Van Buren Township a record of the type, location, and quantity of hazardous waste disposed of within each cell.

2.0 INSPECTION ACTIVITIES AND FREQUENCIES

The post-closure inspections will be conducted using a grid system across the entire surface (final cover) of the landfill in order to discretize the area into specific regions. The approach will be conducted such that each master cell will be inspected and recorded on the Post Closure Inspection Checklist individually. The quarterly (1st & 3rd quarter) and the semi-annual (2nd quarter) inspections will be conducted on a quadrant grid system for each master cell. The annual inspection will be conducted on a 200 foot grid system (see attached Post-closure Inspection Grid Plan). Please refer to the attached Post-closure Inspection Report following this document for further information and inspection frequencies. When an identified problem is documented on the Post-Closure Inspection Report it shall be listed on the Maintenance Log Form. The purpose of this Maintenance Log Form is to track the items through completion of the repairs and to allow for a historical evaluation of any recurring items and locations.

The clay dikes and the perimeter dewatering tile system will be inspected for any surface evidence of deterioration or damage during each of the quarterly (1st and 3rd quarters), the semi-annual (2nd quarter), and the annual inspections. The two discharge points for the dewatering system will also be observed during each of these inspections to confirm that free-flowing conditions exist at the outlets. During each annual inspection, the manholes along the dewatering tile will be opened and the interiors inspected from the ground surface for evidence of deterioration, damage or tile blockage.

3.0 MAINTENANCE ACTIVITIES

In accordance with 40 CFR Part 264.118(b)(2) and 40 CFR Part 265.310(b), the following maintenance activities have been identified.

Security System

Signs will be replaced as they become illegible or if lost due to vandalism. In the event of fence or gate damage, those sections affecting site security will be repaired or replaced immediately.

Final Cover System

Periodic inspections are performed (refer to Subsection 2 of this Plan) to determine if and when additional maintenance is needed. Inspections of the final cover are specifically directed toward the identification of the following:

- Invasion of undesirable plant species
- Deterioration of vegetative cover
- Areas of surface erosion

- Soft or unstable areas of the cover
- Damage to the dikes
- Obstructions, erosion, or deterioration of the surface water drainage ditches
- Obstructions or damage to the discharge pipes for the drainage layer
- Burrowing by animals
- Surface disturbance due to unwarranted vehicle traffic

Detection of problems such as those presented above requires remedial efforts. The remedial efforts, including fertilizing and reseeding, are undertaken to bring the cover back to the original designed condition, as necessary. Documentation of these inspections is provided as shown in the Post-Closure Inspection Form following this document.

Erosion washouts will be repaired as soon as possible after detection. When cap integrity is in question, repair activities will begin immediately. Restoration of the vegetative cover will be performed during or at the end of the growing season.

In the event of localized subsidence that results in the ponding of surface water, repairs will involve building up the subsided area with soil to provide adequate surface water run-off. Based upon recommendations by the MDEQ; areas of localized subsidence must be evaluated prior to automatic application of surface soils to restore surface drainage. For relatively small areas of localized subsidence (i.e. no greater than 50 feet laterally and/or no greater than 12 inches vertically) soils may be added without notification to the MDEQ. However, larger areas must be

evaluated and/or investigated, and shall require submittal of a Work Plan for WHMD approval prior to initiation of maintenance activities.

The vegetative cover is mowed to promote vegetative growth and surface water drainage, and to help improve the site's aesthetics. Vegetative cover that is lost or destroyed due to weathering is replaced in order to control erosion.

The maintenance of the vegetative cover also includes the elimination of undesirable trees or brush growth over the capped areas when apparent. Burrowing animals will be removed or exterminated immediately after being identified. In accordance with 40 CFR Part 264.310(a)(2), the Wayne Disposal Site #2 Landfill final cover functions with a minimum of maintenance.

Clay Dikes & Perimeter Dewatering Tile System

Periodic inspections of the clay dikes and the alignment of the perimeter dewatering tile systems are specifically directed toward the identification of the following:

- Deterioration of vegetative cover over the dikes
- Invasion of the dikes by deep-rooted, woody vegetation species
- Areas of dike surface erosion
- Soft or unstable conditions on dikes or along the tile system alignment
- Disturbance or damage to dikes or tile system manholes
- Blockage of the dewatering tile system outlets
- Excess fluid levels or non-flowing conditions in the dewatering tile system manholes

Vegetative deterioration or surface erosion on the clay dikes will be restored as soon as possible after detection. Vegetation restoration will be performed during or at the end of the growing season. When dike integrity is in question, repair activities will begin immediately.

Blockage at either outlet of the dewatering tile system will be cleared immediately after detection. Damage or disturbance of the concrete manholes on the dewatering tile system will be repaired as soon as possible after detection. Fluid levels in the concrete manholes which indicate partial or full blockage of the dewatering tile system will require jetting or cleaning of the blocked portion of the system as soon as possible after detection. Any surface evidence of collapse in the dewatering tile system will require investigation by sewer camera, open excavation, or other means. If partial or complete collapse has occurred, the affected portion of the system will be repaired and/or replaced as soon as possible after detection.

Leachate Collection System

The primary anticipated maintenance concerns will be pump operations. Should damage or failure occur to this system, repair or replacement of the defective equipment will be performed promptly.

The leachate collection piping will also be maintained by jetting or cleaning out the pipes interior as necessary.

Leak Detection, Collection, and Removal System

The primary anticipated maintenance concerns will be pump operations. Should damage or failure occur to this system, repair or replacement of the defective equipment will be performed promptly. Damaged surface pipes will also be repaired.

Drainage Structures

Ditches that have been damaged due to erosion will be properly repaired. Sediment buildup will be removed where necessary to allow free gravity drainage to the sedimentation basin. Removal of sediment buildup in the sedimentation basins will also be performed as needed to maintain adequate capacity for design flow conditions. The edge drain system may require occasional maintenance via sump clean-out & power-jetting to assure flow & reduce the hydraulic head against perimeter dikes to less than 5 feet of head.

Gas Venting System

Damaged gas venting risers will be repaired or replaced promptly after notification of needed repair. Dislodged gas venting risers will be reset.

Monitoring Wells

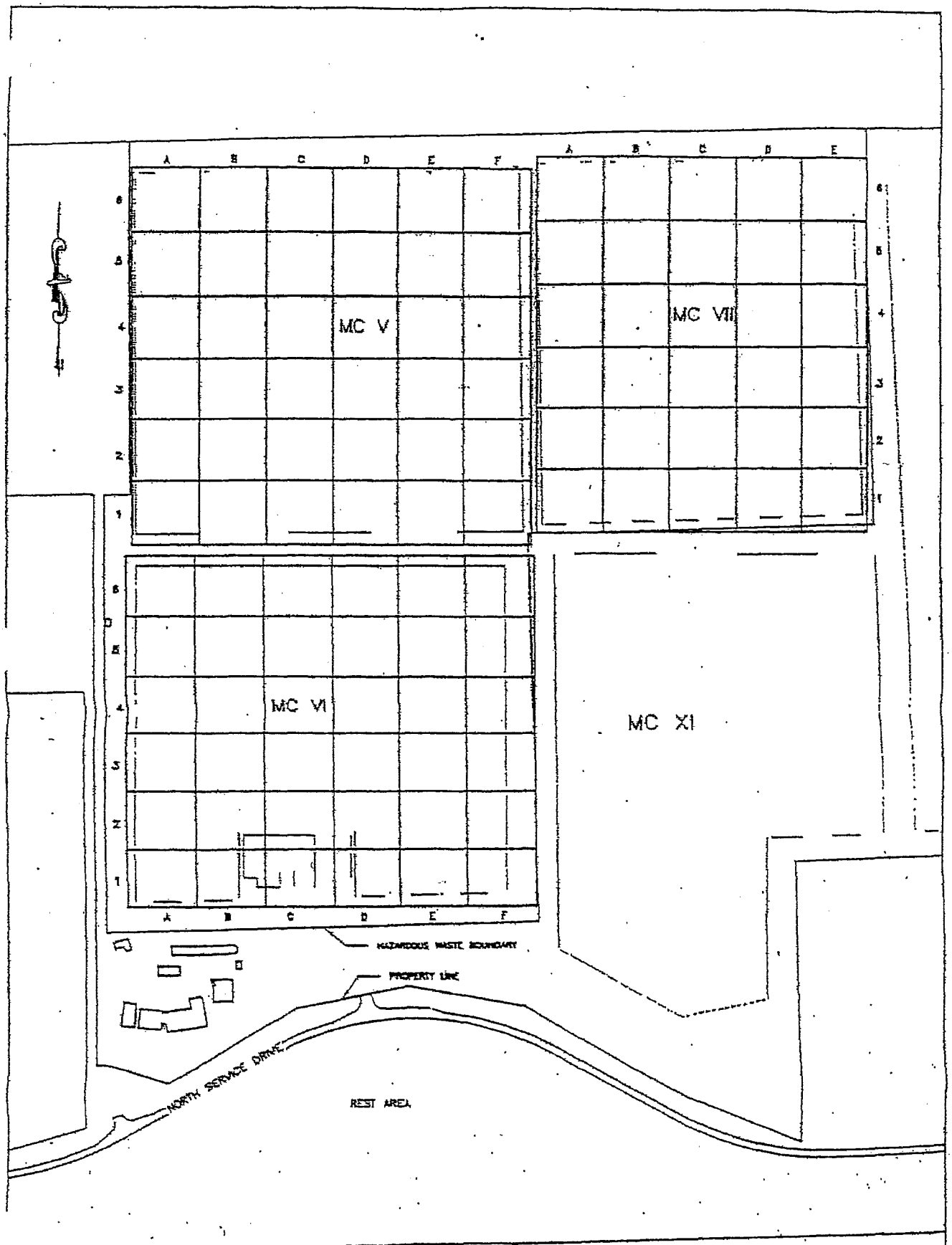
The primary anticipated maintenance concerns will be pump operation, security, and casing integrity. Should damage occur to the pumps, they will be repaired or replaced promptly. If damage is done to the locking system or the well casing, it will also be repaired.

Benchmarks

Should the benchmarks be removed or dislodged entirely, they will be reset or re-established at the original location and elevation.

4.0 MONITORING ACTIVITIES

In accordance with 40 CFR Part 264.310(b)(2). during the post-closure care period, the leachate collection and removal system will continue to be operated until leachate is no longer detected. In accordance with 40 CFR Part 264.310(b)(3), the groundwater monitoring system will be maintained and monitored throughout the post-closure period. The leak detection systems will also be maintained and monitored throughout the post-closure period. Refer to the environmental monitoring sections contained within this Permit Application for additional information regarding monitoring.



WAYNE DISPOSAL SITE NO. 2

Attachment 7

Engineering Plans

WAYNE DISPOSAL, INC. SITE NO. 2
MASTER CELL VI-F&G

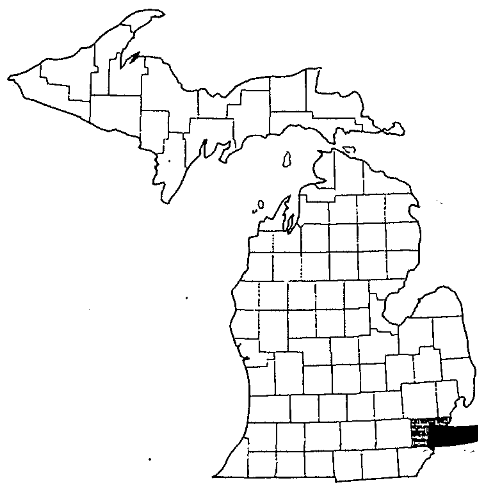
VAN BUREN TOWNSHIP, WAYNE COUNTY, MICHIGAN

NTH PROJECT NO. 13-060921-03

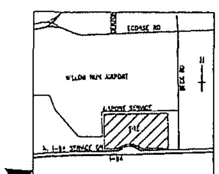
FEBRUARY 2011
REVISED: SEPTEMBER 2011

OWNER:
Wayne Disposal, Inc.
49350 N. I-94 Service Drive
Belleville, Michigan 48111

ENGINEER:
NTH Consultants, LTD.
41780 Six Mile Road
Northville, Michigan 48168



MICHIGAN
APPROX. SCALE: 1"=50 MILES



LOCATION MAP- WAYNE COUNTY
NO SCALE

SHEET INDEX

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

Northville, MI
Detroit, MI
Lansing, MI
Grand Rapids, MI
Exton, PA
Lehigh Valley, PA
Cleveland, OH
Indianapolis, IN

REVISIONS

REV	DESCRIPTION	DATE
A	PHASING SCREENING	
B	PER MDEQ COMMENTS	

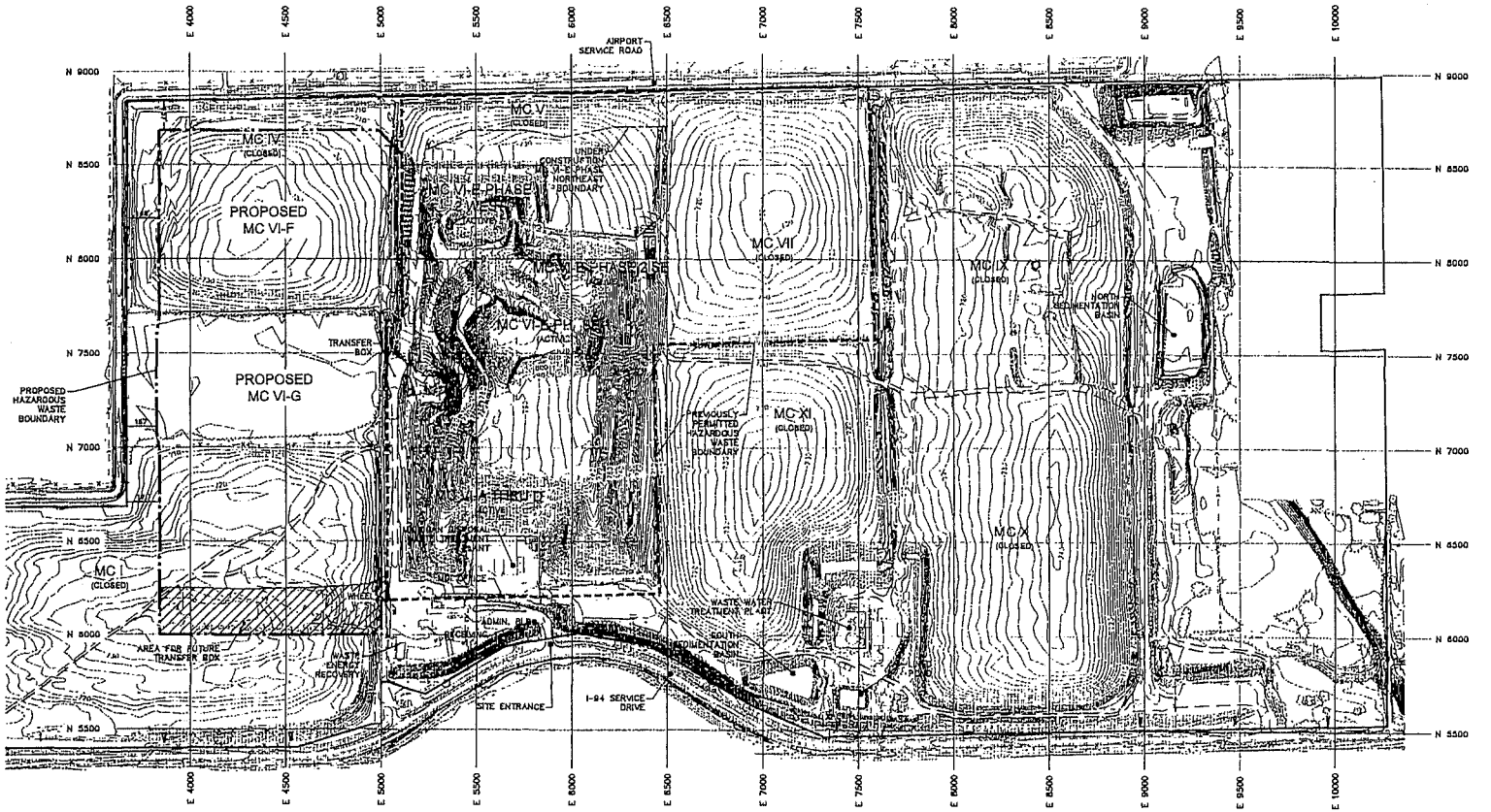
PROJECT NAME:
MASTER CELL VI F&G

PROJECT LOCATION:
WAYNE DISPOSAL, INC
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-060921-03	CAD FILE NAME: 13060921-0
DESIGNED BY: JHL	INCEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: NONE
CHECKED BY: ISS	SUBMITTED DATE: 8/23/11

SHEET TITLE:
TITLE SHEET

SHEET REFERENCE NUMBER:
01



NOTE:

THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AIR-LAND SURVEY AND PROVIDED BY WDI. A SURVEY BY UCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.

N

0 150' 300' 600'
SCALE

LEGEND

- EXISTING CONTOUR (2 FT INTERVAL)
- PREVIOUSLY PERMITTED HAZARDOUS WASTE BOUNDARY
- EXISTING SITE ROAD
- PROPERTY BOUNDARY
- PROPOSED HAZARDOUS WASTE BOUNDARY

NTH Consultants, Lt
Infrastructure Engineering and Environmental Services

Northville, MI	248.553.6
Detroit, MI	313.237.5
Lansing, MI	517.484.8
Grand Rapids, MI	616.957.5
Erie, PA	610.524.2
Lehigh Valley, PA	484.893.1
Cleveland, OH	216.334.4
Indianapolis, IN	317.735.7

REVISIONS

REV.	DESCRIPTION	DATE

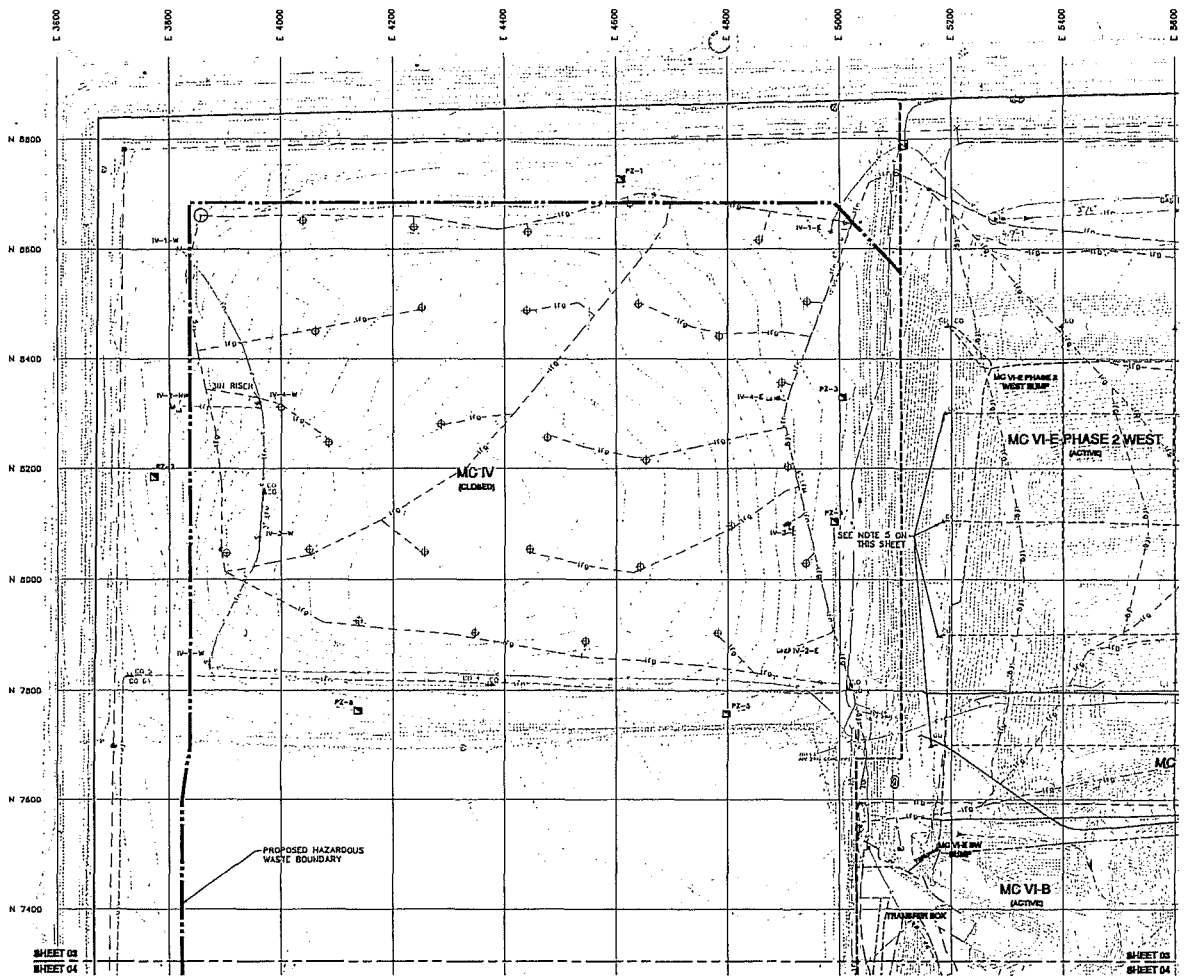
PROJECT NAME
MASTER CELL VI F&G

PROJECT LOCATION
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-060821-03	CAD FILE NAME: GENERAL SITE P
DESIGNED BY: JHL	INCEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: ISS	SUBMITTED DATE: 8/23/11

SHEET TITLE:
GENERAL SITE PLAN

SHEET REFERENCE NUMBER:
02



N

0 50' 100' 200'
SCALE

LEGEND

- 710 — EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- LEACHATE FORCEMAIN
- STORM WATER COLLECTION SYSTEM
- CULVERT
- LANDFILL GAS PIPE
- PERIMETER EDGE DRAIN
- BURIED ELECTRICAL LINE
- SURFACE ELECTRICAL LINE
- OVERHEAD ELECTRICAL LINE
- LEACHATE COLLECTION LINE
- PROPOSED HAZARDOUS WASTE BOUNDARY
- HAZARDOUS WASTE BOUNDARY
- CLEANOUT
- LANDFILL GAS WELL
- LANDFILL GAS HEADER VALVE
- LANDFILL GAS CONDENSATE TRAP
- GAS VENT
- PIEZOMETER
- LEACHATE EXTRACTION WELL
- LEACHATE RISER
- ELECTRICAL UTILITY BOX
- UTILITY POLE
- MONITORING WELL
- TREE
- VEGETATION
- FENCE
- AIR MONITOR STATION

NOTES:

1. THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AIR-LAND SURVEY AND PROVIDED BY WDI. A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.
2. THE UTILITY BASE MAP WAS PROVIDED BY MCLLC.
3. EXISTING UTILITIES (SUCH AS PIEZOMETERS, WELLS, GAS PIPING, LEACHATE FORCEMAIN, ELECTRICAL LINES, AND CLEANOUTS, ETC.) LOCATED INSIDE THE HAZARDOUS WASTE BOUNDARY ARE TO BE ABANDONED DURING CONSTRUCTION UNLESS MARKED TO REMAIN.
4. REFER TO CTI & ASSOCIATES DRAWING IN APPENDIX X OF THE BASIS OF DESIGN REPORT FOR MC I AND MC IV PROPOSED GAS MANAGEMENT SYSTEM.
5. IF CLEANOUTS ARE TO BE ABANDONED, CUT CLEANOUT FLUSH WITH SURFACE AND FUSION WELD HDPE END CAP TO END.

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

Northville, MI	248.553.8300
Detroit, MI	313.237.3000
Lansing, MI	517.484.8000
Grand Rapids, MI	616.957.5200
Exton, PA	610.524.2300
Lehigh Valley, PA	484.895.1410
Cleveland, OH	216.531.4010
Indianapolis, IN	317.735.7840

REVISIONS

NO.	DESCRIPTION	DATE	BY

PROJECT NAME:
MASTER CELL VI F&G

PROJECT LOCATION:
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO: 13-060021-03	CAD FILE NAME: ExistingUtilityPlan1of2.dwg
DESIGNED BY: DTL	ISSUE DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: RBM	SUBMITTED DATE: 2/28/11

SHEET TITLE:
EXISTING UTILITY PLAN
(1 OF 2)

SHEET REFERENCE NUMBER:
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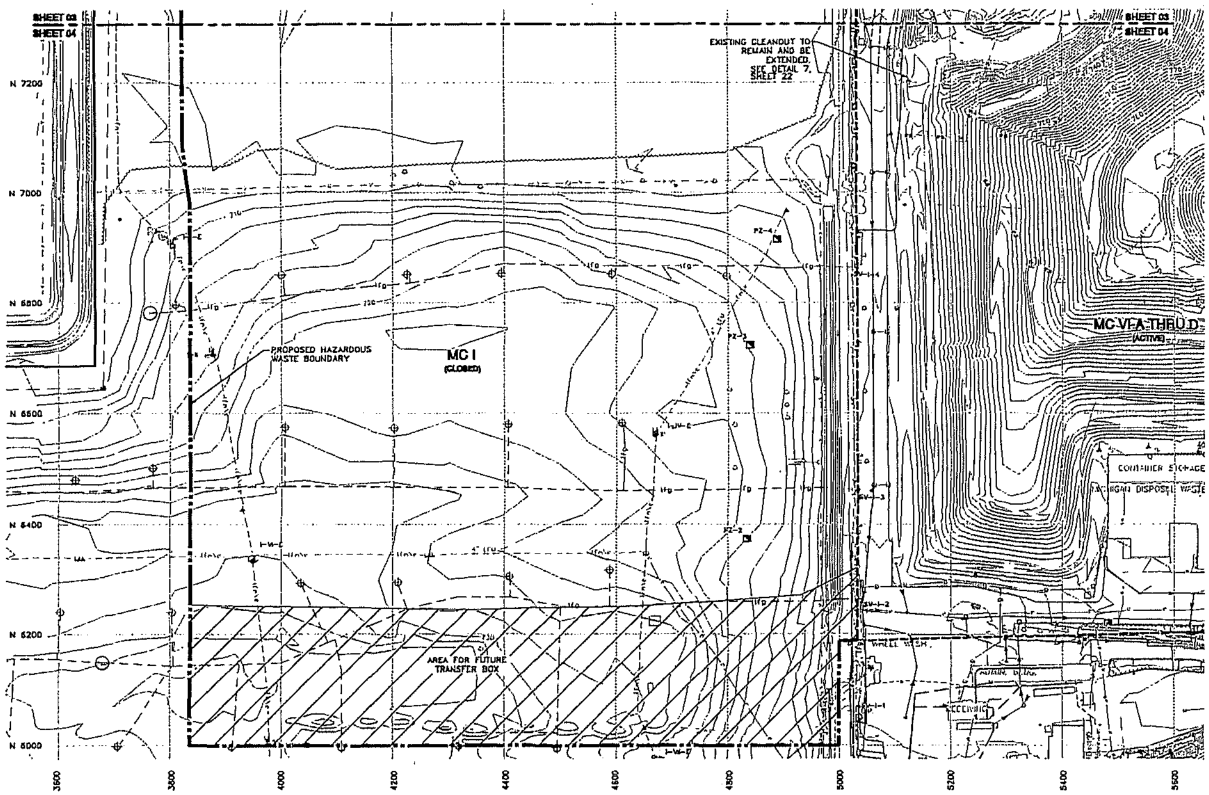

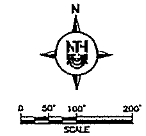

LEGEND

710	EXISTING CONTOUR (2 FT INTERVAL)
	PROPERTY BOUNDARY
	LEACHATE FORCEMAIN
	STORM WATER COLLECTION SYSTEM
	CULVERT
	LANDFILL GAS PIPE
	PERIMETER EDGE DRAIN
	BURIED ELECTRICAL LINE
	SURFACE ELECTRICAL LINE
	OVERHEAD ELECTRICAL LINE
	GAS LINE
	WATER LINE
	SANITARY SEWER LINE
	PROPOSED HAZARDOUS WASTE BOUNDARY
	HAZARDOUS WASTE BOUNDARY
	CLEANOUT
	LANDFILL GAS WELL
	LANDFILL GAS HEADER VALVE
	LANDFILL GAS CONDENSATE TRAP
	GAS VENT
	PIEZOMETER
	STORM STRUCTURE
	LEACHATE EXTRACTION WELL
	LEACHATE RISER
	ELECTRICAL UTILITY BOX
	VALVE VAULT
	UTILITY POLE
	MONITORING WELL
	TREE
	VEGETATION
	FENCE

NOTES:

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4. REFER TO CTI & ASSOCIATES DRAWING IN APPENDIX K OF THE BASIS OF DESIGN REPORT FOR MC I AND MC IV PROPOSED GAS MANAGEMENT SYSTEM.

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

Northville, MI	248.553.6300
Detroit, MI	313.237.3900
Lansing, MI	517.484.0000
Grand Rapids, MI	616.957.3000
Exton, PA	610.524.2300
Lehigh Valley, PA	484.893.1440
Cleveland, OH	216.334.4040
Indianapolis, IN	317.735.7048

REVISIONS

REV	DESCRIPTION	DATE	BY

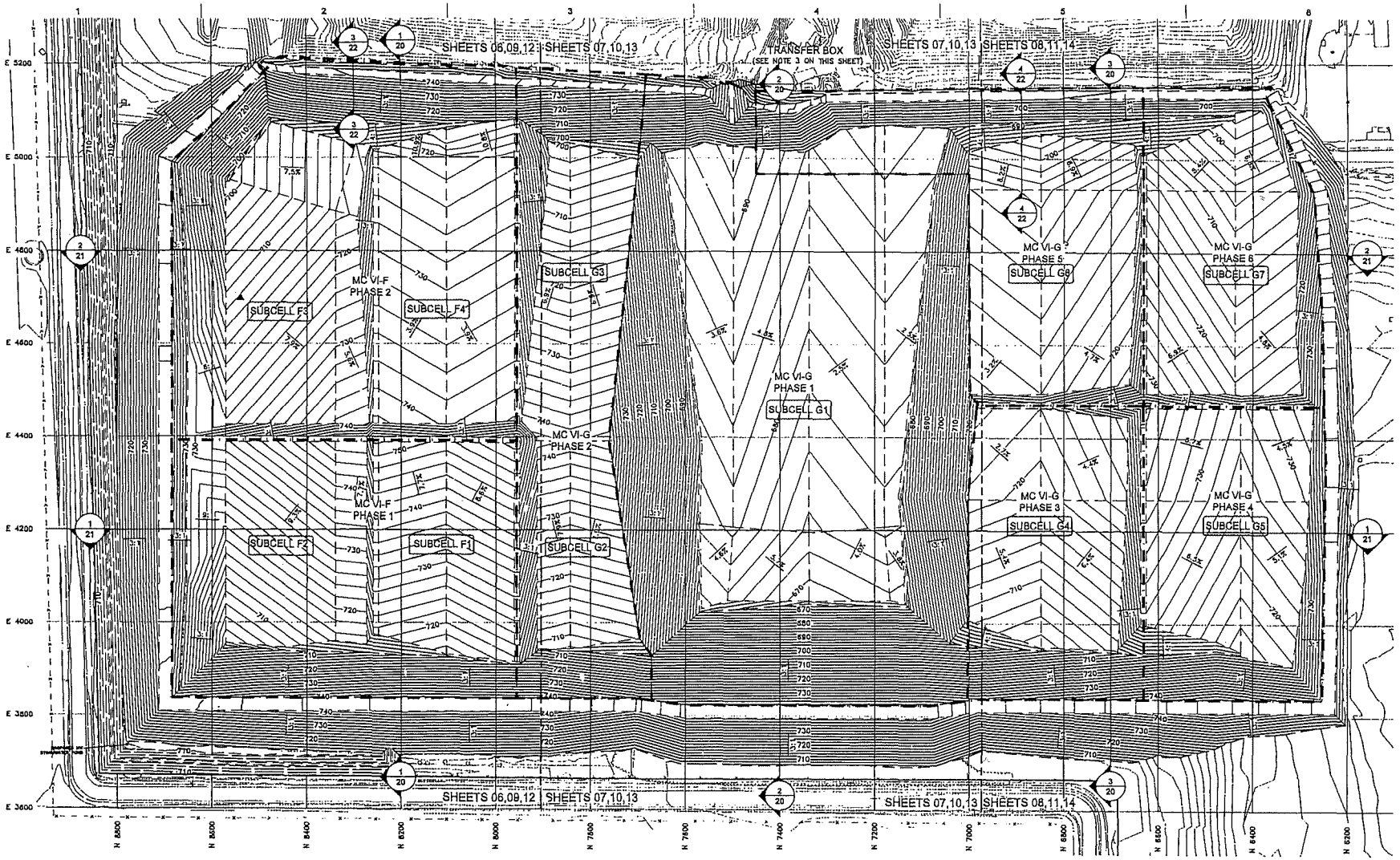
PROJECT NAME:
MASTER CELL VI F&G

PROJECT LOCATION:
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO: 13-060021-03	CAD FILE NAME: [illegible]
DESIGNED BY: DRL	SHEEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: RBM	SUBMITTED DATE: 2/28/11

SHEET TITLE:
EXISTING UTILITY PLAN
(2 OF 2)

SHEET REFERENCE NUMBER:
04



PHASE DESIGNATION	PHASE FOOTPRINT AREA (AC.)	PHASE INCREMENTAL VOLUME (C.Y.)
MC VI-F PHASE 1	8.3	812,000
MC VI-F PHASE 2	12.8	1,845,000
MC VI-G PHASE 1	19.8	2,370,000
MC VI-G PHASE 2	7.3	773,000
MC VI-G PHASE 3	5.3	700,000
MC VI-G PHASE 4	3.5	480,000
MC VI-G PHASE 5	7.4	3,600,000
MC VI-G PHASE 6	5.5	1,120,000
TOTAL:	73.0	11,700,000

NOTES:

1. THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AIR-LAND SURVEY AND PROVIDED BY WDI, A SURVEY BY MCLLG IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.
2. PHASING SHOWN HERE IS FOR WDI PLANNING PURPOSES ONLY AND MAY CHANGE BASED ON WDI NEEDS WITHOUT MDEQ APPROVAL.
3. THE TRANSFER BOX WILL BE MOVED TO VARIOUS LOCATIONS BASED ON CELL DEVELOPMENT AND FILLING OPERATIONS. SEE TRANSFER BOX DETAIL ON SHEETS 26 AND 27.
2. A MINIMUM OF 5 YEARS PRIOR TO CONSTRUCTING MC VI-G PHASES 3 TO 6, WDI SHALL INVESTIGATE THE DIKE LOCATIONS AND NEED FOR DEWATERING FOR THE EXISTING MC I TO CONFIRM THE ASSUMPTIONS USED IN THE DESIGN. WDI SHALL INFORM THE MDEQ OF THE RESULTS OF THIS INVESTIGATION AND REVISE THE DESIGN, IF NECESSARY. THE REVISED DESIGN SHALL BE APPROVED BY THE MDEQ PRIOR TO CONSTRUCTION OF MC VI-G PHASES 3 TO 6.

N

0 50' 100' 200'
SCALE

LEGEND

- EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- PROPOSED GRADE BREAK
- PROPOSED TOP OF PRIMARY LINER CONTOUR (2 FT INTERVAL)
- PROPOSED NW STORMWATER POND CONTOUR (2 FT INTERVAL)
- PROPOSED PHASE BOUNDARY

NTH Consultants,
Infrastructure Engineering
Environmental Service

Northville, MI
Detroit, MI
Lansing, MI
Grand Rapids, MI
Exton, PA
Lehigh Valley, PA
Cleveland, OH
Indianapolis, IN

REVISIONS

REV	DESCRIPTION	DA
2	PHASING REVISIONS	10/
1	PER MDEQ COMMENTS	10/

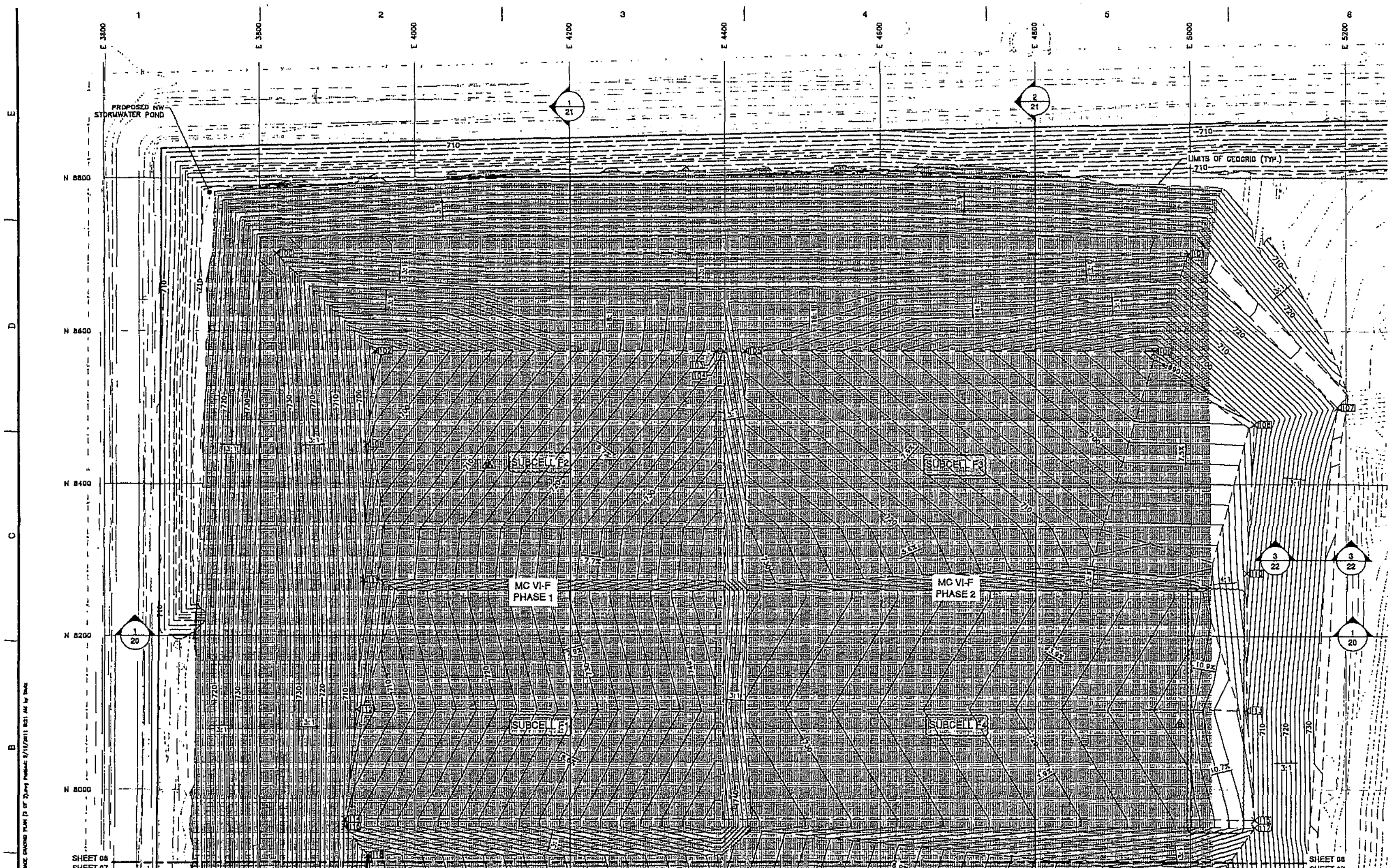
PROJECT NAME
MASTER CELL VI F&G

PROJECT LOCATION
WAYNE DISPOSAL, IN
SITE NO. 2
BELLEVILLE, MICHIGA

NTH PROJECT NO: 13-060821-03	CAD FILE NA: CONSTRUCTION PLAN
DESIGNED BY: JRL	PACKET DATE: 11/13/20
DRAWN BY: DRL	DRAWING SC: AS SHOW
CHECKED BY: ISS	SUBMITTED I: 9/23/11

SHEET TITLE:
CONSTRUCTION PHA
PLAN

SHEET REFERENCE NUMBER:
05



SUBGRADE PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
100	8701.30	3821.03	731.39
101	8701.30	4997.59	731.01
102	8572.66	3948.14	691.65
103	8572.66	4388.34	725.25
104	8572.66	4398.34	725.25
105	8572.66	4425.01	716.36
106	8572.66	4954.00	689.27
107	8500.75	5189.52	725.83
108	8478.81	5082.20	694.48
109	8451.97	3837.75	697.50
110	8282.53	5072.20	698.88

SUBGRADE PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
111	8272.51	3932.99	701.60
112	8104.36	3924.94	704.97
113	8104.36	5072.27	703.43
114	7981.05	3909.76	709.54
115	7960.73	5083.24	706.44
116	7951.05	3909.66	709.54
117	7950.73	5083.24	706.44
118	7913.92	3939.16	700.65
119	7893.05	5042.32	691.59
120	7842.73	3838.19	697.92
121	7842.73	5038.07	689.67

N

0 30' 60' 120'
SCALE

LEGEND

- EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- PROPOSED GRADE BREAK
- 710 PROPOSED TOP OF SUBGRADE CONTOUR (2 FT INTERVAL)
- 710 PROPOSED NW STORMWATER POND CONTOUR (2 FT INTERVAL)
- AREA TO BE COVERED BY GEOGRID
- 100 PROPOSED DIKE COORDINATE POINT NO.
- 3:1 PROPOSED SLOPE

NOTE:

THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AIR-LAND SURVEY AND PROVIDED BY WDI, A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

Northville, MI	248.553.6300
Detroit, MI	313.237.3900
Lansing, MI	517.484.6900
Grand Rapids, MI	616.957.2680
Easton, PA	610.524.2300
Lehigh Valley, PA	484.893.1440
Cleveland, OH	216.334.4040
Indianapolis, IN	317.735.7848

REVISIONS

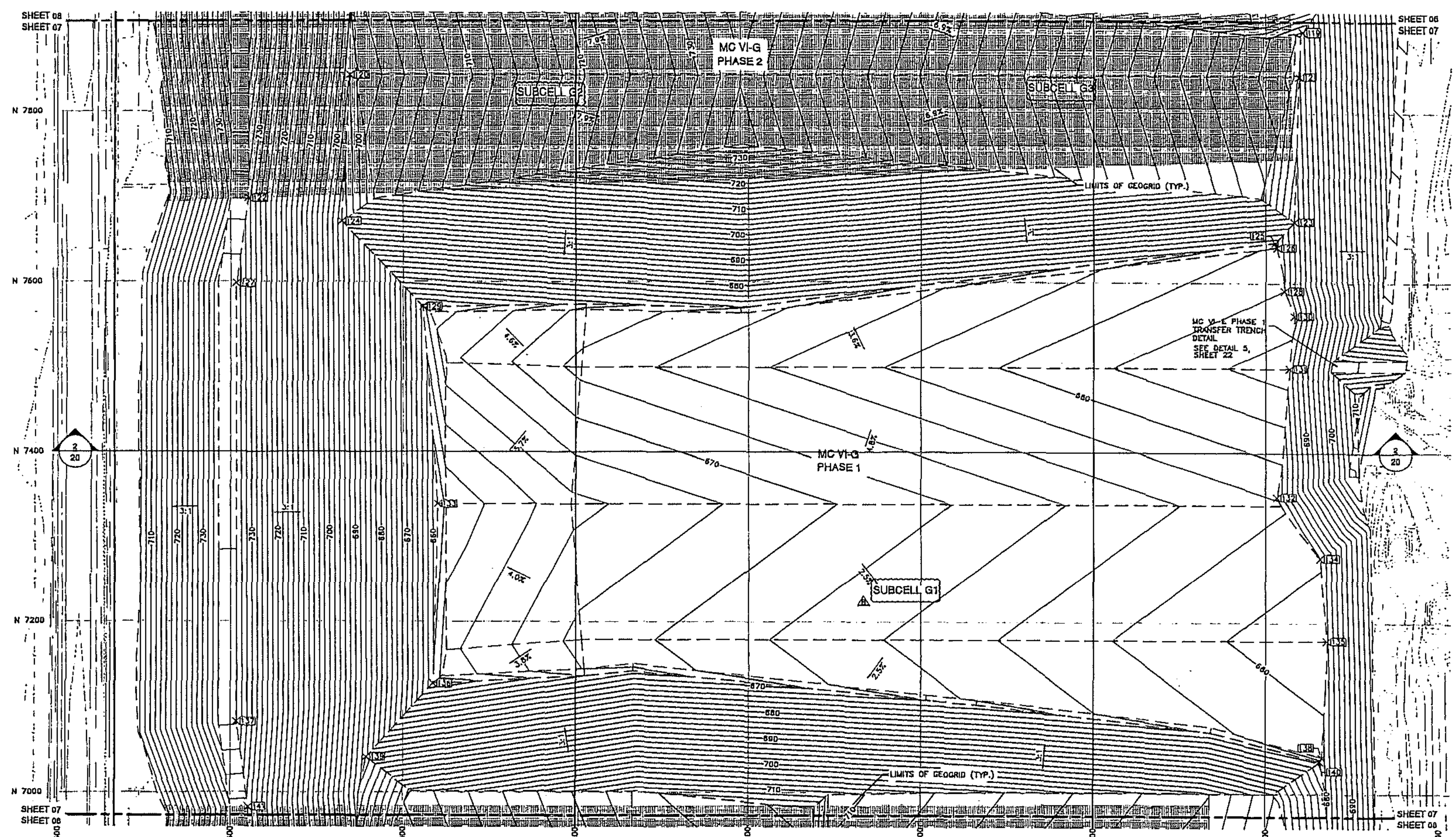
PROJECT NAME:
MASTER CELL VI F&G

PROJECT LOCATION:
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-060821-03	CAD FILE NAME: TOP OF SUBGRADE GRADING PLAN (1 OF 3)
DESIGNED BY: JHL	INCEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: ISS	SUBMITTED DATE: 8/22/11

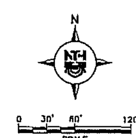
SHEET TITLE:
TOP OF SUBGRADE GRADING PLAN (1 OF 3)

SHEET REFERENCE NUMBER:
06



SUBGRADE PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
122	7697.89	3821.03	730.74
123	7672.54	5032.68	686.26
124	7670.81	3928.84	694.50
125	7647.68	5010.45	678.68
126	7641.99	5012.71	680.19
127	7597.89	3806.80	735.60
128	7591.06	5021.51	682.01
129	7570.41	4023.20	683.24
130	7561.87	5032.75	683.13
131	7498.71	5027.05	685.09
132	7349.00	5012.85	678.14

SUBGRADE PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
133	7338.74	4040.41	658.10
134	7276.06	5062.38	679.69
135	7170.18	5070.45	681.75
136	7127.70	4034.87	660.23
137	7083.24	3807.01	736.24
138	7043.49	5064.48	678.89
139	7042.16	3957.20	684.60
140	7039.03	5082.00	677.47
141	6983.25	3821.03	729.35
142	6687.01	3937.42	696.98
143	6636.63	3931.13	702.62



LEGEND

- EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- PROPOSED GRADE BREAK
- 710 — PROPOSED TOP OF SUBGRADE CONTOUR (2 FT INTERVAL)
- AREA TO BE COVERED BY GEOGRID
- 100 — PROPOSED DIKE COORDINATE POINT NO.
- 3:1 — PROPOSED SLOPE

NOTE:

THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AIR-LAND SURVEY AND PROVIDED BY WDI, A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

Northville, MI	248.553.6300
Detroit, MI	313.237.3900
Lansing, MI	517.484.6900
Grand Rapids, MI	616.857.2850
Exton, PA	610.524.2300
Lehigh Valley, PA	484.893.1440
Cleveland, OH	216.334.4040
Indianapolis, IN	317.735.7646

REVISIONS

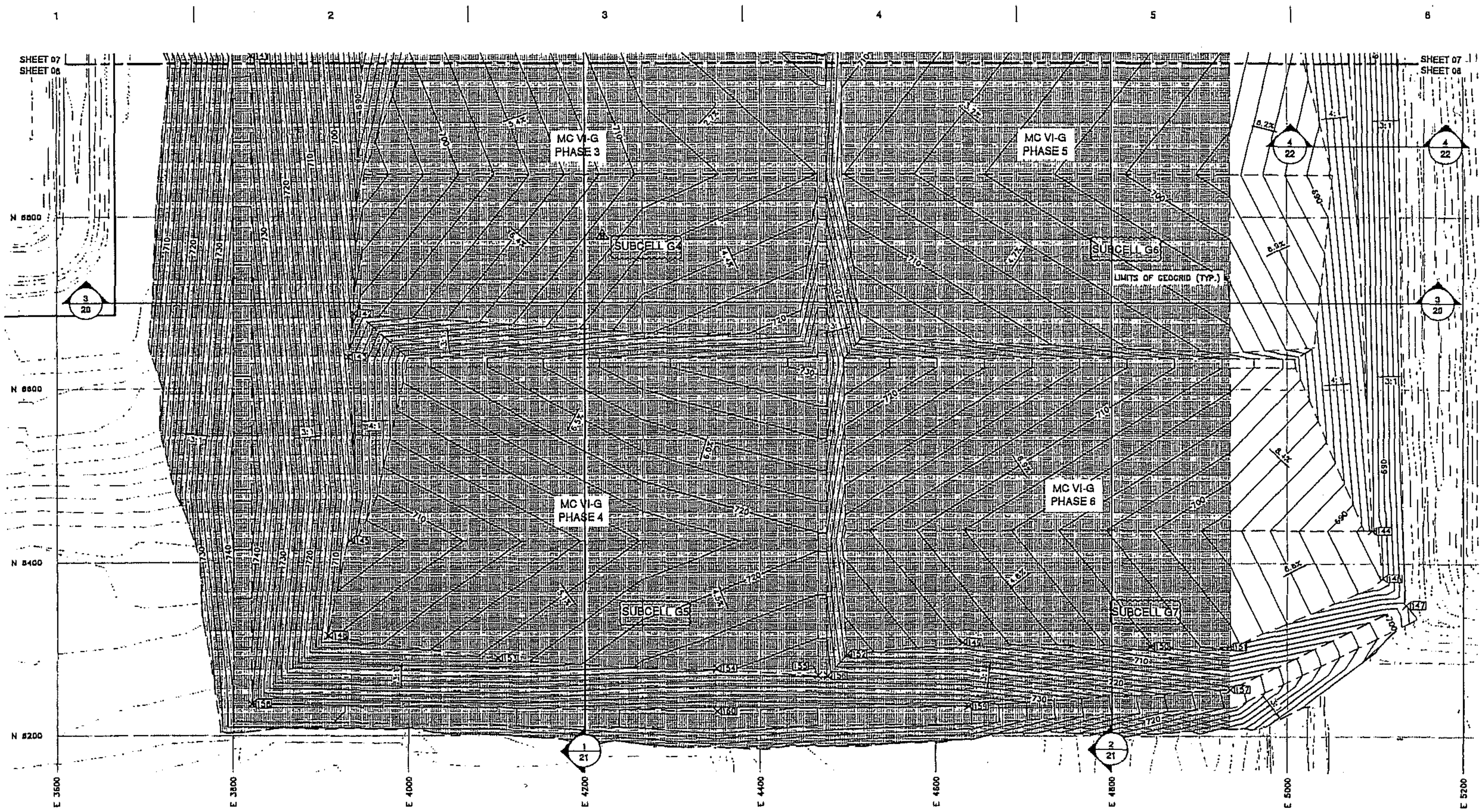
PROJECT NAME:
MASTER CELL VI F&G

PROJECT LOCATION:
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-080921-03	CAD FILE NAME:
DESIGNED BY: DRL	INCEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: RDM	SUBMITTED DATE: 9/22/11

SHEET TITLE:
TOP OF SUBGRADE GRADING PLAN (2 OF 3)

SHEET REFERENCE NUMBER:
07



SUBGRADE PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
144	6437.61	5096.19	685.31
145	6425.37	3933.71	704.74
146	6383.17	5106.23	687.81
147	6352.10	5135.27	696.41
148	6316.02	3906.50	709.72
149	6308.86	4630.41	711.90
150	6304.89	4844.00	704.12
151	6304.21	4934.01	700.81
152	6295.30	4498.77	717.18
153	6290.14	4101.64	716.79
154	6278.55	4350.36	723.66

SUBGRADE PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
155	6270.50	4485.41	725.70
156	6270.26	4476.27	725.42
157	6254.80	4935.00	717.24
158	6237.41	3821.03	738.23
159	6235.06	4636.89	736.17
160	6228.94	4350.65	739.90

0 30' 60' 120'
SCALE

LEGEND

- EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- PROPOSED GRADE BREAK
- 710 PROPOSED TOP OF SUBGRADE CONTOUR (2 FT INTERVAL)
- AREA TO BE COVERED BY GEOGRID
- 100 PROPOSED DIKE COORDINATE POINT NO.
- 3:1 PROPOSED SLOPE

NOTES:

1. THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AIR-LAND SURVEY AND PROVIDED BY WDI, A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.
2. A MINIMUM OF 5 YEARS PRIOR TO CONSTRUCTING MC VI-G PHASES 3 TO 6, WDI SHALL INVESTIGATE THE DIKE LOCATIONS AND NEED FOR DEWATERING FOR THE EXISTING MC I TO CONFIRM THE ASSUMPTIONS USED IN THE DESIGN. WDI SHALL INFORM THE MDEQ OF THE RESULTS OF THIS INVESTIGATION AND REVISE THE DESIGN, IF NECESSARY. THE REVISED DESIGN SHALL BE APPROVED BY THE MDEQ PRIOR TO CONSTRUCTION OF MC VI-G PHASES 3 TO 6.

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

REVISIONS

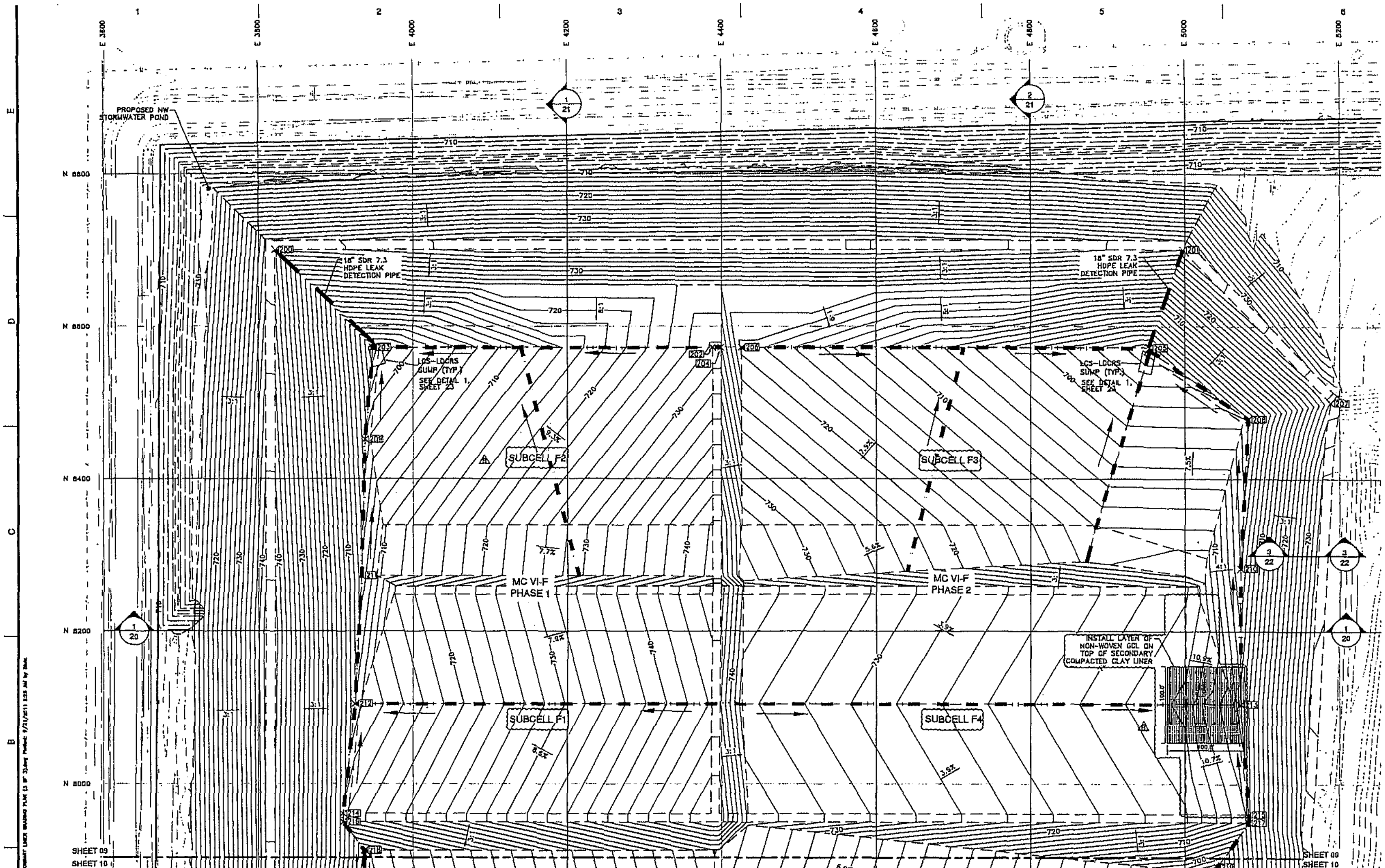
PROJECT NAME:
MASTER CELL VI F&G

PROJECT LOCATION:
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-080821-03	CAD FILE NAME:
DESIGNED BY: JJL	INCEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: JSB	SUBMITTED DATE: 8/23/11

SHEET TITLE:
TOP OF SUBGRADE GRADING PLAN (3 OF 3)

SHEET REFERENCE NUMBER:
08



SECONDARY PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
200	8700.81	3821.52	734.39
201	8700.81	4997.38	734.01
202	8572.25	4388.15	728.36
203	8572.25	3946.23	694.77
204	8572.25	4396.83	728.36
205	8572.25	4954.23	692.38
206	8572.25	4425.54	719.45
207	8500.61	5186.97	728.83
208	8478.75	5082.08	697.60
209	8451.96	3937.88	700.52
210	8282.62	5071.88	702.00

SECONDARY PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
211	8272.67	3933.11	704.72
212	8104.36	3925.07	706.09
213	8104.36	5072.15	706.55
214	7961.11	3909.01	712.66
215	7960.76	5083.12	709.56
216	7950.56	3909.80	712.66
217	7950.24	5083.12	709.56
218	7913.41	3936.99	703.47
219	7892.49	5042.06	694.60
220	7842.73	3938.32	701.04
221	7842.73	5037.95	692.79

0 30' 60' 120'
SCALE

LEGEND

- EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- PROPOSED GRADE BREAK
- 825 — PROPOSED TOP OF SECONDARY CONTOUR (2 FT INTERVAL)
- 710 — PROPOSED NW STORMWATER POND CONTOUR (2 FT INTERVAL)
- 200 — PROPOSED DIKE COORDINATE POINT NO.
- 3:1 — PROPOSED SLOPE
- PROPOSED 2 EXTRA LAYERS OF GEONET, 7.5' WIDE BENEATH GEOCOMPOSITE WITH FLOW DIRECTION
- PROPOSED SOLID LEAK DETECTION RISER PIPE
- PROPOSED SECONDARY COLLECTION SUMP

NOTE:

THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AIR-LAND SURVEY AND PROVIDED BY WDI, A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

Northville, MI	248.553.6300
Detroit, MI	313.237.3900
Lansing, MI	517.484.6900
Grand Rapids, MI	616.957.3690
Exton, PA	610.524.2300
Lehigh Valley, PA	484.893.1440
Cleveland, OH	216.334.4040
Indianapolis, IN	317.735.7646

REVISIONS

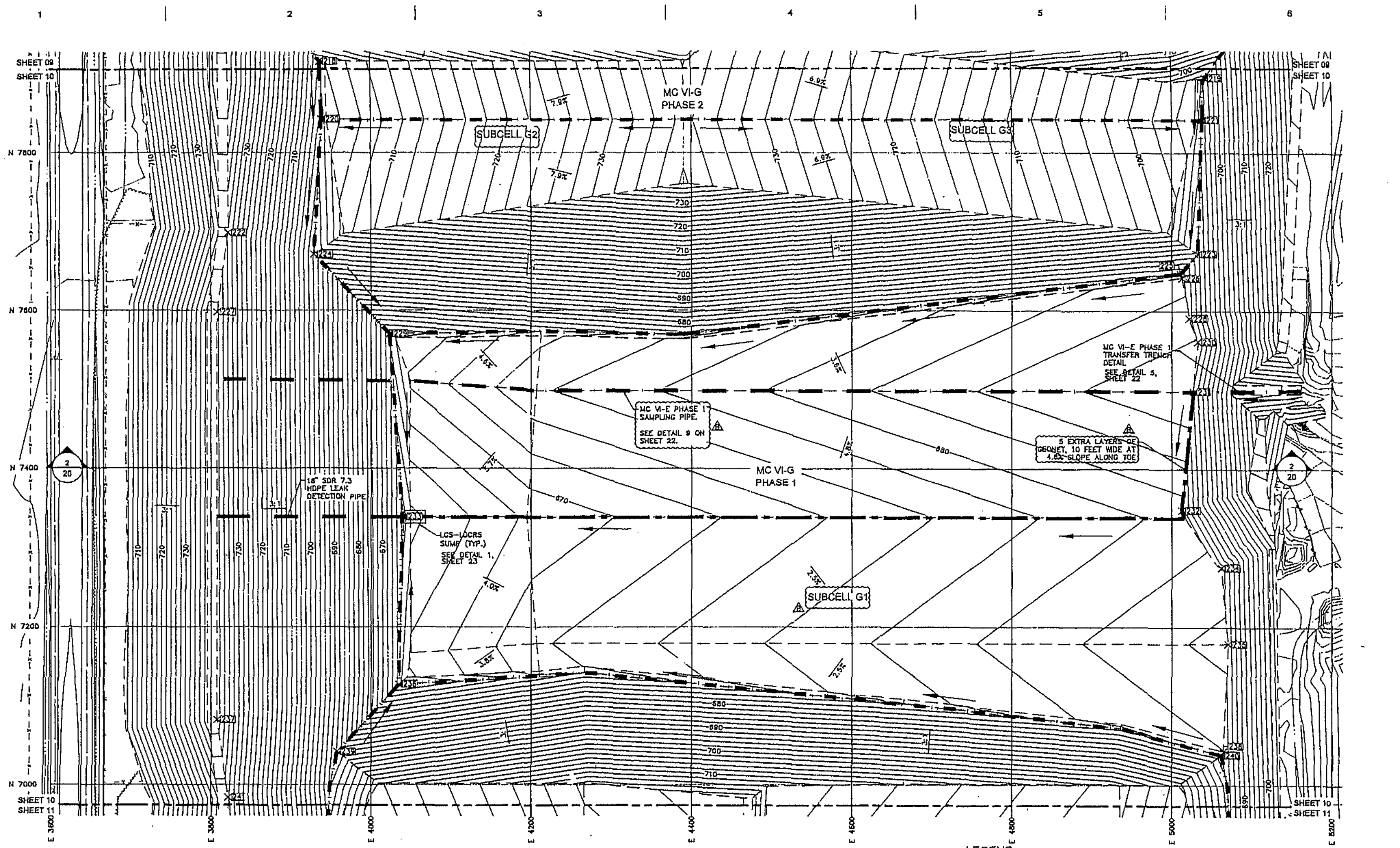
PROJECT NAME:
MASTER CELL VI F&G

PROJECT LOCATION:
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-080921-03	CAD FILE NAME: TOP OF SECONDARY LINER GRADING PLAN (1 OF 3)
DESIGNED BY: JJL	INCEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: ISS	SUBMITTED DATE: 8/23/11

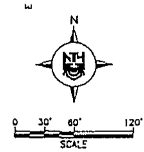
SHEET TITLE:
TOP OF SECONDARY LINER GRADING PLAN (1 OF 3)

SHEET REFERENCE NUMBER:
09



SECONDARY PERIMETER DIKE COORDINATES			
Point No	Northing	Easting	Elevation (ft)
222	7697.85	3821.52	733.74
223	7672.42	5032.72	689.38
224	7670.78	3929.03	697.65
225	7647.54	5010.47	681.80
226	7641.99	5012.71	683.24
227	7597.85	3807.29	738.60
228	7591.06	5021.51	685.01
229	7570.29	4023.33	666.36
230	7561.67	5032.75	688.20
231	7498.71	5027.05	688.09
232	7349.00	5012.85	681.14

SECONDARY PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
233	7338.74	4040.54	661.22
234	7275.80	5061.92	682.69
235	7179.18	5070.45	684.75
236	7127.83	4034.99	663.35
237	7063.28	3807.50	739.24
238	7043.49	5064.48	681.99
239	7042.34	3957.36	687.71
240	7039.01	5061.69	680.59
241	6983.26	3821.52	732.35
242	6667.00	3937.54	702.10
243	6636.63	3931.26	705.74



LEGEND

- EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- PROPOSED GRADE BREAK
- PROPOSED TOP OF SECONDARY CONTOUR (2 FT INTERVAL)
- 200 — PROPOSED DIKE COORDINATE POINT NO.
- 3:1 — PROPOSED SLOPE
- PROPOSED 2 EXTRA LAYERS OF GEONET, 7.5' WIDE BENEATH GEOCOMPOSITE WITH FLOW DIRECTION
- PROPOSED 5 EXTRA LAYERS OF GEONET, 11.5' WIDE, BENEATH GEOCOMPOSITE WITH FLOW DIRECTION
- PROPOSED LEAK DETECTION RISER/ SECONDARY SAMPLING PIPE
- PROPOSED SECONDARY COLLECTION SUMP

NOTE:

THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AIR-LAND SURVEY AND PROVIDED BY WDI, A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.

NTH Consultants,
Infrastructure Engineering
Environmental Services

Northville, MI 248 5
Detroit, MI 313.2
Lansing, MI 517 4
Grand Rapids, MI 616.9
Exton, PA 610.5
Lehigh Valley, PA 484.8
Cleveland, OH 216.3
Indianapolis, IN 317.7

REVISIONS

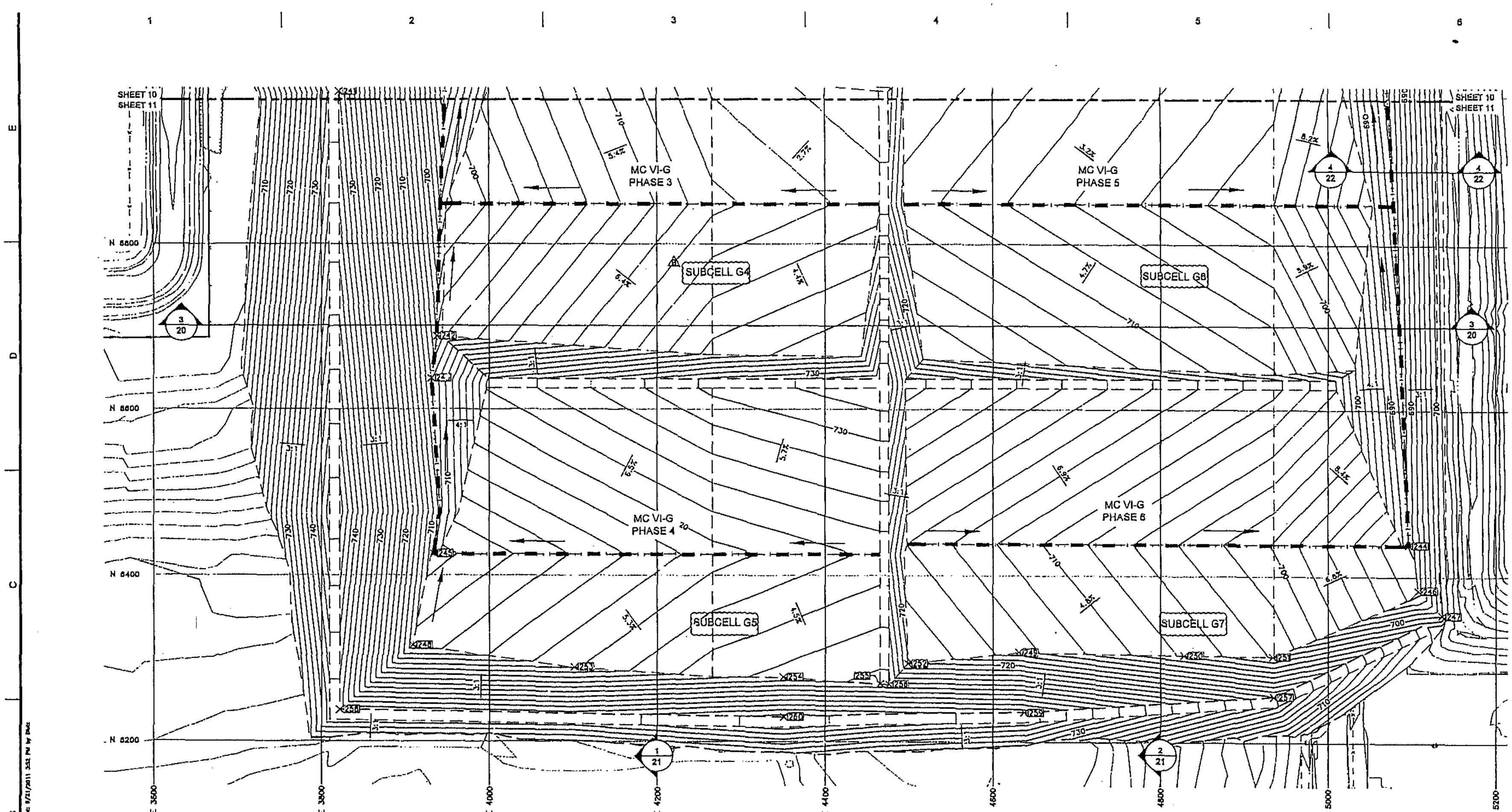
PROJECT NAME:
MASTER CELL VI F&G

PROJECT LOCATION:
WAYNE DISPOSAL, IN
SITE NO. 2
BELLEVILLE, MICHIGA

NTH PROJECT NO.: 13-060821-03	CAD FILE NA
DESIGNED BY: JHL	INCEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SC: AS SHOW
CHECKED BY: ISS	SUBMITTED: 8/23/11

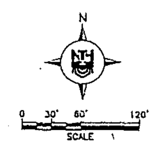
SHEET TITLE:
TOP OF SECONDARY LINER GRADING PLAN OF 3)

SHEET REFERENCE NUMBER:
10



SECONDARY PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
244	6437.59	5096.06	688.43
245	6425.35	3933.63	707.86
246	6383.34	5107.71	690.84
247	6353.82	5135.70	699.60
248	6316.02	3908.50	712.72
249	6306.86	4630.41	714.90
250	6305.63	4827.81	707.70
251	6304.21	4934.01	703.81
252	6295.30	4498.77	720.18
253	6290.14	4101.64	719.79
254	6278.55	4350.36	726.66

SECONDARY PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
255	6270.50	4465.41	728.70
256	6270.2[illegible]	4476.27	728.59
257	6255.28	4934.88	720.24
258	6237.90	3821.52	739.23
259	6235.55	4636.87	739.17
260	6229.43	4350.65	742.90



LEGEND

- 710 — EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- PROPOSED GRADE BREAK
- 710 — PROPOSED TOP OF SECONDARY CONTOUR (2 FT INTERVAL)
- 200 — PROPOSED DIKE COORDINATE POINT NO.
- 3:1 — PROPOSED SLOPE
- PROPOSED 2 EXTRA LAYERS OF GEONET, 7.5' WIDE BENEATH GEOCOMPOSITE WITH FLOW DIRECTION

NOTES:

1. THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AIR-LAND SURVEY AND PROVIDED BY WDI, A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.
2. A MINIMUM OF 5 YEARS PRIOR TO CONSTRUCTING MC VI-G PHASES 3 TO 6, WDI SHALL INVESTIGATE THE DIKE LOCATIONS AND NEED FOR DEWATERING FOR THE EXISTING MC I TO CONFIRM THE ASSUMPTIONS USED IN THE DESIGN. WDI SHALL INFORM THE MDEQ OF THE RESULTS OF THIS INVESTIGATION AND REVISE THE DESIGN, IF NECESSARY. THE REVISED DESIGN SHALL BE APPROVED BY THE MDEQ PRIOR TO CONSTRUCTION OF MC VI-G PHASES 3 TO 6. B

NTH Consultants,
Infrastructure Engineering
Environmental Service

Northville, MI
Detroit, MI
Lansing, MI
Grand Rapids, MI
Exton, PA
Lehigh Valley, PA
Cleveland, OH
Indianapolis, IN

REVISIONS

REV	DESCRIPTION
A	[illegible]
B	[illegible]

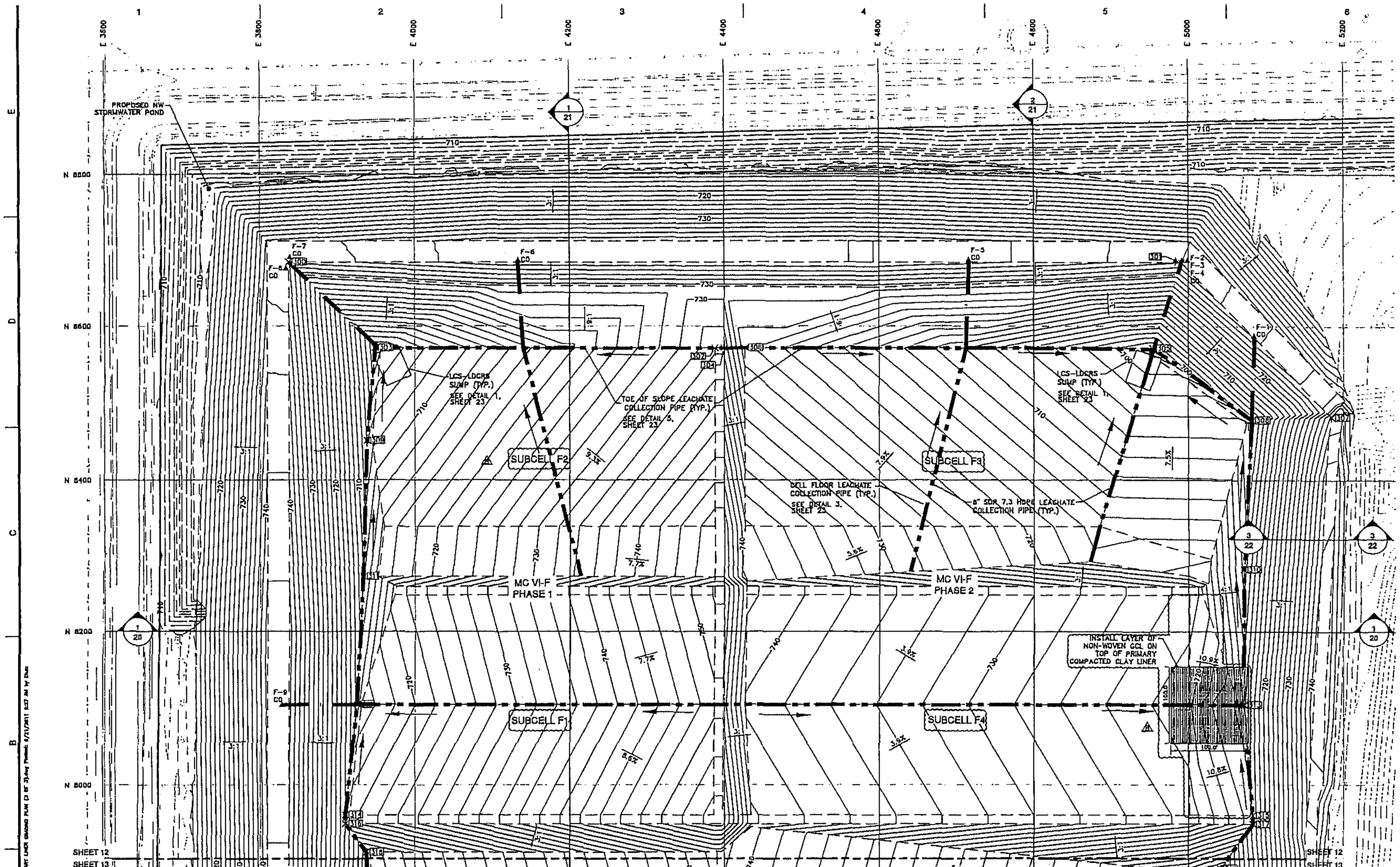
PROJECT NAME:
MASTER CELL VI F&G

PROJECT LOCATION:
WAYNE DISPOSAL, IN
SITE NO. 2
BELLEVILLE, MICHIGA

NTH PROJECT NO: 13-080821-03	CAD FILE N
DESIGNED BY: JHL	MDEP DATE 11/12/08
DRAWN BY: DRL	DRAWING S AS SHO
CHECKED BY: ISS	SUBMITTED 9/23/11

SHEET TITLE:
TOP OF SECONDARY LINER GRADING PLA (OF 3)

SHEET REFERENCE NUMBER:
11



PRIMARY PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
300	8685.01	3837.32	734.39
301	8685.01	4990.85	734.01
302	8571.54	4388.00	733.49
303	8571.54	3948.60	699.97
304	8571.54	4399.64	733.49
305	8571.54	4954.14	697.53
306	8571.54	4426.45	724.56
307	8482.21	5185.03	734.79
308	8478.59	5081.75	702.80
309	8451.95	3938.06	705.82
310	8262.69	5071.67	707.20

PRIMARY PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
311	8273.20	3933.29	709.92
312	8104.36	3925.25	713.29
313	8104.36	5071.95	711.75
314	7961.21	3910.06	717.86
315	7960.81	5082.91	714.76
316	7949.77	3909.93	717.86
317	7949.43	5082.91	714.76
318	7912.56	3937.63	708.50
319	7891.54	5041.36	699.63
320	7842.73	3938.51	706.24
321	7842.73	5037.74	697.99

0 30' 60' 120'
SCALE

LEGEND

- EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- PROPOSED GRADE BREAK
- PROPOSED TOP OF PRIMARY CONTOUR (2 FT INTERVAL)
- PROPOSED NW STORMWATER POND..CONTOUR (2 FT INTERVAL)
- 300 PROPOSED DIKE COORDINATE POINT NO.
- 3:1 PROPOSED SLOPE
- PROPOSED LEACHATE COLLECTION PIPE AND FLOW DIRECTION
- F-1 CO PROPOSED LEACHATE CLEANOUT PIPE
- PROPOSED PRIMARY COLLECTION SUMP

NOTE:

THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AIR-LAND SURVEY AND PROVIDED BY WDI. A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.

NTH Consultants, Ltd

Infrastructure Engineering and Environmental Services

Northville, MI 248.553.630
Detroit, MI 313.237.390
Lansing, MI 517.484.680
Grand Rapids, MI 616.657.365
Exton, PA 610.524.230
Lehigh Valley, PA 484.693.144
Cleveland, OH 216.334.404
Indianapolis, IN 317.735.764

REVISIONS

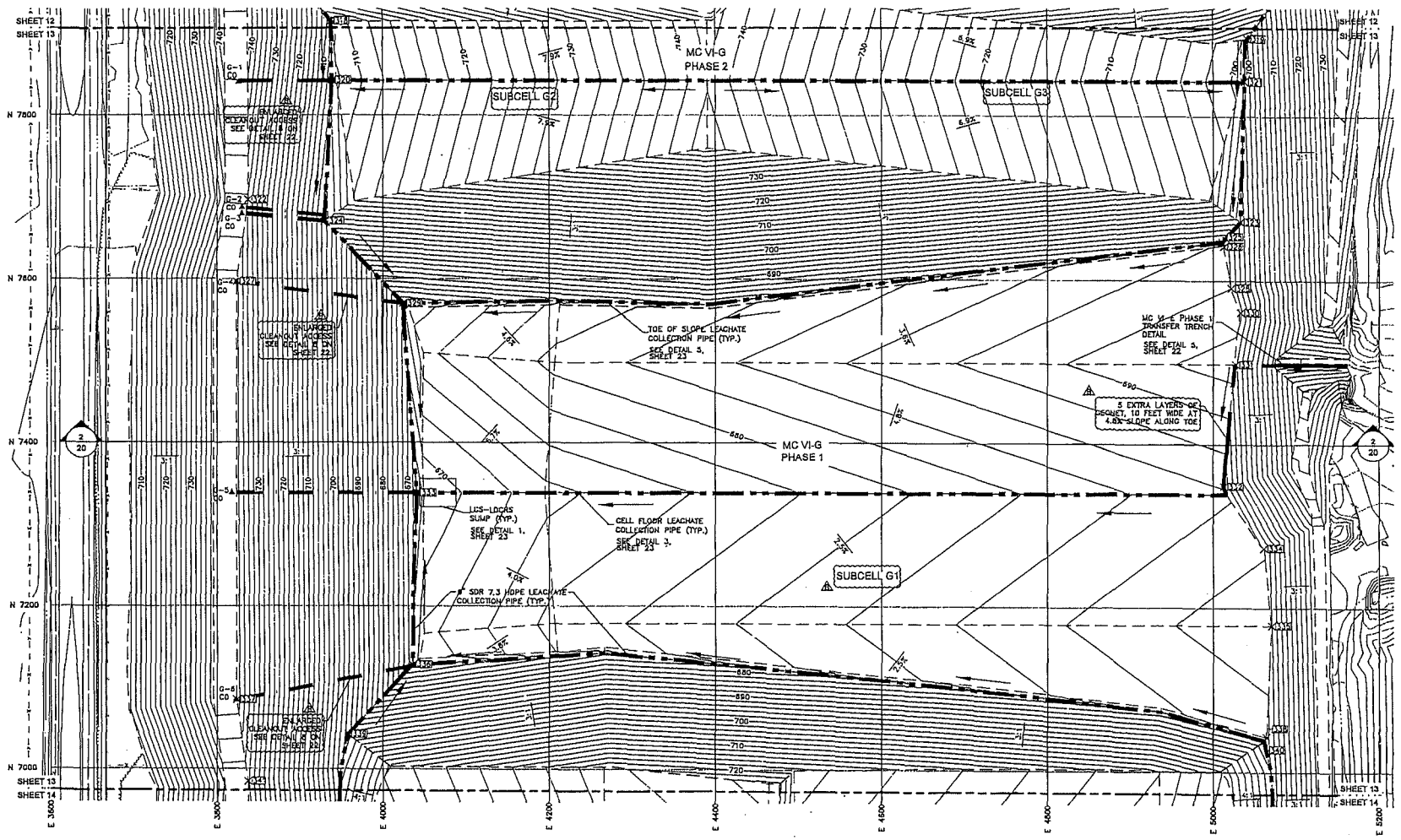
PROJECT NAME: MASTER CELL VI F&G

PROJECT LOCATION: WAYNE DISPOSAL, INC. SITE NO. 2 BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-080921-03	CAD FILE NAME:
DESIGNED BY: JJL	INCEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: ISS	SUBMITTED DATE: 8/23/11

SHEET TITLE: TOP OF PRIMARY LINER GRADING PLAN (1 OF 3)

SHEET REFERENCE NUMBER: 12



PRIMARY PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
322	7696.73	3837.32	733.74
323	7672.20	5032.54	694.58
324	7670.57	3929.28	702.88
325	7647.35	5010.49	687.03
326	7641.98	5012.71	688.30
327	7596.74	3823.09	738.60
328	7591.06	5021.51	690.24
329	7570.10	4023.55	671.56
330	7561.67	5032.75	691.59
331	7498.71	5027.05	693.52
332	7349.00	5012.85	686.42

PRIMARY PERIMETER DIKE COORDINATES			
Point No	Northing	Easting	Elevation (ft)
333	7338.74	4040.74	686.42
334	7273.49	5051.28	687.73
335	7179.18	5070.45	689.94
336	7128.04	4035.19	688.55
337	7084.38	3823.30	739.24
338	7043.49	5064.48	687.10
339	7042.63	3957.62	692.90
340	7038.96	5061.69	685.79
341	6984.38	3837.32	732.35
342	6886.99	3937.74	707.30
343	6836.62	3931.48	710.94

N

0 30' 60' 120'
SCALE

LEGEND

- EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- PROPOSED GRADE BREAK
- 710 PROPOSED TOP OF PRIMARY CONTOUR (2 FT INTERVAL)
- 330 PROPOSED DIKE COORDINATE POINT NO.
- 3:1 PROPOSED SLOPE
- PROPOSED 5 EXTRA LAYERS OF GEONET WITH TRANSMISSIVITY ≥ 1.3 X 10^{-4} M^2/S, 10' WIDE, BENEATH GEOCOMPOSITE WITH FLOW DIRECTION
- PROPOSED LEACHATE COLLECTION PIPE AND FLOW DIRECTION
- G-1 CO PROPOSED LEACHATE CLEANOUT PIPE
- PROPOSED PRIMARY COLLECTION SUMP

NOTE:

THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AIR-LAND SURVEY AND PROVIDED BY WDI, A SURVEY BY WOLLS IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.

NTH Consultants,
Infrastructure Engineering
Environmental Service

Northville, MI
Detroit, MI
Lansing, MI
Grand Rapids, MI
Exton, PA
Lehigh Valley, PA
Cleveland, OH
Indianapolis, IN

REVISIONS

REV	DESCRIPTION
A	PERMIT SUBMITTAL
B	PER USER COMMENTS

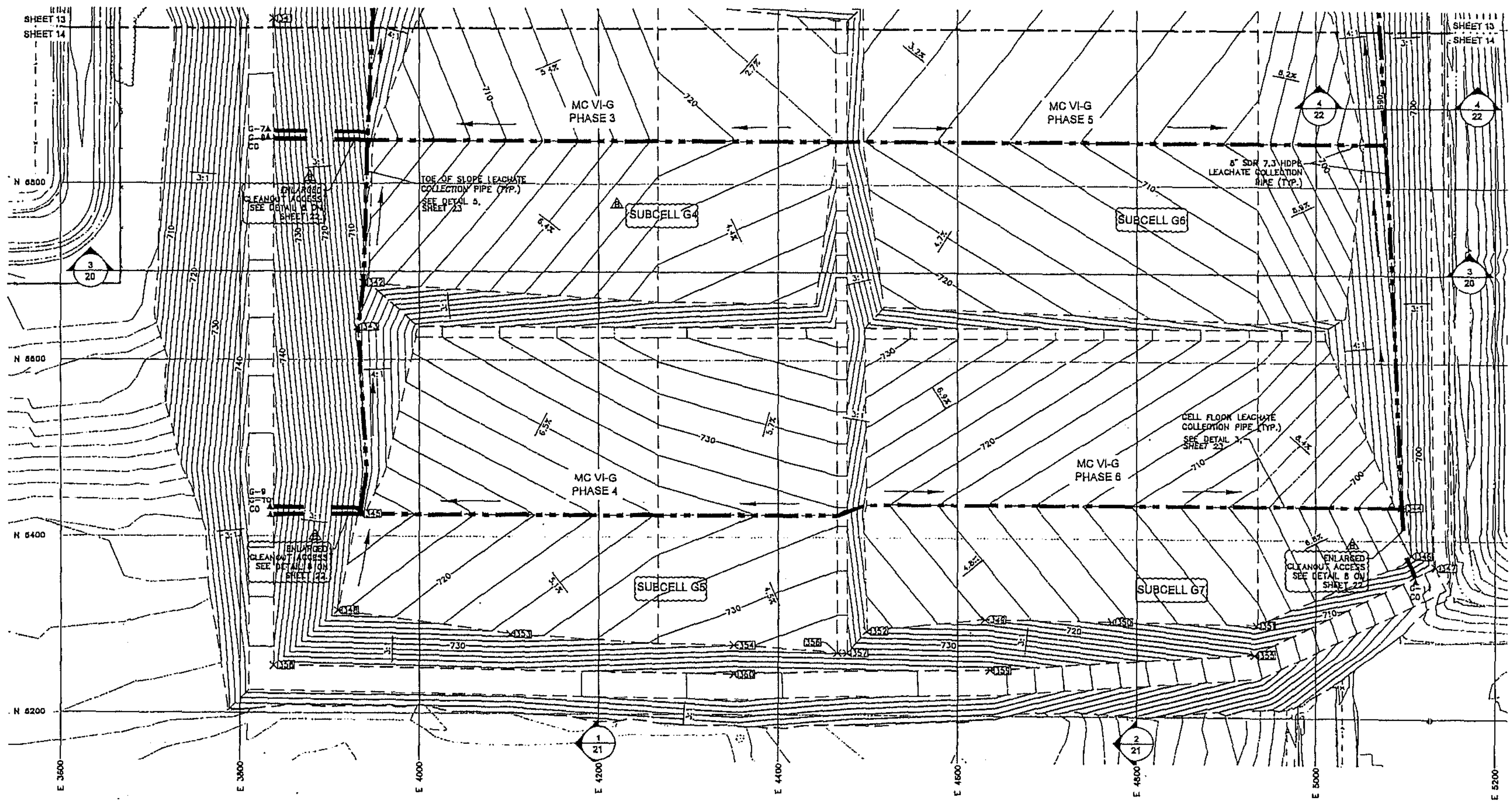
PROJECT NAME
MASTER CELL VI F&C

PROJECT LOCATION
WAYNE DISPOSAL, I
SITE NO. 2
BELLEVILLE, MICHIG

NTH PROJECT NO.: 13-060921-03	CAD FILE:
DESIGNED BY: JHL	INCEP DAT 11/12/0
DRAWN BY: DRL	DRAWING: AS SHO
CHECKED BY: IBS	SUBMITTE 9/23/11

SHEET TITLE:
TOP OF PRIMARY LI
GRADING PLAN (2 O

SHEET REFERENCE NUMBER:
13



PRIMARY PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
344	6437.60	5005.87	693.63
345	6425.32	3934.02	713.06
346	6363.71	5106.68	695.69
347	6370.26	5133.49	704.60
348	6316.02	3908.50	717.88
349	6308.66	4830.41	720.03
350	6307.07	4772.00	714.72
351	6304.21	4934.01	709.18
352	6295.30	4498.77	725.35
353	6290.14	4101.66	724.99
354	6278.55	4350.36	731.79

PRIMARY PERIMETER DIKE COORDINATES			
Point No	Northing	Easting	Elevation (ft)
355	6270.65	4931.07	720.24
356	6270.50	4465.41	733.79
357	6270.26	4476.27	733.80
358	6253.54	3837.32	739.23
359	6251.34	4636.24	739.17
360	6245.23	4350.52	742.90

0 30' 60' 120'
SCALE

LEGEND

710	EXISTING CONTOUR (2 FT INTERVAL)
	PROPERTY BOUNDARY
	PROPOSED GRADE BREAK
710	PROPOSED TOP OF PRIMARY PRIMARY CONTOUR (2 FT INTERVAL)
300	PROPOSED DIKE COORDINATE POINT NO.
3:1	PROPOSED SLOPE
	PROPOSED LEACHATE COLLECTION PIPE AND FLOW DIRECTION
G-8 CO	PROPOSED LEACHATE CLEANOUT PIPE

NOTES:

1. THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AIR-LAND SURVEY AND PROVIDED BY WDI, A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.
2. A MINIMUM OF 5 YEARS PRIOR TO CONSTRUCTING MC VI-G PHASES 3 TO 6, WDI SHALL INVESTIGATE THE DIKE LOCATIONS AND NEED FOR DEWATERING FOR THE EXISTING MC I TO CONFIRM THE ASSUMPTIONS USED IN THE DESIGN. WDI SHALL INFORM THE MDEQ OF THE RESULTS OF THIS INVESTIGATION AND REVISE THE DESIGN, IF NECESSARY. THE REVISED DESIGN SHALL BE APPROVED BY THE MDEQ PRIOR TO CONSTRUCTION OF MC VI-G PHASES 3 TO 6.

NTH Consultants,
Infrastructure Engineering
Environmental Services

Northville, MI 248.66
Detroit, MI 313.23
Lansing, MI 517.48
Grand Rapids, MI 616.9
Exton, PA 610.52
Lehigh Valley, PA 484.8
Cleveland, OH 216.33
Indianapolis, IN 317.73

REVISIONS
REV | DESCRIPTION

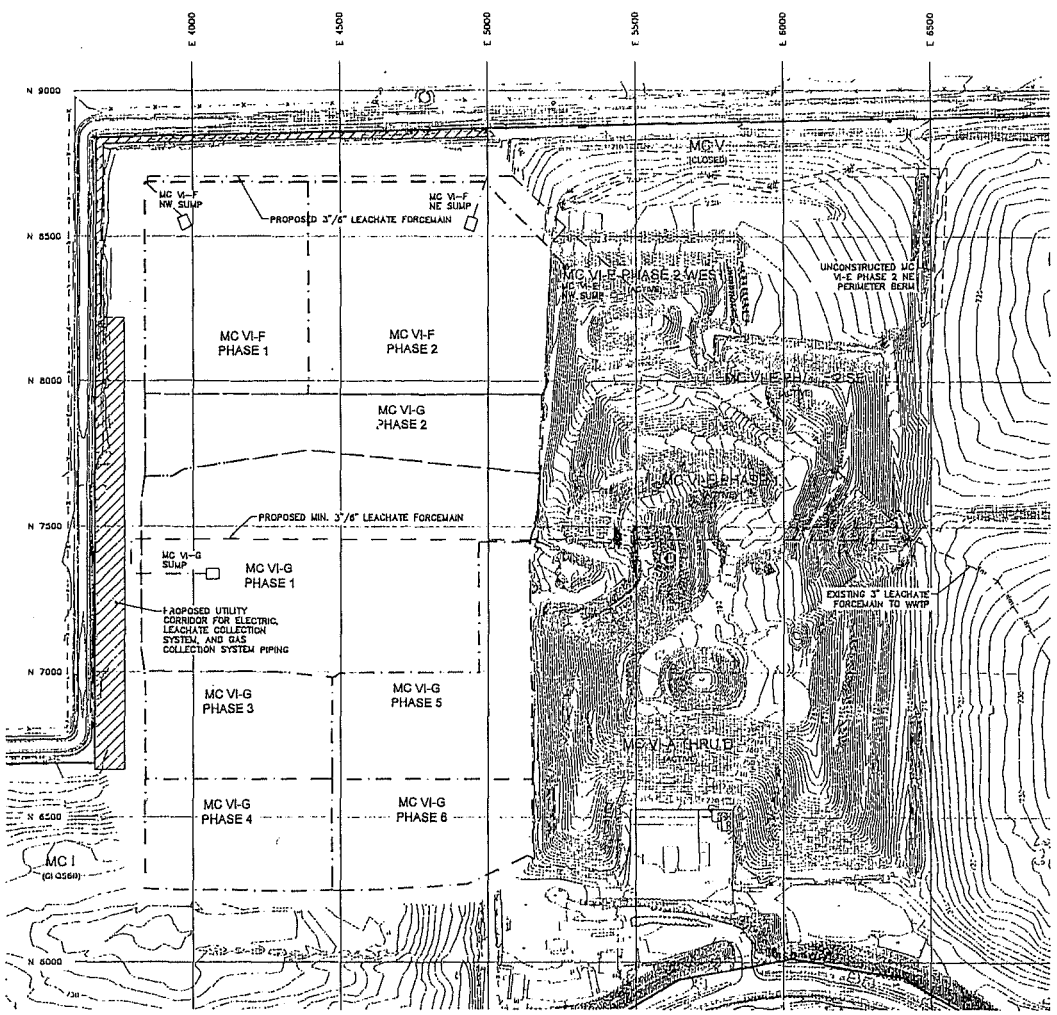
PROJECT NAME:
MASTER CELL VI F&G

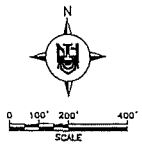
PROJECT LOCATION
WAYNE DISPOSAL, IN
SITE NO. 2
BELLEVILLE, MICHIGA

NTH PROJECT NO.: 13-060821-03	CAD FILE N
DESIGNED BY: JHL	INCEP DATE 11/12/08
DRAWN BY: DRL	DRAWING S AS SHO
CHECKED BY: ISS	SUBMITTED 9/23/11

SHEET TITLE:
TOP OF PRIMARY LIN
GRADING PLAN (3 OF

SHEET REFERENCE NUMBER:
14





LEGEND

- EXISTING CONTOUR (2 FT INTERVAL)
- EXISTING 3" LEACHATE FORCEMAIN
- PROPERTY BOUNDARY
- PROPOSED PHASE BOUNDARY
- PROPOSED 3"/6" DUAL CONTAINED LEACHATE FORCEMAIN
- PROPOSED UTILITY CORRIDOR

NOTE:

1. THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AIR-LAND SURVEY AND PROVIDED BY WDI, A SURVEY BY MCLLO IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.

NTH Consultants, L
Infrastructure Engineering a
Environmental Services

Northville, MI 248 65
Detroit, MI 313 23
Lansing, MI 517 484
Grand Rapids, MI 616 95
Exton, PA 610 82
Lehigh Valley, PA 484.88
Cleveland, OH 216.32
Indianapolis, IN 317.73

REVISIONS

REV	DESCRIPTION	DATE
A	DRAWING SUBMISSION	2/28/11

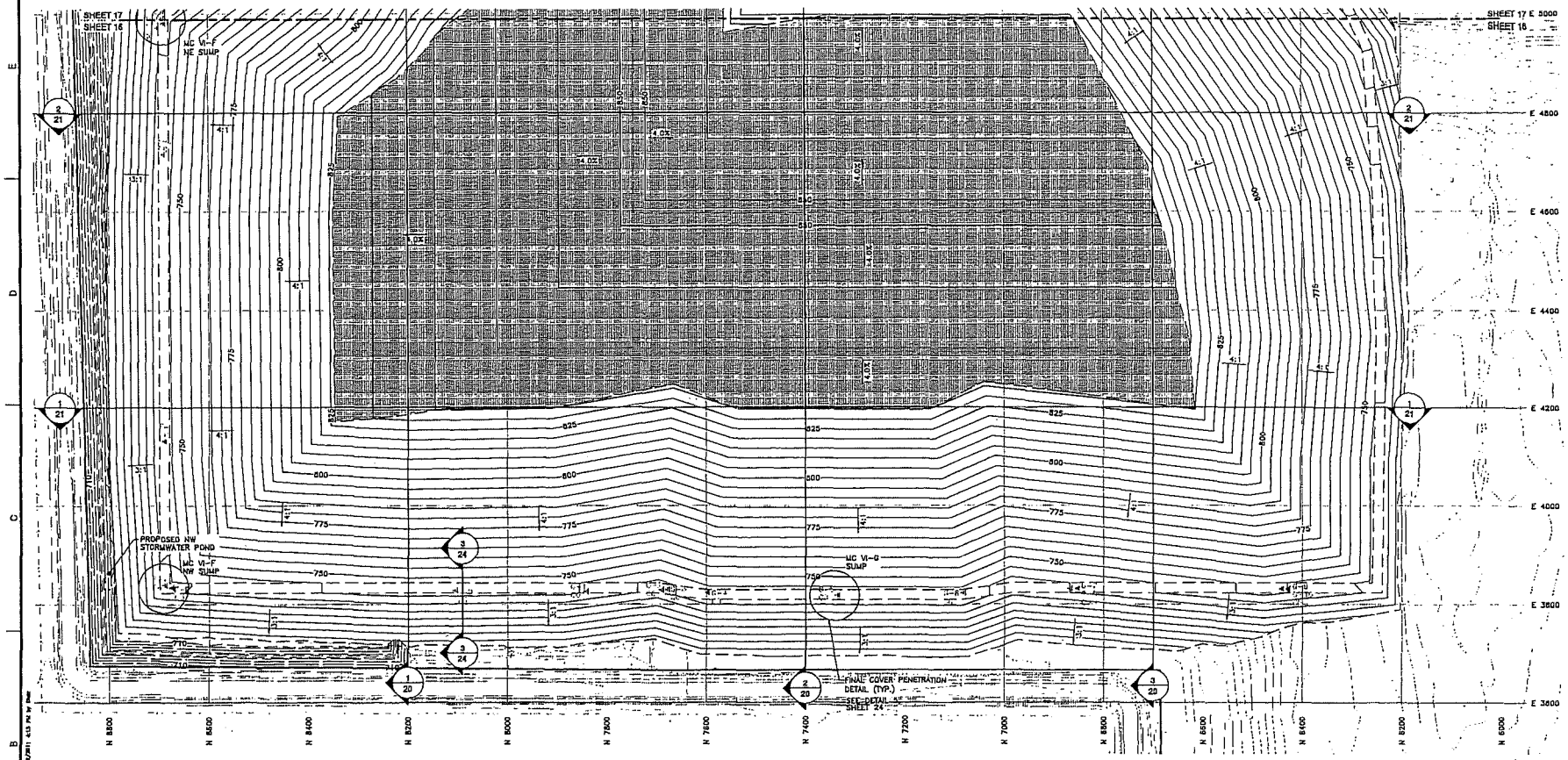
PROJECT NAME
MASTER CELL VI F&G

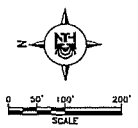
PROJECT LOCATION
WAYNE DISPOSAL, INC
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-060921-03	CAD FILE NAME: UTILITY SUM-FIG-PLAN
DESIGNED BY: DRL	DATE: 11/13/08
DRAWN BY: DRL	DRAWING SCA AS SHOWN
CHECKED BY: RBM	SUBMITTED DA 2/28/11

SHEET TITLE:
LEACHATE MANAGEME
PLAN

SHEET REFERENCE NUMBER:
15





LEGEND

- EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- PROPOSED GRADE BREAK
- PROPOSED TOP OF FINAL COVER CONTOUR (5 FT INTERVAL)
- PROPOSED NW STORMWATER POND CONTOUR (2 FT INTERVAL)
- PROPOSED SLOPE
- PROPOSED PASSIVE GAS VENT/TRENCH
- PROPOSED LEACHATE COLLECTION SYSTEM CLEANOUTS
- PROPOSED SUMP LOCATION AND COVER PENETRATION
- PROPOSED GEOCOMPOSITE WITH TRANSMISSIVITY > 5.0 X 10^{-4} M^2/S (REMAINING COVER GEOCOMPOSITE TRANSMISSIVITY ≥ 7.0 X 10^{-4} M^2/S)

NOTES:

1. THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AIR-LAND SURVEY AND PROVIDED BY WDI, A SURVEY BY MCILC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.
2. INSTALL GAS MANAGEMENT SYSTEM IN ACCORDANCE WITH THE APPROVED CLOSURE PLAN.

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

Northville, MI	248.553.8300
Detroit, MI	313.237.3900
Lansing, MI	517.484.8800
Grand Rapids, MI	616.977.3800
Exton, PA	610.524.2500
Lehigh Valley, PA	484.383.1440
Cleveland, OH	216.334.4640
Indianapolis, IN	317.735.7616

REVISIONS

REV	DESCRIPTION	DATE	BY

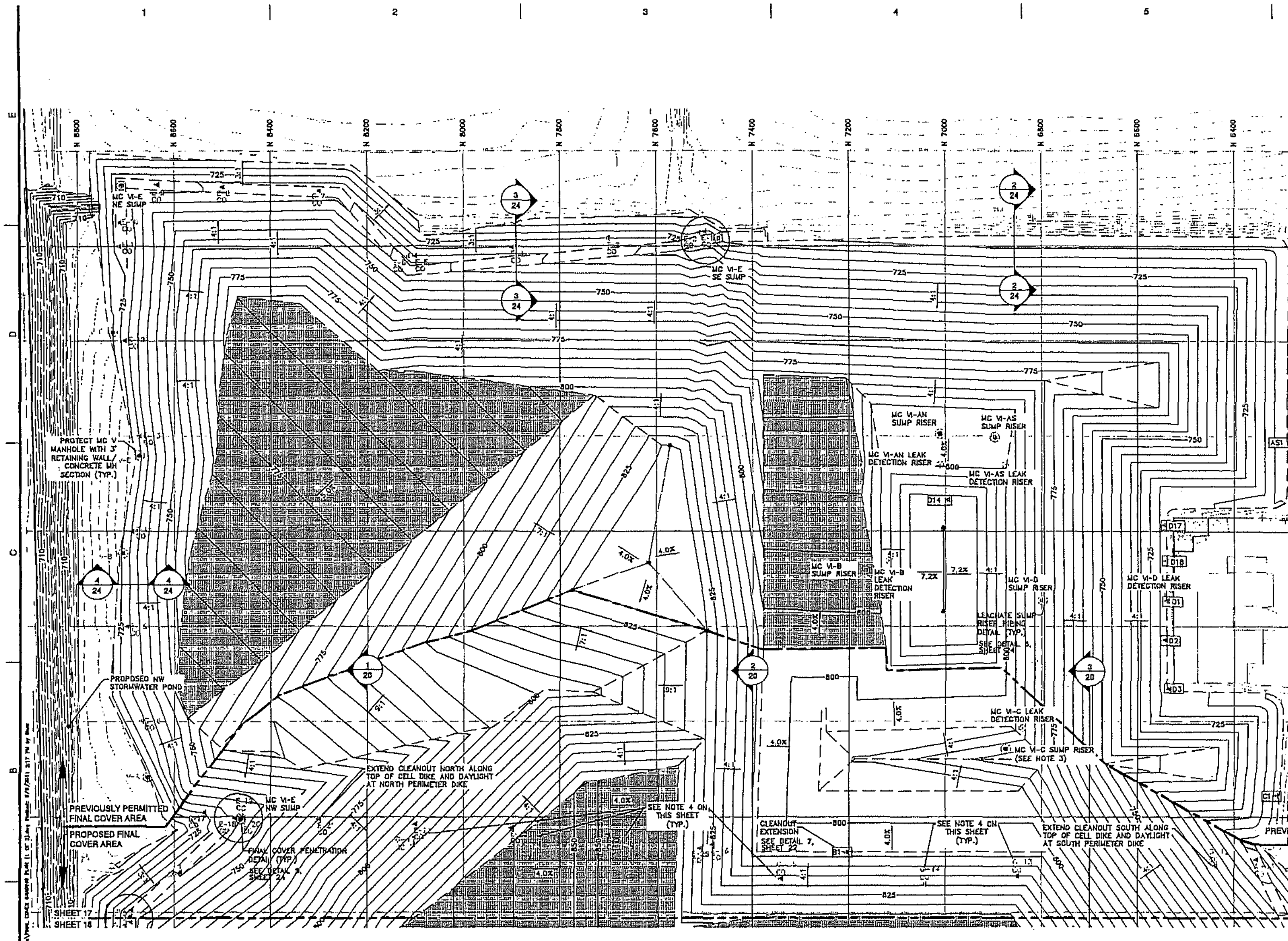
PROJECT NAME
MASTER CELL VI F&G

PROJECT LOCATION
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-080821-03	CAD FILE NAME: Final Cover Grading Plan (1 of 2)
DESIGNED BY: DRL	INCEPT DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: RDM	SUBMITTED DATE: 2/28/11

SHEET TITLE:
FINAL COVER GRADING PLAN (1 OF 2)

SHEET REFERENCE NUMBER:
16



0 50' 100' 200'
SCALE

LEGEND

	EXISTING CONTOUR (2 FT INTERVAL)
	PROPERTY BOUNDARY
	EXISTING/PREVIOUSLY PERMITTED LEACHATE SUMP AND COVER PENETRATION
E-1 CO	EXISTING/PREVIOUSLY PERMITTED LEACHATE COLLECTION SYSTEM CLEANOUTS
	EXISTING LEAK DETECTION, COLLECTION, AND REMOVAL SYSTEM RISERS
	EXISTING APPROXIMATE LOCATION OF COVER DRAIN OUTLETS
	PREVIOUSLY PERMITTED PASSIVE GAS VENT
	PROPOSED GRADE BREAK
825	PROPOSED TOP OF FINAL COVER CONTOUR (5 FT INTERVAL)
710	PROPOSED NW STORMWATER POND CONTOUR (2 FT INTERVAL)
3:1	PROPOSED SLOPE
	PROPOSED PASSIVE GAS VENT/TRENCH
	PROPOSED LEACHATE COLLECTION SYSTEM CLEANOUTS
	PROPOSED SUMP LOCATION AND COVER PENETRATION
	PROPOSED GEOCOMPOSITE WITH TRANSMISSIVITY ≥ 5.0 X 10^{-4} M²/S (REMAINING COVER GEOCOMPOSITE TRANSMISSIVITY ≥ 7.0 X 10^{-5} M²/S)

NOTES:

1. THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AIR-LAND SURVEY, AND PROVIDED BY WDI, A SURVEY BY MCLLC IN OCTOBER 2007 AND A GROUND SURVEY BY WDI IN OCTOBER 2008.
2. CLEANOUTS IN MC VI-AN, AS, B, C, AND D ARE TO BE ABANDONED, EXCEPT B1, C1, D1 THROUGH D3, D14, D17, D18 AND AS1.
3. BEFORE PLACING WASTE AROUND MC VI-C SUMP RISER, A MONITORING PROGRAM SHOULD BE IMPLEMENTED TO MONITOR ITS FUNCTIONALITY. △
4. PRIOR TO PLACING WASTE AROUND CLEANOUTS E-22 THROUGH E-28 AND CLEANOUTS G-13 THROUGH G-19, THE CLEANOUTS SHOULD BE EVALUATED TO DETERMINE IF THE LEACHATE COLLECTION LINE CAN BE CLEANED BY A SINGLE ACCESS POINT. IF NOT, THE CLEANOUT SHOULD TO BE EXTENDED IN ACCORDANCE WITH DETAIL 7 ON SHEET 22 OR ALONG INTERIOR DIKE TO PERIMETER DIKE.
5. INSTALL GAS MANAGEMENT SYSTEM IN ACCORDANCE WITH THE APPROVED CLOSURE PLAN.

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

Northville, MI	248.553.6300
Detroit, MI	313.237.3900
Lansing, MI	517.484.6900
Grand Rapids, MI	616.957.3600
Exton, PA	610.524.2300
Lehigh Valley, PA	484.863.1440
Cleveland, OH	216.334.4040
Indianapolis, IN	317.735.7848

REVISIONS

REV	DESCRIPTION	DATE	BY
A	[illegible]	[illegible]	[illegible]

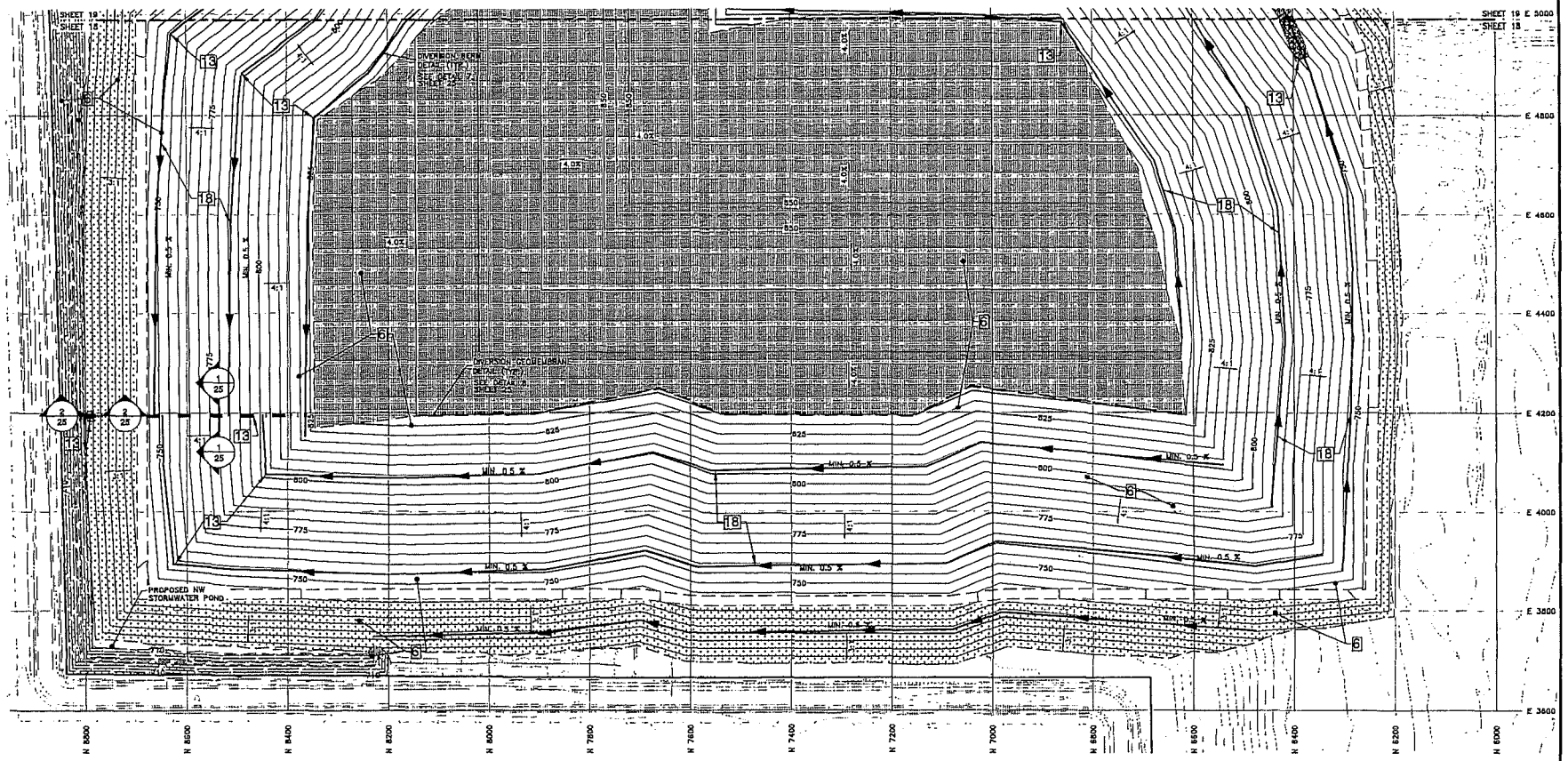
PROJECT NAME:
MASTER CELL VI F&G

PROJECT LOCATION:
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-080821-03	CAD FILE NAME: FINAL COVER GRADING PLAN (2 OF 2)
DESIGNED BY: DRL	INCEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: RDM	SUBMITTED DATE: 2/28/11

SHEET TITLE:
FINAL COVER GRADING PLAN (2 OF 2)

SHEET REFERENCE NUMBER:
17



N

0 50' 100' 200'
SCALE

LEGEND

- EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- PROPOSED GRADE BREAK
- 825 PROPOSED TOP OF FINAL COVER CONTOUR (5 FT INTERVAL)
- 710 PROPOSED NW STORMWATER POND CONTOUR (2 FT INTERVAL)
- 3:1 PROPOSED SLOPE
- PROPOSED DIVERSION GEOMEMBRANE
- PROPOSED DIVERSION BERM
- PROPOSED DOWNSLOPE SPILLWAY
- PROPOSED OUTLET SWALE
- 6 PROPOSED RIP-RAP
- PROPOSED PERMANENT SEEDING-AT TIME OF DIKE CONSTRUCTION
- PROPOSED GEOCOMPOSITE WITH TRANSMISSIVITY ≥ 5.0 X 10^{-4} M^2/S (REMAINING COVER GEOCOMPOSITE TRANSMISSIVITY ≥ 7.0 X 10^{-5} M^2/S)

SOIL EROSION AND SEDIMENTATION CONTROL LEGEND

6 SEEDING WITH MULCH AND/OR MATTING

13 RIPRAP, RUBBLE, GABIONS

18 DIVERSION BERM

NOTES:

1. THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AIR-LAND SURVEY AND PROVIDED BY WDI, A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.
2. SILT FENCE PLACED AT TIME OF CONSTRUCTION AND MAINTAINED UNTIL VEGETATION ON OUTSIDE SLOPE OF DIKE IS ESTABLISHED. SEE STORM WATER MANAGEMENT SYSTEM DETAILS SHEET FOR DETAIL.

NTH Consultants, Ltd
Infrastructure Engineering and Environmental Services
Northville, MI 248.553.8300
Detroit, MI 313.237.3900
Lansing, MI 517.484.6900
Grand Rapids, MI 616.957.3900
Exton, PA 610.524.9500
Lehigh Valley, PA 484.893.1440
Cleveland, OH 216.334.4040
Indianapolis, IN 317.735.7810

REVISIONS

REV	DESCRIPTION	DATE	BY

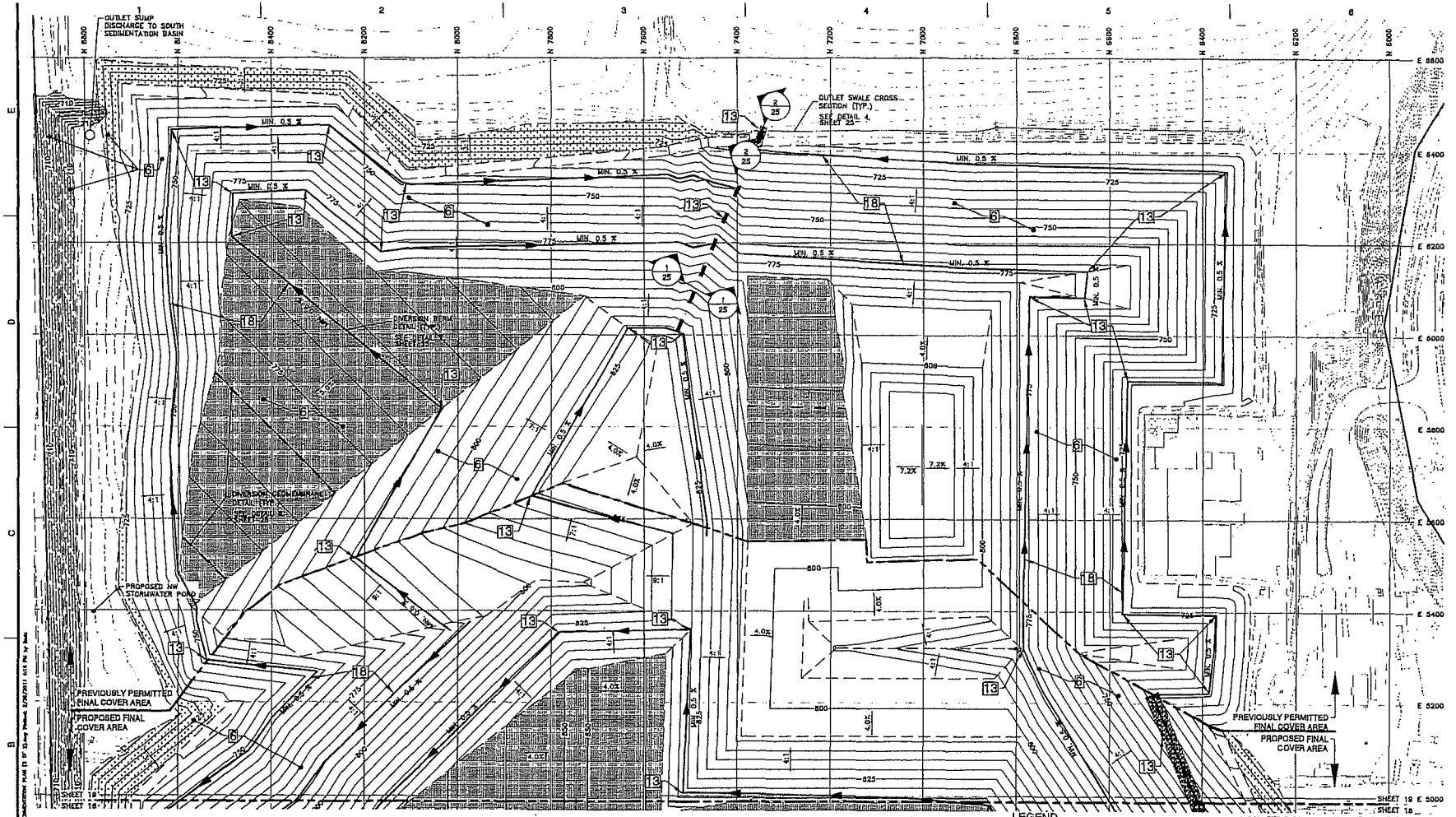
PROJECT NAME
MASTER CELL VI F&G

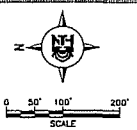
PROJECT LOCATION
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.	CAD FILE NAME:
13-08921-03	
DESIGNED BY: DRL	INCEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: RSM	SUBMITTED DATE: 3/28/11

SHEET TITLE:
STORMWATER MANAGEMENT AND SEDIMENTATION PLAN (1 OF 2)

SHEET REFERENCE NUMBER:
18





LEGEND

- EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- PROPOSED GRADE BREAK
- 625 — PROPOSED TOP OF FINAL COVER CONTOUR (5 FT INTERVAL)
- 710 — PROPOSED NORTH POND CONTOUR (2 FT INTERVAL)
- 3:1 — PROPOSED SLOPE
- PROPOSED DIVERSION GEOMEMBRANE
- PROPOSED DIVERSION BERM
- PROPOSED DOWNSLOPE SPILLWAY
- PROPOSED OUTLET SWALE
- PROPOSED RIP-RAP
- PROPOSED PERMANENT SEEDING-AT TIME OF DIKE CONSTRUCTION
- PROPOSED GEOCOMPOSITE WITH TRANSMISSIVITY ≥ 5.0 X 10^{-4} M^2/S (REMAINING COVER GEOCOMPOSITE TRANSMISSIVITY ≥ 7.0 X 10^{-5} M^2/S)

SOIL EROSION AND SEDIMENTATION CONTROL LEGEND

- 6 — SEEDING WITH MULCH AND/OR MATTING
- 13 — RIPRAP, RUBBLE, GABIONS
- 18 — DIVERSION BERM

NOTES:

1. THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AIR-LAND SURVEY AND PROVIDED BY WDI. A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.
2. SILT FENCE PLACED AT TIME OF CONSTRUCTION AND MAINTAINED UNTIL VEGETATION ON OUTSIDE SLOPE OF DIKE IS ESTABLISHED. SEE STORM WATER MANAGEMENT SYSTEM DETAILS SHEET FOR DETAIL.

NTH Consultants, Ltd
Infrastructure Engineering and Environmental Services
Northville, MI 248.553.8300
Detroit, MI 313.237.3900
Lansing, MI 517.484.8800
Grand Rapids, MI 616.957.3600
Exton, PA 610.524.2000
Lehigh Valley, PA 484.893.1400
Cleveland, OH 216.331.4040
Indianapolis, IN 317.735.7840

REVISIONS

REV	DESCRIPTION	DATE	BY

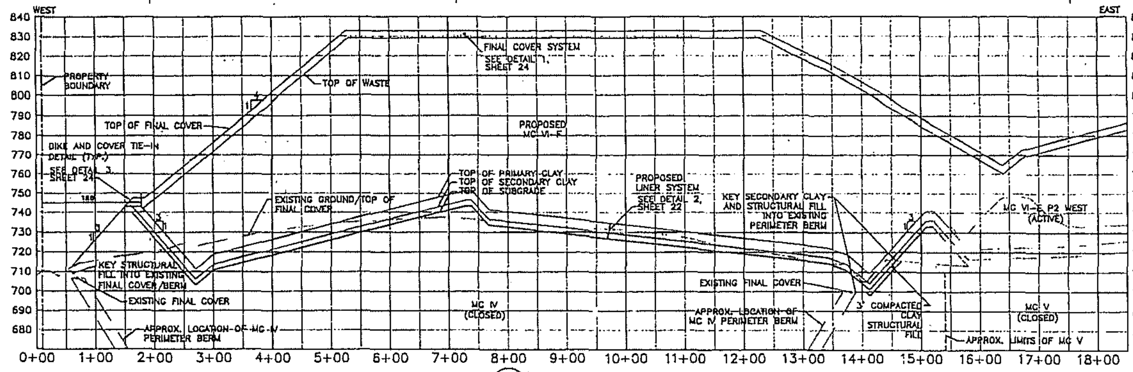
PROJECT NAME:
MASTER CELL VI F&G

PROJECT LOCATION:
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

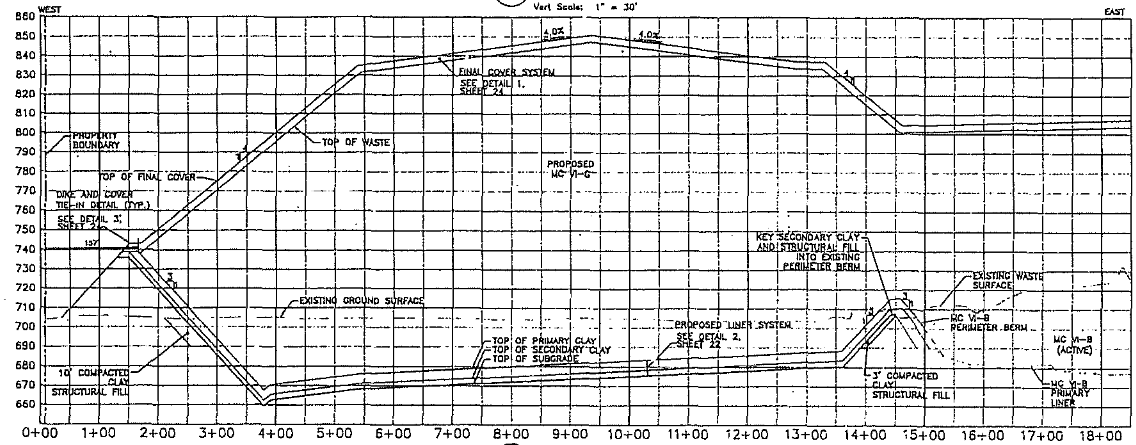
NTH PROJECT NO:	CAD FILE NAME:
13-060821-03	
DESIGNED BY: DRL	INCEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: RDM	SUBMITTED DATE: 2/28/11

SHEET TITLE:
STORMWATER MANAGEMENT AND SEDIMENTATION PLAN (2 OF 2)

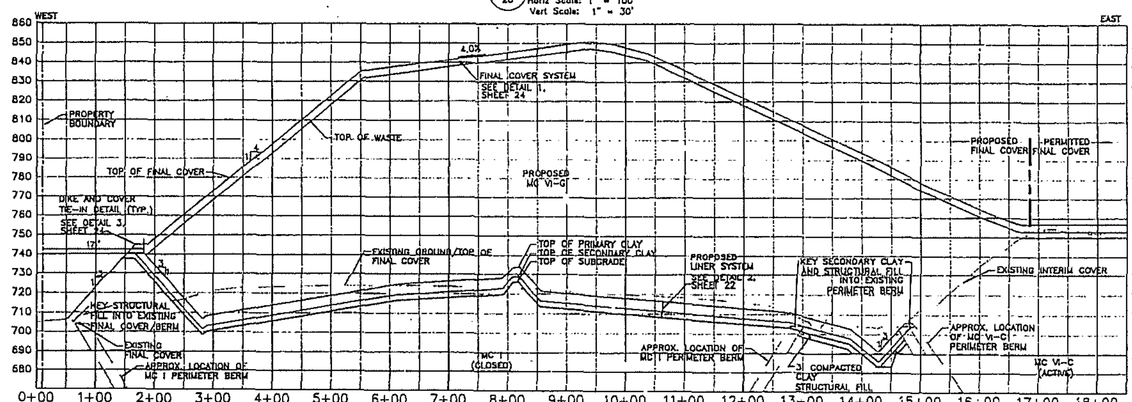
SHEET REFERENCE NUMBER:
19



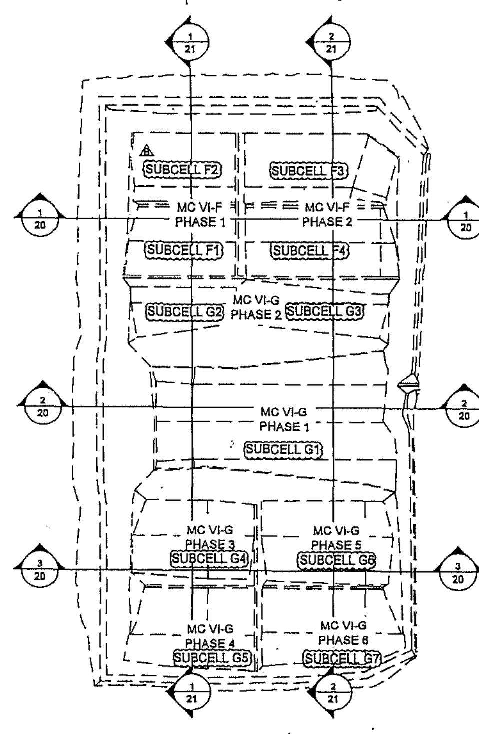
N 8200 PROFILE (1/20)
Horiz Scale: 1" = 100'
Vert Scale: 1" = 30'



N 7400 PROFILE (2/20)
Horiz Scale: 1" = 100'
Vert Scale: 1" = 30'



N 6700 PROFILE (3/20)
Horiz Scale: 1" = 100'
Vert Scale: 1" = 30'



OVERVIEW OF CROSS-SECTIONS

NOTE:

PRIOR TO CELL CONSTRUCTION, DIG TEST PITS TO VERIFY MC I AND IV DIKE ALIGNMENTS.

NTH Consultants,
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Northville, MI
Detroit, MI
Lansing, MI
Grand Rapids, MI
Exton, PA
Lehigh Valley, PA
Cleveland, OH
Indianapolis, IN

REVISIONS

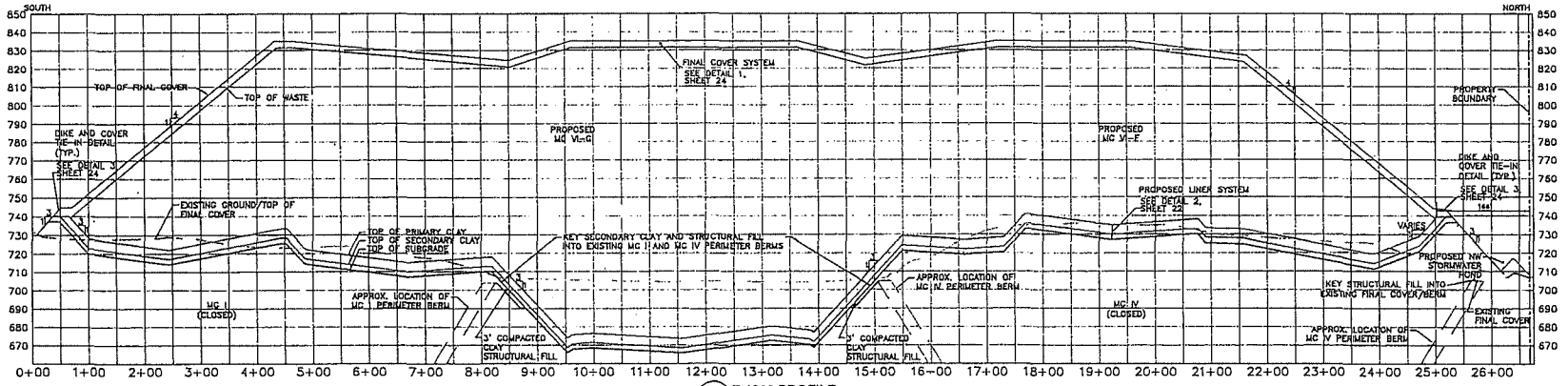
PROJECT NAME
MASTER CELL VI F&G

PROJECT LOCATION
WAYNE DISPOSAL, IN
SITE NO. 2
BELLEVILLE, MICHIGA

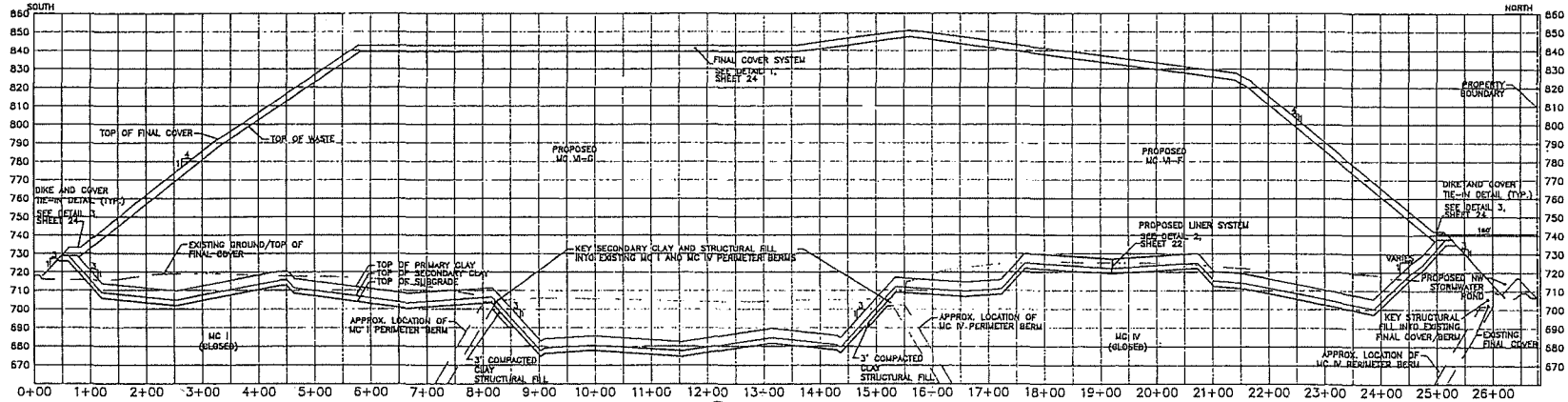
NTH PROJECT NO: 13-060821-03
DESIGNED BY: JHL
DRAWN BY: DRL
CHECKED BY: JSS
SUBMITTED: 9/23/11

SHEET TITLE:
CROSS SECTIONS (1

SHEET REFERENCE NUMBER
20



1/21 E 4200 PROFILE
Horiz Scale: 1" = 100'
Vert Scale: 1" = 30'



2/21 E 4800 PROFILE
Horiz Scale: 1" = 100'
Vert Scale: 1" = 30'

NOTE:

PRIOR TO CELL CONSTRUCTION, DIG TEST PITS TO VERIFY MC I AND IV DIKE ALIGNMENTS.

NTH Consultants
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Detroit, MI
Lansing, MI
Grand Rapids, MI
Exton, PA
Lehigh Valley, PA
Cleveland, OH
Indianapolis, IN

REVISIONS
REV | DESCRIPTION

PROJECT NAME
MASTER CELL VI F&G

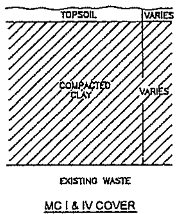
PROJECT LOCATION
WAYNE DISPOSAL, I
SITE NO. 2
BELLEVILLE, MICHIG

NTH PROJECT NO: 13-060821-03
CAD FILE N
CROSS S
(2 OF 3)
DESIGNED BY: DRL
INCEP DATE
11/12/0
DRAWN BY: DRL
DRAWING
AS BUIL
CHECKED BY: RBM
SUBMITTE
2/28/11
SHEET TITLE:
CROSS SECTIONS (2

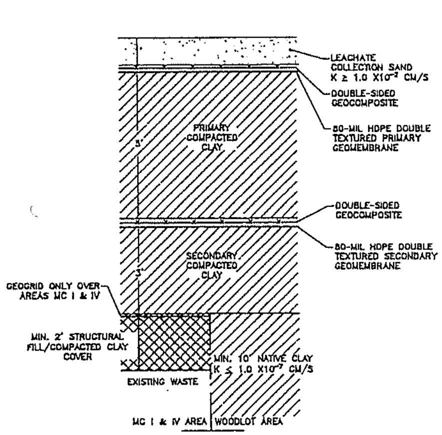
SHEET REFERENCE NUMBER:
21

SEQUENCE OF CONSTRUCTION

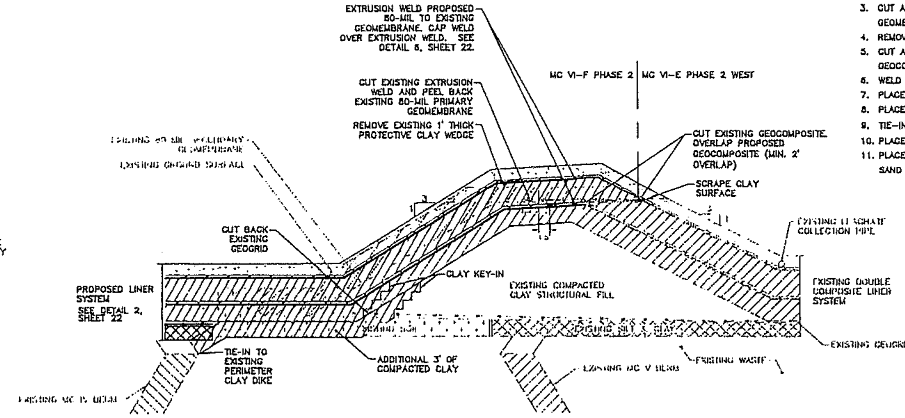
1. REMOVE CLAY WEDGE
2. PULL BACK PRIMARY GEOCOMPOSITE
3. CUT AND PULL BACK PRIMARY GEOMEMBRANE
4. REMOVE OUTSIDE CLAY DIKE
5. CUT AND PULL BACK SECONDARY GEOCOMPOSITE
6. WELD SECONDARY GEOMEMBRANE
7. PLACE SECONDARY GEOCOMPOSITE
8. PLACE PRIMARY CLAY
9. TIE-IN/WELD PRIMARY GEOMEMBRANE
10. PLACE PRIMARY GEOCOMPOSITE
11. PLACE 1 FOOT OF LEACHATE COLLECTION SAND



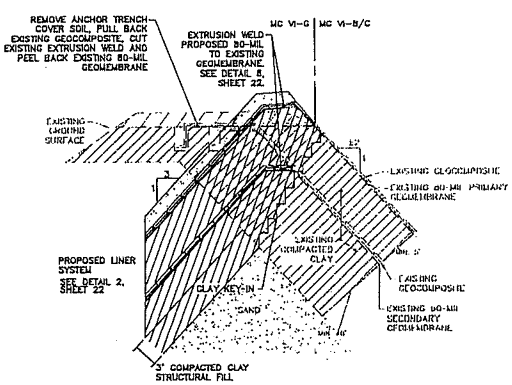
1/22 EXISTING COVER DETAIL
NOT TO SCALE



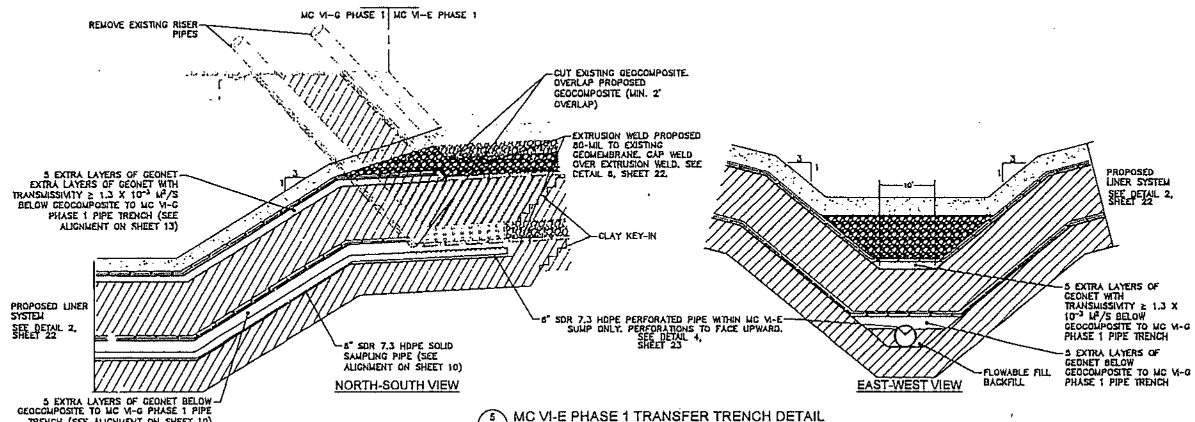
2/22 PROPOSED LINER SYSTEM
NOT TO SCALE



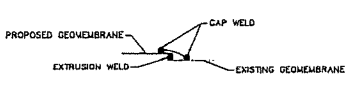
3/22 MC VI-F PHASE 2 & MC VI-E PHASE 2 WEST TIE-IN DETAIL
NOT TO SCALE



4/22 MC VI-G AND MC VI-B OR C TIE-IN DETAIL
NOT TO SCALE

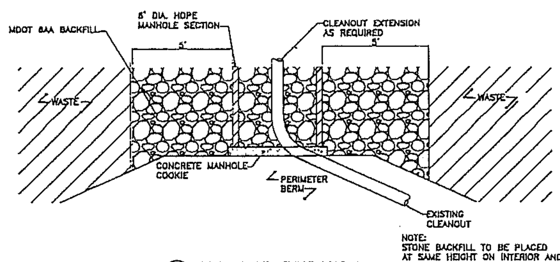


5/22 MC VI-E PHASE 1 TRANSFER TRENCH DETAIL
NOT TO SCALE



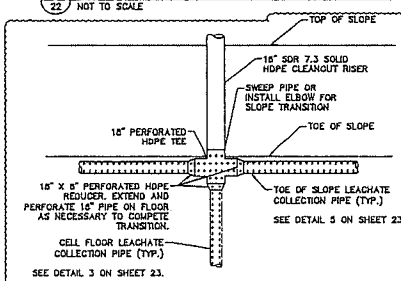
NOTE: DETAIL APPLIES AT LOCATIONS WHERE PROPOSED GEOMEMBRANE TIES INTO EXISTING GEOMEMBRANE

6/22 GEOMEMBRANE WELDING DETAIL
NOT TO SCALE

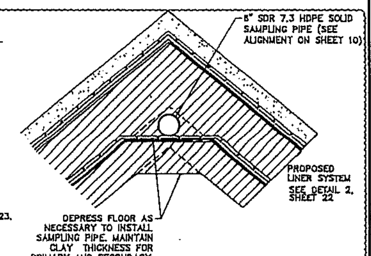


NOTE: STONE BACKFILL TO BE PLACED AT SAME HEIGHT ON INTERIOR AND EXTERIOR OF MANHOLE.

7/22 CLEANOUT EXTENSION
NOT TO SCALE



8/22 ENLARGED CLEANOUT ACCESS
NOT TO SCALE



9/22 MC VI-E PHASE 1 SAMPLING PIPE
NOT TO SCALE

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services
Northville, MI 248.553...
Detroit, MI 313.237...
Lansing, MI 517.484...
Grand Rapids, MI 616.957...
Exton, PA 610.524...
Lehigh Valley, PA 484.863...
Cleveland, OH 216.334...
Indianapolis, IN 317.735...

REVISIONS

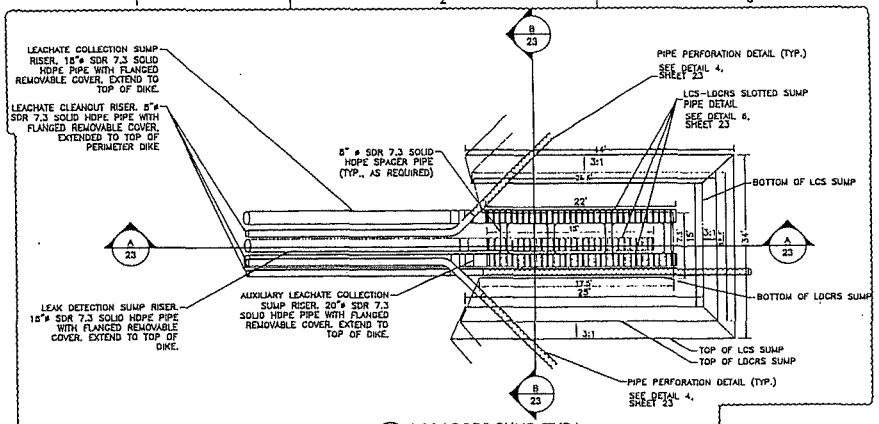
PROJECT NAME: MASTER CELL VI F&G

PROJECT LOCATION: WAYNE DISPOSAL, INC. SITE NO. 2 BELLEVILLE, MICHIGAN

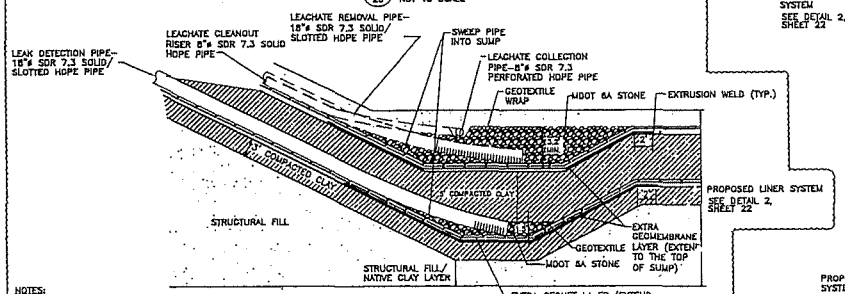
NTH PROJECT NO.: 13-060821-03
DESIGNED BY: JHL
DRAWN BY: ORL
CHECKED BY: ISS
INCEP DATE: 11/12/04
DRAWING SCALE: AS SHOWN
SUBMITTED DATE: 8/23/11

SHEET TITLE: LINER SYSTEM DETAILS

SHEET REFERENCE NUMBER: 22

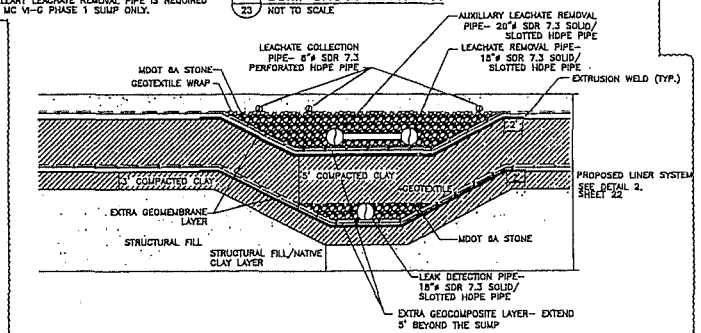


1 / 23 LCS-LDCRS SUMP (TYP.)
NOT TO SCALE

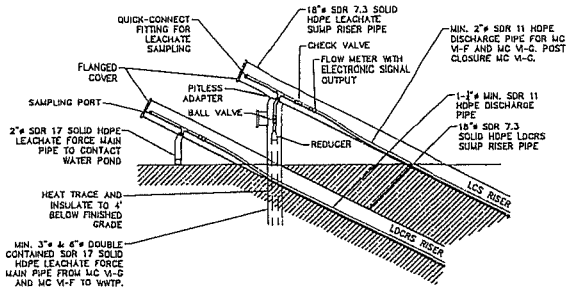


NOTES:
1. THE LCS AND LDCRS PUMP ELEVATIONS ARE:
   LDCRS "PUMP–ON" ELEV– TOP OF LDCRS SUMP
   LDCRS "PUMP–OFF" ELEV– 1 FOOT ABOVE LDCRS SUMP BOTTOM
   LCS "PUMP–ON" ELEV– AT LCS PIPE INVERT
   LCS "PUMP–OFF" ELEV– 1 FOOT ABOVE LCS SUMP BOTTOM
2. OTHER "PUMP–ON"/"PUMP–OFF" CONTROLS MAY BE USED PROVIDED LESS THAN 1 FOOT OF LEACHATE HEAD ON THE LINER IS MAINTAINED.
3. THE AUXILLARY LEACHATE REMOVAL PIPE IS REQUIRED FOR THE MC VI–G PHASE 1 SUMP ONLY.

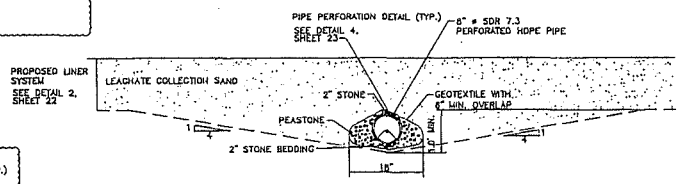
A / 23 SUMP CROSS-SECTION A
NOT TO SCALE



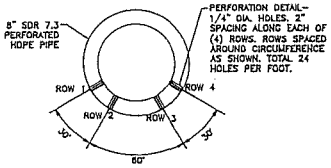
B / 23 SUMP CROSS-SECTION B
NOT TO SCALE



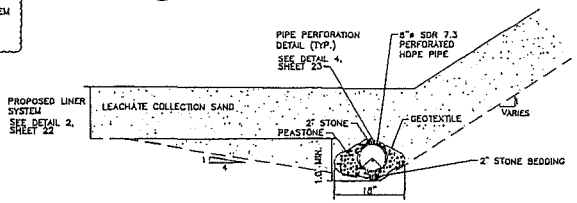
2 / 23 LCS AND LDCRS RISER DETAIL
NOT TO SCALE



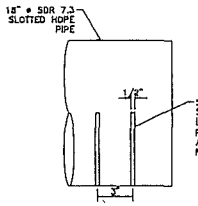
3 / 23 CELL FLOOR LEACHATE COLLECTION PIPE (TYP.)
NOT TO SCALE



4 / 23 PIPE PERFORATION DETAIL (TYP.)
NOT TO SCALE.



5 / 23 TOE OF SLOPE LEACHATE COLLECTION PIPE (TYP.)
NOT TO SCALE



6 / 23 LCS-LDCRS SLOTTED SUMP PIPE DETAIL
NOT TO SCALE

Geosynthetic Materials

Material	Location	Description	Product	Additional Requirements
60-mil Geomembrane	Primary and secondary liners	60-mil HDPE, textured both sides	GSE HD textured, or equivalent	Interface friction requirements in CQA Plan
40-mil Geomembrane	Final cover	40-mil HDPE, textured both sides	GSE HD textured, or equivalent	Interface friction requirements in CQA Plan
Geosynthetic Clay Liner	Final cover	Sodium bentonite encapsulated between two geotextiles that are needle punched or stitch bonded together	GETCO Bentomat ST, or equivalent	Internal shear strength requirements in CQA Plan
Geocomposite	LCS and LDCRS	200-mil HDPE, bonded top and bottom to geotextile meeting requirements below	GSE FABRINET, or equivalent	Transmissivity and interface friction requirements in CQA Plan
Cover Geocomposite	Final cover	200-mil HDPE, bonded top and bottom to geotextile meeting requirements below	GSE FABRINET, or equivalent	Transmissivity and interface friction requirements in CQA Plan
Geonet	LCS and LDCRS sumps, and LDCRS collectors	200-mil HDPE	GSE HYPERNET, or equivalent	Transmissivity requirements in CQA Plan
Geotextile	All geocomposites, gravel/geotextile envelopes for LCS, and final cover perimeter drain	Nominal 8 oz/yd2, needle-punched, nonwoven polypropylene	Amoco 4508, Synthetic Industries Geotex 801, or equivalent	AASHTO M288-96 requirements for Drainage Geotextile (Class 2)
Geogrid	Above Subgrade	Biaxial Polymeric Grid	Huesker Fortrac 80-80, or equivalent	None

LCS denotes leachate collection system
LDCRS denotes leak detection, collection, and removal system

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Northville, MI	248.5
Detroit, MI	313.2
Lansing, MI	517.4
Grand Rapids, MI	616.8
Exton, PA	610.6
Lehigh Valley, PA	484.8
Cleveland, OH	216.3
Indianapolis, IN	317.7

REVISIONS

REV	DESCRIPTION	D
3	PER WDEQ COMMENT	10

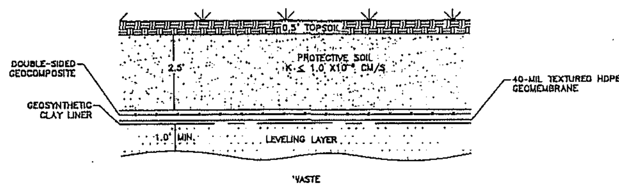
PROJECT NAME
MASTER CELL VI F&G

PROJECT LOCATION
WAYNE DISPOSAL, IN
SITE NO. 2
BELLEVILLE, MICHIGA

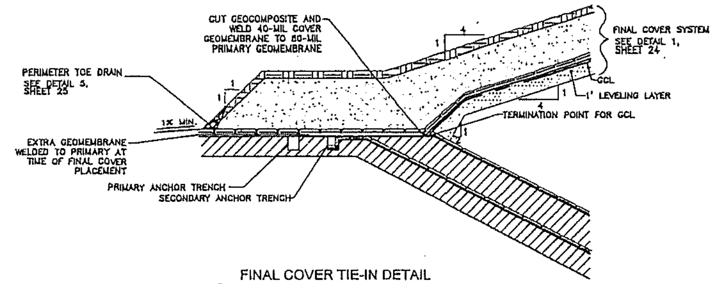
NTH PROJECT NO.: 13-060821-03	CAD FILE NA: LEACHATE SYSTEM DET
DESIGNED BY: JHL	INCEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SI: AS SHO
CHECKED BY: ISS	SUBMITTED: 8/23/11

SHEET TITLE:
LEACHATE COLLECTI
SYSTEM DETAILS

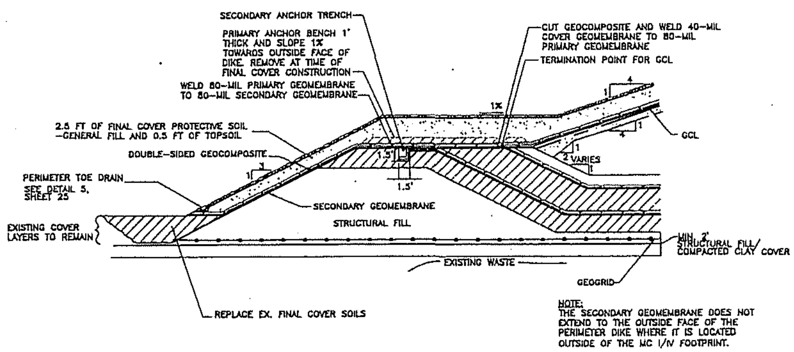
SHEET REFERENCE NUMBER:
23



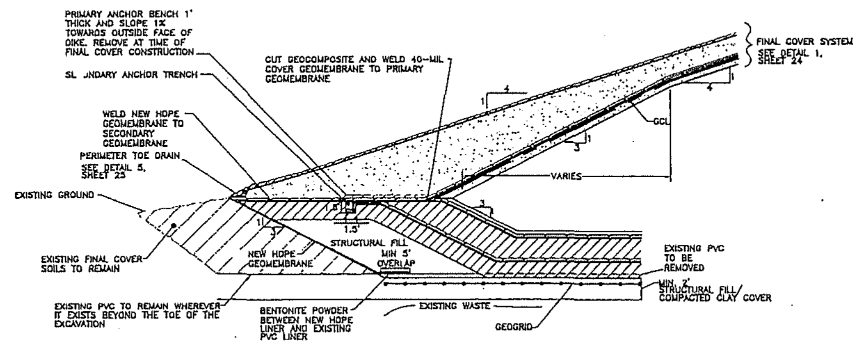
(1/24) FINAL COVER SYSTEM
NOT TO SCALE



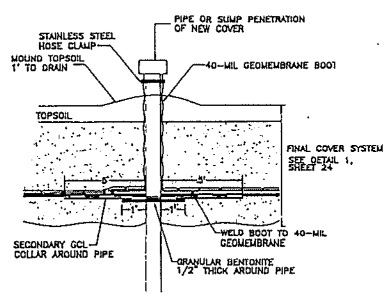
FINAL COVER TIE-IN DETAIL
(2/24) MC VI-AN, AS, C & D
NOT TO SCALE



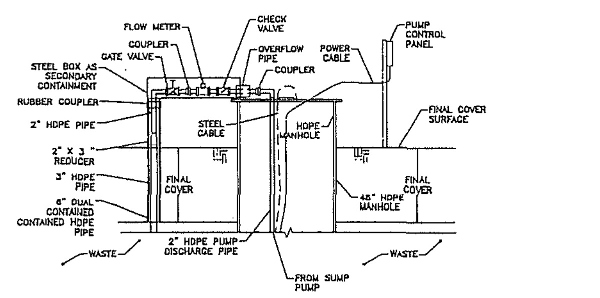
DIKE AND COVER TIE-IN DETAIL (TYP.)
(3/24) MC VI-F, G & EAST SIDE OF VI-E
NOT TO SCALE



DIKE AND COVER TIE-IN DETAIL
(4/24) NORTH SIDE OF MC VI-E
NOT TO SCALE



(5/24) FINAL COVER PENETRATION DETAIL (TYP.)
NOT TO SCALE



LEACHATE SUMP RISER PIPING DETAIL
(6/24) (VI-A, B, C, & D RISERS)
NOT TO SCALE

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Northville, MI 248
Detroit, MI 313
Lansing, MI 517
Grand Rapids, MI 616
Exton, PA 610
Lehigh Valley, PA 484
Cleveland, OH 216
Indianapolis, IN 317

REVISIONS
REV | DESCRIPTION

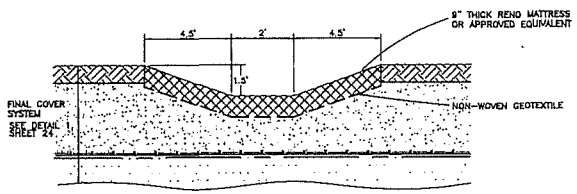
PROJECT NAME
MASTER CELL VI F&G

PROJECT LOCATION
WAYNE DISPOSAL, IN
SITE NO. 2
BELLEVILLE, MICHIGA

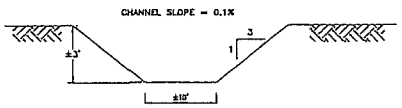
NTH PROJECT NO.: 13-060821-03
CAD FILE N: FINAL COV
DESIGNED BY: DRL
INCEP DATE: 11/12/0
DRAWN BY: DRL
DRAWING: AS SHO
CHECKED BY: RBM
SUBMITTED: 2/28/11

SHEET TITLE:
FINAL COVER DETAIL

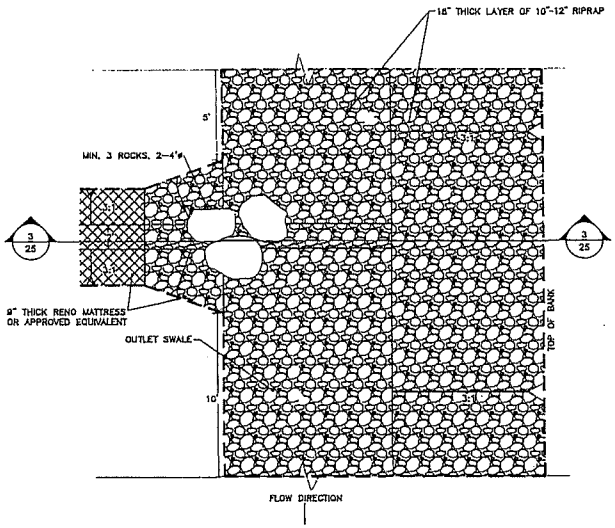
SHEET REFERENCE NUMBER:
24



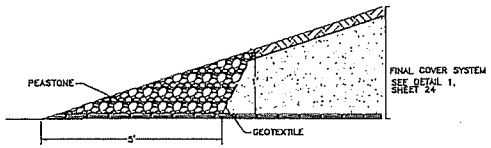
1/25 SPILLWAY CROSS-SECTION
NOT TO SCALE



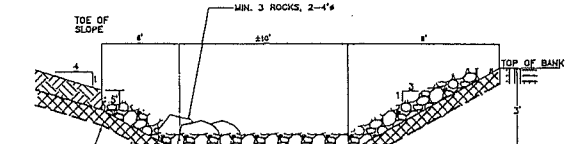
4/25 OUTLET SWALE CROSS SECTION (TYP.)
NOT TO SCALE



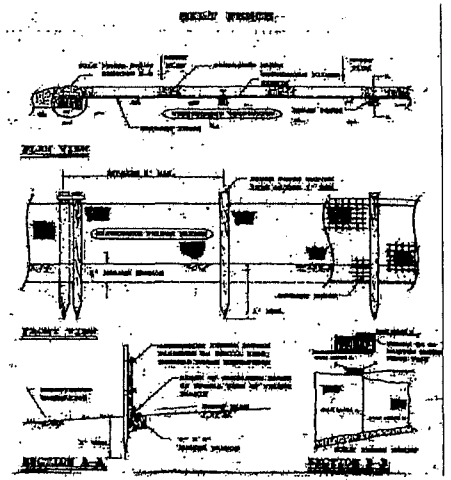
2/25 TOE OF SPILLWAY DOWNSLOPE CHANNEL
NOT TO SCALE



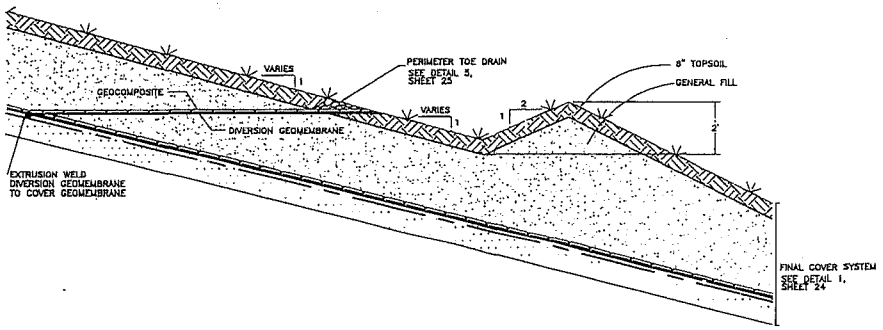
5/25 PERIMETER TOE DRAIN
NOT TO SCALE



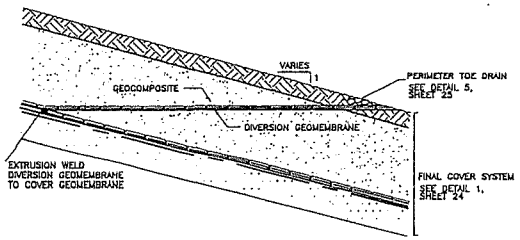
3/25 TOE OF SPILLWAY PROFILE
NOT TO SCALE



6/25 SILT FENCE DETAIL (TYP.)
NOT TO SCALE



7/25 DIVERSION BERM DETAIL (TYP.)
NOT TO SCALE



8/25 DIVERSION GEOMEMBRANE DETAIL (TYP.)
NOT TO SCALE

NTH Consultants,
Infrastructure Engineering
Environmental Services

Northville, MI	248.85
Detroit, MI	313.23
Lansing, MI	517.48
Grand Rapids, MI	616.88
Exton, PA	610.62
Lehigh Valley, PA	484.88
Cleveland, OH	216.33
Indianapolis, IN	317.73

REVISIONS

REV	DESCRIPTION	DA

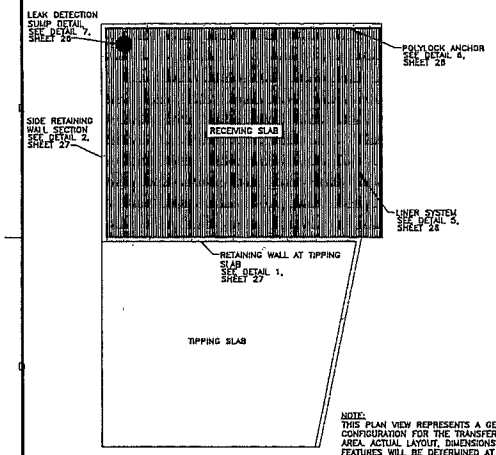
PROJECT NAME
MASTER CELL VI F&G

PROJECT LOCATION
WAYNE DISPOSAL, INC
SITE NO. 2
BELLEVILLE, MICHIGAN

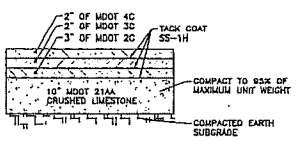
NTH PROJECT NO.: 13-060621-03	CAD FILE NAME: STORM WATER MANAGEMENT SYSTEM DETAILS
DESIGNED BY: DRL	INCEP DATE: 11/13/06
DRAWN BY: DRL	DRAWING SC: AS SHOW
CHECKED BY: RBM	SUBMITTED D: 2/28/11

SHEET TITLE:
STORM WATER MANAGEMENT SYSTEM DETAILS

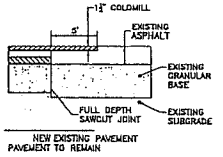
SHEET REFERENCE NUMBER:
25



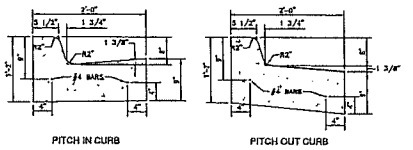
1 / 26 TRANSFER BOX PLAN VIEW
NOT TO SCALE



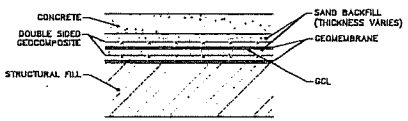
2 / 26 TYPICAL PAVEMENT DETAIL
NOT TO SCALE



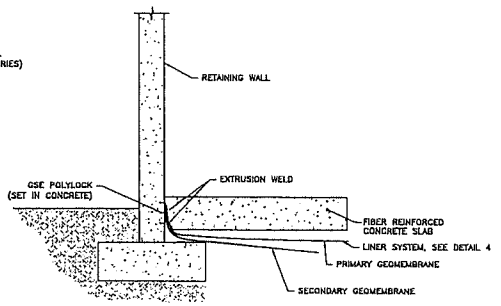
3 / 26 BUTT JOINT
NOT TO SCALE



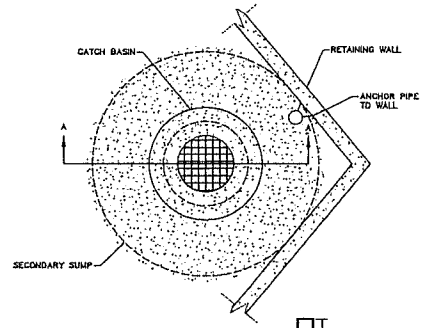
4 / 26 F4 CURB DETAIL
NOT TO SCALE



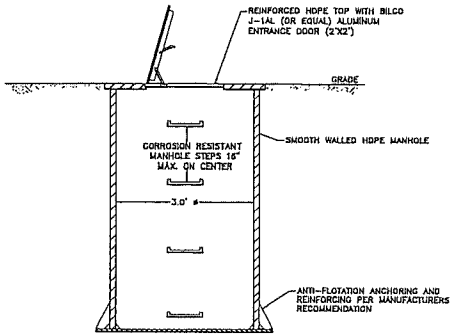
5 / 26 LINER SYSTEM
NOT TO SCALE



6 / 26 POLYLOCK ANCHOR
NOT TO SCALE



7 / 26 LEAK DETECTION SUMP DETAIL
NOT TO SCALE



8 / 26 HDPE CATCH BASIN
NOT TO SCALE

NTH Consultants, Ltd
Infrastructure Engineering and Environmental Services

Northville, MI 248.553.830
Detroit, MI 313.237.580
Lansing, MI 517.484.830
Grand Rapids, MI 616.957.388
Exton, PA 610.524.230
Lehigh Valley, PA 484.883.114
Cleveland, OH 216.334.404
Indianapolis, IN 317.735.764

REVISIONS

REV	DESCRIPTION	DATE	BY

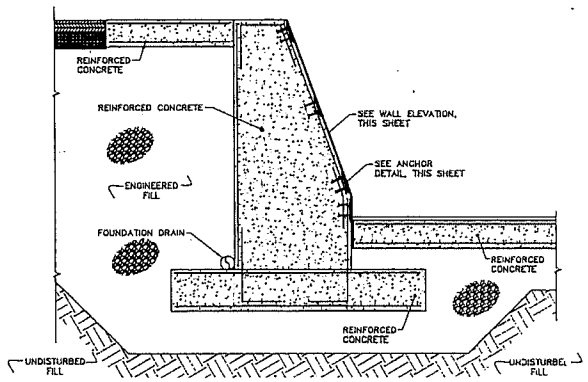
PROJECT NAME
MASTER CELL VI F&G

PROJECT LOCATION
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

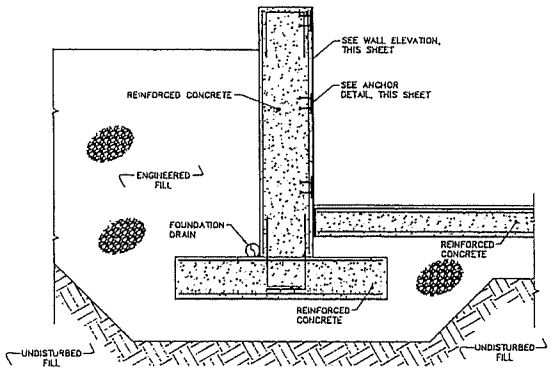
NTH PROJECT NO: 13-060821-03	CAD FILE NAME: TRANSFER BOX DETA
DESIGNED BY: KRD	PICEP DATE: 11/12/06
DRAWN BY: KRD	DRAWING SCALE: NONE
CHECKED BY: RBM	SUBMITTED DATE: 2/28/11

SHEET TITLE:
TRANSFER BOX DETAILS (
OF 2)

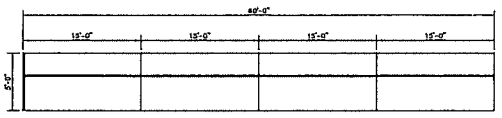
SHEET REFERENCE NUMBER:
26



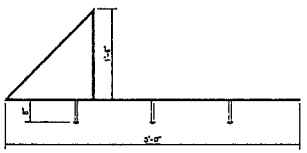
1/27 RETAINING WALL AT TIPPING SLAB
NOT TO SCALE



2/27 SIDE RETAINING WALL SECTION
NOT TO SCALE

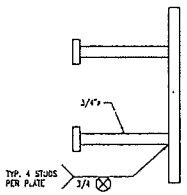


PLAN VIEW

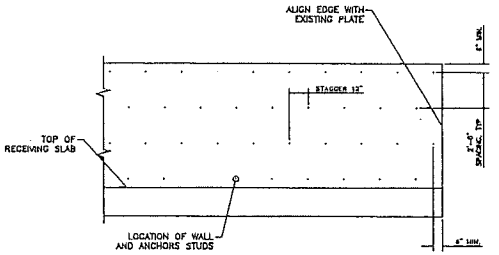


ELEVATION VIEW

3/27 TRUCK STOP SECTION
NOT TO SCALE



4/27 ANCHOR DETAIL
NOT TO SCALE



5/27 WALL ELEVATION
NOT TO SCALE

NTH Consultants
Infrastructure Engineerir
Environmental Servic

Northville, MI	248
Delmar, MI	313
Lansing, MI	517
Grand Rapids, MI	616
Exton, PA	610
Lehigh Valley, PA	484
Cleveland, OH	216
Indianapolis, IN	317

REVISIONS

REV	DESCRIPTION

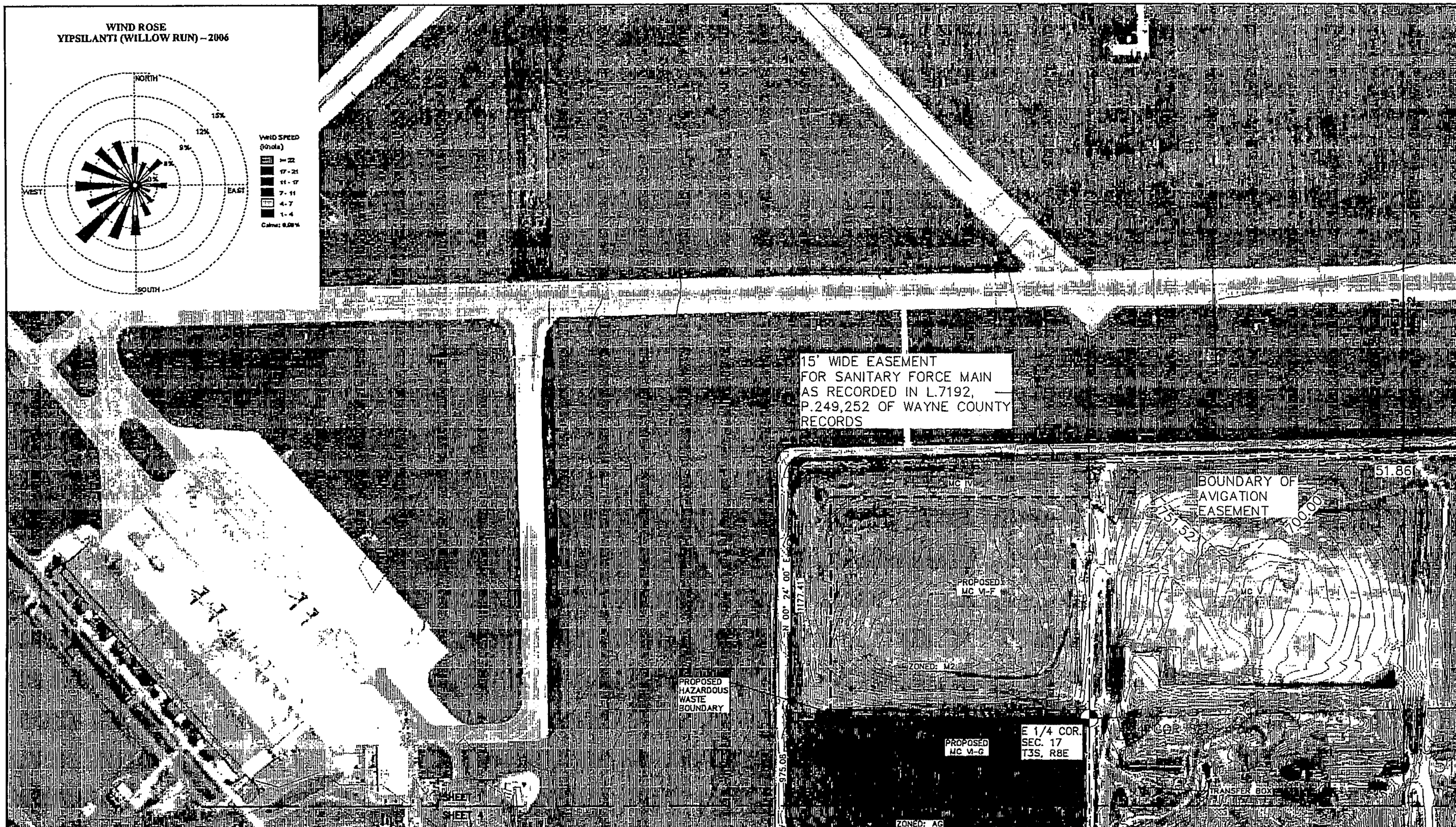
PROJECT NAME
MASTER CELL VI FA

PROJECT LOCATION
WAYNE DISPOSAL, I
SITE NO. 2
BELLEVILLE, MICHIG

NTH PROJECT NO: 13-060821-03	CAD FILE TRANSFER
DESIGNED BY: KRO	PKGD DA 11/12/2
DRAWN BY: KRO	DRAWING NONE
CHECKED BY: RBM	SUBMITTE 2/28/1

SHEET TITLE:
TRANSFER BOX DE
(2 OF 2)

SHEET REFERENCE NUMBER:
27



ZONING DISTRICTS

AG	AGRICULTURAL AND ESTATES
R-1B	SINGLE FAMILY REDIDENTIAL
RM	MULTIPLE FAMILY RESIDENTIAL
C-1	GENERAL BUSINESS
M-2	GENERAL INDUSTRIAL
AP	AIRPORT
M1	LIGHT INDUSTRIAL

LEGEND

---838---	EXIST. CONTOUR
————	℄ OF DITCH OR EDGE OF WATER
— — — —	EXIST. ZONING BOUNDARY

SCALE: 1" = 200'

0 200 400 600

NOTES

1. TOPOGRAPHIC INFORMATION OUTSIDE OF PROPERTY WAS OBTAINED FROM WAYNE COUNTY GIS.
2. 100 YEAR FLOOD PLAIN IS UNMAPPED, COMMUNITY ID: 260546, VAN BUREN TOWNSHIP.
3. ZONING BOUNDARIES ARE DERIVED FROM VAN BUREN CHARTER: ZONING MAP, 1/24/2007. IN MANY CASES COINCIDE WITH PROPERTY BOUNDARY AND ARE DIFFICULT TO SEE ON DRAWING.

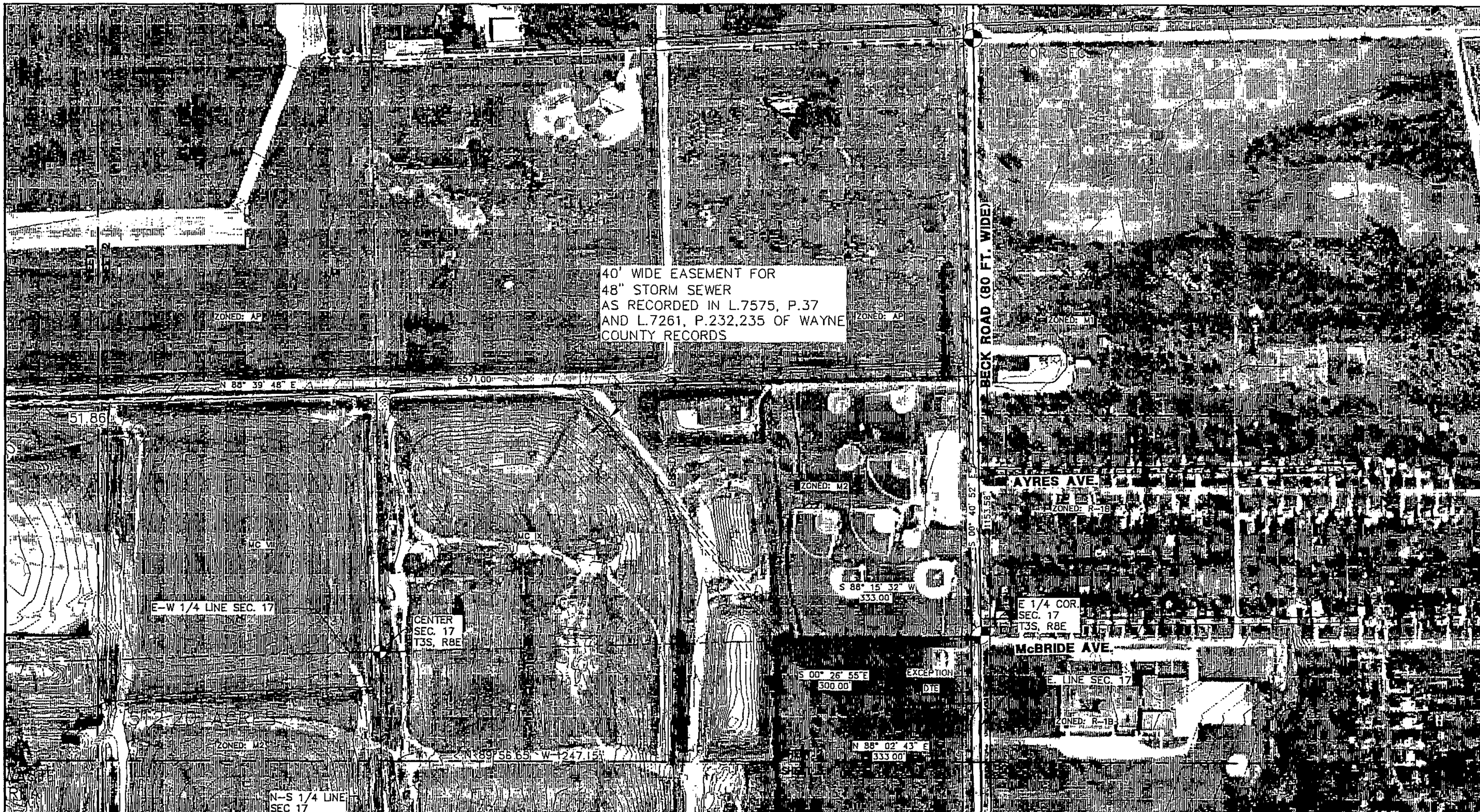
MIDWESTERN CONSULTING

CLIENT
ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE
WAYNE, MI 48184

WAYNE DISPOSAL, INC.
SITE NO. 2
MASTER CELL VI – F & G
AREA PLAN

1

JOB No. 07174



ZONING DISTRICTS

AG	AGRICULTURAL AND ESTATES
R-1B	SINGLE FAMILY REDIDENTIAL
RM	MULTIPLE FAMILY RESIDENTIAL
C-1	GENERAL BUSINESS
M-2	GENERAL INDUSTRIAL
AP	AIRPORT
M1	LIGHT INDUSTRIAL

LEGEND

- 838 — EXIST. CONTOUR
- ℄ OF DITCH OR EDGE OF WATER
- EXIST. ZONING BOUNDARY

SCALE: 1" = 200'

0 200 400 600

NOTES

1. TOPOGRAPHIC INFORMATION OUTSIDE OF PROPERTY WAS OBTAINED FROM WAYNE COUNTY GIS.
2. 100 YEAR FLOOD PLAIN IS UNMAPPED, COMMUNITY ID: 260546, VAN BUREN TOWNSHIP.
3. ZONING BOUNDARIES ARE DERIVED FROM VAN BUREN CHARTER: ZONING MAP, 1/24/2007. IN MANY CASES COINCIDE WITH PROPERTY BOUNDARY AND ARE DIFFICULT TO SEE ON DRAWING.

MIDWESTERN CONSULTING
Civil, Environmental and Transportation Engineers
Planners, Surveyors
Landscape Architects
3815 Plaza Drive
Ann Arbor, Michigan 48108
Phone: 734.995.0200
Fax 734.995.0599

CLIENT
ENVIRONMENTAL QUALITY COMPANY
38255 MICHIGAN AVENUE
WAYNE, MI 48184

WAYNE DISPOSAL, INC.

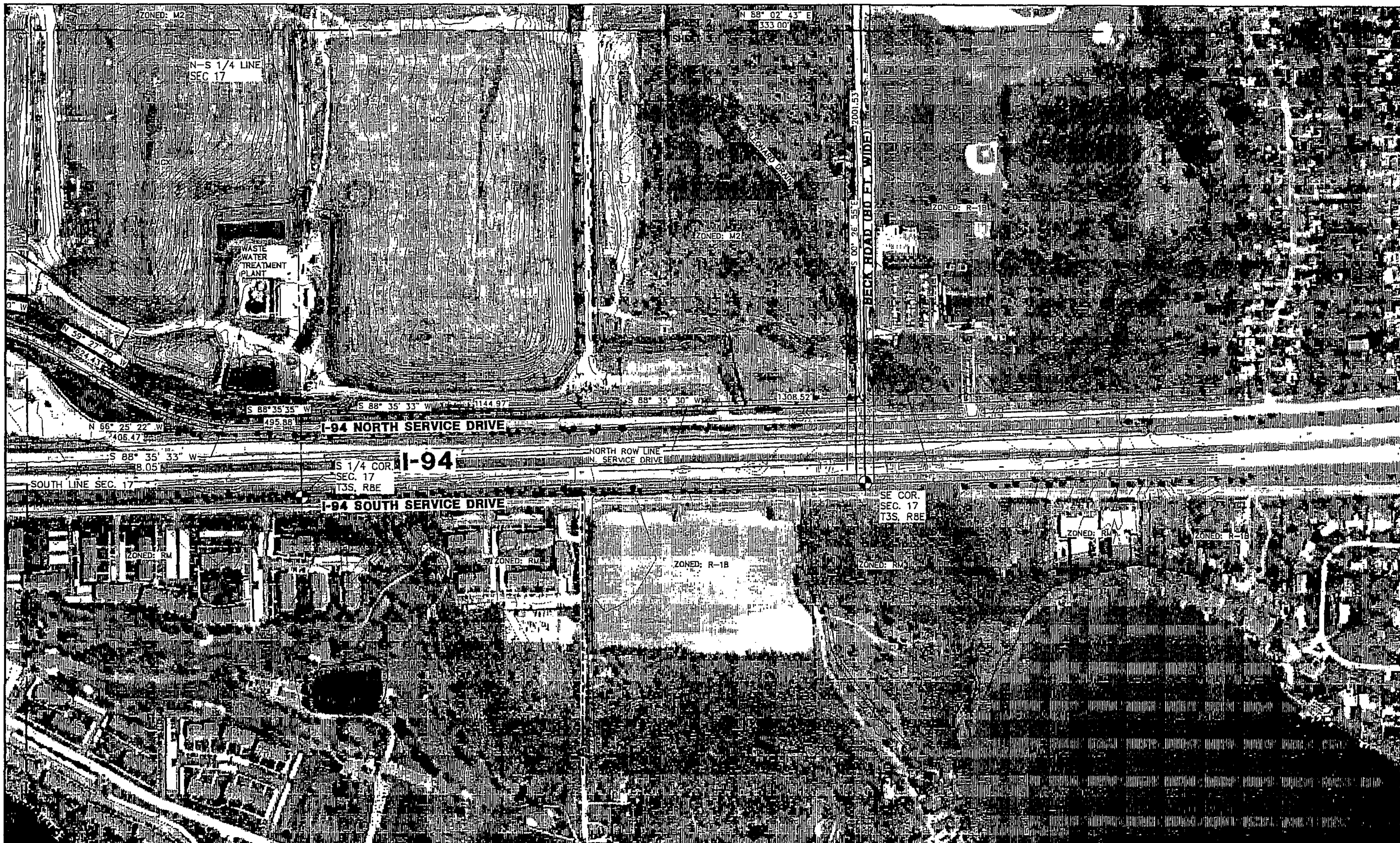
SITE NO. 2
MASTER CELL VI – F & G
AREA PLAN

2

JOB No. 07174

DATE: 8/15/09
SHEET 1 OF 4

NTH SHEET 29 OF 3



ZONING DISTRICTS

AG	AGRICULTURAL AND ESTATES
R-1B	SINGLE FAMILY RESIDENTIAL
RM	MULTIPLE FAMILY RESIDENTIAL
C-1	GENERAL BUSINESS
M2	GENERAL INDUSTRIAL
AP	AIRPORT
M1	LIGHT INDUSTRIAL

LEGEND

- - 838 - - EXIST. CONTOUR
———— ℄ OF DITCH OR EDGE OF WATER
— — — — EXIST. ZONING BOUNDARY

SCALE: 1" = 200'
0 200 400 600

NOTES

1. TOPOGRAPHIC INFORMATION OUTSIDE OF PROPERTY WAS OBTAINED FROM WAYNE COUNTY GIS.
2. 100 YEAR FLOOD PLAIN IS UNMAPPED, COMMUNITY ID: 260546, VAN BUREN TOWNSHIP.
3. ZONING BOUNDARIES ARE DERIVED FROM VAN BUREN CHARTER: ZONING MAP, 1/24/2007. IN MANY CASES COINCIDE WITH PROPERTY BOUNDARY AND ARE DIFFICULT TO SEE ON DRAWING.

JOB No. 07174
REVISIONS: REV. DATE
DATE: 8/13/08
SHEET 3 OF 4
CADD:
ENG:
PM:
TECH: M.V.V.
SURVEY: 07174sv01

3

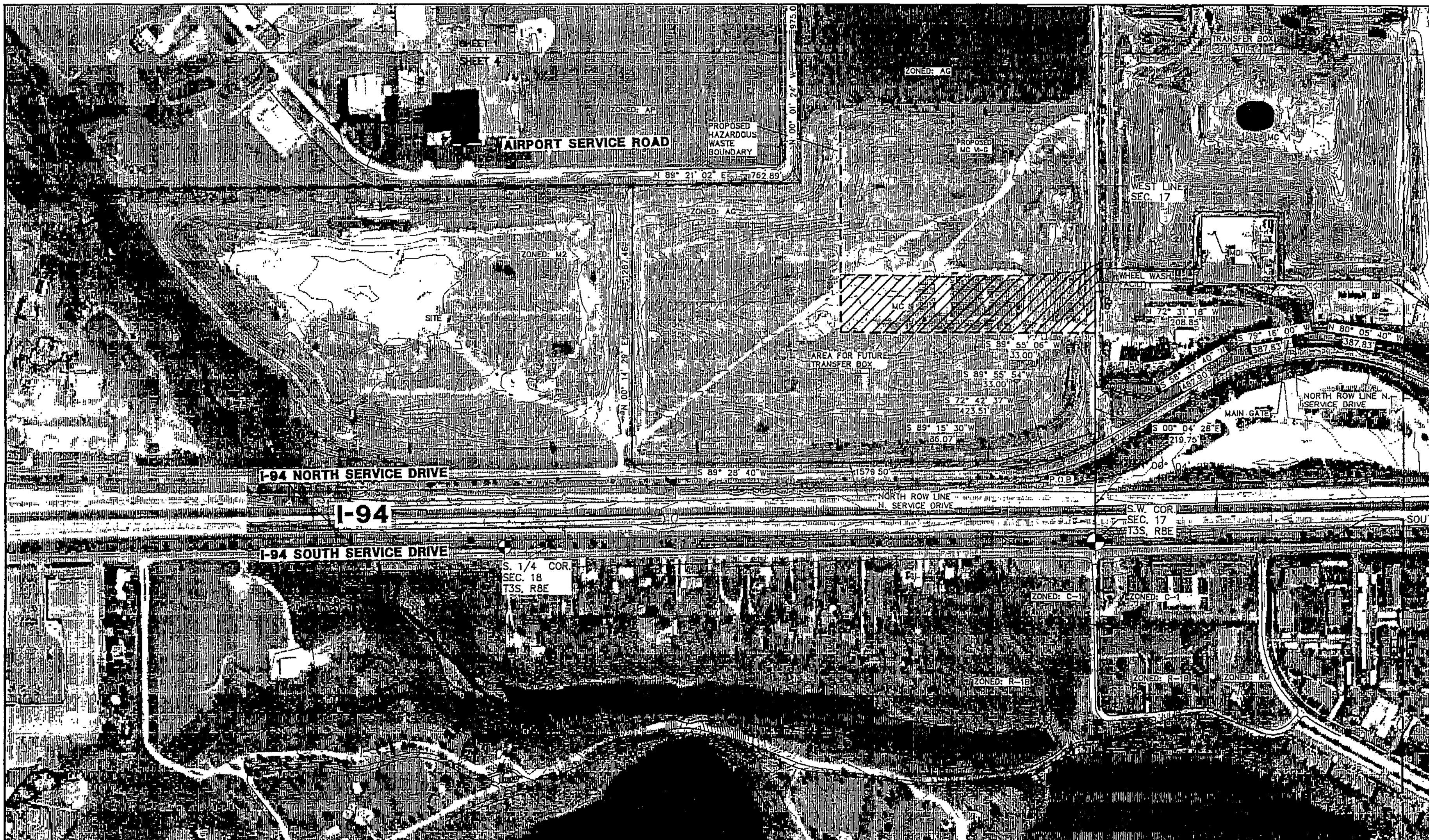
WAYNE DISPOSAL, INC.

SITE NO. 2
MASTER CELL VI – F & G
AREA PLAN

CLIENT
ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE
WAYNE, MI 48184

MIDWESTERN CONSULTING

Civil, Environmental and Transportation Engineers
Planners, Surveyors
Landscape Architects
3815 Plaza Drive
Ann Arbor, Michigan 48108
Phone: 734.995.0200
Fax 734.995.0599



ZONING DISTRICTS

AG	AGRICULTURAL AND ESTATES
R-1B	SINGLE FAMILY REDIDENTIAL
RM	MULTIPLE FAMILY RESIDENTIAL
C-1	GENERAL BUSINESS
M-2	GENERAL INDUSTRIAL
AP	AIRPORT
M1	LIGHT INDUSTRIAL

LEGEND

— 838 —	EXIST. CONTOUR
————	℄ OF DITCH OR EDGE OF WATER
— — — —	EXIST. ZONING BOUNDARY

SCALE: 1" = 200'

0 200 400 800

NOTES

1. TOPOGRAPHIC INFORMATION OUTSIDE OF PROPERTY WAS OBTAINED FROM WAYNE COUNTY GIS.
2. 100 YEAR FLOOD PLAIN IS UNMAPPED, COMMUNITY ID: 260546, VAN BUREN TOWNSHIP.
3. ZONING BOUNDARIES ARE DERIVED FROM VAN BUREN CHARTER: ZONING MAP, 1/24/2007. IN MANY CASES COINCIDE WITH PROPERTY BOUNDARY AND ARE DIFFICULT TO SEE ON DRAWING.

MIDWESTERN CONSULTING
Civil, Environmental and Transportation Engineers Planners, Surveyors Landscape Architects
3815 Plaza Drive Ann Arbor, Michigan 48108 Phone: 734.995.0200 Fax: 734.995.0599

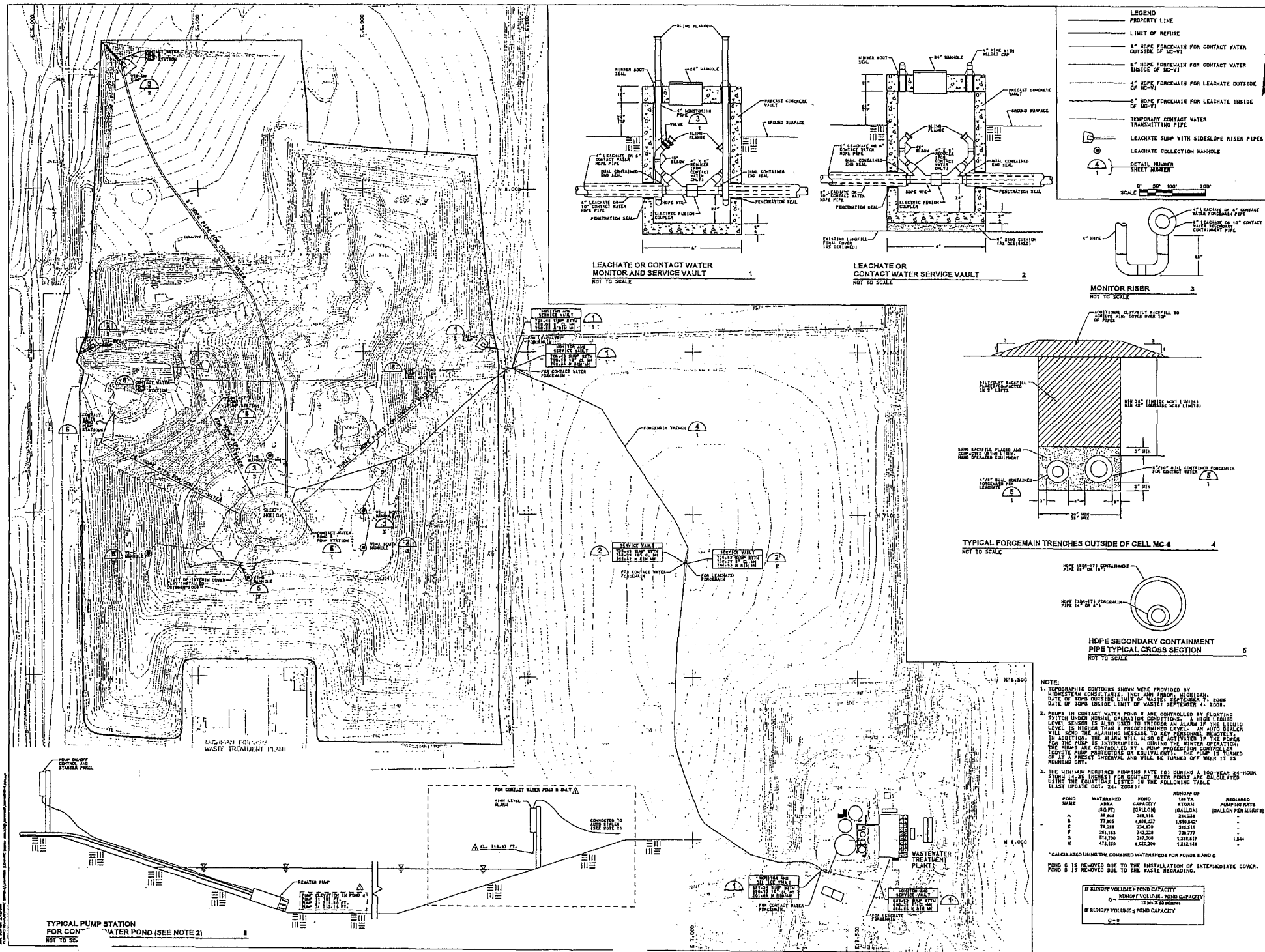
CLIENT
ENVIRONMENTAL QUALITY COMPANY
38255 MICHIGAN AVENUE
WAYNE, MI 48184

WAYNE DISPOSAL, INC.

SITE NO. 2
MASTER CELL VI – F & G
AREA PLAN

4

DATE: 8/13/08
SHEET 4 OF 4
CADD:
ENG:
PM:
TECH: M.V.V.
SURVEY: 07174sv01
JOB No. 07174
REVISIONS: REV. DATE


LEGEND
PROPERTY LINE
LIMIT OF REFUSE
6" HDPE FORCEMAIN FOR CONTACT WATER OUTSIDE OF MC-VI
6" HDPE FORCEMAIN FOR CONTACT WATER INSIDE OF MC-VI
4" HDPE FORCEMAIN FOR LEACHATE OUTSIDE OF MC-VI
6" HDPE FORCEMAIN FOR LEACHATE INSIDE OF MC-VI
TEMPORARY CONTACT WATER TRANSMITTING PIPE
LEACHATE SUMP WITH SIDESLOPE RISER PIPES
LEACHATE COLLECTION MANHOLE
DETAIL NUMBER
SHEET NUMBER
SCALE
0' 50' 100' 200'
LEACHATE OR CONTACT WATER MONITOR AND SERVICE VAULT 1
NOT TO SCALE
LEACHATE OR CONTACT WATER SERVICE VAULT 2
NOT TO SCALE
MONITOR RISER 3
NOT TO SCALE
TYPICAL FORCEMAIN TRENCHES OUTSIDE OF CELL MC-8 4
NOT TO SCALE
HDPE SECONDARY CONTAINMENT PIPE TYPICAL CROSS SECTION 5
NOT TO SCALE
TYPICAL PUMP STATION FOR CONTACT WATER POND (SEE NOTE 2) 8
NOT TO SCALE
WASTEWATER TREATMENT PLANT
NOTE:
1. TOPOGRAPHIC CONTOURS SHOWN WERE PROVIDED BY MIDWESTERN CONSULTANTS, INC. ANN ARBOR, MICHIGAN. DATE OF TOPO OUTSIDE LIMIT OF WASTE: SEPTEMBER 7, 2006 DATE OF TOPO INSIDE LIMIT OF WASTE: SEPTEMBER 4, 2008.
2. PUMPS IN CONTACT WATER POND B ARE CONTROLLED BY FLOATING SWITCH UNDER NORMAL OPERATION CONDITIONS. A HIGH LIQUID LEVEL SENSOR IS ALSO USED TO TRIGGER AN ALARM IF THE LIQUID LEVEL IS HIGHER THAN A PREDETERMINED LEVEL. AN AUTO DIALER WILL SEND THE ALARM MESSAGE TO KEY PERSONNEL RESPECTIVELY. IN ADDITION, THE ALARM WILL ALSO BE ACTIVATED IF THE POWER FOR THE PUMP IS INTERRUPTED. DURING THE WINTER OPERATION, THE PUMPS ARE CONTROLLED BY A PUMP PROTECTION CONTROLLER (COYOTE PUMP PROTECTORS OR EQUIVALENT). THE PUMP IS TURNED ON AT A PRESET INTERVAL AND WILL BE TURNED OFF WHEN IT IS RUNNING DRY.
3. THE MINIMUM REQUIRED PUMPING RATE (R) DURING A 100-YEAR 24-HOUR STORM (4.36 INCHES) FOR CONTACT WATER PONDS ARE CALCULATED USING THE EQUATIONS LISTED IN THE FOLLOWING TABLE (LAST UPDATE OCT. 24, 2008)!

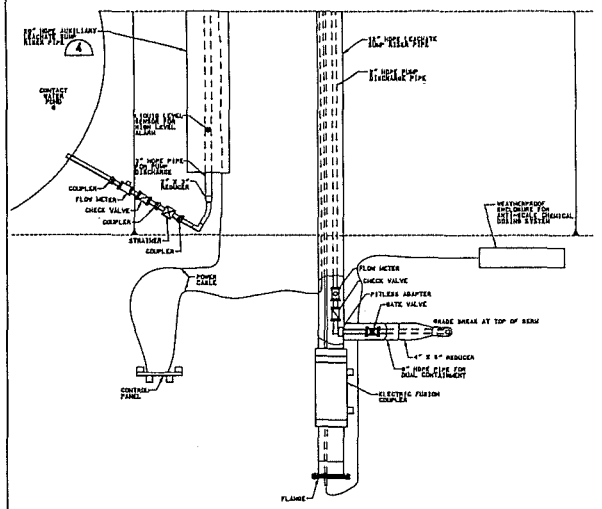
POND NAME	WATERSHED AREA (SQ FT)	POND CAPACITY (GALLON)	RUNOFF OF 100 YR STORM (GALLON)	REQUIRED PUMPING RATE (GALLON PER MINUTE)
A	89,868	368,118	244,578	-
B	77,905	4,604,627	1,510,542*	-
E	79,284	334,620	316,611	-
F	281,183	743,228	738,777	-
G	814,706	287,000	1,388,417	1,544
H	473,650	6,020,200	1,252,148	-

* CALCULATED USING THE COMBINED WATERSHEDS FOR PONDS B AND G

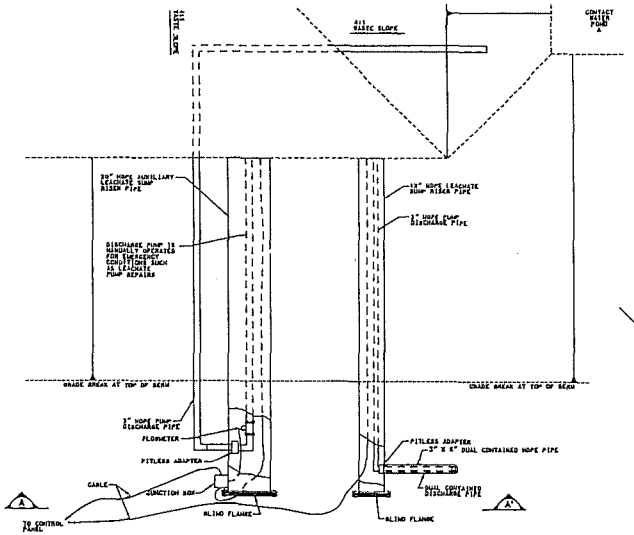
POND G IS REMOVED DUE TO THE INSTALLATION OF INTERMEDIATE COVER.
POND G IS REMOVED DUE TO THE WASTE REGRADING.

IF RUNOFF VOLUME > POND CAPACITY
Q = (RUNOFF VOLUME - POND CAPACITY) / (12 hrs X 60 minutes)
IF RUNOFF VOLUME ≤ POND CAPACITY
Q = 0
WAYNE DISPOSAL SITE NO. 2
WAYNE, MICHIGAN
LEACHATE SYSTEM AS-BUILTS
CTI and Associates, Inc.
11/2/09

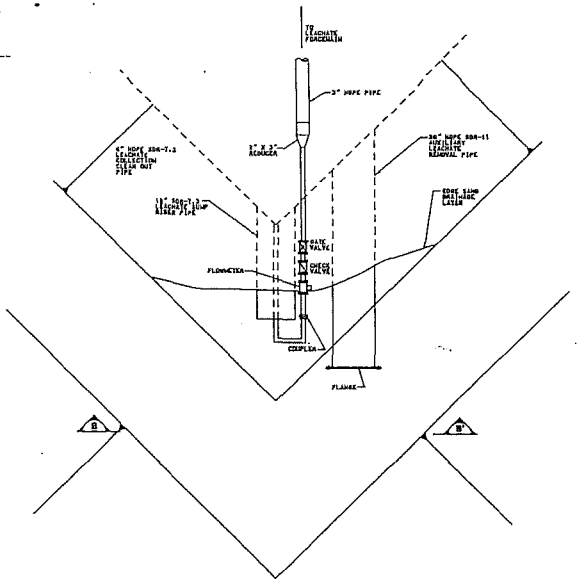
PLAN VIEW



PLAN VIEW

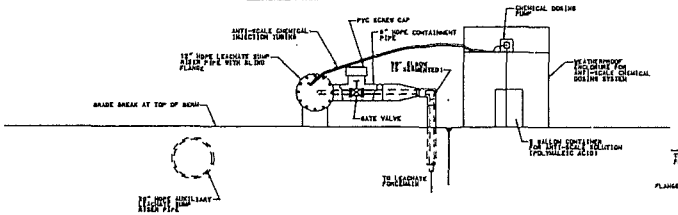


PLAN VIEW



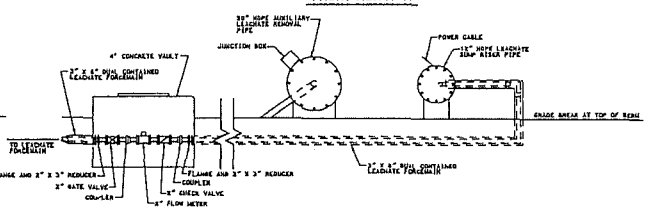
FRONT VIEW B - B'

FRONT VIEW

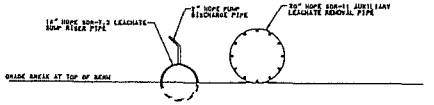


VIE-SE LEACHATE SUMP RISER PIPE 1
NOT TO SCALE

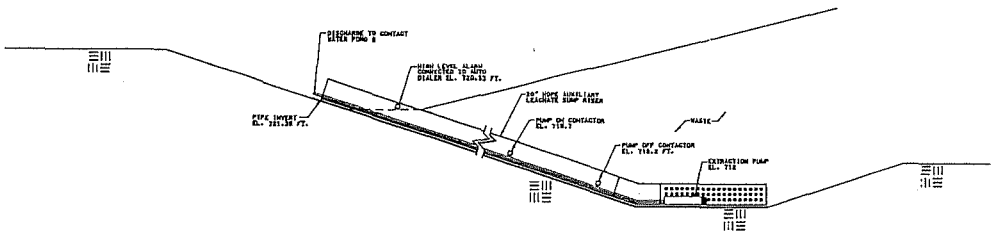
FRONT VIEW A - A'



VIE-SW LEACHATE SUMP RISER PIPE 2
NOT TO SCALE

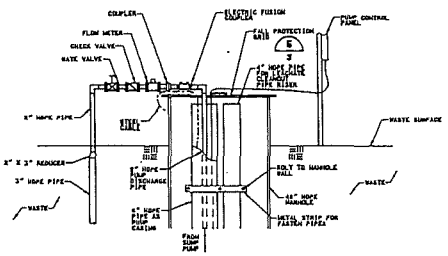


VIE-NW LEACHATE SUMP RISER PIPE 3
NOT TO SCALE



⚠ VIE-SE AUXILIARY LEACHATE SUMP RISER 4
NOT TO SCALE

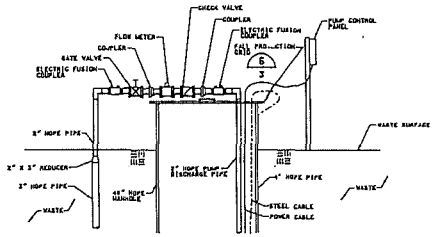
WAYNE DISPOSAL SITE NO. 2
WAYNE, MICHIGAN
LEACHATE SYSTEM AS-BUILTS



VI-A NORTH LEACHATE SUMP MANHOLE 1

NOT TO SCALE

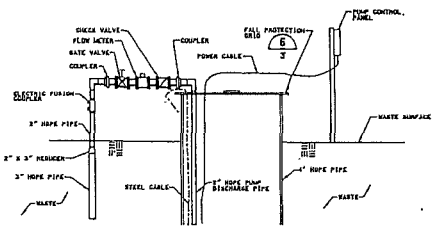
NOTE: THIS MANHOLE IS LOCATED WITHIN ACTIVE AREA.



VI-A SOUTH LEACHATE SUMP MANHOLE 2

NOT TO SCALE

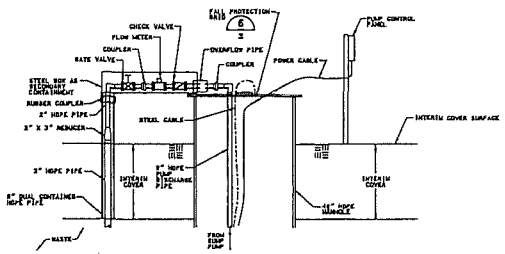
NOTE: THIS MANHOLE IS LOCATED WITHIN ACTIVE AREA.



VI-B LEACHATE SUMP MANHOLE 3

NOT TO SCALE

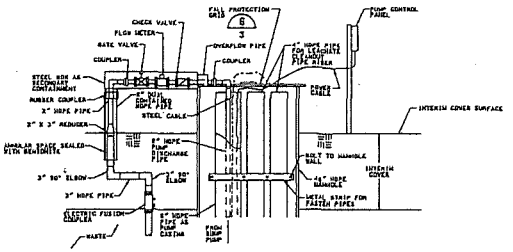
NOTE: THIS MANHOLE IS LOCATED WITHIN ACTIVE AREA.



VI-C LEACHATE SUMP MANHOLE 4

NOT TO SCALE

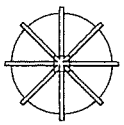
NOTE: THIS MANHOLE IS LOCATED OUTSIDE OF ACTIVE AREA.



VI-D LEACHATE SUMP MANHOLE 5

NOT TO SCALE

NOTE: THIS MANHOLE IS LOCATED OUTSIDE OF ACTIVE AREA.



FALL PROTECTION GRID 6

NOT TO SCALE

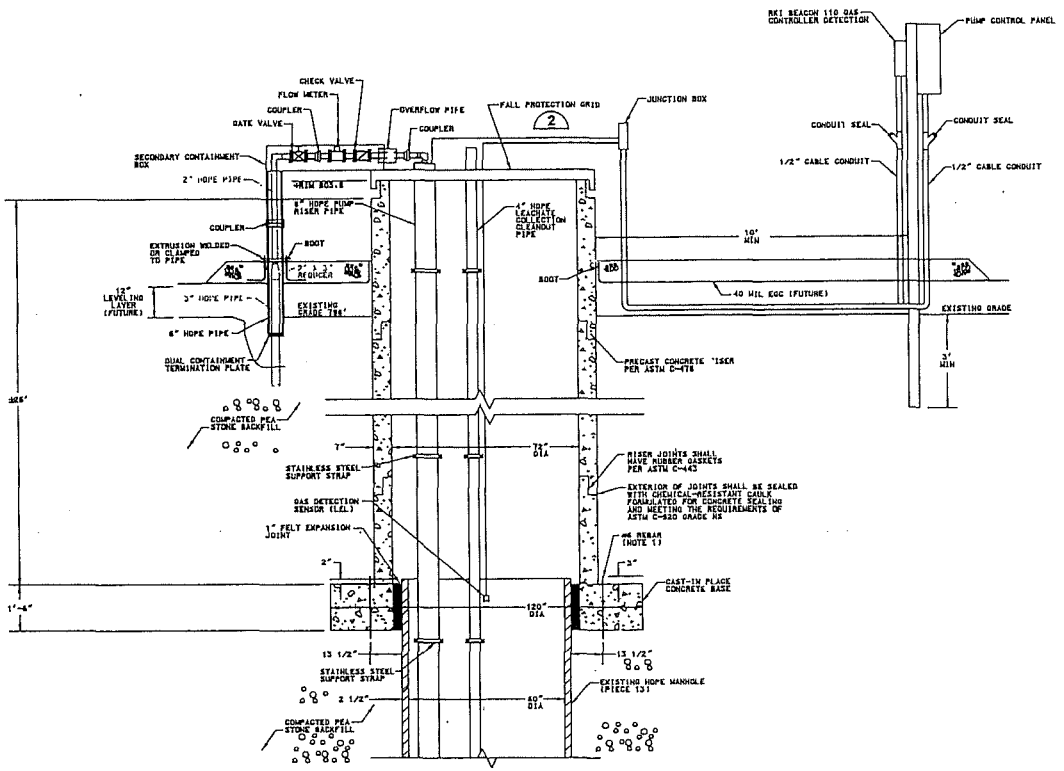
WAYNE DISPOSAL, SITE NO. 2
WAYNE, MICHIGAN
LEACHATE SYSTEM AS-BUILTS

LEACHATE MANHOLE DETAILS

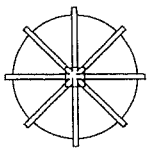
PROJECT NUMBER 88042036

SCALE AS SHOWN

DRAWING NO. 3



OPEN MANHOLE OPTION 1
NOT TO SCALE



FALL PROTECTION GRID (TOP VIEW) 2
NOT TO SCALE

NOTE:

1- 24" LENGTH #6 REBAR EMBEDED IN CONCRETE BASE. 16 BARS TOTAL. EVENLY SPACED OUTSIDE OF CONCRETE MANHOLE SECTION TO PREVENT EXCESSIVE MOVEMENT OF THE SECTION DURING INSTALLATION.

DATE:	1/11/2010
DESIGNED BY:	XZ
DRAWN BY:	BDL
CHECKED BY:	XZ
APPROVED BY:	

CTI and Associates, Inc.
12402 Emerson Drive
Brighton, Michigan 48116
Phone: 248.486.5100 Fax: 248.486.5050
www.ctiassociates.com

WAYNE DISPOSAL SITE NO. 2
WAYNE, MICHIGAN

PROJECT NUMB
980420

SCALE
NONE

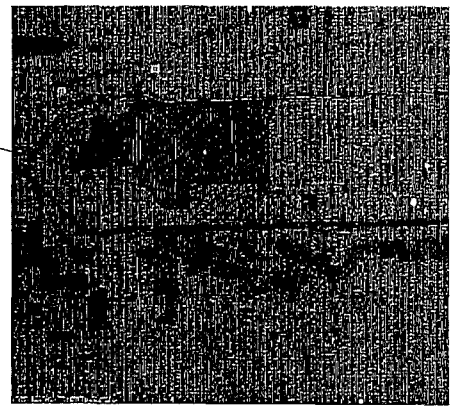
DRAWING NO
1

MASTER CELL VI-E DESIGN MODIFICATION PLANS
WAYNE DISPOSAL INC., SITE NO. 2
VAN BUREN TWP., WAYNE COUNTY, MICHIGAN

PREPARED FOR: WAYNE DISPOSAL, INC.
VAN BUREN TOWNSHIP, WAYNE COUNTY, MICHIGAN

PREPARED BY: NTH CONSULTANTS, LTD.
NORTHVILLE, MICHIGAN

DATE: MARCH 2008
REVISED DATE: SEPTEMBER 2011 (B)



VICINITY SKETCH

INDEX

NTH Consultants
Infrastructure Engineerin
Environmental Servic

Northville, MI	248
Detroit, MI	313
Lansing, MI	517
Grand Rapids, MI	616
Exton, PA	610
Lehigh Valley, PA	484
Cleveland, OH	216
Indianapolis, IN	317

SUBMITTAL

REV	DESCRIPTION
A	PER MDEQ COMMENTS
B	MODIFY FLOOR E.N.

PROJECT NAME
MASTER CELL VI-E
DESIGN MODIFICATI

PROJECT LOCATION
WDI SITE NO. 2
VAN BUREN TWP., W
COUNTY, MICHIGAN

NTH PROJECT NO.: 13-070604-05	CAD FILE N SHEET
DESIGNED BY: JHL	INCEP DAT 12/1/08
DRAWN BY: DRL	DRAWING NONE
CHECKED BY: ISS	SUBMITTE 9/28/20

SHEET TITLE:
TITLE/INDEX

SHEET REFERENCE NUMBER:
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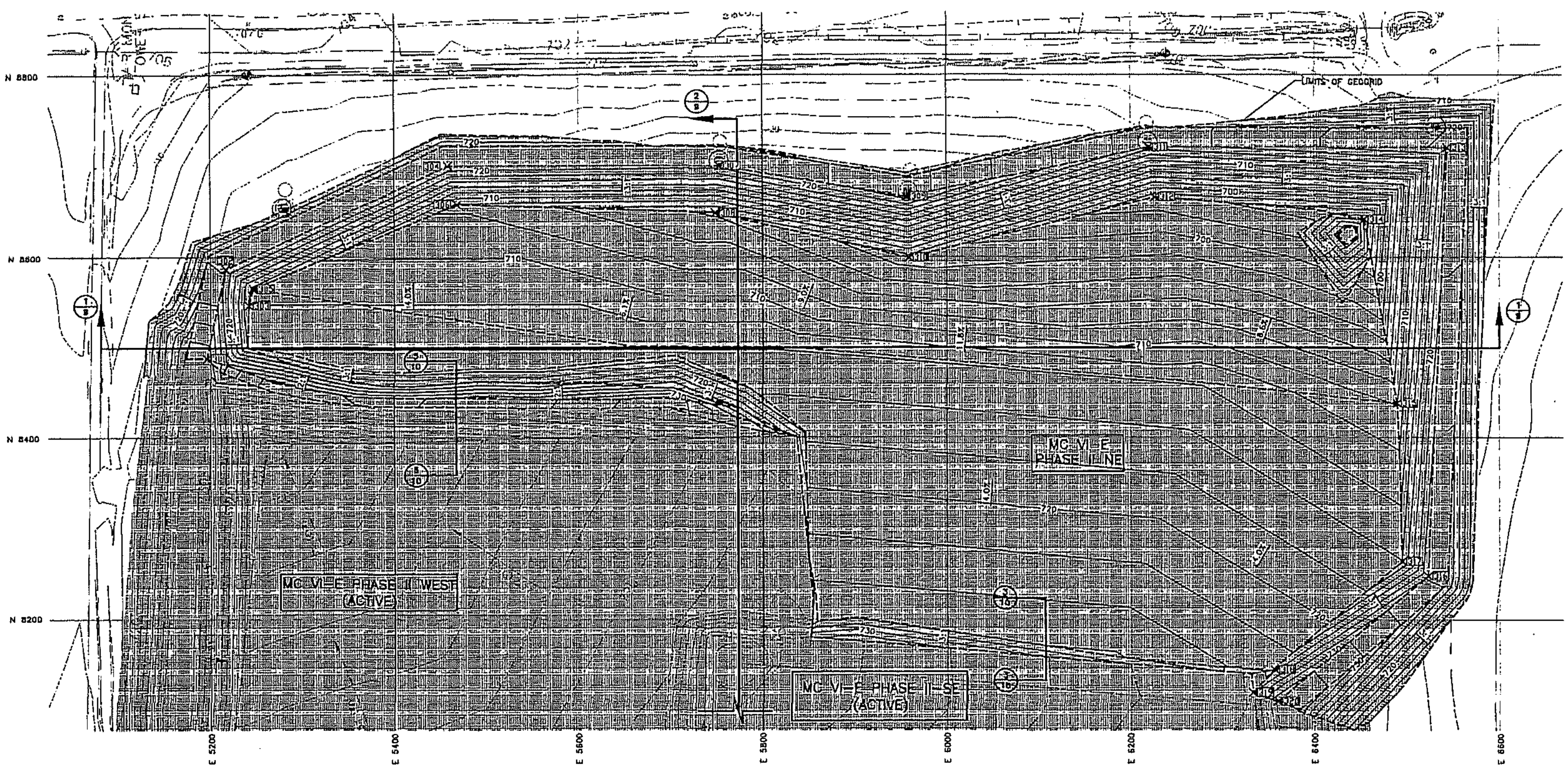


PERIMETER DIKE COORDINATES			
POINT NO.	NORTHING	EASTING	ELEVATION
301	8487.63	5196.20	729.39
302	8586.60	5216.82	721.83
303	8546.89	5241.79	712.03
304	8700.42	5458.24	721.83
305	8565.19	5246.41	711.17
306	8657.89	5468.01	707.62
307	8700.42	5753.31	720.83
308	8649.05	5748.66	703.72
309	8666.63	5956.08	722.83
310	8599.09	5958.86	700.91
311	8720.70	6220.18	714.83
312	8666.18	6226.32	696.76
313	8720.70	6543.93	720.33
314	8641.95	6454.04	692.55
315	8437.99	6489.67	709.84
316	8248.43	6522.64	725.07
317	8264.74	6494.41	716.05
318	8144.33	6356.08	723.55
319	8119.26	6332.19	725.78
320	8109.46	6359.61	734.04

LEGEND:

- 730 — PROPOSED TOP OF DIKE/SUBGRADE CONTOURS (B)
- 730 — EXISTING CONTOUR
- PROPOSED GRADE BREAK
- 301 — PROPOSED DIKE COORDINATE POINT NUMBER ID
- AREA TO BE COVERED BY GEOGRID (B)
- FLOOR SLOPE
- EXISTING LEACHATE SUMP
- EXISTING LEACHATE SUMP VALVE PIT

SCALE: 0, 30', 60', 120'

NTH Consultants, Ltd

Infrastructure Engineering and Environmental Services

Northville, MI 248.553.63..
Detroit, MI 313.237.39..
Lansing, MI 517.484.88..
Grand Rapids, MI 616.857.36..
Exton, PA 610.524.23..
Lehigh Valley, PA 484.893.14..
Cleveland, OH 216.334.40..
Indianapolis, IN 317.735.76..

SUBMITTAL

REV	DESCRIPTION
A	PER MDEQ COMMENTS
B	MODIFY FLOOR/TIER

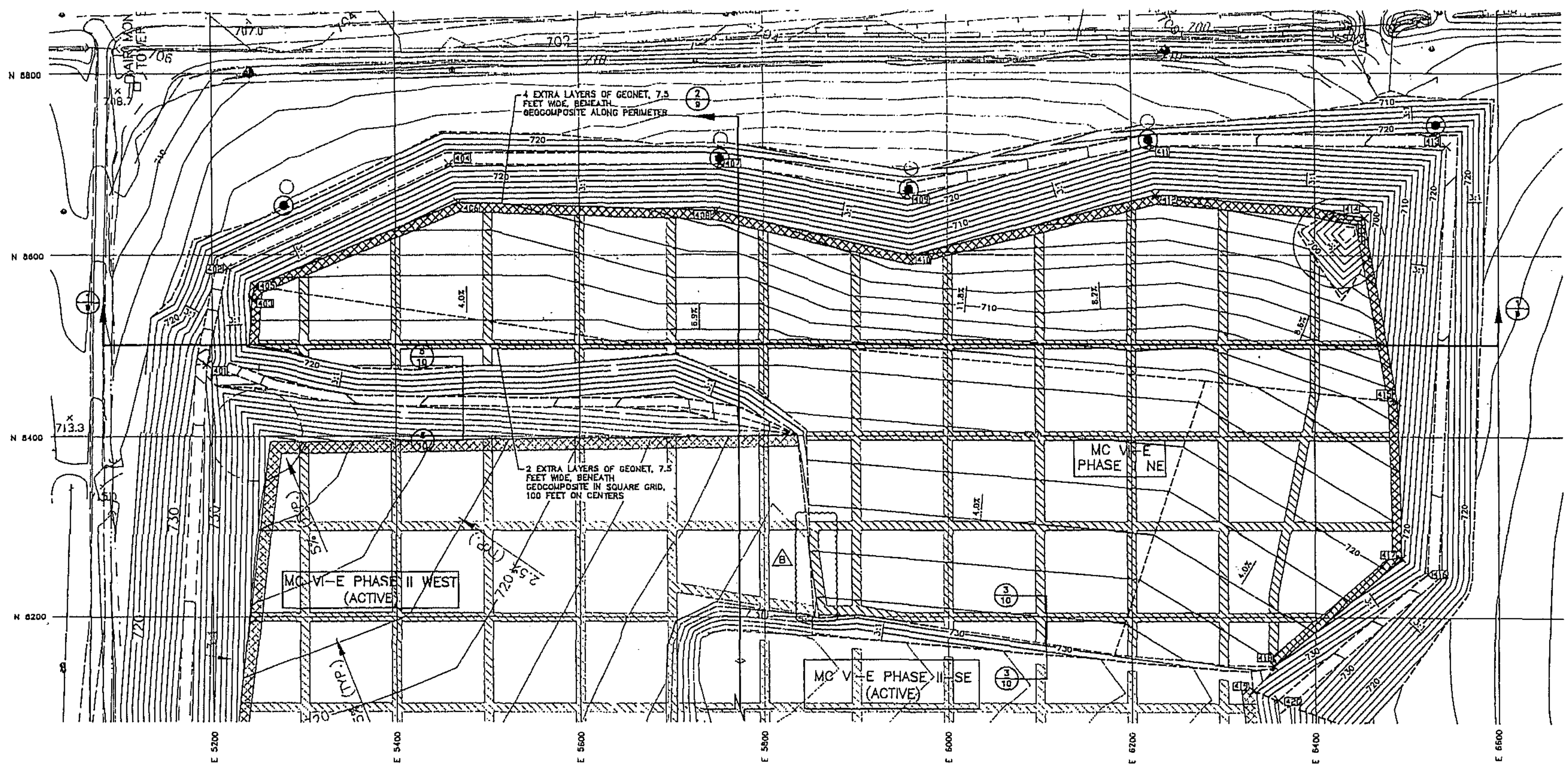
PROJECT NAME: MASTER CELL VI-E DESIGN MODIFICATION

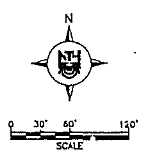
PROJECT LOCATION: WDI SITE NO. 2 VAN BUREN TWP., WAYNE COUNTY, MICHIGAN

NTH PROJECT NO.: 13-070804-05	CAD FILE NAME: SHEET 3
DESIGNED BY: JIL	INCEP DATE: 1/21/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: ISS	SUBMITTED DATE: 9/29/2011

SHEET TITLE: SUBGRADE ELEVATION PLAN

SHEET REFERENCE NUMBER: 3





LEGEND:

—730—	PROPOSED TOP OF DIKE/ SECONDARY CLAY LINER CONTOURS
—730—	EXISTING CONTOUR
— — —	PROPOSED GRADE BREAK
401	PROPOSED SECONDARY CLAY LINER POINT NUMBER ID
	PROPOSED 2 EXTRA LAYERS OF GEONET, 7.5' WIDE, BENEATH GEOCOMPOSITE IN SQUARE GRID
	EXISTING 2 EXTRA LAYERS OF GEONET, 7.5' WIDE, BENEATH GEOCOMPOSITE IN SQUARE GRID
	PROPOSED 4 EXTRA LAYERS OF GEONET, 7.5' WIDE BENEATH GEOCOMPOSITE ALONG PERIMETER
	EXISTING 4 EXTRA LAYERS OF GEONET, 7.5' WIDE BENEATH GEOCOMPOSITE ALONG PERIMETER
	PROPOSED SECONDARY COLLECTION SUMP LOCATION
	EXISTING SECONDARY COLLECTION SUMP LOCATION
±8%	FLOOR SLOPE
	EXISTING LEACHATE SUMP
	EXISTING LEACHATE SUMP VALVE PIT

SECONDARY CLAY LINER COORDINATES

POINT NO	NORTHING	EASTING	ELEVATION
401	8478.50	5194.37	732.04
402	8586.60	5216.82	725.00
403	8552.78	5243.18	714.96
404	8700.42	5458.24	725.00
405	8565.19	5246.41	714.34
406	8657.89	5468.01	710.79
407	8700.42	5753.31	724.00
408	8649.05	5748.66	706.89
409	8666.63	5956.08	726.00
410	8599.09	5950.86	704.08
411	8720.70	6220.18	718.00
412	8666.18	6226.32	699.93
413	8720.70	6343.93	723.50
414	8641.95	6454.04	695.72
415	8437.99	6489.67	713.01
416	8248.43	6522.64	729.04
417	8264.74	6494.41	719.22
418	8146.34	6355.15	726.18
419	8119.26	6332.19	728.95
420	8109.46	6359.61	737.21

NTH Consultants,

Infrastructure Engineering
Environmental Service

Northville, MI	248.5
Detroit, MI	313.2
Lansing, MI	517.4
Grand Rapids, MI	616.5
Exton, PA	610.5
Lehigh Valley, PA	484.5
Cleveland, OH	216.3
Indianapolis, IN	317.7

SUBMITTAL

REV	DESCRIPTION
A	PER MDEQ COMMENTS
B	MODIFY FLOOR/TIE IN

PROJECT NAME

MASTER CELL VI-E
DESIGN MODIFICATIC

PROJECT LOCATION

WDI SITE NO. 2
VAN BUREN TWP., W/
COUNTY, MICHIGAN

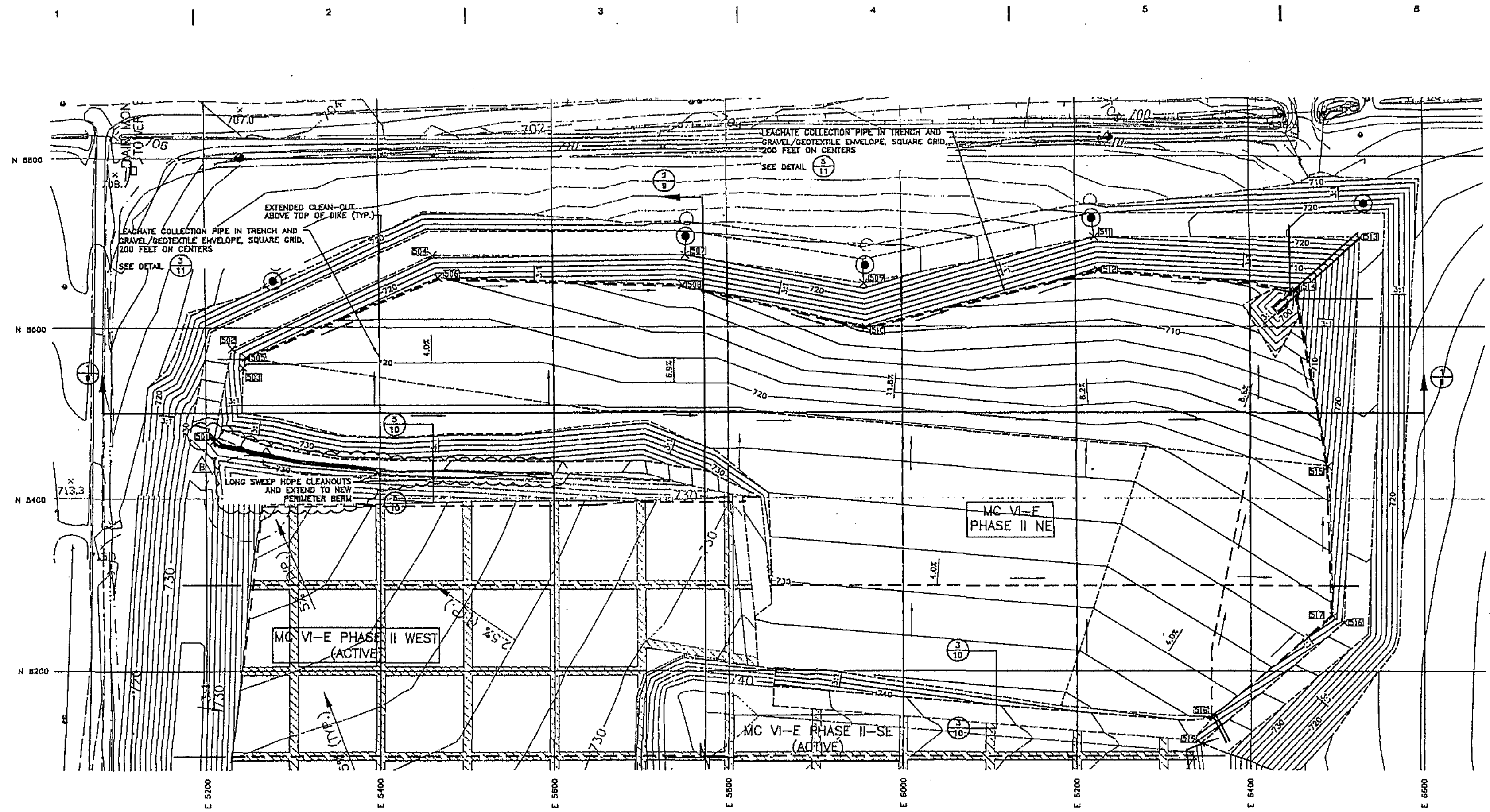
NTH PROJECT NO: 13-070804-05	CAD FILE NA SHEET 4
DESIGNED BY: JHL	INCEP DATE 1/21/08
DRAWN BY: DRL	DRAWING S AS SHO
CHECKED BY: ISS	SUBMITTED 9/28/201

SHEET TITLE:

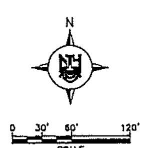
TOP OF SECONDARY
LINER ELEVATION PL

SHEET REFERENCE NUMBER:

4



PRIMARY CLAY LINER COORDINATES			
POINT NO.	NORTHING	EASTING	ELEVATION
501	8466.47	5208.11	732.36
502	8575.56	5230.55	725.00
503	8552.98	5243.24	720.23
504	8684.58	5461.79	725.00
505	8565.19	5246.41	719.62
506	8657.89	5468.01	716.07
507	8684.58	5752.00	724.00
508	8649.05	5748.66	712.17
509	8650.52	5956.38	726.00
510	8599.09	5958.86	709.36
511	8704.86	6221.78	718.00
512	8666.18	6226.32	705.21
513	8704.86	6527.36	723.50
514	8641.95	6454.04	701.00
515	8437.99	6489.67	718.29
516	8257.01	6507.34	729.00
517	8264.46	6494.44	724.51
518	8146.02	6355.69	731.45
519	8115.19	6342.71	737.66



LEGEND:

- —730— PROPOSED TOP OF DIKE/ PRIMARY CLAY LINER CONTOURS (B)
- —730— EXISTING CONTOUR
- PROPOSED GRADE BREAK
- 520 PROPOSED PRIMARY CLAY LINER POINT NUMBER ID
- PROPOSED LEACHATE COLLECTION SUMP LOCATION SEE DETAIL 1/11
- EXISTING LEACHATE COLLECTION SUMP LOCATION
- PROPOSED LEACHATE COLLECTION PIPE AND FLOW DIRECTION
- EXISTING LEACHATE COLLECTION PIPE AND FLOW DIRECTION
- EXISTING 2 EXTRA LAYERS OF GEONET, 7.5' WIDE, BENEATH GEOCOMPOSITE IN SQUARE GRID 100 FEET ON CENTERS
- ±8% FLOOR SLOPE
- EXISTING LEACHATE SUMP
- EXISTING LEACHATE SUMP VALVE PIT
- EXISTING CLEANOUT
- PROPOSED CLEANOUT

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Infrastructure Engineerin
Environmental Servic

Northville, MI	248
Detroit, MI	313
Lansing, MI	517
Grand Rapids, MI	616
Exton, PA	610.
Lehigh Valley, PA	484.
Cleveland, OH	216
Indianapolis, IN	317.

SUBMITTAL

REV	DESCRIPTION
A	[illegible]
B	[illegible]

PROJECT NAME

MASTER CELL VI-E DESIGN MODIFICATI

PROJECT LOCATION

WDI SITE NO. 2
VAN BUREN TWP., W
COUNTY, MICHIGAN

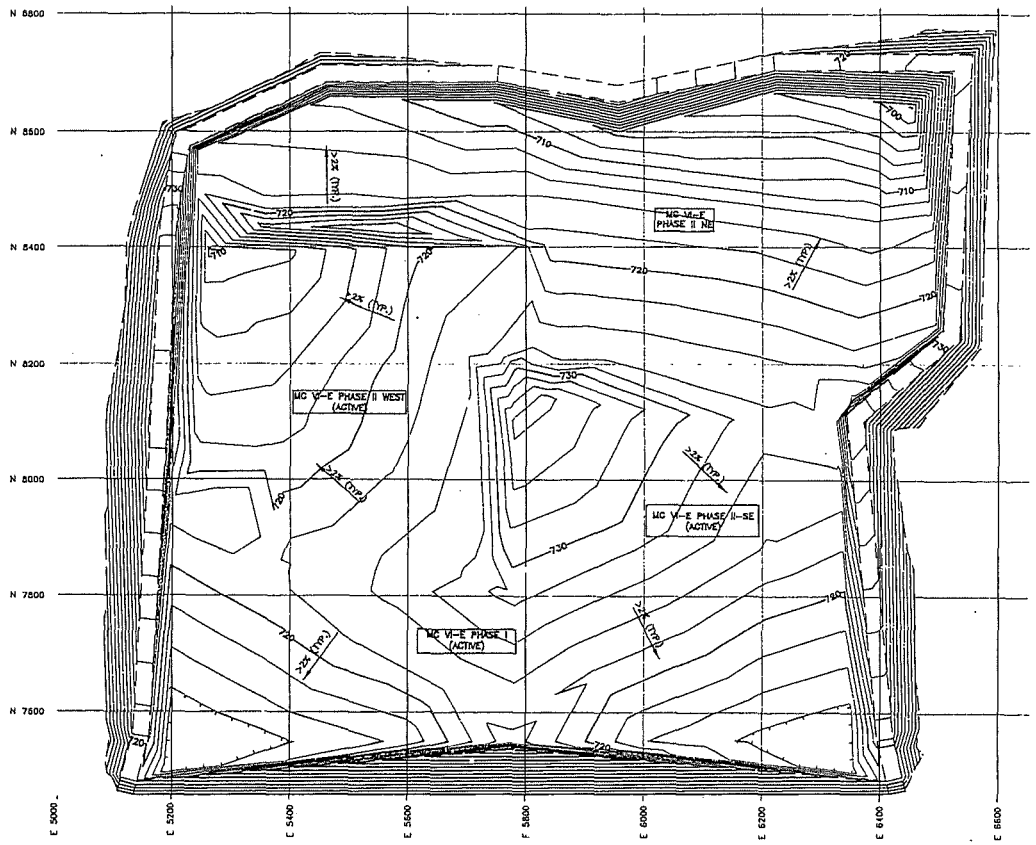
NTH PROJECT NO.: 13-070804-05	CAD FILE N SHEET
DESIGNED BY: JHL	SHEET DAT 1/21/08
DRAWN BY: DRL	DRAWING S AS SHO
CHECKED BY: ISS	SUBMITTE 9/28/201

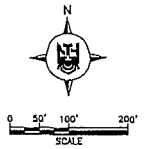
SHEET TITLE:

TOP OF PRIMARY LI
ELEVATION PLAN

SHEET REFERENCE NUMBER:

5





LEGEND:

730 PROPOSED ESTIMATED LONG-TERM TOP OF PRIMARY LINER CONTOUR

GRADE BREAK (A) (B)

NTH Consultants,
Infrastructure Engineering
Environmental Service

Northville, MI 248.6
Detroit, MI 313.2
Lansing, MI 517.4
Grand Rapids, MI 616.5
Exton, PA 610.5
Lehigh Valley, PA 484.8
Cleveland, OH 216.3
Indianapolis, IN 317.7

SUBMITTAL		
REV	DESCRIPTION	DA
A	PERMITTED CONSTRUCTION	12/1
B	MONTHLY PROGRESS #4	4/1

PROJECT NAME

MASTER CELL VI-E
DESIGN MODIFICATIO

PROJECT LOCATION

WDI SITE NO. 2
VAN BUREN TWP., WA
COUNTY, MICHGAN

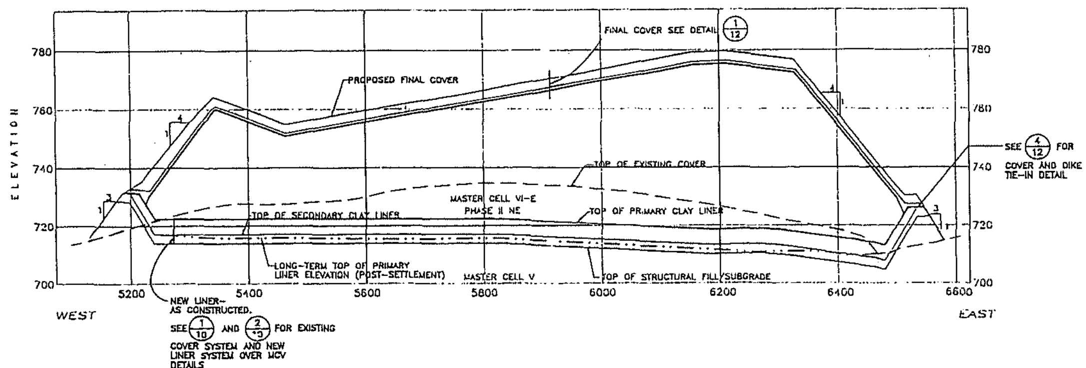
NTH PROJECT NO.: 13-070854-05	CAD FILE NAM #SHEET #
DESIGNED BY: JHL	PKG# DATE: 12/1/04
DRAWN BY: DRL	DRAWING SC A& &HOW
CHECKED BY: I&S	SUBMITTED D 9/28/2011

SHEET TITLE:

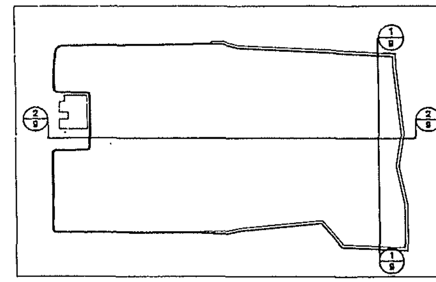
ESTIMATED TOP OF
PRIMARY LINER
POST-SETTLEMENT
ELEVATION PLAN

SHEET REFERENCE NUMBER:

6



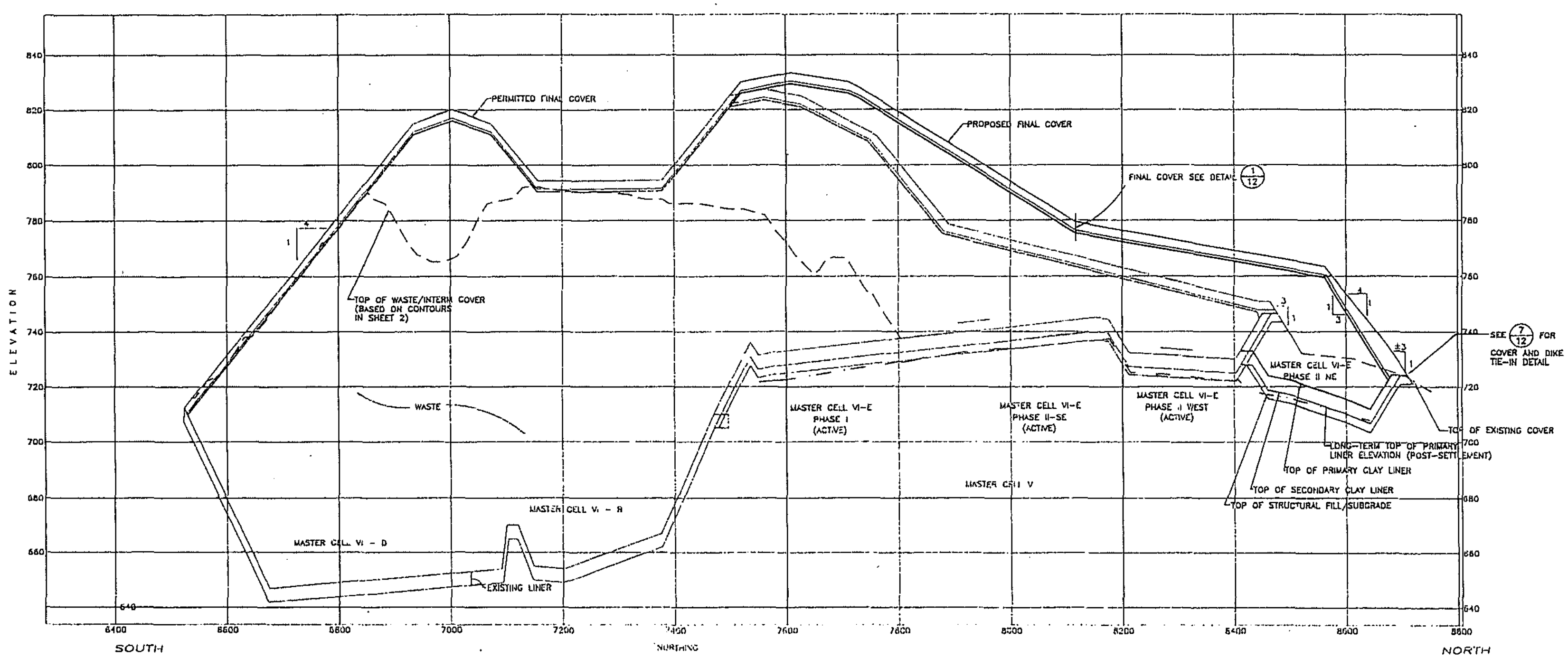
1/9 EAST—WEST CROSS SECTION



CROSS SECTION PLAN VIEW

LEGEND:

- PROPOSED COVER
- PROPOSED TOP OF PRIMARY LINER
- PROPOSED TOP OF SECONDARY/ STRUCTURAL FILL
- ESTIMATED LONG TERM TOP OF PRIMARY LINER (POST-SETTLEMENT)
- TOP OF EXISTING COVER/ WASTE GRADE



2/9 NORTH—SOUTH CROSS SECTION

VERTICAL SCALE 20' 0 20'

HORIZONTAL SCALE 100' 0 100'

NTH Consultants

Infrastructure Engineering, Environmental Services

Northville, MI; Detroit, MI; Lansing, MI; Grand Rapids, MI; Exton, PA; Lehigh Valley, PA; Cleveland, OH; Indianapolis, IN

SUBMITTAL

PROJECT NAME: MASTER CELL VI-E DESIGN MODIFICATION

PROJECT LOCATION: WDI SITE NO. 2 VAN BUREN TWP., COUNTY, MICHIGAN

NTH PROJECT NO.: 13-070804-05

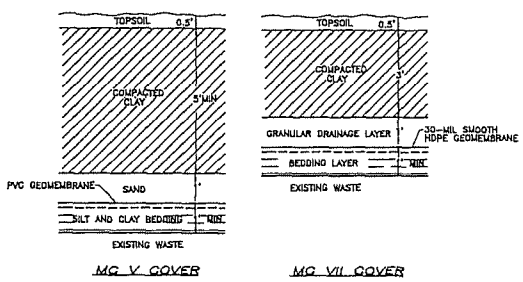
DESIGNED BY: JHL

DRAWN BY: DRL

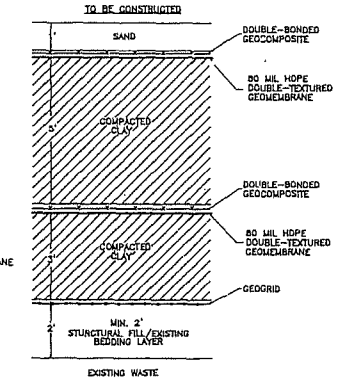
CHECKED BY: ISB

SHEET TITLE: CROSS-SECTIONS

SHEET REFERENCE NUMBER: 9



1/10 EXISTING COVER DETAILS
NOT TO SCALE



2/10 LINER SYSTEM OVER MC V
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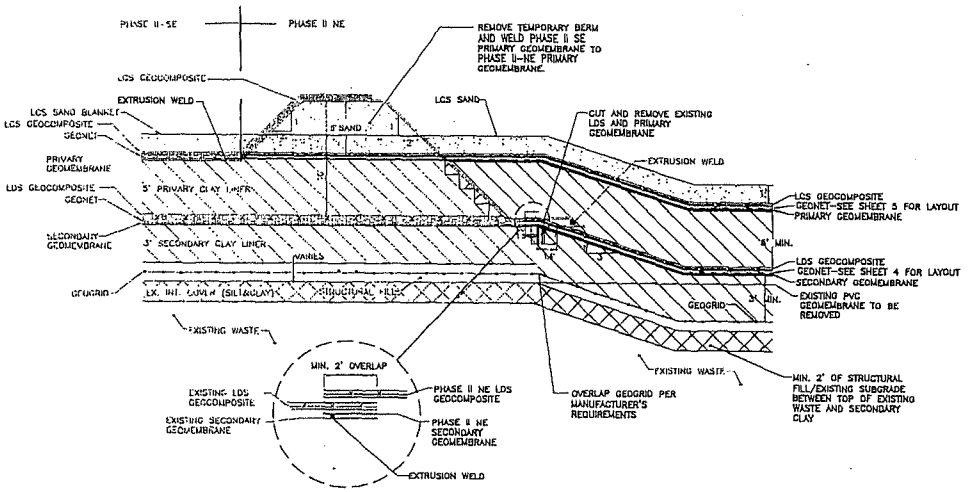
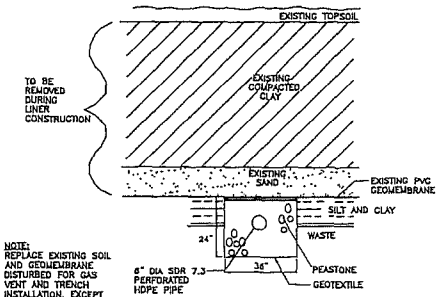


3/10 MC VI-E PHASE II SE/ MC VI-E PHASE II NE TIE IN DETAIL
NOT TO SCALE



4/10 MC-V GAS VENT TRENCH
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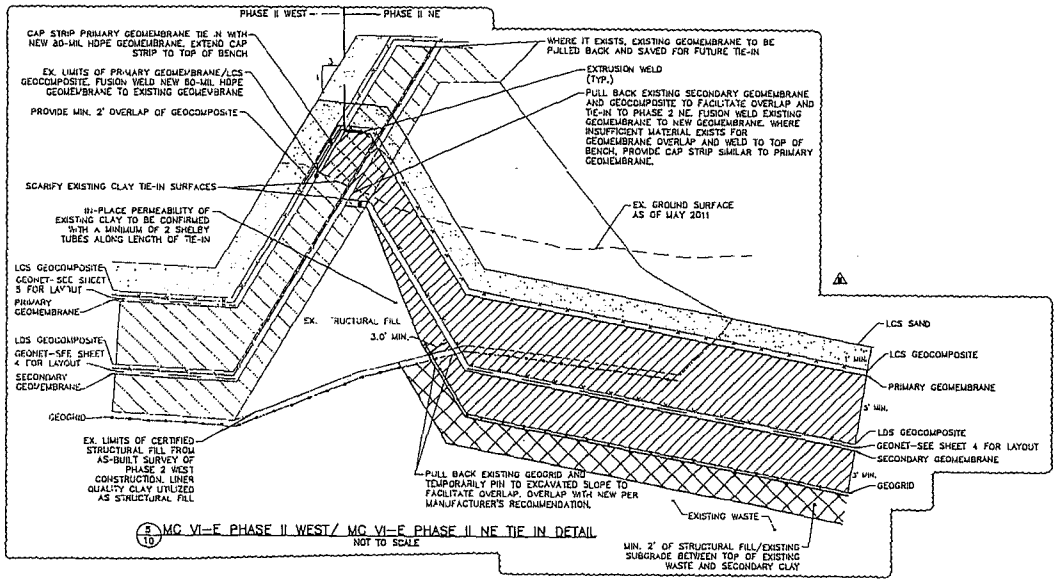


5/10 MC VI-E PHASE II WEST/ MC VI-E PHASE II NE TIE IN DETAIL
NOT TO SCALE

NTH Consultants
Infrastructure Engineerin
Environmental Servic

Northville, MI 248.
Delnek, MI 313.
Lansing, MI 517.
Grand Rapids, MI 616.
Exton, PA 610.
Lehigh Valley, PA 484.
Cleveland, OH 216.
Indianapolis, IN 317.

SUBMITTAL

KEY	DESCRIPTION
3	MODIFICATION #1

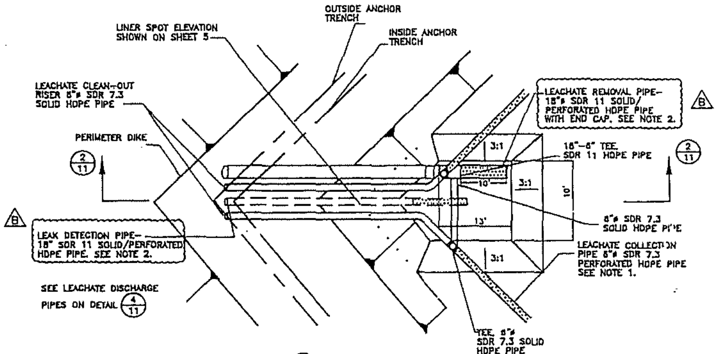
PROJECT NAME
MASTER CELL VI-E
DESIGN MODIFICATI

PROJECT LOCATION
WDI SITE NO. 2
VAN BUREN TWP., V
COUNTY, MICHIGAN

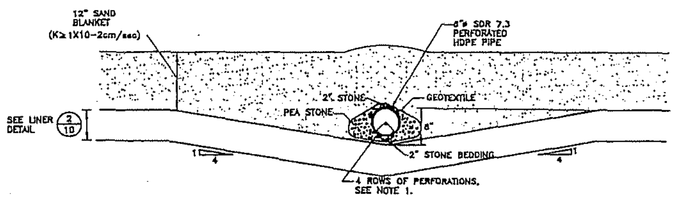
NTH PROJECT NO.: 13-072464-65	CAD FILE: 6H-SEC
DESIGNED BY: JHL	DATE: 1/21/20
DRAWN BY: DRL	DRAWING A-8 8H
CHECKED BY: ISB	SUBMITTA 3/26/2

SHEET TITLE:
LINER SYSTEM DET

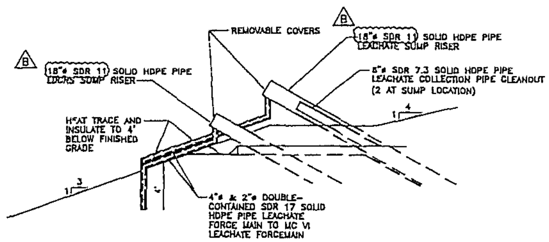
SHEET REFERENCE NUMBER:
10



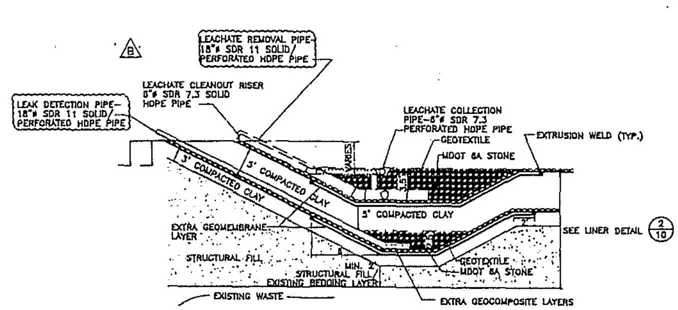
1/11 SUMP DETAIL
N.T.S.



3/11 CELL FLOOR LEACHATE COLLECTION PIPE (TYP.)
N.T.S.

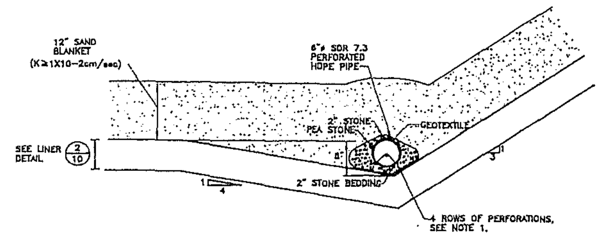


4/11 LCS AND LDCRS RISER DISCHARGE AFTER CLOSURE
N.T.S.



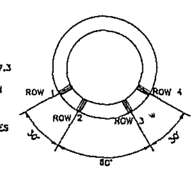
NOTE:
THE LCS AND LDS PUMP ELEVATIONS ARE:
1. LDS "PUMP-ON" ELEV= TOP OF LDS SUMP
2. LDS "PUMP-OFF" ELEV= 1 FOOT ABOVE LDS SUMP BOTTOM
3. LCS "PUMP-ON" ELEV= 0.67' BELOW TOP OF LCS SUMP
4. LCS "PUMP-OFF ELEV= 1 FOOT ABOVE LCS SUMP BOTTOM

2/11 SUMP CROSS SECTION
N.T.S.

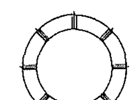


5/11 TOE OF SLOPE LEACHATE COLLECTION PIPE (TYP.)
N.T.S.

NOTES:
1. PIPE IS HDPE, 8" SDR 7.3 WITH 1/4" DIA. HOLES, 2" SPACING ALONG EACH OF (4) ROWS. ROWS SPACED AROUND CIRCUMFERENCE AS SHOWN. TOTAL 24 HOLES PER FOOT.



2. PIPE IS 18" HDPE SDR 11 WITH 3/8" DIA. HOLES. 3" SPACING ALONG EACH OF (8) ROWS. ROWS SPACED AROUND CIRCUMFERENCE AS SHOWN. TOTAL 32 HOLES PER FOOT.



Geosynthetic Materials

Material	Location	Description	Product	Additional Requirements
60-mil Geomembrane	Primary and secondary liners	60-mil HDPE, textured both sides	GSE HD textured, or equivalent	Interface friction requirements in CQA Plan
40-mil Geomembrane	Final cover	40-mil HDPE, textured both sides	GSE HD textured, or equivalent	Interface friction requirements in CQA Plan
Geosynthetic Clay Liner	Final cover	Sodium bentonite encapsulated between two geotextiles that are needle punched or stitch bonded together	CETCO Bentomat ST, or equivalent	Internal shear strength requirements in CQA Plan
Geocomposite	LCS and LDCRS	200-mil HDPE, bonded top and bottom to geotextile meeting requirements below	GSE FABRINET, or equivalent	Transmissivity and interface friction requirements in CQA Plan
Cover Geocomposite	Final cover	200-mil HDPE, bonded top and bottom to geotextile meeting requirements below	GSE FABRINET, or equivalent	Transmissivity and interface friction requirements in CQA Plan
Geonet	LCS and LDCRS sumps, LCS and LDCRS collectors	200-mil HDPE	GSE HYPERNET, or equivalent	Transmissivity requirements in CQA Plan
Geotextile	All geocomposites, gravel/geotextile envelopes for LCS, and final cover perimeter drain	Nominal 8 oz/yd2, needle-punched, nonwoven polypropylene	Amoco 4508, Synthetic Industries Geotex 801, or equivalent	AASHTO M288-96 requirements for Drainage Geotextile (Class 2)
Geogrid	Above Subgrade	Biaxial Polymeric Grid	Huesker Fortrac 80-80, or equivalent	None

LCS denotes leachate collection system
LDCRS denotes leak detection, collection, and removal system

NTH Consultants,
Infrastructure Engineering
Environmental Services

Northville, MI	248.55
Detroit, MI	313.23
Lansing, MI	517.48
Grand Rapids, MI	616.88
Exton, PA	610.52
Lehigh Valley, PA	484.88
Cleveland, OH	216.33
Indianapolis, IN	317.73

SUBMITTAL

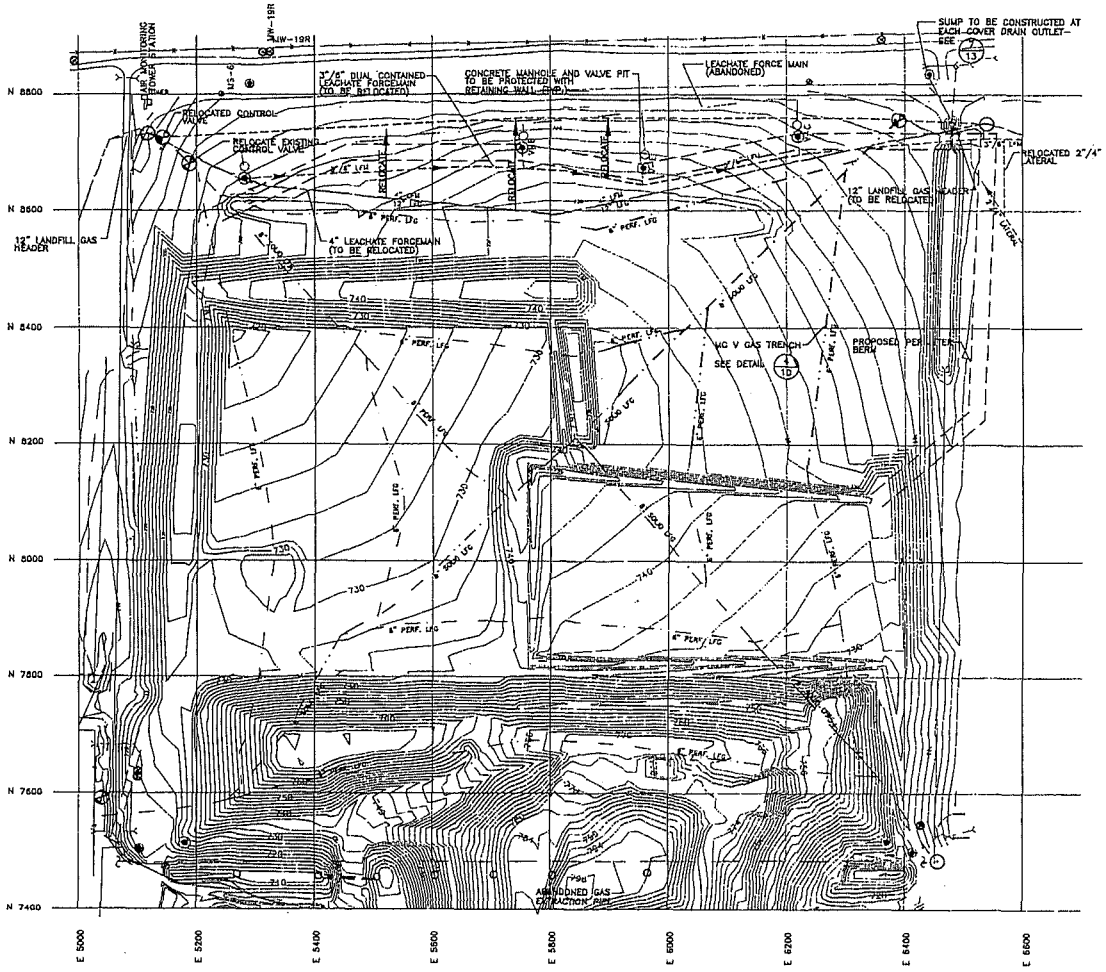
PROJECT NAME
MASTER CELL VI-E DESIGN MODIFICATIO

PROJECT LOCATION
WDI SITE NO. 2
VAN BUREN TWP., WA
COUNTY, MICHIGAN

NTH PROJECT NO.: 13-070804-05	CAD FILE NA: SHEET 1
DESIGNED BY: JHL	INCEP DATE: 1/21/08
DRAWN BY: DRL	DRAWING SC: AS SHOV
CHECKED BY: ISS	SUBMITTED: 9/28/201

SHEET TITLE:
LEACHATE COLLECTI SYSTEM DETAILS

SHEET REFERENCE NUMBER:
11



LEGEND:

- 6" PERF. LFG — AS-BUILT LANDFILL GAS COLLECTION PIPE
- 6" PERF. LFG — PROPOSED LANDFILL GAS COLLECTION PIPE
- PROPOSED TOP OF PERIMETER BERM
- LANDFILL GAS HEADER PIPE
- 4" LFM — LEACHATE FORCEMAIN
- RELOCATED UTILITY ALIGNMENT
- CONTROL VALVE
- CONDENSATE TRAP
- EXISTING LEACHATE SUMP
- EXISTING LEACHATE SUMP VALVE PIT
- EXISTING LYSIMETER
- EXISTING GROUNDWATER MONITORING WELL
- EXISTING CLEAN OUT
- APPROXIMATE LOCATION OF EXISTING COVER DRAIN OUTLETS
- EXISTING LEACHATE FORCEMAIN (ABANDONED)

NOTES:

1. TOPOGRAPHIC INFORMATION TAKEN FROM MAY 1998 AERIAL SURVEY BY AIR-LAND SURVEY, SURVEYS BY WDI IN JANUARY 2006, JANUARY 2007, NOVEMBER 2007, AND SURVEY FROM MCI LLC. IN OCTOBER 2007. CONTOUR INTERVAL= 2 FEET
2. UTILITY INFORMATION BASED ON SITE UTILITY PLAN PROVIDED BY MC LLC.

N

0 50' 100' 200'
SCALE

NTH Consultants, Lt
Infrastructure Engineering and Environmental Services

Northville, MI	248.553.85
Detroit, MI	313.237.38
Lansing, MI	517.484.68
Grand Rapids, MI	616.957.58
Exton, PA	610.524.23
Lehigh Valley, PA	484.893.14
Cleveland, OH	216.334.40
Indianapolis, IN	317.735.78

SUBMITTAL

REV	DESCRIPTION	DATE
A	PER NOTED COMMENTS	10/28

PROJECT NAME

MASTER CELL VI-E
DESIGN MODIFICATION

PROJECT LOCATION

WDI SITE NO. 2
VAN BUREN TWP., WAYNE COUNTY, MICHIGAN

NTH PROJECT NO: 13-070804-05	CAD FILE NAME: SHEET 14
DESIGNED BY: JHL	INCEP DATE: 1/21/09
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: IEB	SUBMITTED DATE: 8/26/2011

SHEET TITLE

MC V MISCELLANEOUS UTILITIES

SHEET REFERENCE NUMBER:

14

WAYNE DISPOSAL, INC. SITE NO. 2
TRANSFER BOX RELOCATION

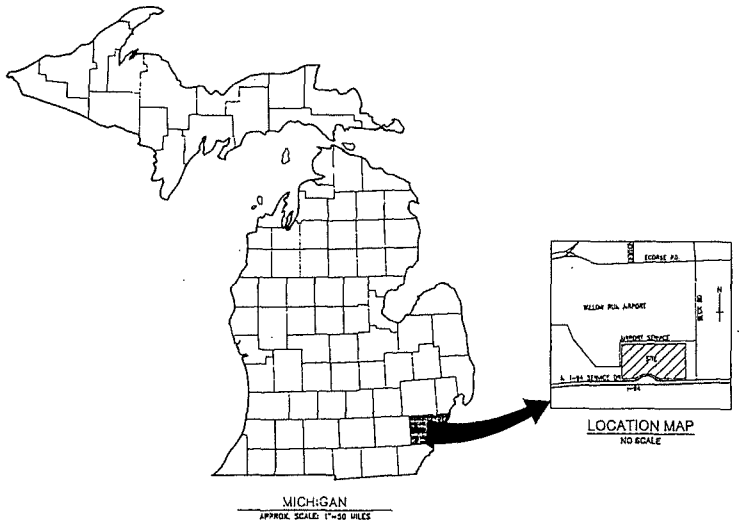
VAN BUREN TOWNSHIP, WAYNE COUNTY, MICHIGAN

NTH PROJECT NO. 13-060921-09

SEPTEMBER 2009

OWNER:
Wayne Disposal, Inc.
49350 N. I-94 Service Drive
Belleville, Michigan 48111

ENGINEER:
NTH Consultants, LTD.
41780 Six Mile Road
Northville, Michigan 48168



SHEET INDEX

NTH Consultants,
Infrastructure Engineering
Environmental Services

Northville, MI 248 55
Detroit, MI 313.23
Lansing, MI 517.4
Grand Rapids, MI 616.9
Exton, PA 610.6
Lehigh Valley, PA 484.5
Cleveland, OH 216.3
Indianapolis, IN 317.7

SUBMITTAL

REV	DESCRIPTION	DATE

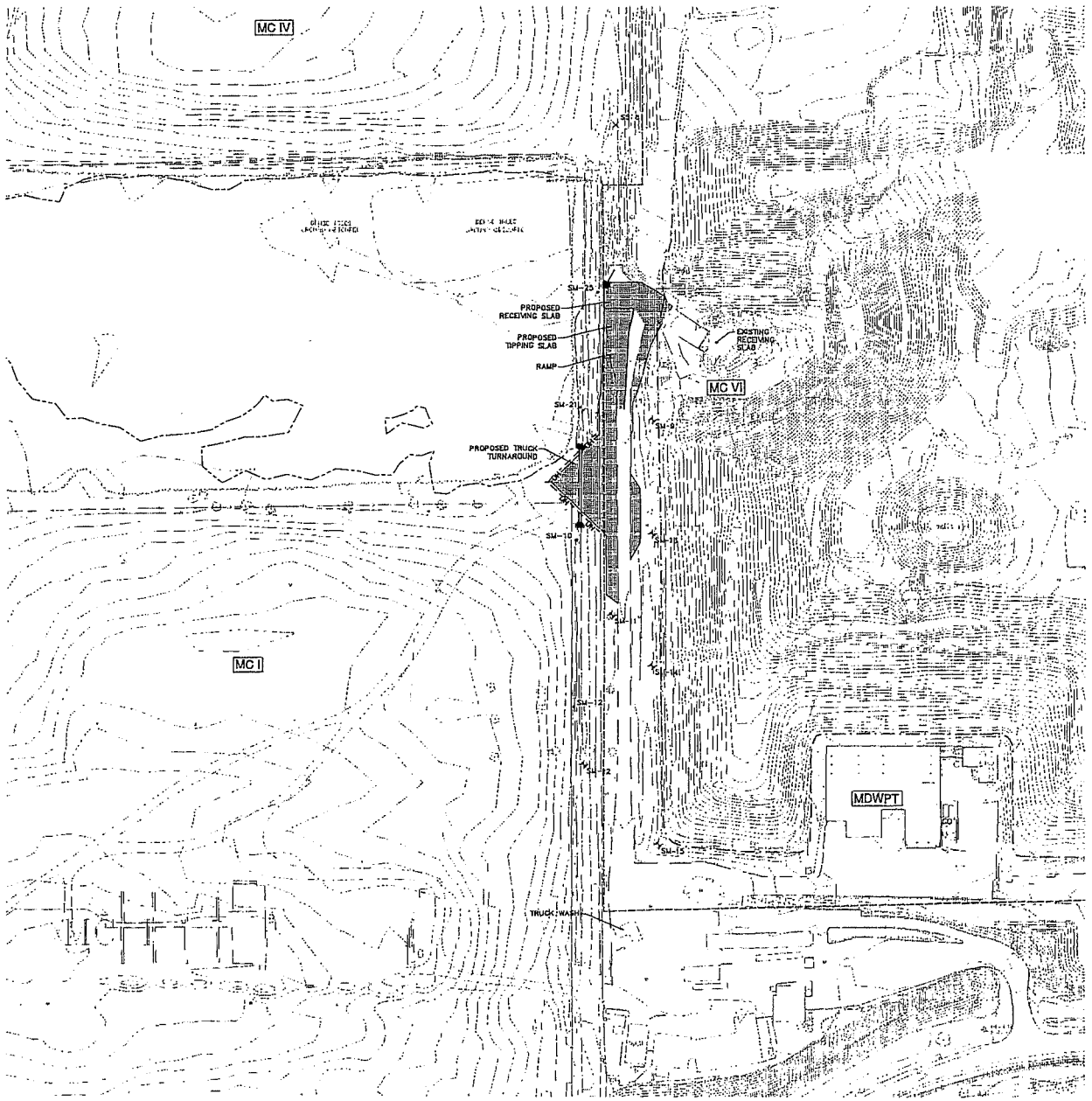
PROJECT NAME:
TRANSFER BOX RELOCATION

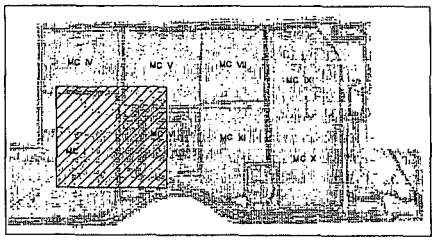
PROJECT LOCATION:
WAYNE DISPOSAL, INC
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-060921-09	CAD FILE NAME: 060921C
DESIGNED BY: KAO	INCEP DATE: 12/1/06
DRAWN BY: KAO	DRAWING SCA: NONE
CHECKED BY: RBM	SUBMITTED DA: 8/4/09

SHEET TITLE:
TITLE SHEET

SHEET REFERENCE NUMBER:
C-100





LOCATION MAP

N

0 50' 100' 200'
SCALE

LEGEND:

- LIGHT
- UTILITY POLE
- SIGN
- EXISTING CONTOUR (2 FT INTERVAL)
- FENCE
- EDGE OF ROAD
- HAZARDOUS WASTE BOUNDARY
- INSIDE TOP OF DIKE/ LIMITS OF LINER
- STORM SEWER
- CULVERT
- WETLAND BOUNDARY
- PROPOSED RETAINING WALL
- PROPOSED STORM SEWER
- PROPOSED END SECTION/RIP RAP
- PROPOSED MANHOLE
- PROPOSED PAVEMENT
- SM-9 SOIL SAMPLING LOCATION
- SM-10 SEDIMENT SAMPLING LOCATION
- SS 8 SURFACE WATER SAMPLING LOCATION

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

Northville, MI	248.553.8300
Detroit, MI	313.237.3100
Lansing, MI	517.484.8800
Grand Rapids, MI	616.957.3485
Exton, PA	610.524.2500
Lehigh Valley, PA	484.893.1440
Cleveland, OH	216.234.4040
Indianapolis, IN	317.735.7848

SUBMITTAL

REV	DESCRIPTION	DATE	BY

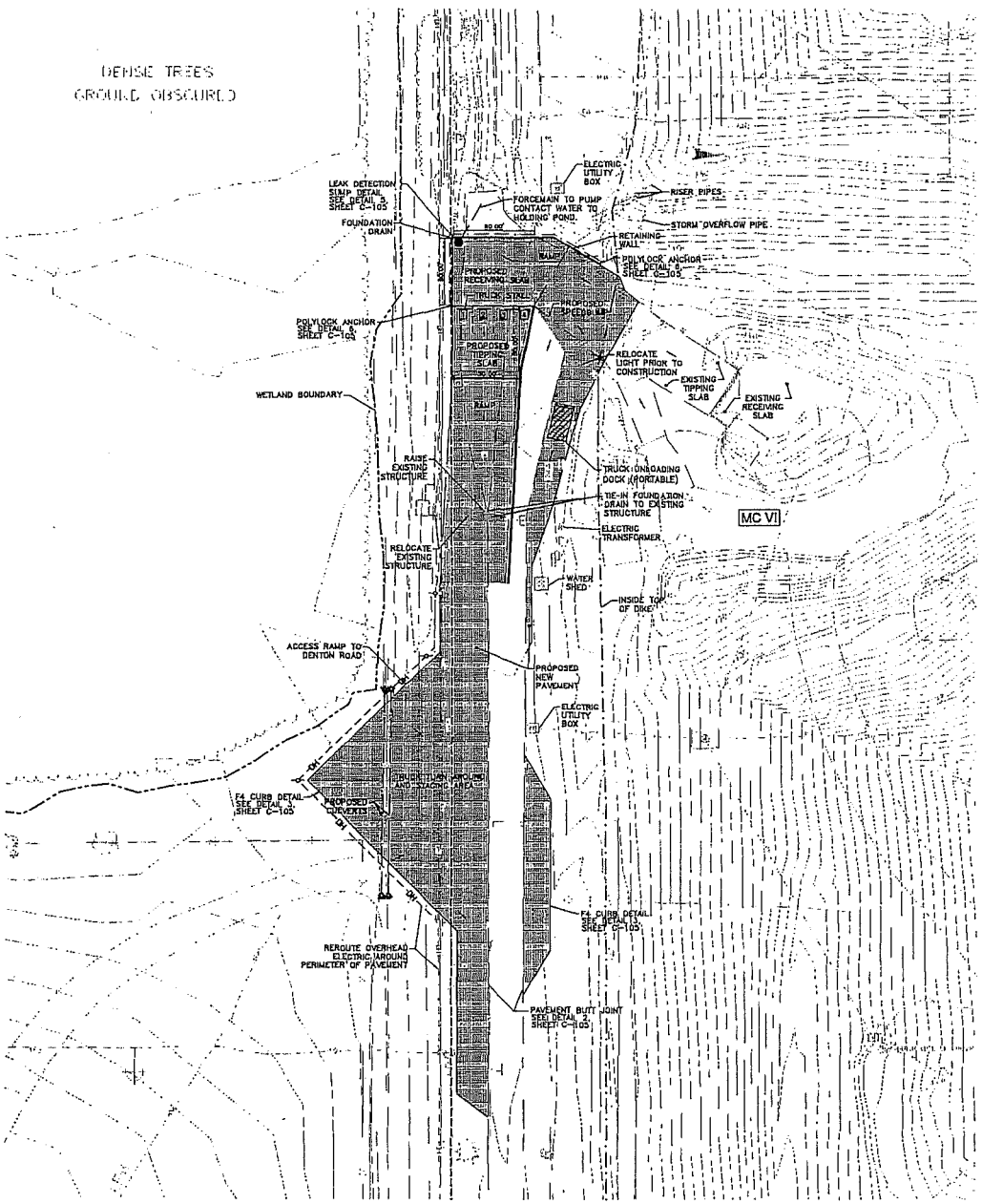
PROJECT NAME
TRANSFER BOX RELOCATION

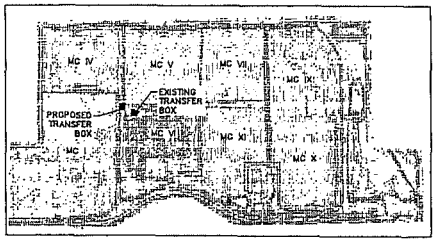
PROJECT LOCATION
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO. 13-080821-08	CAD FILE NAME: 080821GN-LAY
DESIGNED BY: NAME	INCEP DATE: 12/11/08
DRAWN BY: NAME	DRAWING SCALE: AS SHOWN
CHECKED BY: NAME	SUBMITTED DATE 9/4/09

SHEET TITLE:
GENERAL LAYOUT PLAN

SHEET REFERENCE NUMBER:
C-101





LOCATION MAP

N

0 20' 40' 80'

SCALE

LEGEND:

- LIGHT
- UTILITY POLE
- SIGN
- EXISTING CONTOUR (2 FT INTERVAL)
- FENCE
- EDGE OF ROAD
- HAZARDOUS WASTE BOUNDARY
- INSIDE TOP OF DIKE/ LIMITS OF LINER
- OVERHEAD ELECTRIC
- LEACHATE LINE
- GAS HEADER
- UNDERGROUND ELECTRIC
- SURFACE ELECTRIC
- STORM SEWER
- CULVERT
- WETLAND BOUNDARY
- PROPOSED RETAINING WALL
- PROPOSED GRADE BREAKLINE
- PROPOSED CONTACT WATER FORCEMAIN
- PROPOSED SLOPE DIRECTION
- PROPOSED END SECTION/RIP RAP
- PROPOSED MANHOLE
- PROPOSED PAVEMENT
- PROPOSED FOUNDATION DRAIN

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

Northville, MI	248.553.8300
Detroit, MI	313.257.2600
Lansing, MI	517.484.8800
Grand Rapids, MI	616.957.3480
Exton, PA	610.524.2500
Lehigh Valley, PA	484.800.1440
Cleveland, OH	216.324.4040
Indianapolis, IN	317.735.7848

SUBMITTAL

REV	DESCRIPTION	DATE	BY

PROJECT NAME
TRANSFER BOX RELOCATION

PROJECT LOCATION
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-080821-08	CAD FILE NAME: 0802108-CP
DESIGNED BY: KRO	INCEP DATE: 12/11/08
DRAWN BY: KRO	DRAWING SCALE: AS SHOWN
CHECKED BY: RDM	SUBMITTED DATE 3/4/09

SHEET TITLE:
CONCEPTUAL PLAN

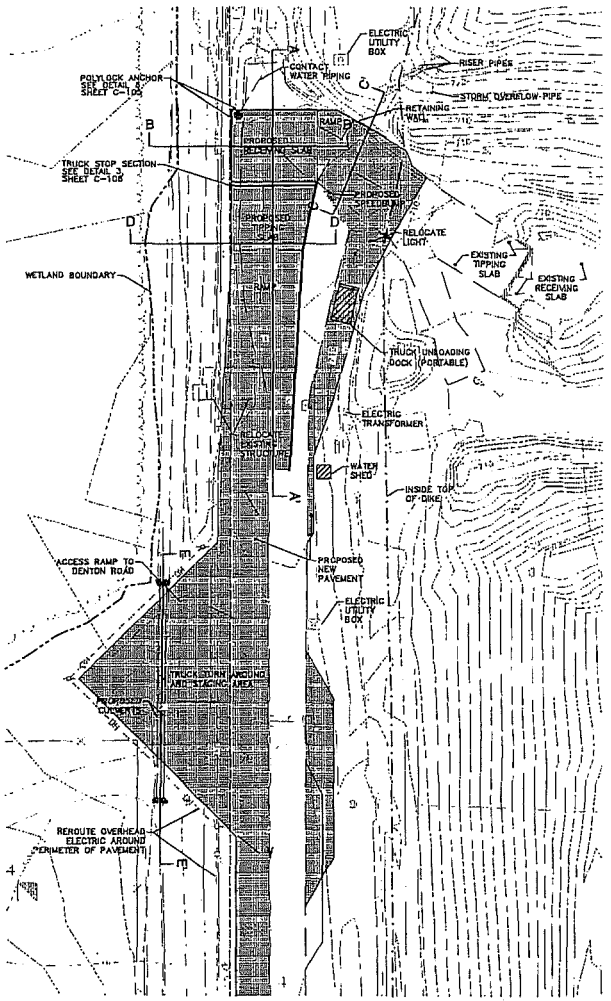
SHEET REFERENCE NUMBER:
C-102

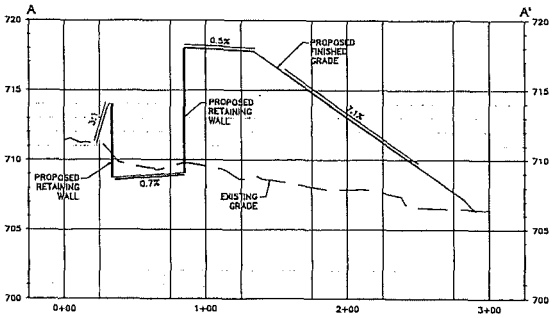
LEGEND:

- EXISTING CONTOUR (2 FT INTERVAL)
- EDGE OF ROAD
- HAZARDOUS WASTE BOUNDARY
- INSIDE TOP OF DIKE/ LIMITS OF LINER
- PROPOSED BREAKLINE
- WETLAND BOUNDARY
- PROPOSED RETAINING WALL
- PROPOSED STORM SEWER

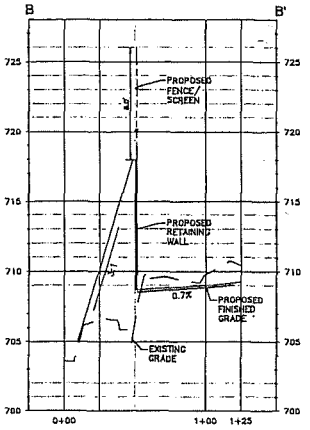
N

SCALE 0 20' 40' 80'

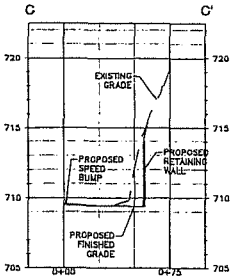




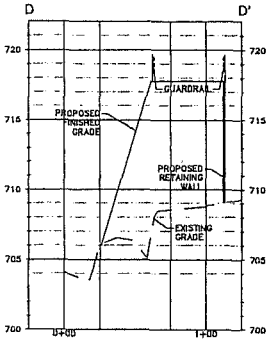
CROSS-SECTION A-A'



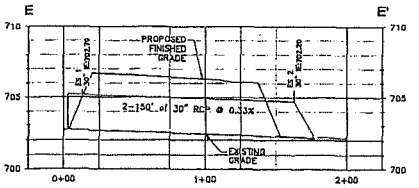
CROSS-SECTION B-B'



CROSS-SECTION C-C'



CROSS-SECTION D-D'



CROSS-SECTION E-E'

HORIZ. SCALE: 0 20' 40' 80'

VERT. SCALE: 0 2' 4' 8'

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

Nashville, MI	248.553.8300
Detroit, MI	313.237.3900
Lansing, MI	517.484.8800
Grand Rapids, MI	616.957.3600
Exton, PA	610.524.2000
Lehigh Valley, PA	484.895.1440
Cleveland, OH	216.331.4040
Indianapolis, IN	317.735.7648

SUBMITTAL

RFI	DESCRIPTION	DATE	BY

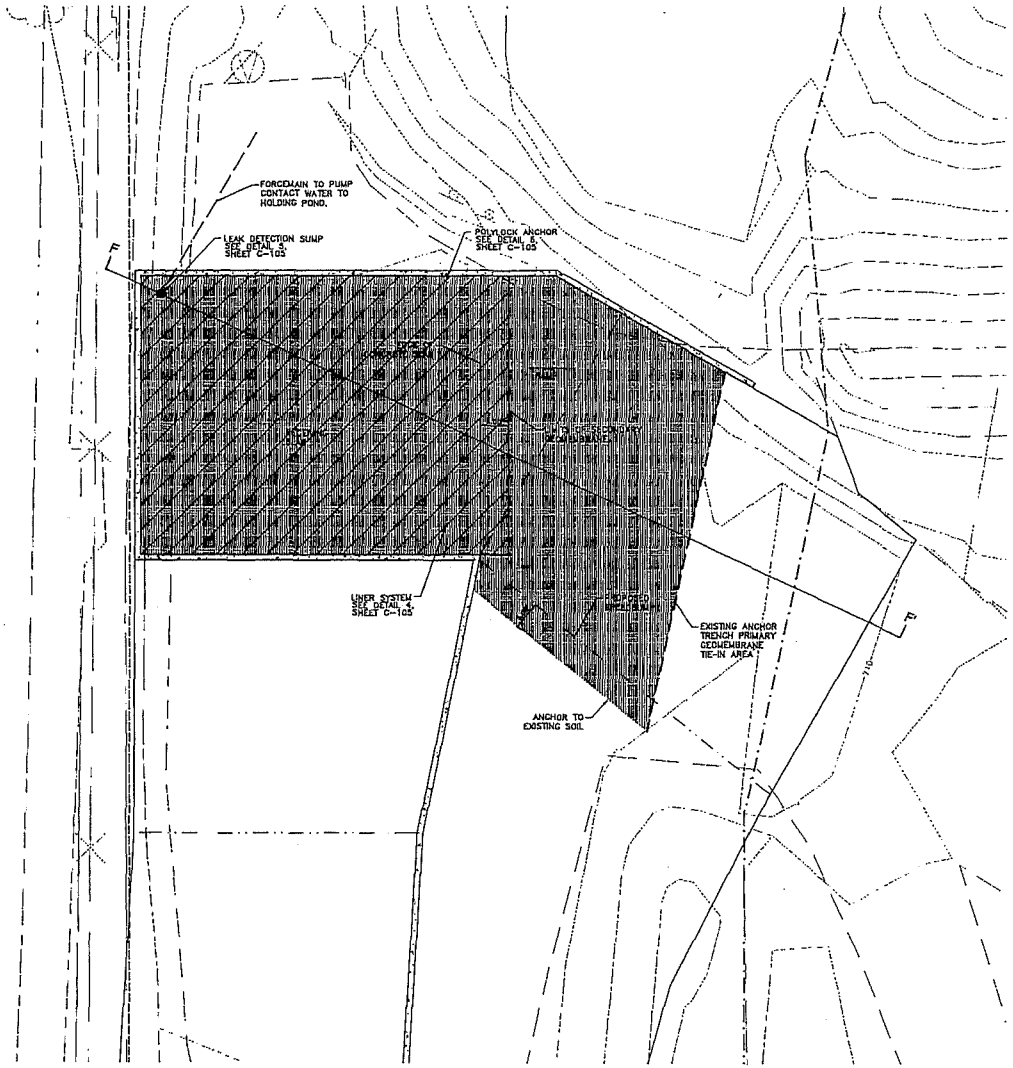
PROJECT NAME
TRANSFER BOX RELOCATION

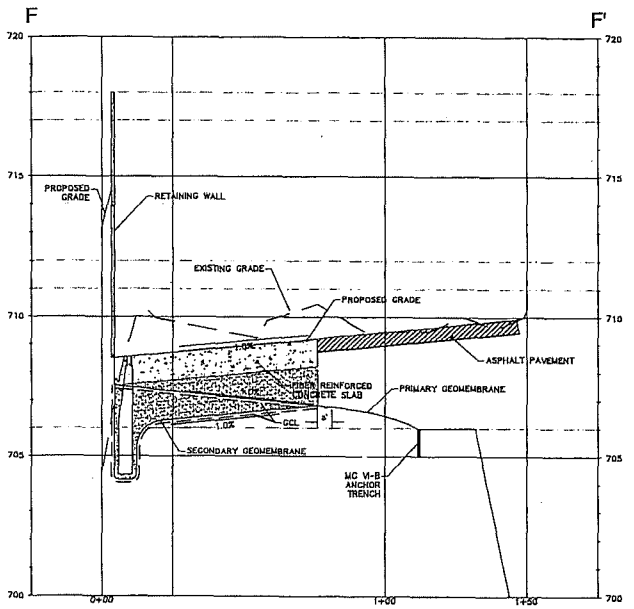
PROJECT LOCATION
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-040821-08	CAD FILE NAME: 08092108-PJH
DESIGNED BY: KRG	INCEP DATE: 12/11/08
DRAWN BY: KRG	DRAWING SCALE:
CHECKED BY: RDM	SUBMITTED DATE: 8/4/09

SHEET TITLE:
CROSS-SECTIONS

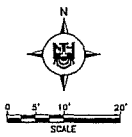
SHEET REFERENCE NUMBER:
C-103





CROSS-SECTION F-F'

HORIZ. SCALE:
0 10' 20' 40'
0 1' 2' 4'
VERT. SCALE:



LEGEND:

- EXISTING CONTOUR (2 FT INTERVAL)
- FENCE
- EDGE OF ROAD
- HAZARDOUS WASTE BOUNDARY
- INSIDE TOP OF DIKE/ LIMITS OF LINER
- PROPOSED RETAINING WALL
- PROPOSED GRADE BREAKLINE
- PROPOSED CONTACT WATER FORCEMAIN
- PROPOSED MANHOLE
- PROPOSED PRIMARY GEOMEMBRANE
- PROPOSED SECONDARY GEOMEMBRANE

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

Northville, MI	248.553.8300
Detroit, MI	313.237.3500
Lansing, MI	517.484.8900
Grand Rapids, MI	616.957.3580
Exton, PA	610.524.2300
Lehigh Valley, PA	484.895.1440
Cleveland, OH	216.531.4040
Indianapolis, IN	317.735.7649

SUBMITTAL

REV	DESCRIPTION	DATE	BY

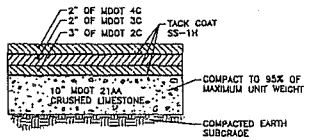
PROJECT NAME
TRANSFER BOX RELOCATION

PROJECT LOCATION
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

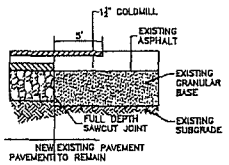
NTH PROJECT NO.: 13-060821-08	CAD FILE NAME: 060821SB-LS
DESIGNED BY: KRD	INCEP DATE: 12/13/08
DRAWN BY: KRD	DRAWING SCALE: AS SHOWN
CHECKED BY: RDM	SUBMITTED DATE: 6/4/09

SHEET TITLE:
LINER SYSTEM

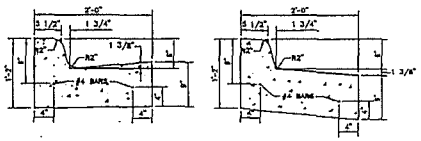
SHEET REFERENCE NUMBER:
C-104



1 C-105 TYPICAL PAVEMENT DETAIL
NOT TO SCALE

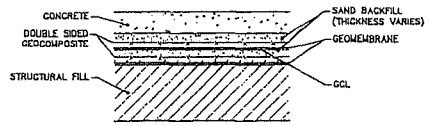


2 C-105 PAVEMENT BUTT JOINT
NOT TO SCALE

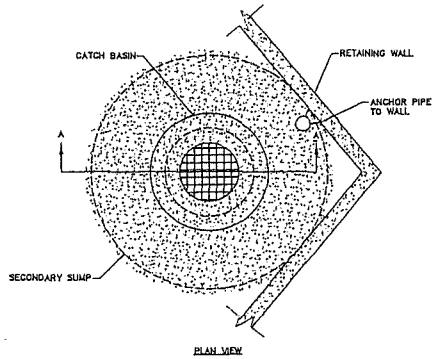


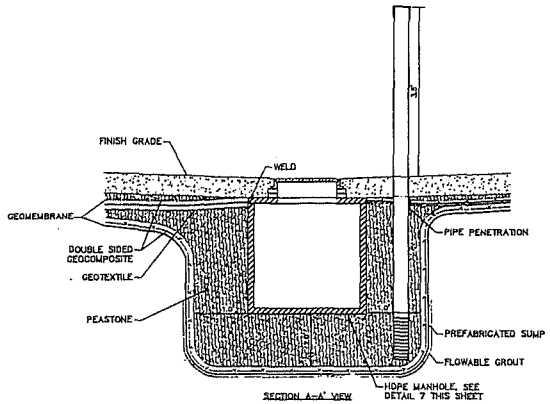
NOTE:
BASE AND SUBBASE AGGREGATES TO EXTEND MINIMUM 1'-0" BEHIND BACK OF CURB.

3 C-105 F4 CURB DETAIL
NOT TO SCALE



4 C-105 LINER SYSTEM
NOT TO SCALE





5 C-105 LEAK DETECTION SUMP DETAIL
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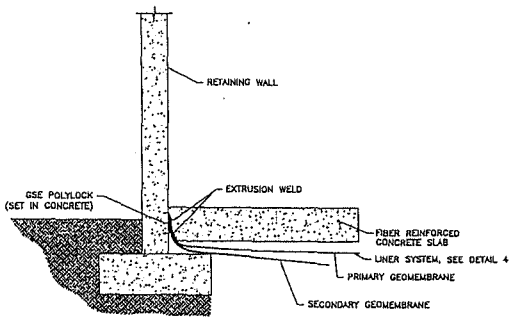

6 C-105 POLYLOCK ANCHOR
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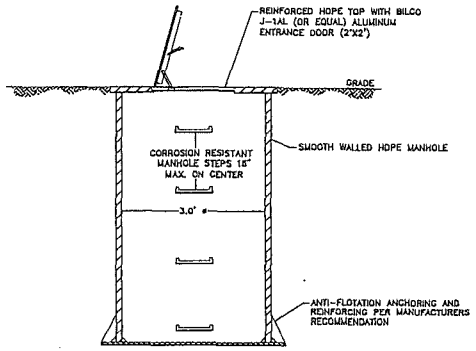


7 C-105 HDPE CATCH BASIN
NOT TO SCALE

NTH Consultants,
Infrastructure Engineering
Environmental Services

Northville, MI 248.55
Detroit, MI 313.33
Lansing, MI 517.48
Grand Rapids, MI 616.95
Eaton, PA 610.52
Lehigh Valley, PA 484.69
Cleveland, OH 216.33
Indianapolis, IN 317.73

REVISIONS

REV	DESCRIPTION	DA

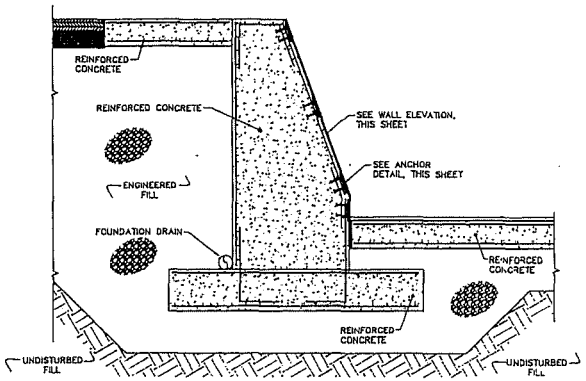
PROJECT NAME
TRANSFER BOX RELOCATION

PROJECT LOCATION
WAYNE DISPOSAL, INC
SITE NO. 2
BELLEVILLE, MICHIGAN

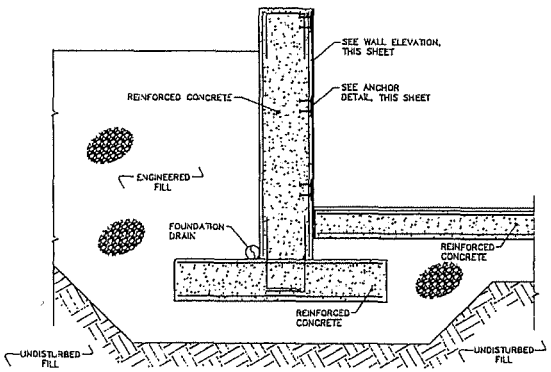
NTH PROJECT NO.: 13-060821-08	CAD FILE NAME: 060821c8-
DESIGNED BY: KAD	INCEP DATE: 12/11/08
DRAWN BY: KAD	DRAWING REV: NONE
CHECKED BY: KBM	SUBMITTED D: 8/4/09

SHEET TITLE:
DETAILS

SHEET REFERENCE NUMBER:
C-105



1 C-106 RETAINING WALL AT TIPPING SLAB
NOT TO SCALE



2 C-106 SIDE RETAINING WALL SECTION
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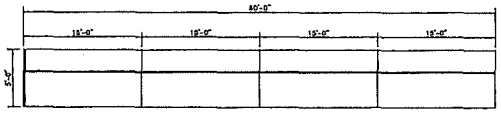
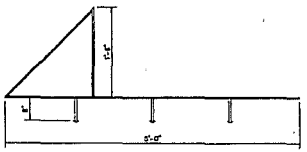
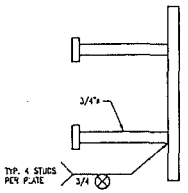


PLAN VIEW

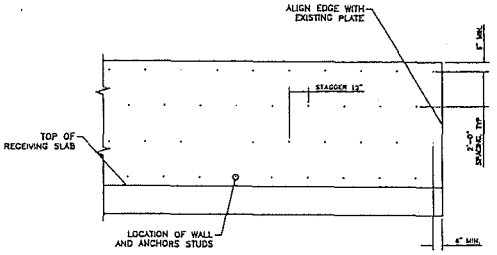


ELEVATION VIEW

3 C-106 TRUCK STOP SECTION
NOT TO SCALE



4 C-106 ANCHOR DETAIL
NOT TO SCALE



5 C-106 WALL ELEVATION
NOT TO SCALE

NTH Consultants,
Infrastructure Engineering
Environmental Services

Northville, MI
Detroit, MI
Lansing, MI
Grand Rapids, MI
Eaton, PA
Lehigh Valley, PA
Cleveland, OH
Indianapolis, IN

REVISIONS

REV	DESCRIPTION	DA

PROJECT NAME
TRANSFER BOX RELOCATION

PROJECT LOCATION
WAYNE DISPOSAL, IN
SITE NO. 2
BELLEVILLE, MICHIGA

NTH PROJECT NO.: 13-060821-08	CAD FILE NAM 060821
DESIGNED BY: NAME	INCEP DATE: 12/11/08
DRAWN BY: NAME	DRAWING SC NONE
CHECKED BY: NAME	SUBMITTED D 8/4/09

SHEET TITLE:
DETAILS

SHEET REFERENCE NUMBER:
C-106

Attachment 8

Acceptable Waste Types

DESCRIPTION OF HAZARDOUS WASTE TYPES

40 CFR 270.13

AND

NREPA 451, PART 111 R504(1)b

See MDEQ Application Form (EQP 5111) XIV "Description of Hazardous Waste Types".

Description of Hazardous Wastes
Wayne Disposal, Inc., Site # 2
MID 048 090 633

LINE NO.	A. EPA HAZARDOUS WASTECODE	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE	D1. PROCESS CODES			D2. PROCESS DESCRIPTION
1	D001[R]	200000	Y	D80			
2	D002	200000	Y	D80			
3	D003[R]	200000	Y	D80			
4	D004	200000	Y	D80			
5	D005	200000	Y	D80			
6	D006	200000	Y	D80			
7	D007	200000	Y	D80			
8	D008	200000	Y	D80			
9	D009	200000	Y	D80			
10	D010	200000	Y	D80			
11	D011	200000	Y	D80			
12	D012	200000	Y	D80			
13	D013	200000	Y	D80			
14	D014	200000	Y	D80			
15	D015	200000	Y	D80			
16	D016	200000	Y	D80			
17	D017	200000	Y	D80			
18	D018	200000	Y	D80			
19	D019	200000	Y	D80			
20	D020	200000	Y	D80			
21	D021	200000	Y	D80			
22	D022	200000	Y	D80			
23	D023	200000	Y	D80			
24	D024	200000	Y	D80			
25	D025	200000	Y	D80			
26	D026	200000	Y	D80			
27	D027	200000	Y	D80			
28	D028	200000	Y	D80			
29	D029	200000	Y	D80			
30	D030	200000	Y	D80			
31	D031	200000	Y	D80			
32	D032	200000	Y	D80			
33	D033	200000	Y	D80			
34	D034	200000	Y	D80			
35	D035	200000	Y	D80			
36	D036	200000	Y	D80			
37	D037	200000	Y	D80			
38	D038	200000	Y	D80			
39	D039	200000	Y	D80			
40	D040	200000	Y	D80			
41	D041	200000	Y	D80			
42	D042	200000	Y	D80			
43	D043	200000	Y	D80			
44	F001	200000	Y	D80			
45	F002	200000	Y	D80			
46	F003	200000	Y	D80			
47	F004	200000	Y	D80			

Description of Hazardous Wastes
Wayne Disposal, Inc., Site # 2
MID 048 090 633

LINE NO.	A. EPA HAZARDOUS WASTECODE	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE	D1. PROCESS CODES			D2. PROCESS DESCRIPTION
48	F005	200000	Y	D80			
49	F006	200000	Y	D80			
50	F007	200000	Y	D80			
51	F008	200000	Y	D80			
52	F009	200000	Y	D80			
53	F010	200000	Y	D80			
54	F011	200000	Y	D80			
55	F012	200000	Y	D80			
56	F019	200000	Y	D80			
57	F024	200000	Y	D80			
58	F025	200000	Y	D80			
59	F032	200000	Y	D80			
60	F034	200000	Y	D80			
61	F035	200000	Y	D80			
62	F037	200000	Y	D80			
63	F038	200000	Y	D80			
64	F039	200000	Y	D80			
65	K001	200000	Y	D80			
66	K002	200000	Y	D80			
67	K003	200000	Y	D80			
68	K004	200000	Y	D80			
69	K005	200000	Y	D80			
70	K006	200000	Y	D80			
71	K007	200000	Y	D80			
72	K008	200000	Y	D80			
73	K009	200000	Y	D80			
74	K010	200000	Y	D80			
75	K011	200000	Y	D80			
76	K013	200000	Y	D80			
77	K014	200000	Y	D80			
78	K015	200000	Y	D80			
79	K016	200000	Y	D80			
80	K017	200000	Y	D80			
81	K018	200000	Y	D80			
82	K019	200000	Y	D80			
83	K020	200000	Y	D80			
84	K021	200000	Y	D80			
85	K022	200000	Y	D80			
86	K023	200000	Y	D80			
87	K024	200000	Y	D80			
88	K025	200000	Y	D80			
89	K026	200000	Y	D80			
90	$K027^{R}$	200000	Y	D80			
91	K028	200000	Y	D80			
92	K029	200000	Y	D80			
93	K030	200000	Y	D80			
94	K031	200000	Y	D80			
95	K032	200000	Y	D80			

Description of Hazardous Wastes
Wayne Disposal, Inc., Site # 2
MID 048 090 633

LINE NO.	A. EPA HAZARDOUS WASTECODE	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE	D1. PROCESS CODES			D2. PROCESS DESCRIPTION
96	K033	200000	Y	D80			
97	K034	200000	Y	D80			
98	K035	200000	Y	D80			
99	K036	200000	Y	D80			
100	K037	200000	Y	D80			
101	K038	200000	Y	D80			
102	K039	200000	Y	D80			
103	K040	200000	Y	D80			
104	K041	200000	Y	D80			
105	K042	200000	Y	D80			
106	K043	200000	Y	D80			
107	K044[R]	200000	Y	D80			
108	K045[R]	200000	Y	D80			
109	K046	200000	Y	D80			
110	K047[R]	200000	Y	D80			
111	K048	200000	Y	D80			
112	K049	200000	Y	D80			
113	K050	200000	Y	D80			
114	K051	200000	Y	D80			
115	K052	200000	Y	D80			
116	K060	200000	Y	D80			
117	K061	200000	Y	D80			
118	K062	200000	Y	D80			
119	K069	200000	Y	D80			
120	K071	200000	Y	D80			
121	K073	200000	Y	D80			
122	K083	200000	Y	D80			
123	K084	200000	Y	D80			
124	K085	200000	Y	D80			
125	K086	200000	Y	D80			
126	K087	200000	Y	D80			
127	K088	200000	Y	D80			
128	K090	200000	Y	D80			
129	K091	200000	Y	D80			
130	K093	200000	Y	D80			
131	K094	200000	Y	D80			
132	K095	200000	Y	D80			
133	K096	200000	Y	D80			
134	K097	200000	Y	D80			
135	K098	200000	Y	D80			
136	K100	200000	Y	D80			
137	K101	200000	Y	D80			
138	K102	200000	Y	D80			
139	K103	200000	Y	D80			
140	K104	200000	Y	D80			
141	K105	200000	Y	D80			
142	K106	200000	Y	D80			

Description of Hazardous Wastes
Wayne Disposal, Inc., Site # 2
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LINE NO.	A. EPA HAZARDOUS WASTECODE	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE	D1. PROCESS CODES			D2. PROCESS DESCRIPTION
143	K107	200000	Y	D80			
144	K108	200000	Y	D80			
145	K109	200000	Y	D80			
146	K110	200000	Y	D80			
147	K111	200000	Y	D80			
148	K112	200000	Y	D80			
149	K113	200000	Y	D80			
150	K114	200000	Y	D80			
151	K115	200000	Y	D80			
152	K116	200000	Y	D80			
153	K117	200000	Y	D80			
154	K118	200000	Y	D80			
155	K123	200000	Y	D80			
156	K124	200000	Y	D80			
157	K125	200000	Y	D80			
158	K126	200000	Y	D80			
159	K131	200000	Y	D80			
160	K132	200000	Y	D80			
161	K136	200000	Y	D80			
162	K141	200000	Y	D80			
163	K142	200000	Y	D80			
164	K143	200000	Y	D80			
165	K144	200000	Y	D80			
166	K145	200000	Y	D80			
167	K147	200000	Y	D80			
168	K148	200000	Y	D80			
169	K149	200000	Y	D80			
170	K150	200000	Y	D80			
171	K151	200000	Y	D80			
172	K156	200000	Y	D80			
173	K157	200000	Y	D80			
174	K158	200000	Y	D80			
175	K159	200000	Y	D80			
176	K161	200000	Y	D80			
177	K169	200000	Y	D80			
178	K170	200000	Y	D80			
179	K171	200000	Y	D80			
180	K172	200000	Y	D80			
181	K174	200000	Y	D80			
182	K175	200000	Y	D80			
183	K176	200000	Y	D80			
184	K177	200000	Y	D80			
185	K178	200000	Y	D80			
186	K181	200000	Y	D80			
187	P001	200000	Y	D80			
188	P002	200000	Y	D80			
189	P003	200000	Y	D80			
190	P004	200000	Y	D80			

Description of Hazardous Wastes
Wayne Disposal, Inc., Site # 2
MID 048 090 633

LINE NO.	A. EPA HAZARDOUS WASTECODE	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE	D1 PROCESS CODES			D2 PROCESS DESCRIPTION
191	P005	200000	Y	D80			
192	P006	200000	Y	D80			
193	P007	200000	Y	D80			
194	P008	200000	Y	D80			
195	P009	200000	Y	D80			
196	P010	200000	Y	D80			
197	P011	200000	Y	D80			
198	P012	200000	Y	D80			
199	P013	200000	Y	D80			
200	P014	200000	Y	D80			
201	P015	200000	Y	D80			
202	P016	200000	Y	D80			
203	P017	200000	Y	D80			
204	P018	200000	Y	D80			
205	P020	200000	Y	D80			
206	P021	200000	Y	D80			
207	P022	200000	Y	D80			
208	P023	200000	Y	D80			
209	P024	200000	Y	D80			
210	P026	200000	Y	D80			
211	P027	200000	Y	D80			
212	P028	200000	Y	D80			
213	P029	200000	Y	D80			
214	P030	200000	Y	D80			
215	P031	200000	Y	D80			
216	P033	200000	Y	D80			
217	P034	200000	Y	D80			
218	P036	200000	Y	D80			
219	P037	200000	Y	D80			
220	P038	200000	Y	D80			
221	P039	200000	Y	D80			
222	P040	200000	Y	D80			
223	P041	200000	Y	D80			
224	P042	200000	Y	D80			
225	P043	200000	Y	D80			
226	P044	200000	Y	D80			
227	P045	200000	Y	D80			
228	P046	200000	Y	D80			
229	P047	200000	Y	D80			
230	P048	200000	Y	D80			
231	P049	200000	Y	D80			
232	P050	200000	Y	D80			
233	P051	200000	Y	D80			
234	P054	200000	Y	D80			
235	P056	200000	Y	D80			
236	P057	200000	Y	D80			
237	P058	200000	Y	D80			
238	P059	200000	Y	D80			

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Wayne Disposal, Inc., Site # 2
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LINE NO.	A. EPA HAZARDOUS WASTECODE	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE	D1. PROCESS CODES			D2. PROCESS DESCRIPTION
239	P060	200000	Y	D80			
240	P062	200000	Y	D80			
241	P063	200000	Y	D80			
242	P064	200000	Y	D80			
243	P065	200000	Y	D80			
244	P066	200000	Y	D80			
245	P067	200000	Y	D80			
246	P068	200000	Y	D80			
247	P069	200000	Y	D80			
248	P070	200000	Y	D80			
249	P071	200000	Y	D80			
250	P072	200000	Y	D80			
251	P073	200000	Y	D80			
252	P074	200000	Y	D80			
253	P075	200000	Y	D80			
254	P076	200000	Y	D80			
255	P077	200000	Y	D80			
256	P078	200000	Y	D80			
257	P081	200000	Y	D80			
258	P082	200000	Y	D80			
259	P084	200000	Y	D80			
260	P085	200000	Y	D80			
261	P087	200000	Y	D80			
262	P088	200000	Y	D80			
263	P089	200000	Y	D80			
264	P092	200000	Y	D80			
265	P093	200000	Y	D80			
266	P094	200000	Y	D80			
267	P095	200000	Y	D80			
268	P096	200000	Y	D80			
269	P097	200000	Y	D80			
270	P098	200000	Y	D80			
271	P099	200000	Y	D80			
272	P101	200000	Y	D80			
273	P102	200000	Y	D80			
274	P103	200000	Y	D80			
275	P104	200000	Y	D80			
276	P105	200000	Y	D80			
277	P106	200000	Y	D80			
278	P108	200000	Y	D80			
279	P109	200000	Y	D80			
280	P110	200000	Y	D80			
281	P111	200000	Y	D80			
282	P112	200000	Y	D80			
283	P113	200000	Y	D80			
284	P114	200000	Y	D80			
285	P115	200000	Y	D80			
286	P116	200000	Y	D80			

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Wayne Disposal, Inc., Site # 2
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LINE NO.	A. EPA HAZARDOUS WASTECODE	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE	D1. PROCESS CODES			D2. PROCESS DESCRIPTION
287	P118	200000	Y	D80			
288	P119	200000	Y	D80			
289	P120	200000	Y	D80			
290	P121	200000	Y	D80			
291	P122	200000	Y	D80			
292	P123	200000	Y	D80			
293	P127	200000	Y	D80			
294	P128	200000	Y	D80			
295	P185	200000	Y	D80			
296	P188	200000	Y	D80			
297	P189	200000	Y	D80			
298	P190	200000	Y	D80			
299	P191	200000	Y	D80			
300	P192	200000	Y	D80			
301	P194	200000	Y	D80			
302	P196	200000	Y	D80			
303	P197	200000	Y	D80			
304	P198	200000	Y	D80			
305	P199	200000	Y	D80			
306	P201	200000	Y	D80			
307	P202	200000	Y	D80			
308	P203	200000	Y	D80			
309	P204	200000	Y	D80			
310	P205	200000	Y	D80			
311	U001	200000	Y	D80			
312	U002	200000	Y	D80			
313	U003	200000	Y	D80			
314	U004	200000	Y	D80			
315	U005	200000	Y	D80			
316	U006	200000	Y	D80			
317	U007	200000	Y	D80			
318	U008	200000	Y	D80			
319	U009	200000	Y	D80			
320	U010	200000	Y	D80			
321	U011	200000	Y	D80			
322	U012	200000	Y	D80			
323	U014	200000	Y	D80			
324	U015	200000	Y	D80			
325	U016	200000	Y	D80			
326	U017	200000	Y	D80			
327	U018	200000	Y	D80			
328	U019	200000	Y	D80			
329	U020	200000	Y	D80			
330	U021	200000	Y	D80			
331	U022	200000	Y	D80			
332	U023	200000	Y	D80			
333	U024	200000	Y	D80			
334	U025	200000	Y	D80			

Description of Hazardous Wastes
Wayne Disposal, Inc., Site # 2
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LINE NO.	A. EPA HAZARDOUS WASTECODE	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE	D1. PROCESS CODES			D2. PROCESS DESCRIPTION
335	U026	200000	Y	D80			
336	U027	200000	Y	D80			
337	U028	200000	Y	D80			
338	U029	200000	Y	D80			
339	U030	200000	Y	D80			
340	U031	200000	Y	D80			
341	U032	200000	Y	D80			
342	U033	200000	Y	D80			
343	U034	200000	Y	D80			
344	U035	200000	Y	D80			
345	U036	200000	Y	D80			
346	U037	200000	Y	D80			
347	U038	200000	Y	D80			
348	U039	200000	Y	D80			
349	U041	200000	Y	D80			
350	U042	200000	Y	D80			
351	U043	200000	Y	D80			
352	U044	200000	Y	D80			
353	U045	200000	Y	D80			
354	U046	200000	Y	D80			
355	U047	200000	Y	D80			
356	U048	200000	Y	D80			
357	U049	200000	Y	D80			
358	U050	200000	Y	D80			
359	U051	200000	Y	D80			
360	U052	200000	Y	D80			
361	U053	200000	Y	D80			
362	U055	200000	Y	D80			
363	U056	200000	Y	D80			
364	U057	200000	Y	D80			
365	U058	200000	Y	D80			
366	U059	200000	Y	D80			
367	U060	200000	Y	D80			
368	U061	200000	Y	D80			
369	U062	200000	Y	D80			
370	U063	200000	Y	D80			
371	U064	200000	Y	D80			
372	U066	200000	Y	D80			
373	U067	200000	Y	D80			
374	U068	200000	Y	D80			
375	U069	200000	Y	D80			
376	U070	200000	Y	D80			
377	U071	200000	Y	D80			
378	U072	200000	Y	D80			
379	U073	200000	Y	D80			
380	U074	200000	Y	D80			
381	U075	200000	Y	D80			
382	U076	200000	Y	D80			

Description of Hazardous Wastes
Wayne Disposal, Inc., Site # 2
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LINE NO.	A. EPA HAZARDOUS WASTECODE	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE	D1. PROCESS CODES			D2. PROCESS DESCRIPTION
383	U077	200000	Y	D80			
384	U078	200000	Y	D80			
385	U079	200000	Y	D80			
386	U080	200000	Y	D80			
387	U081	200000	Y	D80			
388	U082	200000	Y	D80			
389	U083	200000	Y	D80			
390	U084	200000	Y	D80			
391	U085	200000	Y	D80			
392	U086	200000	Y	D80			
393	U087	200000	Y	D80			
394	U088	200000	Y	D80			
395	U089	200000	Y	D80			
396	U090	200000	Y	D80			
397	U091	200000	Y	D80			
398	U092	200000	Y	D80			
399	U093	200000	Y	D80			
400	U094	200000	Y	D80			
401	U095	200000	Y	D80			
402	U096	200000	Y	D80			
403	U097	200000	Y	D80			
404	U098	200000	Y	D80			
405	U099	200000	Y	D80			
406	U101	200000	Y	D80			
407	U102	200000	Y	D80			
408	U103	200000	Y	D80			
409	U105	200000	Y	D80			
410	U106	200000	Y	D80			
411	U107	200000	Y	D80			
412	U108	200000	Y	D80			
413	U109	200000	Y	D80			
414	U110	200000	Y	D80			
415	U111	200000	Y	D80			
416	U112	200000	Y	D80			
417	U113	200000	Y	D80			
418	U114	200000	Y	D80			
419	U115	200000	Y	D80			
420	U116	200000	Y	D80			
421	U117	200000	Y	D80			
422	U118	200000	Y	D80			
423	U119	200000	Y	D80			
424	U120	200000	Y	D80			
425	U121	200000	Y	D80			
426	U122	200000	Y	D80			
427	U123	200000	Y	D80			
428	U124	200000	Y	D80			
429	U125	200000	Y	D80			
430	U126	200000	Y	D80			

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Wayne Disposal, Inc., Site # 2
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LINE NO.	A. EPA HAZARDOUS WASTECODE	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE	D1. PROCESS CODES			D2. PROCESS DESCRIPTION
431	U127	200000	Y	D80			
432	U128	200000	Y	D80			
433	U129	200000	Y	D80			
434	U130	200000	Y	D80			
435	U131	200000	Y	D80			
436	U132	200000	Y	D80			
437	U133	200000	Y	D80			
438	U134	200000	Y	D80			
439	U135	200000	Y	D80			
440	U136	200000	Y	D80			
441	U137	200000	Y	D80			
442	U138	200000	Y	D80			
443	U140	200000	Y	D80			
444	U141	200000	Y	D80			
445	U142	200000	Y	D80			
446	U143	200000	Y	D80			
447	U144	200000	Y	D80			
448	U145	200000	Y	D80			
449	U146	200000	Y	D80			
450	U147	200000	Y	D80			
451	U148	200000	Y	D80			
452	U149	200000	Y	D80			
453	U150	200000	Y	D80			
454	U151	200000	Y	D80			
455	U152	200000	Y	D80			
456	U153	200000	Y	D80			
457	U154	200000	Y	D80			
458	U155	200000	Y	D80			
459	U156	200000	Y	D80			
460	U157	200000	Y	D80			
461	U158	200000	Y	D80			
462	U159	200000	Y	D80			
463	U160	200000	Y	D80			
464	U161	200000	Y	D80			
465	U162	200000	Y	D80			
466	U163	200000	Y	D80			
467	U164	200000	Y	D80			
468	U165	200000	Y	D80			
469	U166	200000	Y	D80			
470	U167	200000	Y	D80			
471	U168	200000	Y	D80			
472	U169	200000	Y	D80			
473	U170	200000	Y	D80			
474	U171	200000	Y	D80			
475	U172	200000	Y	D80			
476	U173	200000	Y	D80			
477	U174	200000	Y	D80			
478	U176	200000	Y	D80			

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LINE NO.	A. EPA HAZARDOUS WASTECODE	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE	D1. PROCESS CODES			D2. PROCESS DESCRIPTION
479	U177	200000	Y	D80			
480	U178	200000	Y	D80			
481	U179	200000	Y	D80			
482	U180	200000	Y	D80			
483	U181	200000	Y	D80			
484	U182	200000	Y	D80			
485	U183	200000	Y	D80			
486	U184	200000	Y	D80			
487	U185	200000	Y	D80			
488	U186	200000	Y	D80			
489	U187	200000	Y	D80			
490	U188	200000	Y	D80			
491	U189	200000	Y	D80			
492	U190	200000	Y	D80			
493	U191	200000	Y	D80			
494	U192	200000	Y	D80			
495	U193	200000	Y	D80			
496	U194	200000	Y	D80			
497	U196	200000	Y	D80			
498	U197	200000	Y	D80			
499	U200	200000	Y	D80			
500	U201	200000	Y	D80			
501	U202	200000	Y	D80			
502	U203	200000	Y	D80			
503	U204	200000	Y	D80			
504	U205	200000	Y	D80			
505	U206	200000	Y	D80			
506	U207	200000	Y	D80			
507	U208	200000	Y	D80			
508	U209	200000	Y	D80			
509	U210	200000	Y	D80			
510	U211	200000	Y	D80			
511	U213	200000	Y	D80			
512	U214	200000	Y	D80			
513	U215	200000	Y	D80			
514	U216	200000	Y	D80			
515	U217	200000	Y	D80			
516	U218	200000	Y	D80			
517	U219	200000	Y	D80			
518	U220	200000	Y	D80			
519	U221	200000	Y	D80			
520	U222	200000	Y	D80			
521	U223	200000	Y	D80			
522	U225	200000	Y	D80			
523	U226	200000	Y	D80			
524	U227	200000	Y	D80			
525	U228	200000	Y	D80			
526	U234	200000	Y	D80			

Description of Hazardous Wastes
Wayne Disposal, Inc., Site # 2
MID 048 090 633

LINE NO.	A. EPA HAZARDOUS WASTECODE	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE	D1. PROCESS CODES			D2. PROCESS DESCRIPTION
527	U235	200000	Y	D80			
528	U236	200000	Y	D80			
529	U237	200000	Y	D80			
530	U238	200000	Y	D80			
531	U239	200000	Y	D80			
532	U240	200000	Y	D80			
533	U243	200000	Y	D80			
534	U244	200000	Y	D80			
535	U246	200000	Y	D80			
536	U247	200000	Y	D80			
537	U248	200000	Y	D80			
538	U249	200000	Y	D80			
539	U271	200000	Y	D80			
540	U278	200000	Y	D80			
541	U279	200000	Y	D80			
542	U280	200000	Y	D80			
543	U328	200000	Y	D80			
544	U353	200000	Y	D80			
545	U359	200000	Y	D80			
546	U364	200000	Y	D80			
547	U367	200000	Y	D80			
548	U372	200000	Y	D80			
549	U373	200000	Y	D80			
550	U387	200000	Y	D80			
551	U389	200000	Y	D80			
552	U394	200000	Y	D80			
553	U395	200000	Y	D80			
554	U404	200000	Y	D80			
555	U409	200000	Y	D80			
556	U410	200000	Y	D80			
557	U411	200000	Y	D80			
558	001S	200000	Y	D80			
559	002S	200000	Y	D81			
560	003S	200000	Y	D82			
561	004S	200000	Y	D83			
562	005S	200000	Y	D84			
563	006S	200000	Y	D85			
564	007S	200000	Y	D86			
565	001K	200000	Y	D80			
566	002K	200000	Y	D80			
567	001U	200000	Y	D80			
568	002U	200000	Y	D80			
569	003U	200000	Y	D80			
570	004U	200000	Y	D80			
571	005U	200000	Y	D80			
572	006U	200000	Y	D80			
573	007U	200000	Y	D80			
574	008U	200000	Y	D80			

Description of Hazardous Wastes
Wayne Disposal, Inc., Site # 2
MID 048 090 633

LINE NO.	A. EPA HAZARDOUS WASTECODE	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE	D1. PROCESS CODES			D2. PROCESS DESCRIPTION
575	009U	200000	Y	D80			
576	011U	200000	Y	D80			
577	012U	200000	Y	D80			
578	013U	200000	Y	D80			
579	014U	200000	Y	D80			
580	015U	200000	Y	D80			
581	016U	200000	Y	D80			
582	017U	200000	Y	D80			
583	020U	200000	Y	D80			
584	021U	200000	Y	D80			
585	022U	200000	Y	D80			
586	023U	200000	Y	D80			
587	024U	200000	Y	D80			
588	025U	200000	Y	D80			
589	027U	200000	Y	D80			
590	028U	200000	Y	D80			
591	029U	200000	Y	D80			
592	030U	200000	Y	D80			
593	031U	200000	Y	D80			
594	032U	200000	Y	D80			
595	033U	200000	Y	D80			
596	034U	200000	Y	D80			
597	036U	200000	Y	D80			
598	037U	200000	Y	D80			
599	038U	200000	Y	D80			
600	040U	200000	Y	D80			
601	041U	200000	Y	D80			
602	042U	200000	Y	D80			
603	043U	200000	Y	D80			
604	044U	200000	Y	D80			
605	046U	200000	Y	D80			
606	047U	200000	Y	D80			
607	048U	200000	Y	D80			
608	049U	200000	Y	D80			
609	050U	200000	Y	D80			
610	051U	200000	Y	D80			
611	052U	200000	Y	D80			
612	054U	200000	Y	D80			
613	055U	200000	Y	D80			
614	056U	200000	Y	D80			
615	057U	200000	Y	D80			
616	058U	200000	Y	D80			
617	059U	200000	Y	D80			
618	061U	200000	Y	D80			
619	063U	200000	Y	D80			
620	064U	200000	Y	D80			
621	065U	200000	Y	D80			
622	068U	200000	Y	D80			

Description of Hazardous Wastes
Wayne Disposal, Inc., Site # 2
MID 048 090 633

LINE NO.	A. EPA HAZARDOUS WASTECODE	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE	D1. PROCESS CODES			D2. PROCESS DESCRIPTION
623	070U	200000	Y	D80			
624	071U	200000	Y	D80			
625	072U	200000	Y	D80			
626	073U	200000	Y	D80			
627	074U	200000	Y	D80			
628	075U	200000	Y	D80			
629	076U	200000	Y	D80			
630	077U	200000	Y	D80			
631	078U	200000	Y	D80			
632	079U	200000	Y	D80			
633	080U	200000	Y	D80			
634	082U	200000	Y	D80			
635	083U	200000	Y	D80			
636	086U	200000	Y	D80			
637	088U	200000	Y	D80			
638	089U	200000	Y	D80			
639	090U	200000	Y	D80			
640	092U	200000	Y	D80			
641	093U	200000	Y	D80			
642	094U	200000	Y	D80			
643	095U	200000	Y	D80			
644	096U	200000	Y	D80			
645	097U	200000	Y	D80			
646	098U	200000	Y	D80			
647	099U	200000	Y	D80			
648	100U	200000	Y	D80			
649	101U	200000	Y	D80			
650	102U	200000	Y	D80			
651	103U	200000	Y	D80			
652	104U	200000	Y	D80			
653	106U	200000	Y	D80			
654	108U	200000	Y	D80			
655	110U	200000	Y	D80			
656	111U	200000	Y	D80			
657	112U	200000	Y	D80			
658	113U	200000	Y	D80			
659	114U	200000	Y	D80			
660	115U	200000	Y	D80			
661	116U	200000	Y	D80			
662	117U	200000	Y	D80			
663	118U	200000	Y	D80			
664	119U	200000	Y	D80			
665	120U	200000	Y	D80			
666	121U	200000	Y	D80			
667	122U	200000	Y	D80			
668	124U	200000	Y	D80			
669	127U	200000	Y	D80			
670	128U	200000	Y	D80			

Description of Hazardous Wastes
Wayne Disposal, Inc., Site # 2
MID 048 090 633

LINE NO.	A. EPA HAZARDOUS WASTECODE	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE	D1. PROCESS CODES			D2. PROCESS DESCRIPTION
671	129U	200000	Y	D80			
672	131U	200000	Y	D80			
673	132U	200000	Y	D80			
674	134U	200000	Y	D80			
675	135U	200000	Y	D80			
676	136U	200000	Y	D80			
677	137U	200000	Y	D80			
678	138U	200000	Y	D80			
679	139U	200000	Y	D80			
680	140U	200000	Y	D80			
681	141U	200000	Y	D80			
682	142U	200000	Y	D80			
683	143U	200000	Y	D80			
684	144U	200000	Y	D80			
685	146U	200000	Y	D80			
686	147U	200000	Y	D80			
687	148U	200000	Y	D80			
688	150U	200000	Y	D80			
689	151U	200000	Y	D80			
690	152U	200000	Y	D80			
691	153U	200000	Y	D80			
692	154U	200000	Y	D80			
693	155U	200000	Y	D80			
694	157U	200000	Y	D80			
695	158U	200000	Y	D80			
696	159U	200000	Y	D80			
697	160U	200000	Y	D80			
698	161U	200000	Y	D80			
699	162U	200000	Y	D80			
700	163U	200000	Y	D80			
701	164U	200000	Y	D80			
702	165U	200000	Y	D80			
703	166U	200000	Y	D80			
704	167U	200000	Y	D80			
705	168U	200000	Y	D80			
706	169U	200000	Y	D80			
707	170U	200000	Y	D80			
708	171U	200000	Y	D80			
709	172U	200000	Y	D80			
710	173U	200000	Y	D80			
711	174U	200000	Y	D80			
712	175U	200000	Y	D80			
713	PCBs	200000	Y	D80			
714	CAMU-eligible	200000	Y	D80			

Attachment 9

Groundwater Monitoring Program Sampling and Analysis Plan

Section 27

Groundwater Sampling and Analysis Plan
Wayne Disposal Inc.

MID 048 090 633

I. INTRODUCTION

40 CFR, Part 264.97 requires the owner or operator of a hazardous waste facility to develop and follow a consistent program of groundwater sampling and analysis procedures. The program must include procedures and techniques for:

1) sample collection;
2) sample preservation and shipment;
3) analytical procedures; and
4) chain of custody control.

This document has been developed to direct the efforts of Wayne Disposal, Inc.'s (WDI) groundwater monitoring personnel and thereby meet the requirement of the rule referenced above.

II. GENERAL DESCRIPTION

The current groundwater monitoring system for WDI consists of 28 wells, numbered 18, 19R, 20 through 22, 23AR, 24, 25, 26A, 27A, 28 through 30, 31AR, 32, 34A, 35A, 36 through 40R and 47 though 53. Wells numbered 1A through 16, 26, 27, 31 and 41 through 46 also exist at the site but do not form a part of the groundwater monitoring sampling network for the hazardous waste management area of WDI. Wells OB-21, OB-23R, OB-24, OB 34R and OB-40R are also monitored under the Toxic Substances Control Act (TSCA) per conditions contained in 40CFR 761.75. Well locations are shown on Attachment A.

For Cell VI-F&G, a two-phase monitoring system will be implemented to supplement the current monitoring program. Construction of the MC VI-F&G began in with the Woodlot (MC VI-G

Phase 1). During this initial monitoring phase, a line of wells were installed south of the MC VI-G, Phase I As shown on Attachment A, this set of wells is designated as OB-49 through OB-52. In addition to the four new wells, observation wells W-1 and W-10S, which were installed as part of the hydrogeologic investigation, have been re-designated as wells OB-48 and OB-53, respectively and incorporated into the monitoring plan. Three of the new wells (OB-50, OB-51 and OB-52) were installed in the lower sand aquifer and one (OB-49) was installed in the bedrock.

When construction of cells south of the these wells begins, these initial phase wells will be abandoned, and additional wells will be installed (or re-designated) at the downgradient (i.e., south) side of MC 1, which will be incorporated into the Part 111 groundwater monitoring program for MC VI-F&G. This second set of wells will include existing wells OB-6, OB-8, OB-12R, and OB-13 (to be re-designated as dual Part 111/115 monitoring wells), and four new monitoring wells (OB-54, OB-55, OB-58 and OB-59).

As new wells are installed, they must be sampled four times to establish an intrawell minimum background concentration for all primary and secondary parameters prior to waste being placed in the cell (or phase of cell) that will be monitored by the new well. If possible, these four samples should be collected quarterly to provide suitable background variance. If the background samples are collected on an accelerated schedule, the background statistics should be recomputed once four samples collected quarterly are completed, assuming of course, that there is no evidence of impact by waste or waste constituents at the time.

Copies of the well logs for all of WDI's wells are included in Attachment B. As new wells are added or abandoned, Attachments A B and E must updated and the updates submitted to the MDEQ.

III. LABORATORY

Analyses of samples from the wells are conducted by a contract laboratory, TriMatrix Laboratories, Inc. (TriMatrix) of Grand Rapids, MI. Analytical arrangements and sample bottle preparation can be ordered in advance by calling TriMatrix. Request all analyses when calling for bottles so the laboratory personnel can properly prepare the containers.
If WDI decides to contract analysis of groundwater samples to another laboratory, the change will be made only after at least two concurrent sampling/analysis events show adequate correlation of analysis results of the existing and proposed contract laboratories.

IV. REQUIRED DOCUMENTATION

Documentation required for this monitoring program include:
a) A field notebook must be utilized to record all pertinent field data and sampling information during every sampling event. This must include the name(s) of sampling personnel, sample date, sample time, sample location, depth to standing water in the well, calculations for determining the volume of water to be purged from the well prior to sampling, results of any field measurements on groundwater samples and observations of sample characteristics or the sampling environment. Any odors, colors, sheens or other unusual characteristics of the samples must be described in detail. Copies of these field data notes must be included in reports sent to MDEQ.

b) During each sampling event, a Monitoring Well Inspection/Damage Report must be filled out and sent to the QEHS Department. A copy of this form is included as Attachment C-2. This report must be filled out to note any conditions of the monitoring wells or surrounding area that needs maintenance or repairs.

c) An equipment inventory, repair and calibration log is maintained in the Engineering field office. This log is used to list the inventory (by serial number) of all sampling apparatus and

field measurement devices. Any changes of equipment or repairs to equipment must be noted in this log, as well as daily instrument calibrations, etc.

d) Also required for the sampling process are standard chain of custody forms from TriMatrix. A sample copy of this record is included herein as Attachment C-1. This sheet must be filled out fully for each sample submitted for analysis as described in Section X.

V. STANDING WATER LEVEL MEASUREMENTS

The sampling schedule for the uppermost aquifer wells is generally arranged such that the wells are sampled the month immediately following that in which Wells 1A through 17 are sampled. To obtain the best picture of static water levels for the site, 1) the levels must be obtained for all wells listed on Attachment E before any water is removed for purging or sampling, and 2) the levels must be obtained for all wells in as short a time as possible on the same day, due to barometric pressure effects. This means that static water levels for the wells are generally determined at least 30 days in advance of their sampling. This is the only case where purging and sampling does not immediately follow the water level observations.

The depth to standing water within the well casing is measured from the top of casing (TOC). The top of the well casing is exposed by removing the white plastic Well Wizard™ well heads. The surveyed point on the casing is always at the edge on the north side of the casing. Additionally, there is a permanent mark on the north side of the casing which marks the edge from which water levels are to be taken. The TOC elevations shall be surveyed at least once every two years to verify accuracy. Removal of the well head is necessary for determination of the standing water level. The depth to water is measured using an electric water level indicator. Attachment D describes the operating procedures for the water level indicator, which is used for this purpose.

When using the water level indicator, make certain that the probe and submersed portion of the cable are cleaned with distilled water and a clean cloth, followed by a distilled water rinse. This prevents cross contamination between wells. Lower the probe into the casing slowly while watching for the light. Carefully determine the water level by raising and lowering the probe at the water surface, and monitoring the light and buzzer. Record the distance from the point on the cable at TOC to the nearest marking on the cable within the well casing. The markings on the cable are scaled in 0.01 foot intervals. Record the measurement to the nearest 0.01 foot. The depth to standing water is then the distance from the probe tip at the water level to the marking on the cable. Record this depth in the field notebook.

VI. WELL PURGING

Before purging a well, it is necessary to determine the quantity of water contained within the well casing. This is done by subtracting the depth to standing water from the depth to the well screen. The depth to standing water must be determined just prior to beginning sample collection. The depth to the well screen for each existing well is listed on Attachment E. The difference between screen depth and water level depth is the height of water standing within the well. Multiply this height of water by 0.17 gallons per foot (for 2 inch diameter well casing). Multiply that product by 3, the number of standing volumes to be purged, which is the minimum recommended by MDEQ. The resultant product is the total quantity to be purged from the well, in gallons. Once again,

Amt. purged (in gallons) = (Ht. of standing water) x 0.17 x 3

Record these calculations in the field notebook.

The depth to the well screen should be confirmed every four years by removing the dedicated pump assemblies and lowering the water level indicator probe to the very bottom of the well casing for a determination of the clear depth of the well (make sure that the indicator cable is

cleaned between each well). In addition, well depths should be checked if a change in well yield or sample appearance (i.e. turbidity) is noted. It is very important to ensure that the pump and tubing are kept clean when removed from the well (i.e. do not place equipment on ground, rather, wrap in plastic sheeting).

Once three standing well volumes have been removed, measure and record the pH and specific conductance of the water coming from the well. Continue to record these values at a rate of once every 10 minutes. After three values of pH and specific conductance have been obtained in this manner, compare the highest and lowest values. If the difference between the highest and lowest pH value is 0.07 su or less, then the well is considered stabilized with respect to pH. If the difference between the highest and lowest specific conductance values is 18 μmhos/cm or less, then well stabilization with respect to this parameter is considered complete. If the difference between the highest and lowest values for either parameter exceeds this criteria, pump the well another 10 minutes and recheck both parameters. Perform the comparison again, using only the last three monitored values of pH and specific conductance. Once the criteria are satisfied for any three consecutive monitored values of both pH and specific conductance, then consider the well fully stabilized and proceed with sampling. Measure and record well water temperature at this time as well. Record in the field notebook all the data obtained to establish well stabilization. In the cases where an individual well cannot be purged to stabilization in a manner described above because the well becomes fully dewatered, then sample the well after completely dewatering (evacuating) the well four times. For each sampling event, the second, third and fourth well evacuations should be performed within three days of the previous well evacuation. Sampling should be accomplished as soon after the fourth well evacuation as possible, depending upon the rate at which the water level in the well recovers. Measure and record pH, specific conductance and temperature in the field at the time the sample is obtained from such a well. Fully record in the field notebook all instances of well evacuation.

At Site II, we employ the "Well Wizard"^{TM} system of dedicated pumps. This means that each well has a submersible pump within it, generally located at the well screen. The control unit and cylinders of compressed nitrogen are the other components that complete this system. Because

sampling immediately follows the purging step in nearly all cases, the sampling box is always included during well purging. The sample box is discussed in greater detail in the Sample Collection portion of this document.

Prior to a sampling round for the wells, replace the sampling box discharge tube. To set up the Well Wizard™ system for operation, connect the nitrogen cylinder hose to the supply port on the controller unit. Connect one end of the coiled tubing within the controller unit to the Drive Air Out port on the unit, and the other end to the smaller of the two ports on the well head assembly. Connect the water sample line from the larger of the two well head ports to the back of the sampling box. Make certain that the valve on the rear of the box directs flow out of the box and through the discharge tube, until well purging is completed.

To initiate purging, begin the flow of nitrogen from the cylinder. Measure the quantity of water purged from the well using the graduated 3 gallon bucket kept with this equipment. Note that all purged water should be discharged on the ground away from the well. Do not allow the purged water to re-enter the well or the well protective casing nor should you allow ponding of the water around the well. Further background on Well Wizard™ operation can be gained by referring to Attachment F. Report any problems with equipment function to the Regulatory Affairs Department.

VII. SAMPLE COLLECTION

Upon completion of the well purging step, or upon return to a well which has been evacuated four times for purging, you are ready to take samples. Make sure each sample bottle for a given monitoring well has a label (affixed by the analytical laboratory personnel) which contains our facility name, the monitoring well number, the date and the sampler's initials. If a preservative has been included by the laboratory, such a note should appear on the label.

In the past sampling programs, it has been shown that airborne artifacts from disposal operations and engine exhaust can affect the number of detected constituents and their concentrations within groundwater samples. For this reason, a controlled-atmosphere sampling box was constructed for use in the collection of groundwater samples. Nitrogen, under positive pressure, is used as the sampling atmosphere within the box, thereby minimizing the probability of impacts to sample quality by airborne artifacts. All groundwater samples taken from WDI wells using dedicated pumps shall be taken within the sampling box.

In preparation for sampling, connect the nitrogen cylinder to the sampling box and purge the box atmosphere with nitrogen for 20 to 30 minutes. Make certain that all sample bottles to be used at a given location are placed within the box prior to purging the box atmosphere. Remove the caps from the bottles during the purging process to expose the interior of the bottles to the nitrogen environment. A new laboratory grade tygon tube connecting the wellhead to the sampling box must be used for the collection of samples from each location. When all is ready, turn the valve on the rear of the sampling box, diverting the flow of water from the discharge tube to the sampling tube within the box.

Samples for volatile organic compounds will be filled first. No headspace is permitted in the small glass vials. This may require several attempts but it can and must be done. Make certain not to touch the inside of bottle necks or caps with your hands. Next, fill the bottles for total organic carbon, total phenolics, metals and then other miscellaneous parameters, in this order. Fill each sample bottle to the very top and allow minimal headspace (air bubbles when capped and tipped) and take care not to spill any of the preservatives. Record the number and type of samples taken and the time of sampling on the chain of custody record.

Trip blanks (VOC vials filled with laboratory "clean" water) shall accompany the sample containers every day that samples are collected. A trip blank is provided by the laboratory for each batch of sample bottles (usually one for each cooler). These remain unopened throughout the sampling day and are submitted with the sample bottles. A field blank shall also be collected at each well sampled. A field blank is an empty (except for preservative) VOC vial that is

opened in the nitrogen sampling box and filled with laboratory provided "clean" water while that well is being sampled. The purpose is to replicate the sampling environment in all ways except for the source of water in the container. Both kinds of blanks should be preserved, handled and shipped exactly as the well samples are. All of the trip blanks and a minimum of one field blank for each ten samples will be analyzed on a random basis for the primary parameters. However, if a positive result for any primary parameter is noted in a given well, the matching field blanks will immediately be analyzed for the offending parameter(s). A complete replicate sample shall be obtained from one well, chosen randomly, during each sampling round and will be analyzed for the same parameters as the sample it replicates.

VIII. SAMPLE PRESERVATION AND SHIPMENT

Attachment G is a tabulation of sample preservation procedures for TriMatrix. The samples must be preserved in accordance with the procedures outlined in this attachment. For all samples the laboratory provides clean, pre-preserved bottles (where necessary). Samples to be analyzed for dissolved metals must be field filtered with a 0.45 μm in-line filter cartridge and preserved with a couple of drops of reagent grade HNO_3 to a pH of less than 2. If the samples cannot be field filtered for any reason they must be filtered and preserved immediately upon delivery to the laboratory.

When the sample collection step is completed, open the sampling box, transfer all sample bottles to a cooler and pack the cooler with ice. Make sure that after each well sampling is completed that the tubing for the sampling box, is replaced with new tubing and the chain of custody record is completed.

All collected samples and blanks must be stored in a secure location until delivery to the contract laboratory personnel. This means within site of sampling personnel or locked in a secure location. Chain of custody records must accompany the samples at all times. The handling of these forms is covered in the Chain of Custody Control portion of this document.

IX. ANALYTICAL PROCEDURES

The parameters to be tested for as part of the monitoring program for the uppermost aquifer wells are shown in Attachment H.

Specific analytical procedures and target detection limits, consistent with the current Policy and Procedure Document OWMRP-111/115-8 and used by TriMatrix for this monitoring program are tabulated in Attachment I. However, when changes to analytical methods or to the detection limits contained within OWMRP-111/115-8 are published and made available, the contents of Attachment I must be updated accordingly, or MDEQ approval must be attained for any alternate target detection limits. Further, this attachment should be reviewed periodically to determine if the laboratory has made changes that should be reflected in the attachment. QA/QC frequencies, and precision and accuracy calculations are included in Trimatrix's QA/QC manual. Changes made to detection limits, analytical methods or QA/QC in response to regulatory requirements can be utilized in this monitoring program without changing the plan, but must be included in updated sampling and analysis plans.

Field measurements of specific conductance, pH and temperature will be performed using the equipment and procedures described in Attachment J. The instruments must be calibrated prior to each day of use and the appropriate notation made in the Equipment Inventory, Repair and Calibration Log described in Section IV.

TriMatrix's Quality Assurance Manual is included as Attachment K. This manual describes the internal policies, guidelines and procedures of TriMatrix. This manual is not intended to describe the specific details of this particular monitoring program. Rather, we are to use this document as a guideline in evaluating TriMatrix's QA/QC and standard operating procedures to ensure that generally acceptable practices are employed.

X. CHAIN OF CUSTODY CONTROL

Chain of Custody refers to the record of individuals and external conditions of sample handling through the time of laboratory analysis. The chain of custody record included as Attachment C is the principal document of this record. These sheets must be fully filled in with sampling information as well as the persons involved and shipment conditions during transport to the analytical laboratory. These sheets must accompany the samples to the laboratory.

When the samples are surrendered at the laboratory, each chain of custody record must be signed by the person transporting the samples as well as a representative of the receiving laboratory. The lab will make a copy of each sheet for us and keep the originals. The copy must be maintained in the files. Upon completion of a full round of sampling, transmit depth to standing water information, field monitoring data and all chain of custody records to the Environmental Health & Safety (EHS) Department.

XI. EQUIPMENT AND WELL MAINTENANCE

Equipment used for the collection and analysis of groundwater samples must be maintained in working order and replaced or repaired promptly when necessary. Electrodes for pH and specific conductance should be replaced annually, or sooner if they become difficult to calibrate or appear to malfunction. The dedicated Well Wizard™ pumps and associated equipment require no routine maintenance but should be promptly replaced or repaired in the event of a malfunction. Any pump removed from a well should be thoroughly cleaned before replacement. Tubing removed from the well should be packaged and stored to prevent contamination or replaced. As outlined in Section IV, records of instrument calibration and any equipment replacement or repair must be kept in the Equipment Log maintained at the Engineering field office.

The well casings, protective covers, and Well Wizard™ pump heads should be inspected for damage at the time of each well sampling. Any damage should be noted in the field notebook

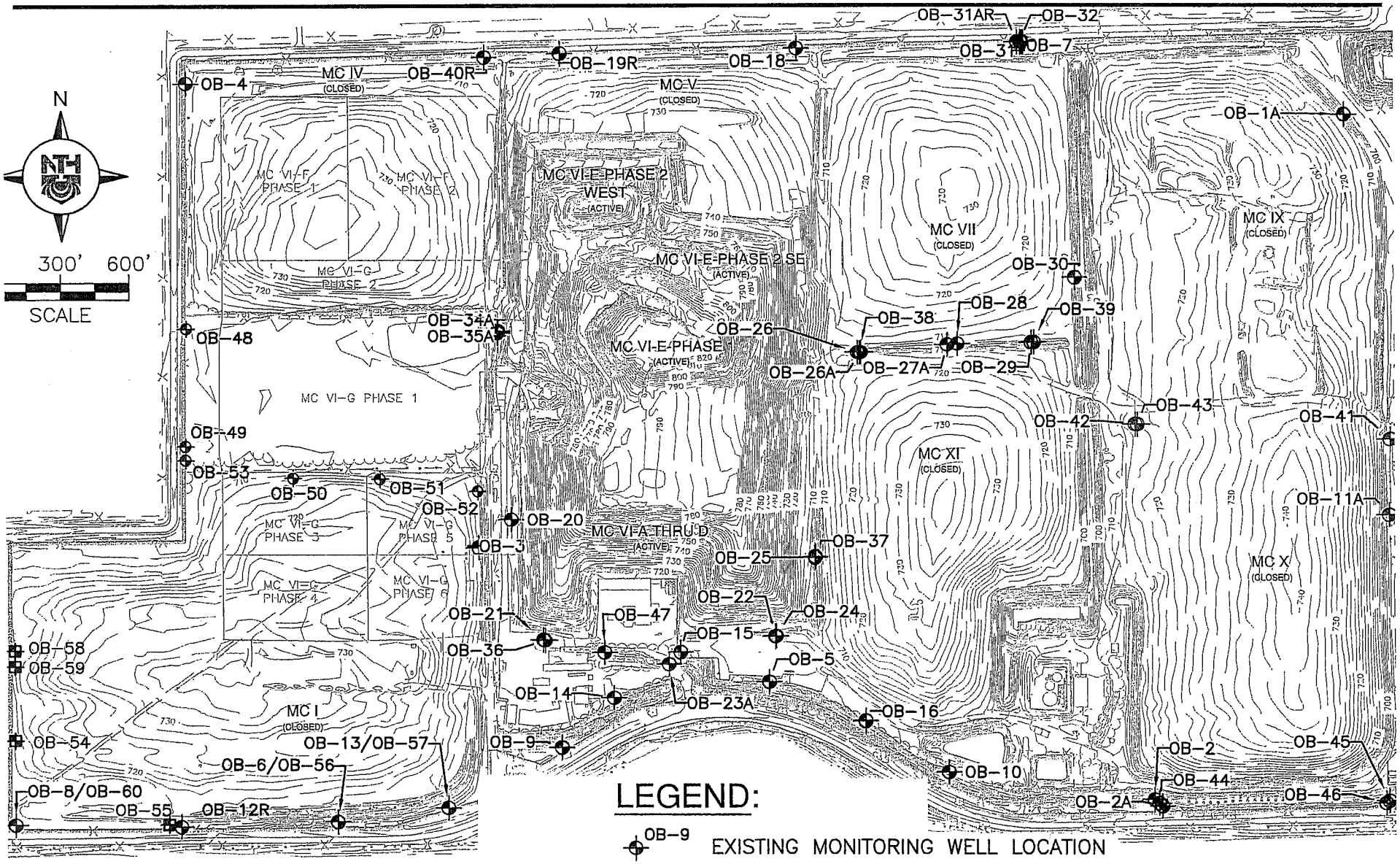
and a Monitoring Well Inspection/Damage Report must be filled out and sent to the Regulatory Affairs Department. A copy of this form is included as Attachment C-2. Also note any surface erosion, standing water at the well or evidence of a damaged grout seal around the well.

In the event any damage requiring well repair becomes necessary, a Damage Incident Report will be prepared by the EHS Department. A copy of this report will be placed in the site Operating Log and the Groundwater Monitoring Operating Log. A proposed method of well repair will be prepared and submitted to the MDEQ for approval. Repair efforts will be undertaken after approval by the MDEQ is received. The MDEQ shall then be notified at least 24 hours prior to initiating the repair efforts. Following completion of the well repairs, as-built documentation of the repair efforts will be prepared. A copy of this will be placed in the site Operating Log and the Groundwater Monitoring Operating Log. A copy will also be sent to the MDEQ.

XII. Statistical Evaluation and Reporting Requirements

All ground water analyses for the uppermost aquifer wells must be analyzed for evidence of statistically significant increases in concentrations of all primary and secondary monitoring parameters as described in Attachment L

The analytical reports, the records of the field procedures and a report of the statistical analyses (narrative and tubular) must be submitted to the MDEQ within 60 days after each calendar quarter. This report will also include a summary of the review of QA/QC data, a narrative of the sampling event including dates and sampling personnel, and a description of any unusual events or conditions encountered. Copies of the analysis and report must be maintained in designated files at the administration office at the site. In addition, an annual report summarizing the results of groundwater monitoring results and which evaluates groundwater flow directions and rates for the uppermost aquifer must be submitted to MDEQ by March 1 of the following year.



LEGEND:

- OB-9 — EXISTING MONITORING WELL LOCATION
- OB-54 — PROPOSED MC VI F/G WELL LOCATIONS
- 710 — EXISTING TOPOGRAPHIC CONTOUR

NTH PROJECT No.:	DESIGNED BY:	CHECKED BY:	DRAWING SCALE:	NTH Consultants, Ltd.	WAYNE DISPOSAL, INC. SITE NO. 2	GROUNDWATER MONITORING WELL LOCATION MAP	ATTACHMENT:
13060921-06	DLP	ACE	AS SHOWN	Infrastructure Engineering and Environmental Services	VAN BUREN TWP., WAYNE COUNTY, MICHIGAN		A
CAD FILE NAME: 060921-WLM	DRAWN BY: KRO	INCEPTION DATE: 11/16/09	PLOT DATE: 10/15/2014				

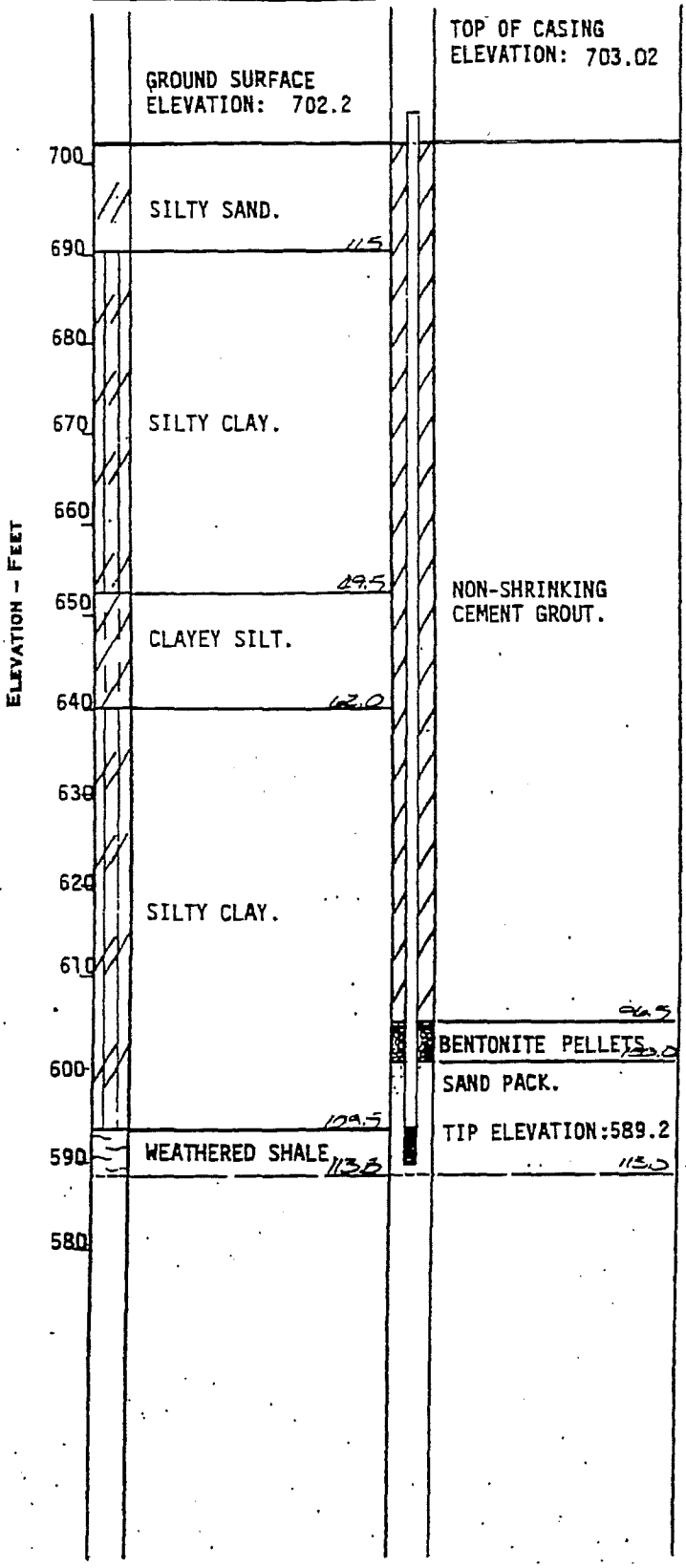
J:\62\62080376\Production Sets\Env\WLM\060921-WLM.dwg

ATT B.

LOG OF GROUNDWATER MONITORING WELL

CLASSIFICATIONS BY:
NEYER, TISEO & HINDO, LTD.

GENERALIZED SUBSURFACE PROFILE | WELL SCHEMATIC



GROUNDWATER DATA

DATE	GROUNDWATER ELEV. (FEET)	COMMENTS
9-24-84	654.69	
10-22-84	653.22	

CASING – DIAMETER: 2.0"
– LENGTH: 108.0'
– MATERIAL: PVC

SCREEN – DIAMETER: 2.0"
– LENGTH: 5.0"
– MESH: .006" slot
– MATERIAL: PVC

WELL STARTED: 9-11-84
WELL COMPLETED: 9-11-84
INSPECTOR: J. Serwik
DRILLER: J. Blank
CONTRACTOR: American Drilling
EQUIPMENT: CME-75

NOTES:
1. For details of the subsurface strata see Log of Test Boring No. OB-18.
2. Top of casing elevations and ground surface elevations provided by Wayne Disposal, Inc.

NEYER, TISEO & HINDO, LTD.
CONSULTING ENGINEERS

GROUNDWATER MONITORING WELL No. OB-18

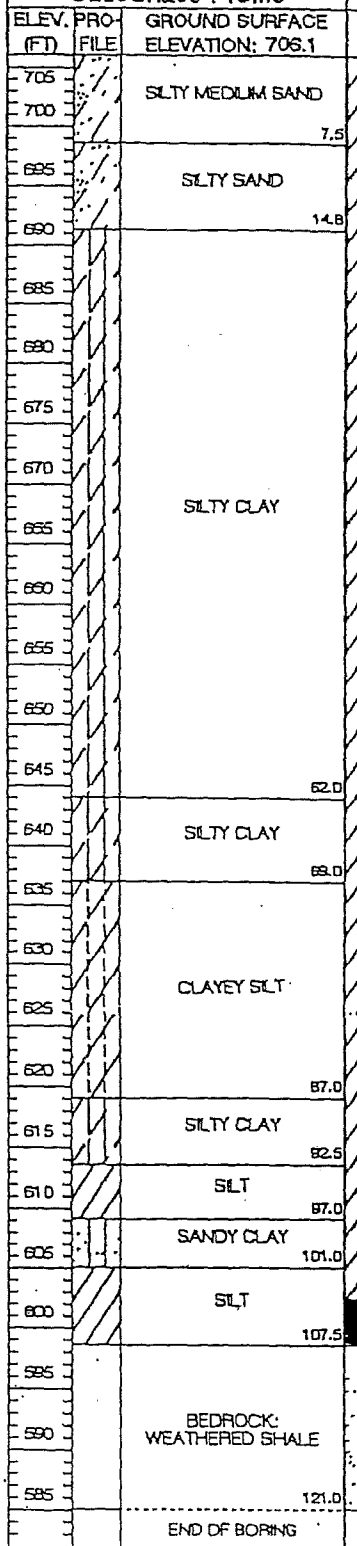
NTH Consultants, Ltd.

MONITORING WELL NO. OB-19R

Project Name: WAYNE DISPOSAL LANDFILL - SITE NO. 2 NTH Proj. No: 13-3051 01

Project Location: VAN BUREN TWP., WAYNE COUNTY, MICHIGAN Checked By: ACE

LOG OF MONITORING WELL



GROUNDWATER DATA

Date	Ground-water Elev. (ft)	Comments
12/01/94	654.50	Before Development

NOTES:

[1] FOR DETAILS OF SUBSURFACE STRATA FROM 0-90', SEE LOG OF TEST BORING OB-19; FOR 90-121', SEE LOG OF TEST BORING OB-19R

[2] TOP OF CASING & GROUND SURFACE ELEVATIONS PROVIDED BY WAYNE DISPOSAL, INC

[3] WELL LOCATION: 8873.2 N, 5324.4 E

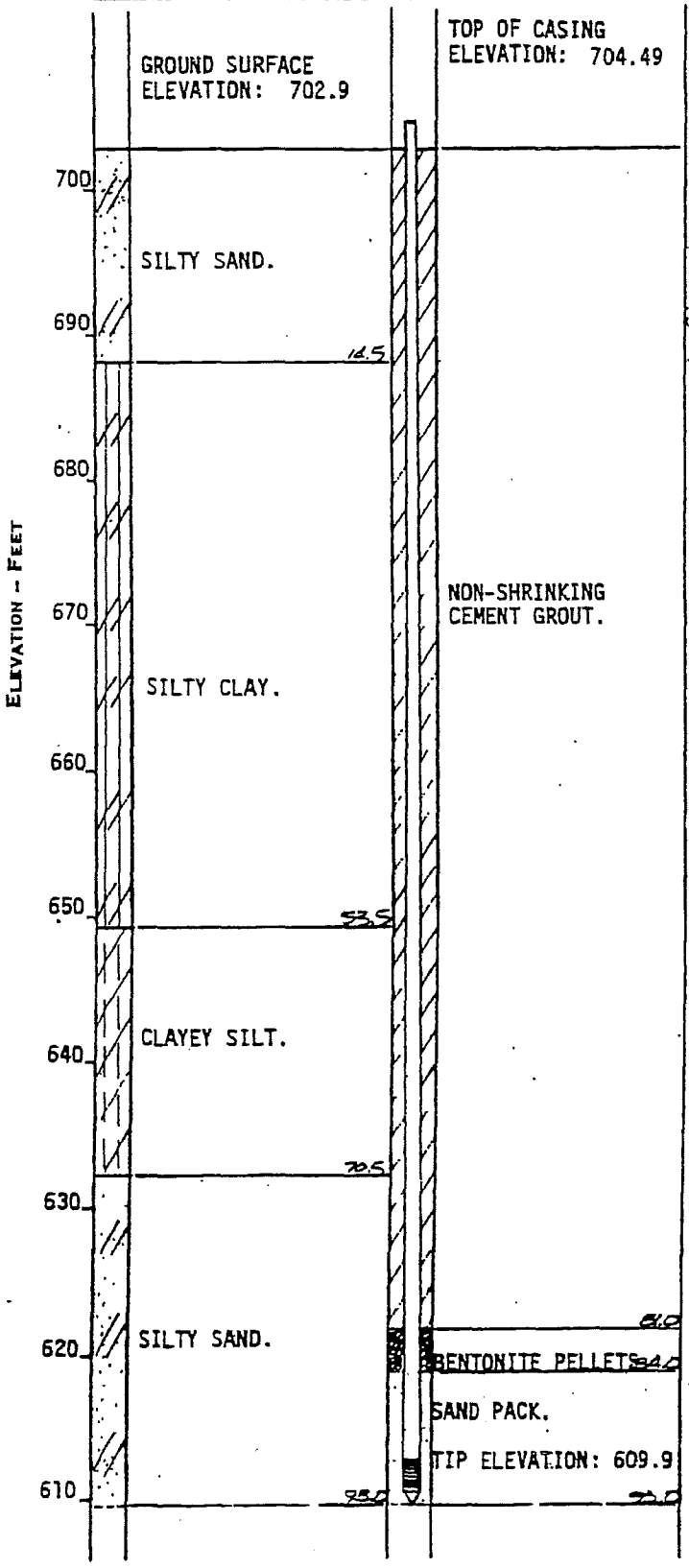
Started: 11/22/94
Completed: 11/22/94
Inspector: R. LEE
Driller: G. QUALLS
Contractor: GEO-TEK, INC.
Equipment: CME-850 ALL-TERRAIN DRILL RIG
Well Type: MONITORING

Casing Diameter: 2.0"
Casing Length: 118.0'
Casing Type: STAINLESS STEEL
Screen Diameter: 2.0"
Screen Length: 5.0'
Screen Mesh: 0.010"
Screen Type: STAINLESS STEEL

LOG OF GROUNDWATER MONITORING WELL

CLASSIFICATIONS BY:
NEYER, TISEO & HINDO, LTD.

GENERALIZED SUBSURFACE PROFILE | WELL SCHEMATIC



GROUNDWATER DATA

DATE	GROUND-WATER ELEV. (FEET)	COMMENTS
9-12-84	653.24	
9-24-84	653.13	

CASING - DIAMETER: 2.0"
- LENGTH: 90.0'
- MATERIAL: Galvanized

SCREEN - DIAMETER: 2.0"
- LENGTH: 3.0'
- MESH: .007" slot
- MATERIAL: Stainless Steel

WELL STARTED: 8-1-84
WELL COMPLETED: 8-2-84
INSPECTOR: J. Serwik
DRILLER: J. Blank
CONTRACTOR: American Drilling
EQUIPMENT: CME-75

NOTES:
1. For details of the subsurface stra see Log of Test Boring No. OB-20.
2. Top of casing elevations and groun surface elevations provided by Way Disposal, Inc.

NEYER, TISEO & HINDO, LTD.
CONSULTING ENGINEERS

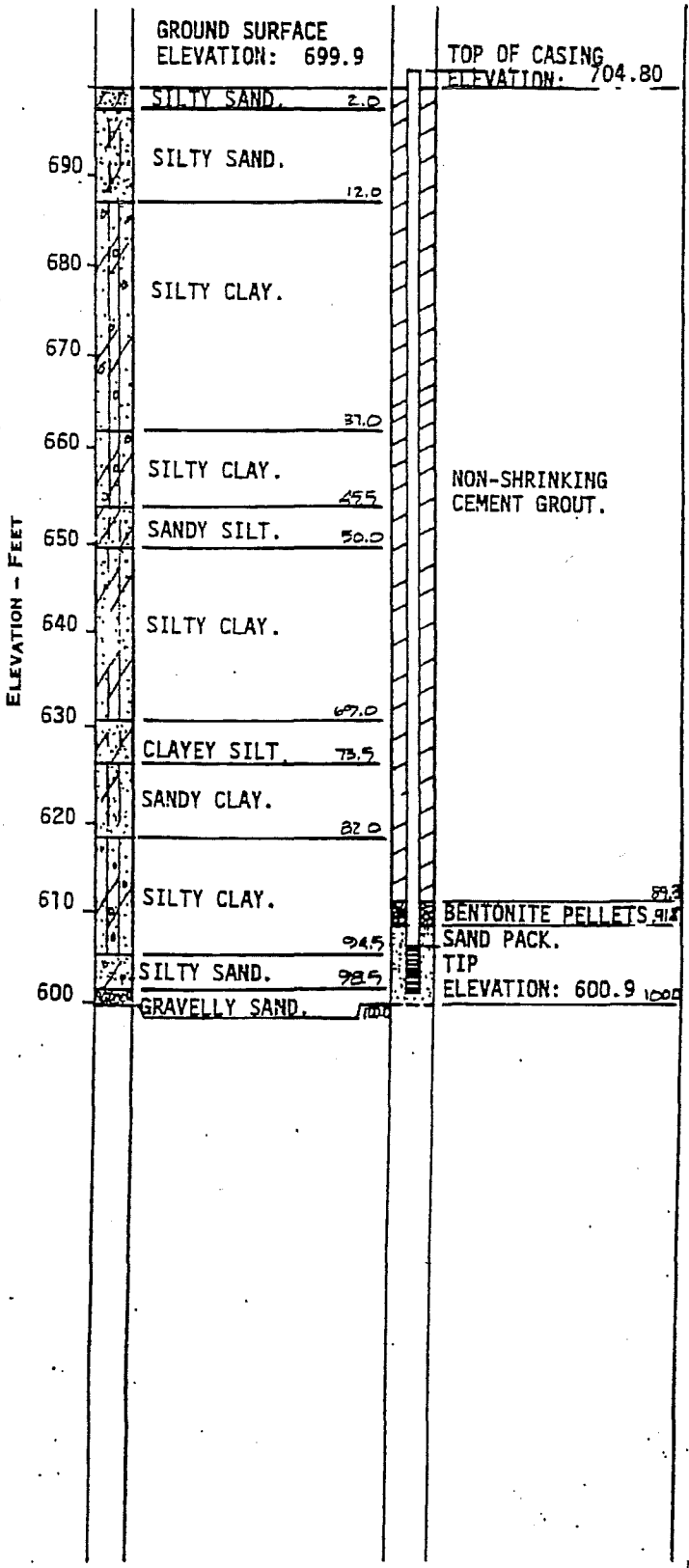
GROUNDWATER MONITORING WELL No. OB-20

WAYNE DISPOSAL LANDFILL SITE NO. 2

LOG OF GROUNDWATER MONITORING WELL

CLASSIFICATIONS BY:
NEYER, TISEO & HINDO, LTD.

GENERALIZED SUBSURFACE PROFILE | WELL SCHEMATIC



GROUNDWATER DATA

DATE	GROUND-WATER ELEV. (FEET)	COMMENTS
9-12-84	652.64	
9-24-84	652.64	
10-22-84	652.44	

CASING – DIAMETER: 2.0"
– LENGTH: 94.0'
– MATERIAL: PVC

SCREEN – DIAMETER: 2.0"
– LENGTH: 5.0'
– MESH: .006" slot
– MATERIAL: PVC

WELL STARTED: 7-23-84
WELL COMPLETED: 7-24-84
INSPECTOR: J. Serwik
DRILLER: J. Blank
CONTRACTOR: American Drilling
EQUIPMENT: CME-75

NOTES:
1. For details of the subsurface strat see Log of Test Boring No. OB-21.
2. Top casing elevations and ground surface elevations provided by Wayn Disposal, Inc.

NEYER, TISEO & HINDO, LTD.
CONSULTING ENGINEERS

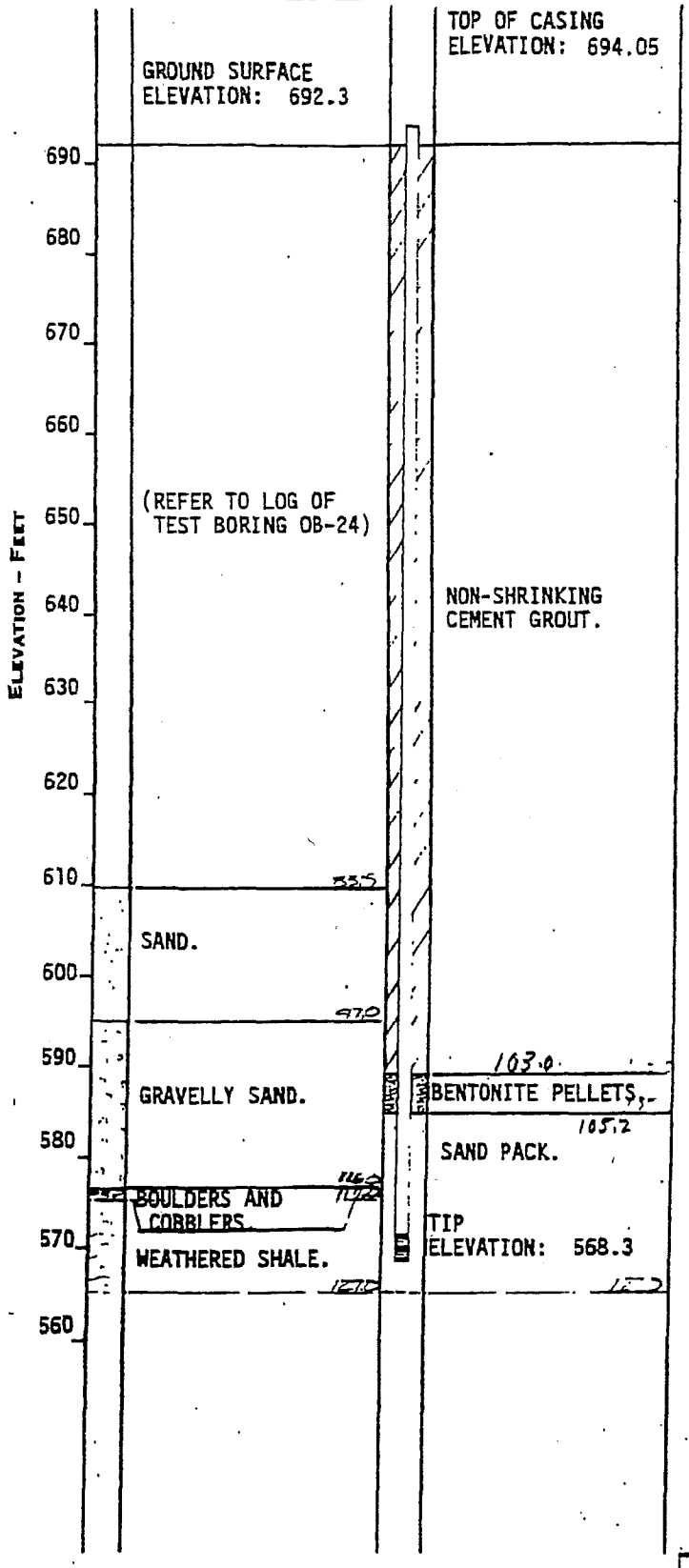
GROUNDWATER MONITORING WELL NO. OB-21

WAYNE DISPOSAL LANDFILL SITE NO. 2

LOG OF GROUNDWATER MONITORING WELL

CLASSIFICATIONS BY:
NEYER, TISEO & HINDO, LTD.

GENERALIZED SUBSURFACE PROFILE | WELL SCHEMATIC



GROUNDWATER DATA

DATE	GROUNDWATER ELEV. (FEET)	COMMENTS
9-24-84	654.24	
10-22-84	653.32	

CASING – DIAMETER: 2.0"
– LENGTH: 119.0
– MATERIAL: PVC

SCREEN – DIAMETER: 2.0"
– LENGTH: 5.0'
– MESH: .006" slot
– MATERIAL: PVC

WELL STARTED: 9-14-84
WELL COMPLETED: 9-14-84
INSPECTOR: J. Serwik
DRILLER: J. Blank
CONTRACTOR: American
EQUIPMENT: CME-75

NOTES:
1. For details of the subsurface strat see Log of Test Boring No. OB-22.
2. Top of casing elevations and ground surface elevations provided by Wayn Disposal, Inc.

NEYER, TISEO & HINDO, LTD.
CONSULTING ENGINEERS

GROUNDWATER MONITORING WELL NO. OB-22

WAYNE DISPOSAL LANDFILL SITE NO. 2

Project No:

Well ID: OB-23A

Project: Well Re-Location

Client: Wayne Disposal, Inc.

Enclosure:

Location: Site No. 2 Belleville, MI

Engineer: M. Takacs

SUBSURFACE PROFILE

Depth	Symbol	Description	Depth/Elev.	Well Construction	Remarks
0		Ground Surface	0		
0–10		***sand:*** fine gray, silty with trace gravel and clay	700 / 12		
10–95		***Clay:*** gray, silty with trace sand and gravel	688 / 95		Casing 2" Stainless Steel
95–125		***Sand:*** gray, medium to coarse with trace gravel	605 / 125		Annular Space pH neutral grout Screen 5 foot 2" diameter Stainless Steel 7 Slot
125–130		***Shale:*** gray, weathered	571		

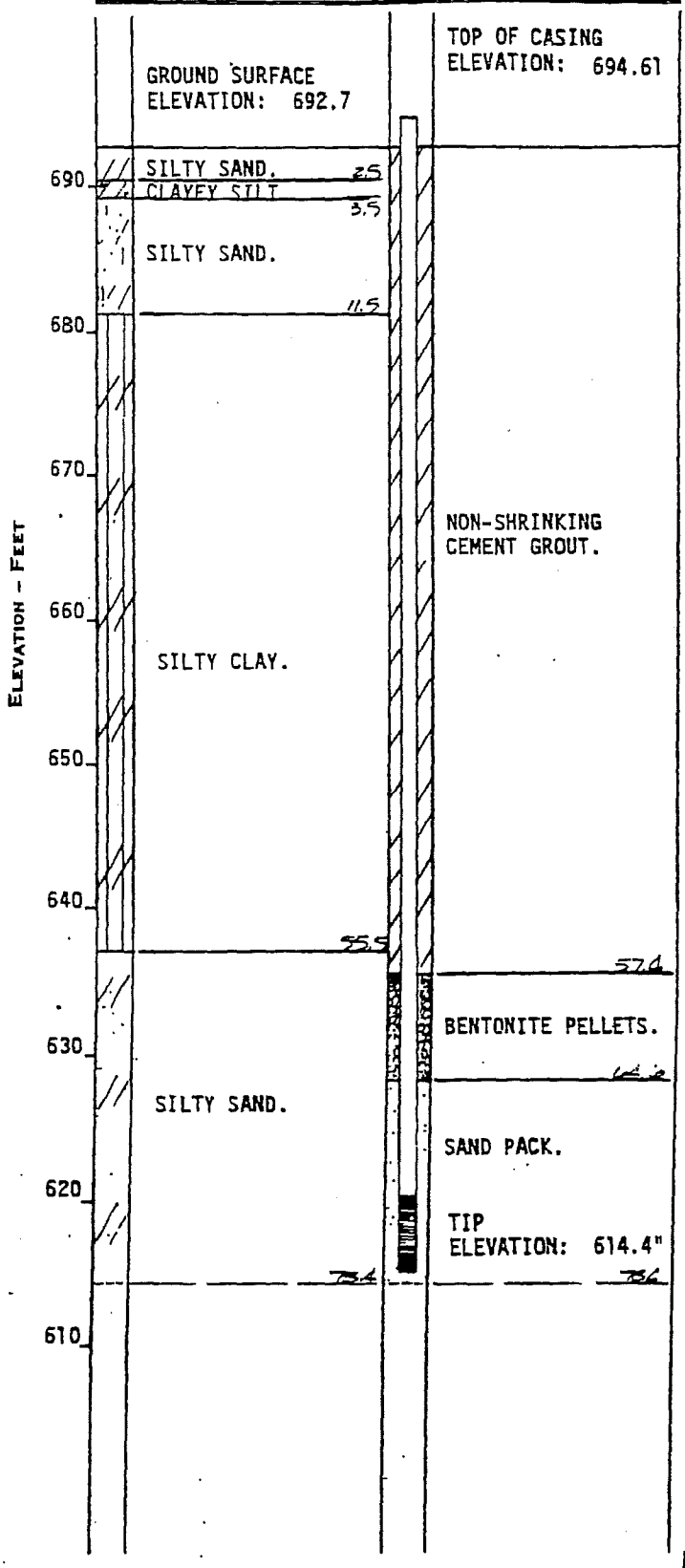
Drilled By: American Drilling

Drill Method: 6.25 inch HSA to EOB

LOG OF GROUNDWATER MONITORING WELL

CLASSIFICATIONS BY:
NEYER, TISEO & HINDO, LTD.

GENERALIZED SUBSURFACE PROFILE | WELL SCHEMATIC



GROUNDWATER DATA

DATE	GROUND-WATER ELEV. (FEET)	COMMENTS
9-12-84	653.62	
9-24-84	653.67	
10-22-84	653.30	

CASING – DIAMETER: 2.0"
– LENGTH: 73.3'
– MATERIAL: PVC

SCREEN – DIAMETER: 2.0"
– LENGTH: 5.0'
– MESH: .006" slot
– MATERIAL: PVC

WELL STARTED: 7-24-84
WELL COMPLETED: 7-24-84
INSPECTOR: J. Serwik
DRILLER: J. Blank
CONTRACTOR: American Drilling
EQUIPMENT: CME-75

NOTES:
1. For details of the subsurface strat see Log of Test Boring No. OB-24.
2. Top of casing elevations and ground surface elevations provided by Wayn Disposal, Inc.

NEYER, TISEO & HINDO, LTD.
CONSULTING ENGINEERS

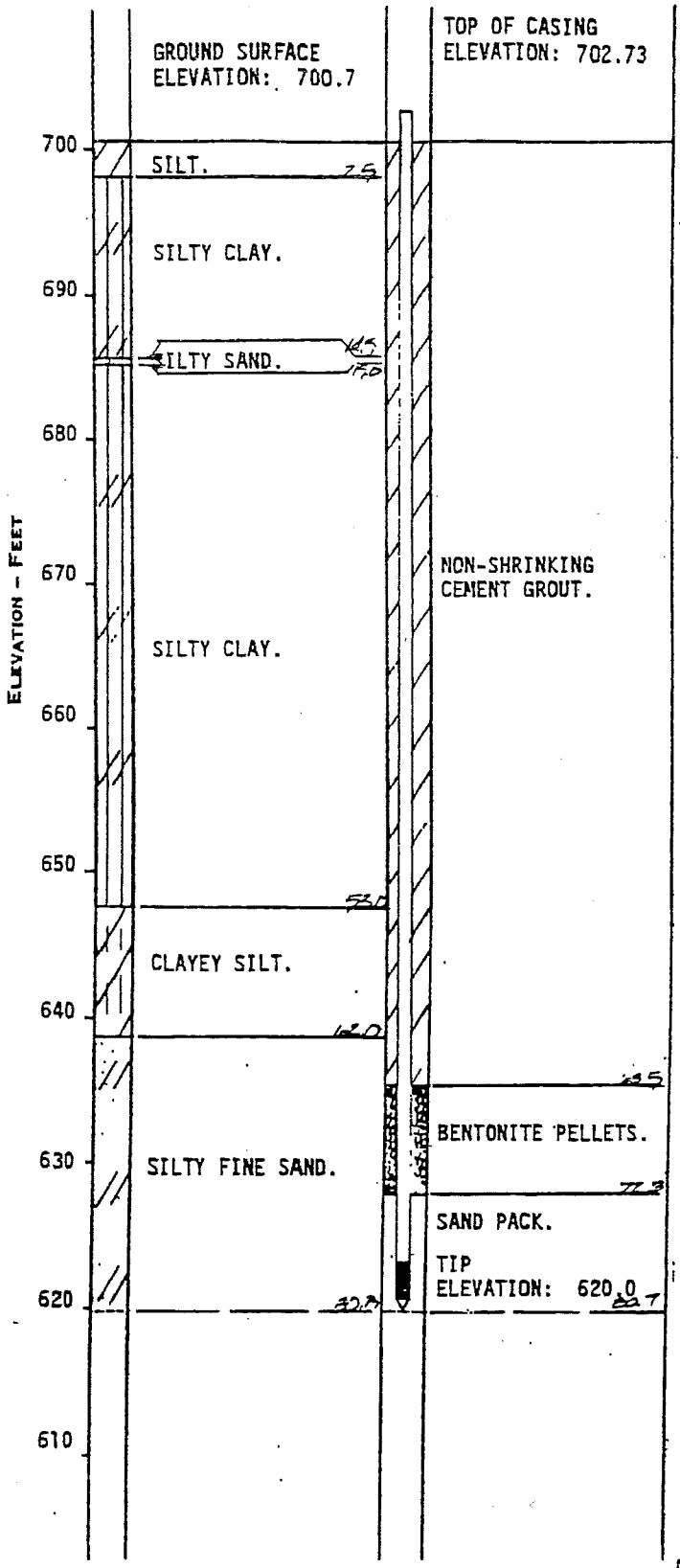
GROUNDWATER MONITORING WELL No. OB-24

WAYNE DISPOSAL LANDFILL SITE NO. 2

LOG OF GROUNDWATER MONITORING WELL

CLASSIFICATIONS BY:
NEYER, TISEO & HINDO, LTD.

GENERALIZED SUBSURFACE PROFILE | WELL SCHEMATIC



GROUNDWATER DATA

DATE	GROUND-WATER ELEV. (FEET)	COMMENTS
9-12-84	653.50	
9-24-84	653.86	
10-22-84	653.51	

CASING – DIAMETER: 2.0"
– LENGTH: 77.7
– MATERIAL: Galvanized

SCREEN – DIAMETER: 2.0"
– LENGTH: 3.0'
– MESH: .007" slot
– MATERIAL: Stainless Steel

WELL STARTED: 8-25-84
WELL COMPLETED: 8-25-84
INSPECTOR: J. Serwik
DRILLER: J. Blank
CONTRACTOR: American Drilling
EQUIPMENT: CME-75

NOTES:
1. For details of the subsurface strat see Log of Test Boring No. OB-25.
2. Top of casing elevations and ground surface elevations provided by Wayne Disposal, Inc.

NEYER, TISEO & HINDO, LTD.
CONSULTING ENGINEERS

GROUNDWATER MONITORING WELL NO. OB-25

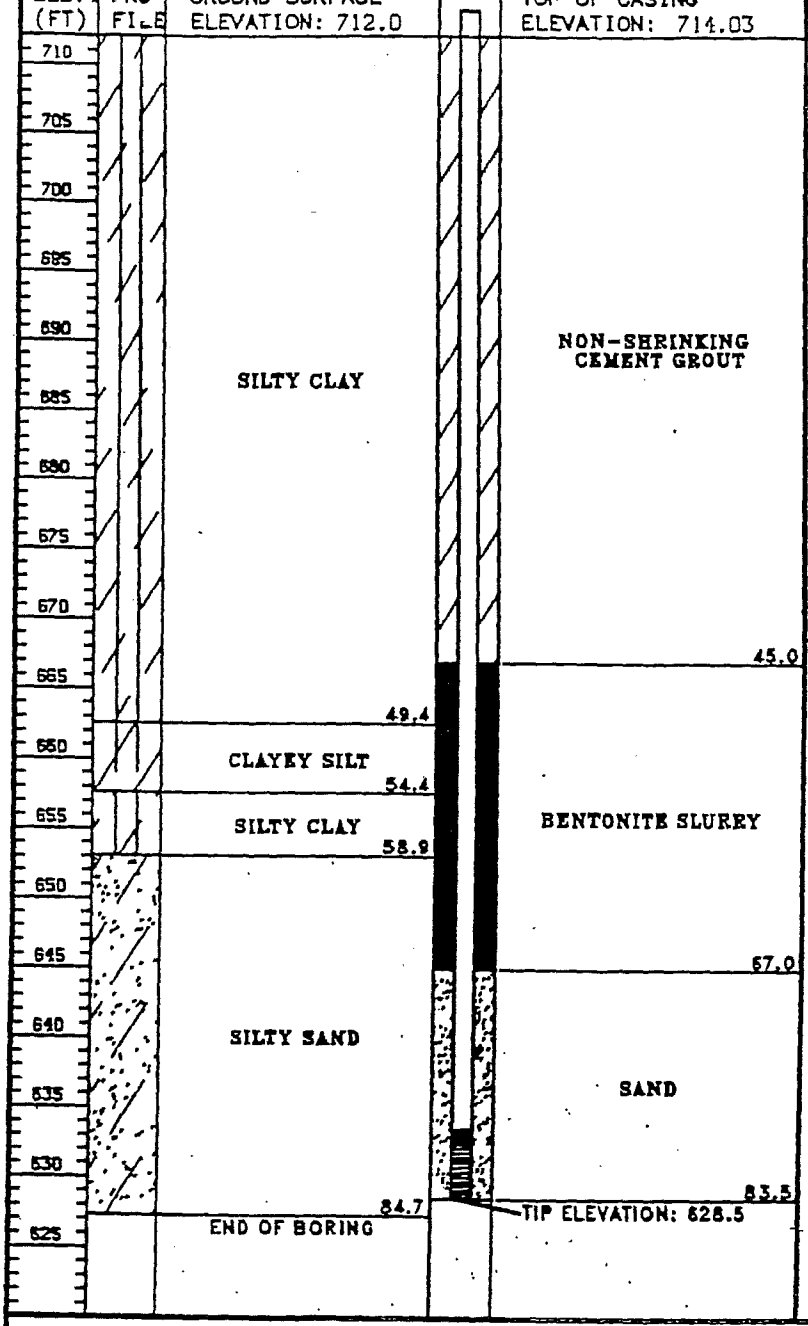
WAYNE DISPOSAL LANDFILL SITE NO. 2
VAN BUREN TOWNSHIP

NEYER, TISEO & HINDO, LTD.

MONITOR WELL NO. OB-26A

Project Name: WAYNE DISPOSAL LANDFILL – SITE NO. 2 — **NTH Pro. No.** 94315 OW
Project Location: VAN BUREN TWP., WAYNE COUNTY, MICHIGAN — **Chk. By:** RLB

LOG OF MONITOR INSTALLATION



GROUNDWATER DATA

Date	Groundwater Elev. (ft)	Comments
9/23/87	650.69	
9/24/87	650.62	
9/25/87	650.42	
9/28/87	650.58	

NOTES :

[1] FOR DETAILS OF SUBSURFACE STRATA, SEE LOG OF TEST BORING NO. OB-26
[2] TOP OF CASING AND GROUND SURFACE ELEVATIONS PROVIDED BY WAYNE DISPOSAL, INC.

Started:	9/18/87
Completed:	9/21/87
Inspector:	R. BURNS
Driller:	S REMPALSKI
Contractor:	MATECO DRILLING COMPANY
Equipment:	CME-550
Observation Type:	MONITORING WELL

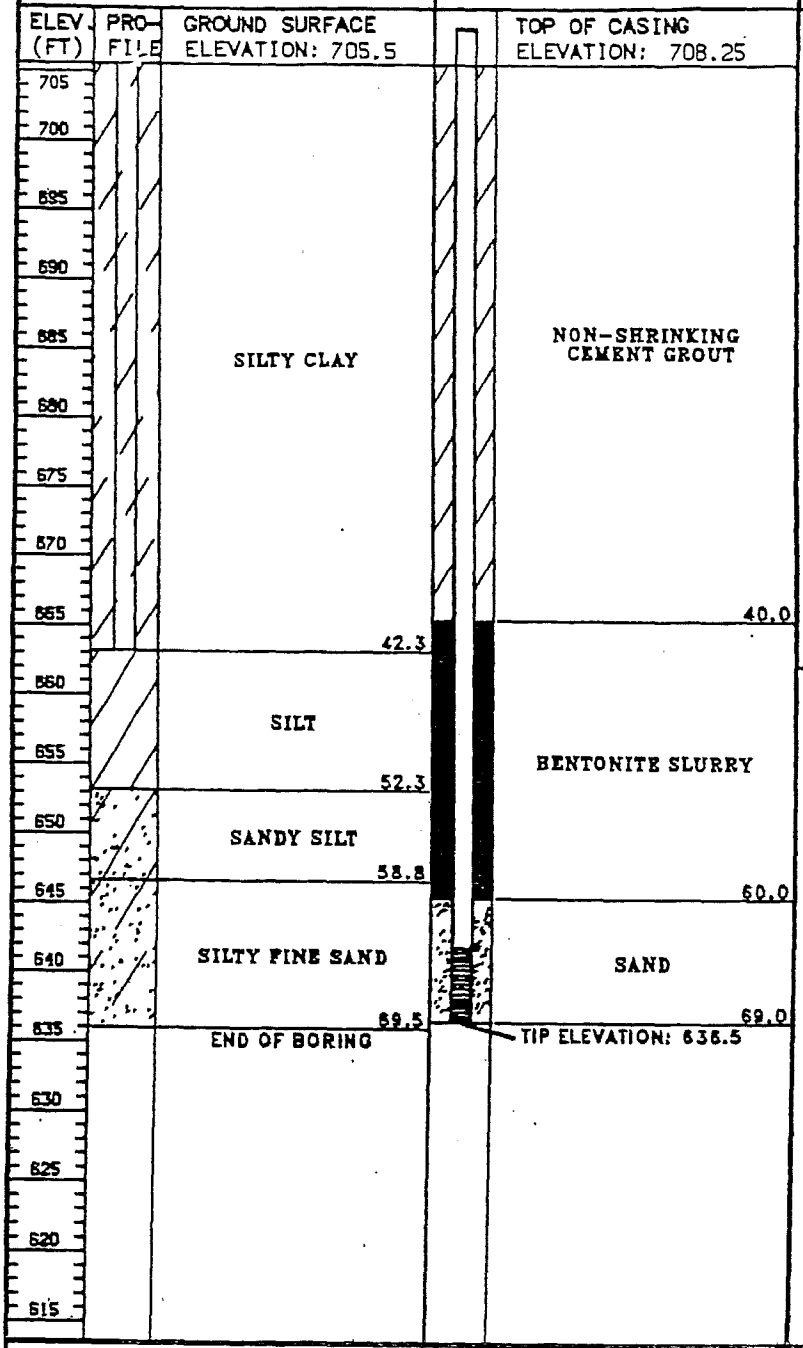
Casing Diam.:	2"
Casing Length:	80.5'
Casing Type:	60.5' GALV. / 20' SS
Screen Diam.:	2"
Screen Length:	5'
Screen Mesh:	0.01"
Screen Type:	STAINLESS STEEL

NEYER, TISEO & HINDO, LTD.

MONITOR WELL NO. OB-27A

Project Name: WAYNE DISPOSAL LANDFILL – SITE NO. 2 — NTH Pro. No. 94315 OW
Project Location: VAN BUREN TWP., WAYNE COUNTY, MICHIGAN — Chk. By: RLB

LOG OF MONITOR INSTALLATION



GROUNDWATER DATA

Date	Groundwater Elev. (ft)	Comments
10/7/87	658.75	
10/23/87	650.49	

NOTES :

[1] FOR DETAILS OF SUBSURFACE STRATA, SEE LOG OF TEST BORING NO. OB-27
[2] TOP OF CASING AND GROUND SURFACE ELEVATIONS PROVIDED BY WAYNE DISPOSAL, INC.

Started: 10/5/87
Completed: 10/5/87
Inspector: R. BURNS
Driller: S. REMPALSKI
Contractor: MATECO DRILLING COMPANY
Equipment: CME-550
Observation Type: MONITORING WELL

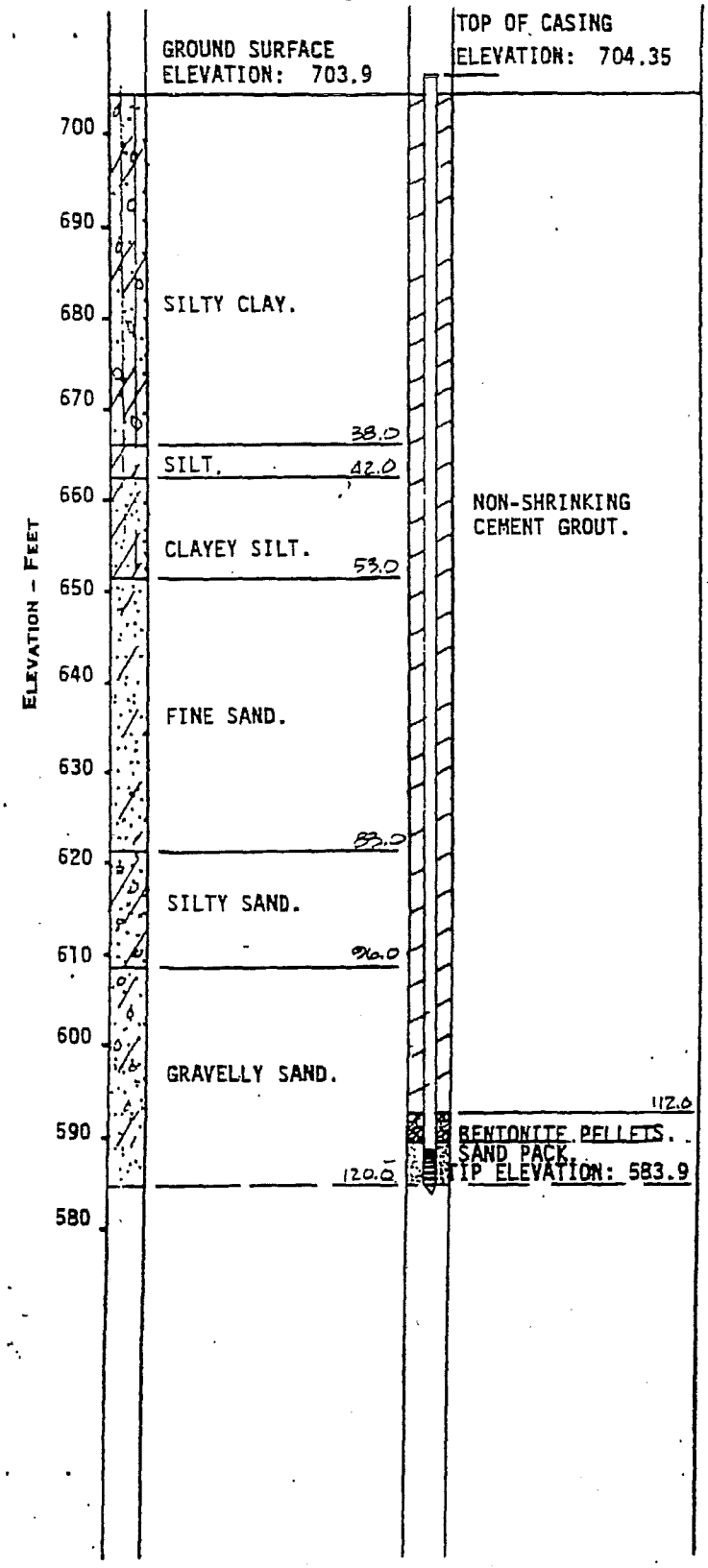
Casing Diam.: 2"
Casing Length: 67'
Casing Type: 47' GALV. / 20' SS
Screen Diam.: 2"
Screen Length: 5'
Screen Mesh: 0.01"
Screen Type: STAINLESS STEEL

Figure No. 10

LOG OF GROUNDWATER MONITORING WELL

CLASSIFICATIONS BY:
NEYER, TISEO & HINDO, LTD.

GENERALIZED SUBSURFACE PROFILE | WELL SCHEMATIC



GROUNDWATER DATA

DATE	GROUND-WATER ELEV. (FEET)	COMMENTS
9-12-84	653.60	
9-24-84	653.69	
10-22-84	653.54	

CASING – DIAMETER: 2.0"
– LENGTH: 117.0
– MATERIAL: Galvanized

SCREEN – DIAMETER: 2.0"
– LENGTH: 3.0'
– MESH: .007" slot
– MATERIAL: Stainless Steel

WELL STARTED: 8-13-84
WELL COMPLETED: 8-14-84
INSPECTOR: J. Serwik
DRILLER: J. Blank
CONTRACTOR: American Drilling
EQUIPMENT: CME-75

NOTES:
1. For details of the subsurface stra see Log of Test Boring No. 28.
2. Top of casing elevations and groun surface elevations provided by Way Disposal, Inc.

115?

NEYER, TISEO & HINDO, LTD.
CONSULTING ENGINEERS

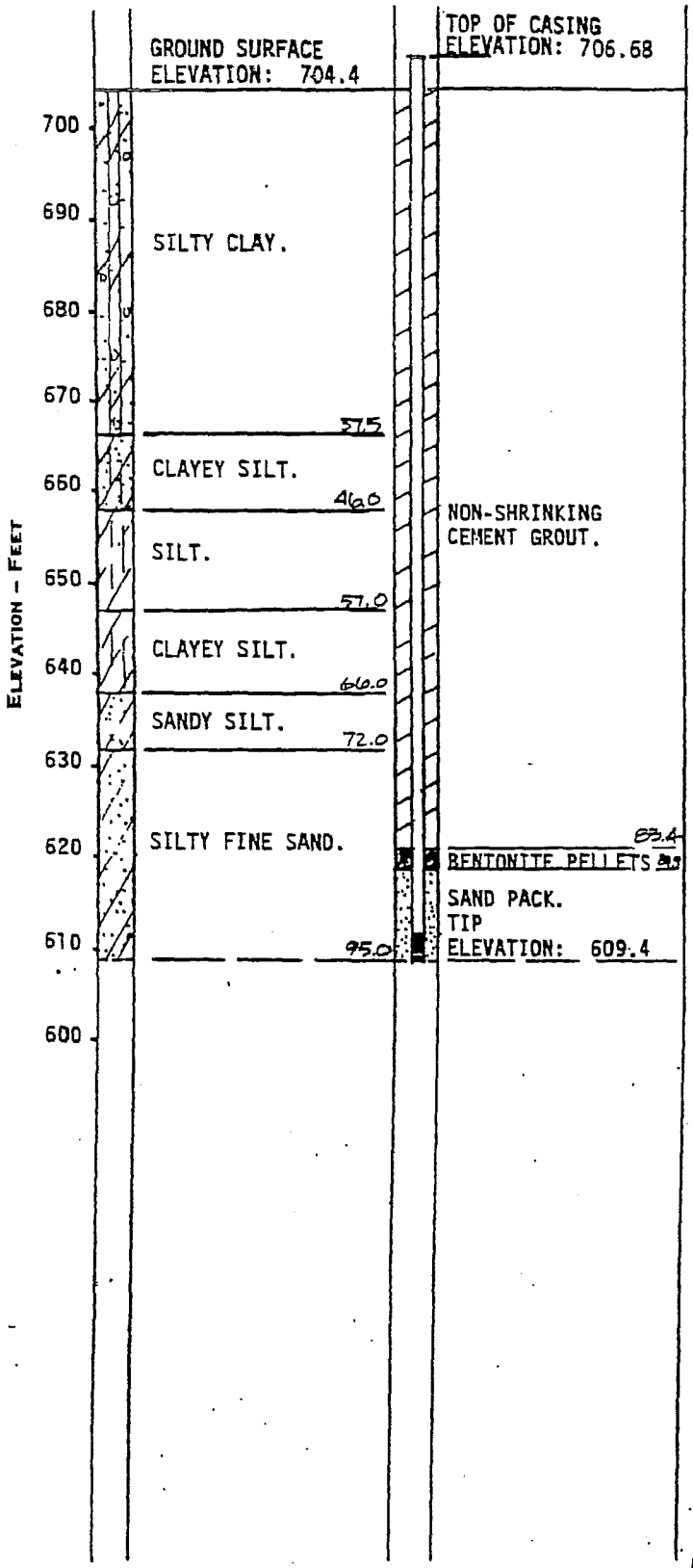
GROUNDWATER MONITORING WELL No. DR-28

WAYNE DISPOSAL LANDFILL SITE NO. 2
VAN BUREN TOWNSHIP

LOG OF GROUNDWATER MONITORING WELL

CLASSIFICATIONS BY:
NEYER, TISEO & HINDO, LTD.

GENERALIZED SUBSURFACE PROFILE | WELL SCHEMATIC



GROUNDWATER DATA

DATE	GROUND-WATER ELEV. (FEET)	COMMENTS
9-12-84	653.61	
9-24-84	653.63	
10-22-84	653.36	

CASING – DIAMETER: 2.0"
– LENGTH: 90.0'
– MATERIAL: PVC

SCREEN – DIAMETER: 2.0"
– LENGTH: 5.0'
– MESH: .006" slot
– MATERIAL: PVC

WELL STARTED: 7-30-84
WELL COMPLETED: 7-30-84
INSPECTOR: J. Serwik
DRILLER: J. Blank
CONTRACTOR: American Drilling
EQUIPMENT: CME-75

NOTES:
1. For details of the subsurface stra see Log of Test Boring No. OB-29.
2. Top of casing elevations and groun surface elevations provided by Way Disposal, Inc.

NEYER, TISEO & HINDO, LTD.
CONSULTING ENGINEERS

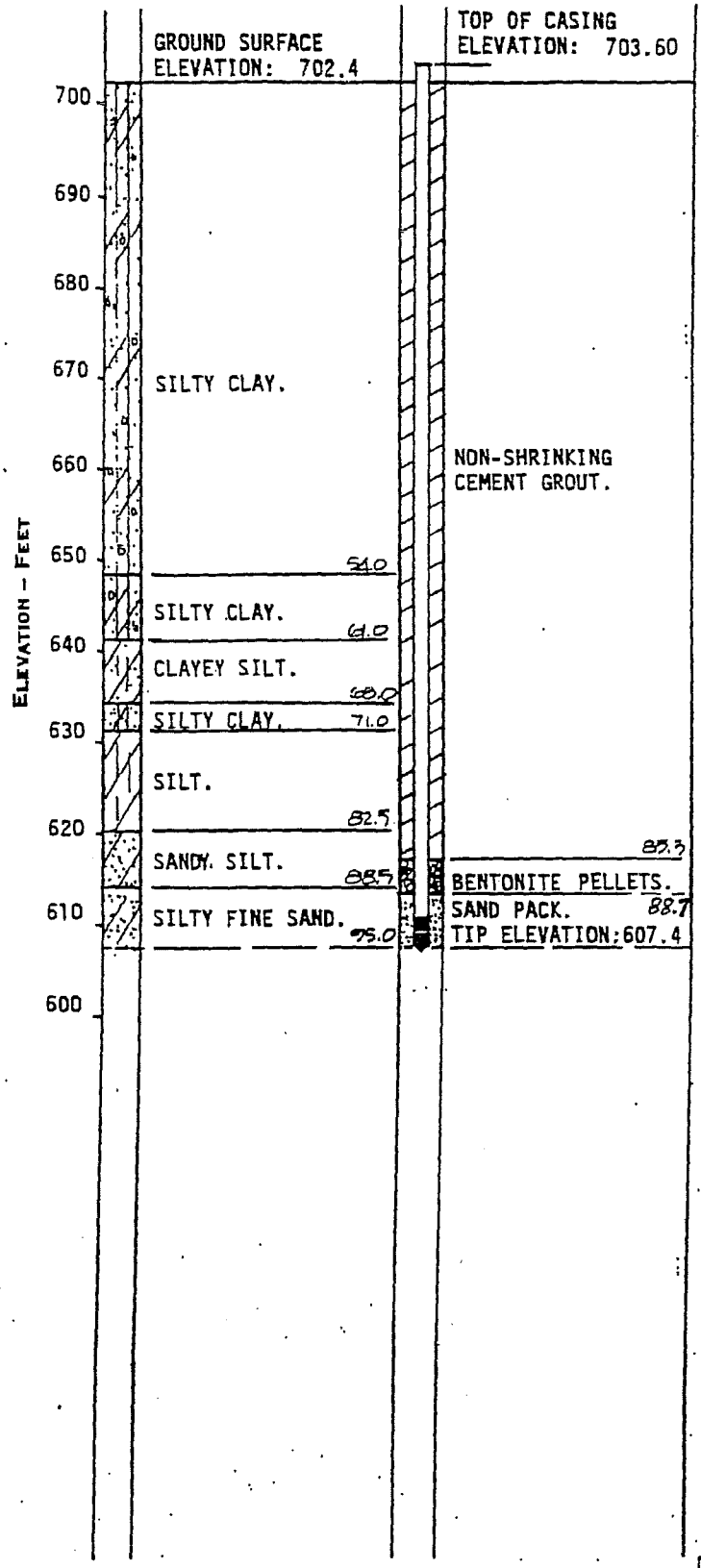
GROUNDWATER MONITORING WELL No. OB-29

WAYNE DISPOSAL LANDFILL SITE NO. 2
VAN BUREN TOWNSHIP

LOG OF GROUNDWATER MONITORING WELL

CLASSIFICATIONS BY:
NEYER, TISEO & HINDO, LTD.

GENERALIZED SUBSURFACE PROFILE | WELL SCHEMATIC



GROUNDWATER DATA

DATE	GROUNDWATER ELEV. (FEET)	COMMENTS
9-12-84	653.61	
9-24-84	653.81	
10-22-84	653.38	

CASING - DIAMETER: 2.0"
- LENGTH: 92.0'
- MATERIAL: Galvanized

SCREEN - DIAMETER: 2.0"
- LENGTH: 3.0'
- MESH: .007" slot
- MATERIAL: Stainless Steel

WELL STARTED: 8-29-84
WELL COMPLETED: 8-29-84
INSPECTOR: J. Serwik
DRILLER: J. Blank
CONTRACTOR: American Drilling
EQUIPMENT: CME-75

NOTES:
1. For details of the subsurface stra see Log of Test Boring No. OB-30.
2. Top of casing elevations and groun surface elevations provided by Way Disposal, Inc.

NEYER, TISEO & HINDO, LTD.
CONSULTING ENGINEERS

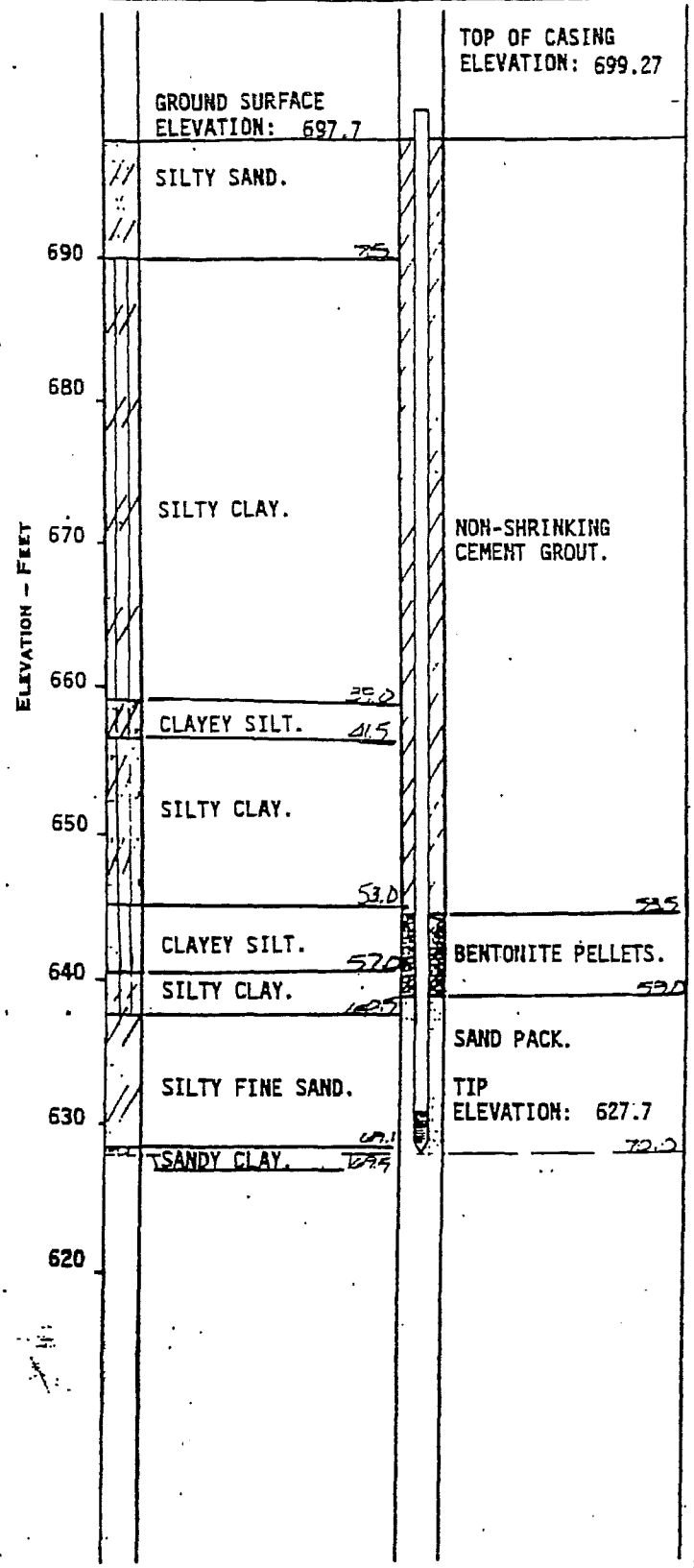
GROUNDWATER MONITORING WELL No. OB-30

WAYNE DISPOSAL LANDFILL SITE NO. 2
VAN BUREN TOWNSHIP
WAYNE COUNTY, MICHIGAN

LOG OF GROUNDWATER MONITORING WELL

CLASSIFICATIONS BY:
NEYER, TISEO & HINDO, LTD.

GENERALIZED SUBSURFACE PROFILE | WELL SCHEMATIC



GROUNDWATER DATA

DATE	GROUND-WATER ELEV. (FEET)	COMMENTS
9-24-84	655.60	
10-22-84	655.25	

CASING - DIAMETER: 2.0"
- LENGTH: 67.0'
- MATERIAL: Galvanized

SCREEN - DIAMETER: 2.0"
- LENGTH: 3.0'
- MESH: .007" slot
- MATERIAL: Stainless Steel

WELL STARTED: 9-18-84
WELL COMPLETED: 9-18-84
INSPECTOR: J. Serwik
DRILLER: J. Blank
CONTRACTOR: American Drilling
EQUIPMENT: CME-75

NOTES:
1. For details of the subsurface strat see Log of Test Boring No. OB-31.
2. Top of casing elevations and ground surface elevations provided by Wayne Disposal, Inc.

NEYER, TISEO & HINDO, LTD.
CONSULTING ENGINEERS

GROUNDWATER MONITORING WELL No. OB-31

WAYNE DISPOSAL LANDFILL SITE NO. 2
VAN BUREN TOWNSHIP
WAYNE COUNTY, MICHIGAN

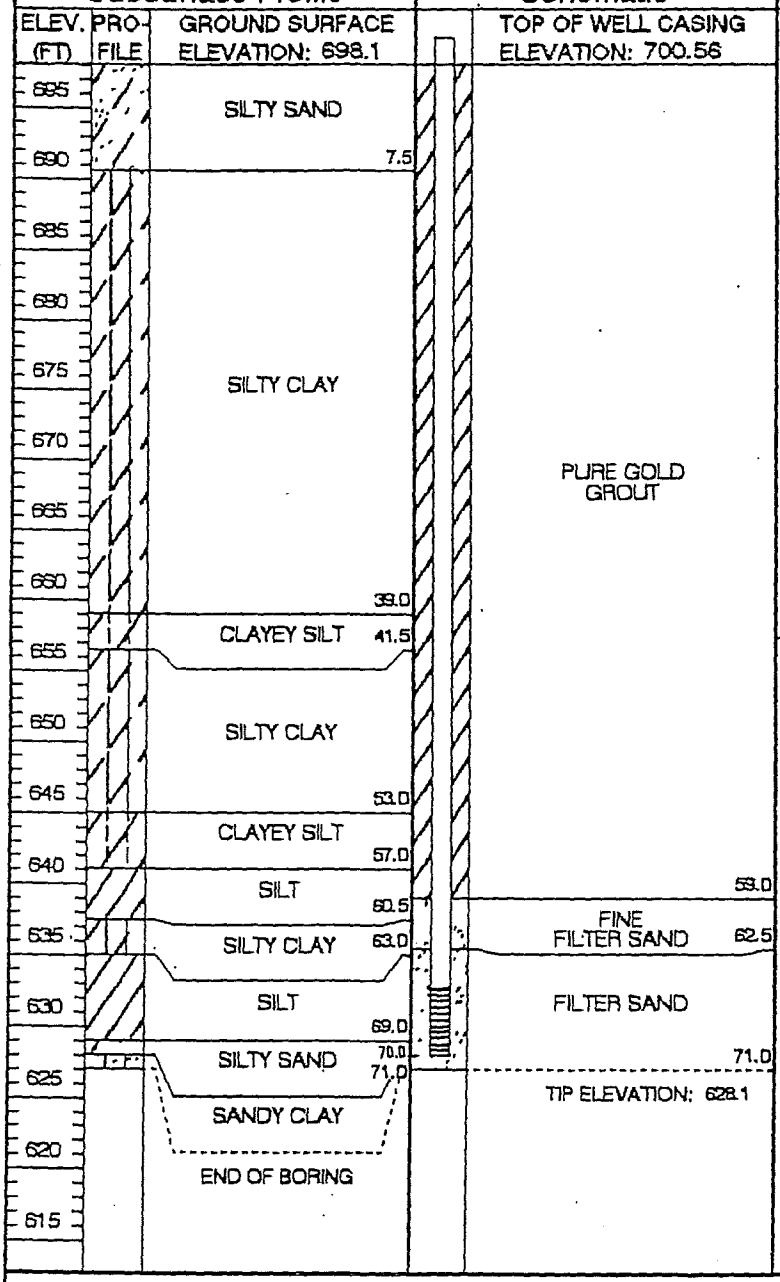
NTH Consultants, Ltd.

MONITORING WELL NO. OB-31AR

Project Name : WAYNE DISPOSAL, INC. - SITE NO. 2 NTH Proj. No: 13-3051 00

Project Location : VAN BUREN TOWNSHIP, WAYNE COUNTY, MICHIGAN Checked By : ACE

LOG OF MONITORING WELL



GROUNDWATER DATA

Date	Ground-water Elev.(ft)	Comments
02/03/93	653.91	BEFORE DEVELOPMENT
02/09/93	656.36	BEFORE DEVELOPMENT
02/25/93	656.19	

NOTES :

[1] FOR DETAILS OF SUBSURFACE STRATA, SEE LOG OF TEST BORING NO. OB-31AR.

[2] TOP OF CASING & GROUND SURFACE ELEVATIONS PROVIDED BY WAYNE DISPOSAL, INC.

[3] WELL INSTALLED TO REPLACE MONITORING WELL NO. OB-31A.

[4] CENTRALIZERS WERE USED TO MAINTAIN THE VERTICALITY OF THE WELL ASSEMBLY IN THE BOREHOLE.

FIELD MEASUREMENTS DURING DRILLING:

pH: 8.53
SPEC. COND: 361 µmhos/cm

FIELD MEASUREMENTS AFTER DEVELOPMENT:

pH: 8.21
SPEC. COND: 309 µmhos/cm

Started: 02/02/93
Completed: 02/03/93
Inspector: C. ENDLER
Driller: G. QUALLS
Contractor: GEO-TEK, INC.
Equipment: CME-750 ALL-TERRAIN DRILLING RIG
Well Type: MONITORING

Casing Diameter: 2.0"
Casing Length: 67.5'
Casing Type: STAINLESS STEEL
Screen Diameter: 2.0"
Screen Length: 5.0'
Screen Mesh: 0.007"
Screen Type: STAINLESS STEEL

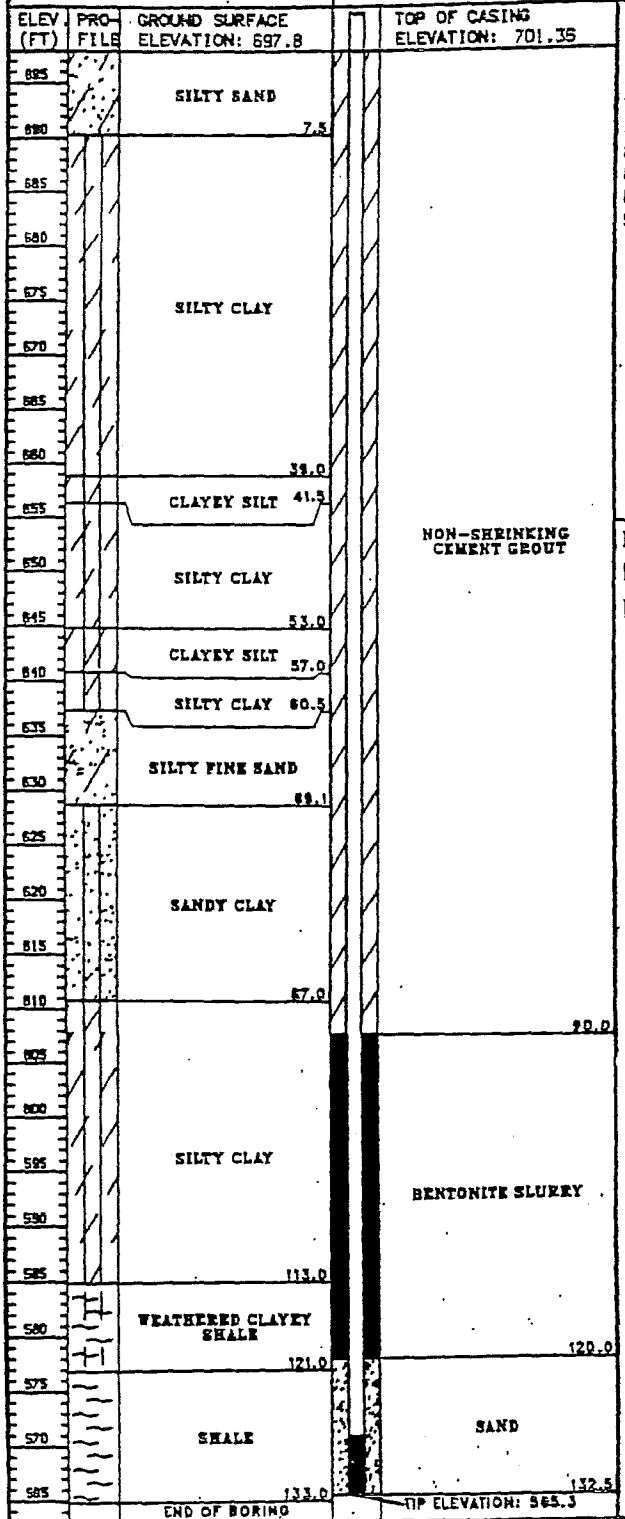
Figure No. A-4

NEYER, TISEO & HINDO, LTD.

MONITOR WELL NO. OB-32

Project Name: WAYNE DISPOSAL LANDFILL - SITE NO. 2 — NTH Pro. No. 94315 OW
Project Location: VAN BUREN TWP., WAYNE COUNTY, MICHIGAN — Chk. By: RLB

LOG OF MONITOR INSTALLATION



GROUNDWATER DATA

Date	Groundwater Elev. (ft)	Comments
7/23/87	655.70	
7/28/87	651.35	
7/29/87	651.25	
7/31/87	651.15	
8/18/87	651.00	
8/21/87	650.72	
8/25/87	650.77	
8/31/87	651.10	
9/4/87	650.78	

NOTES :

[1] FOR DETAILS OF SUBSURFACE STRATA, SEE LOG OF TEST BORING NO. OB-32.
[2] TOP OF CASING AND GROUND SURFACE ELEVATIONS PROVIDED BY WAYNE DISPOSAL, INC.

Started: 7/21/87
Completed: 7/21/87
Inspector: R. BURNS / M. TAKACS
Driller: S. REMPALSKI
Contractor: MATECO DRILLING COMPANY
Equipment: CME-550
Observation Type: MONITORING WELL

Casing Diam.: 2"
Casing Length: 127'
Casing Type: 107.5' GALV. / 20' SS
Screen Diam.: 2"
Screen Length: 5'
Screen Mesh: 0.007"
Screen Type: STAINLESS STEEL

Figure No. 12

MONITORING WELL NO: OB-34A

NTH CONSULTANTS, LTD.

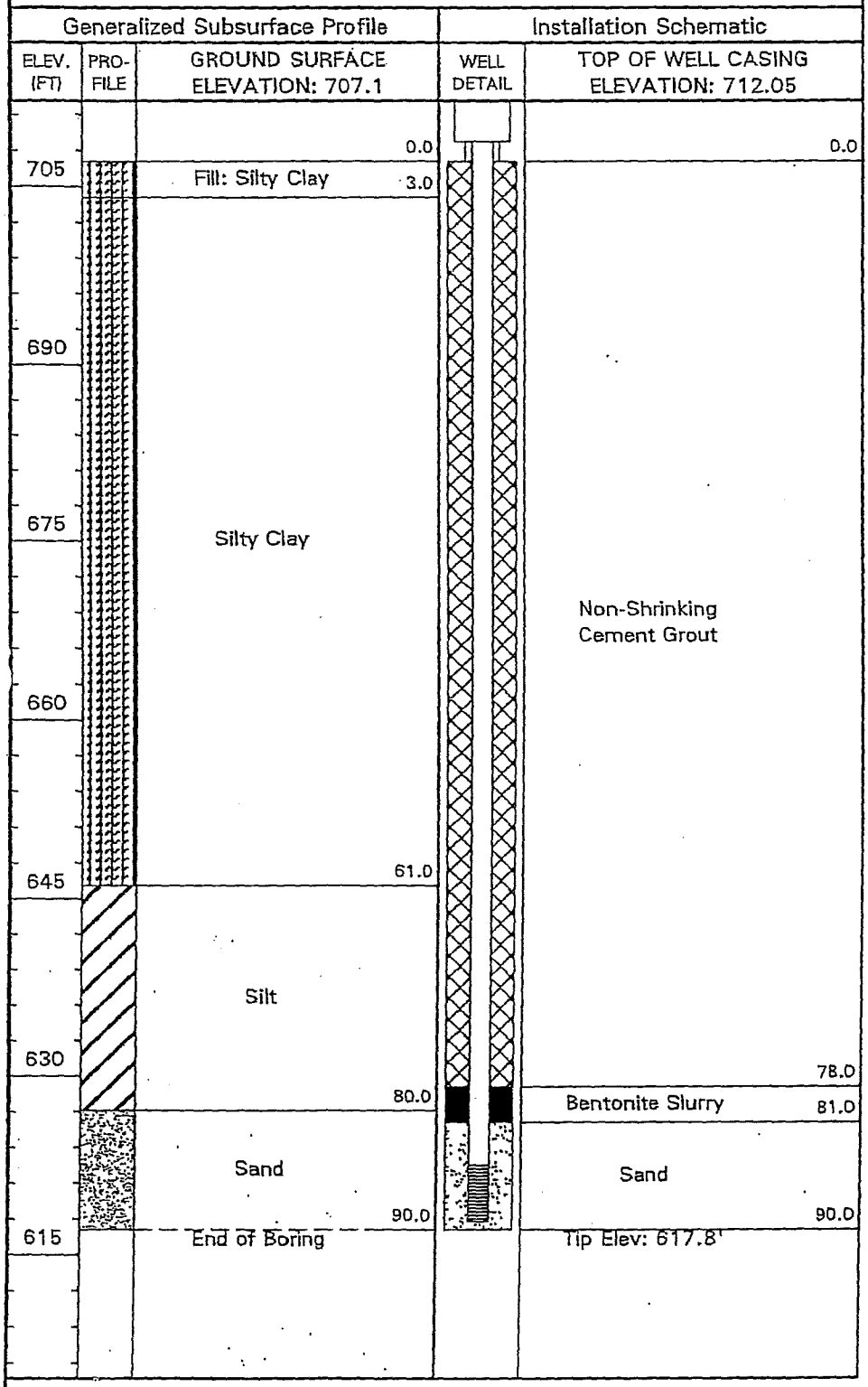
Project Name: *WAYNE DISPOSAL, INC.*

Project Location: *BELLEVILLE, MICHIGAN*

NTH Proj. No: *13-020395-01*

Checked By: RBR

LOG OF MONITORING WELL



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
06-24-03	n/a	due to use of drilling fluids

NOTES

[1] For details of subsurface strata, see Log of Test Boring OB-34A.

Started:	*06/23/03*	Casing Diameter:	*2.0 in*
Completed:	*06/24/03*	Casing Length:	*89.25 ft*
Inspector:	*K. Warning*	Casing Type:	*Stainless Steel*
Contractor:	*American Drilling & Testing Co.*	Screen Diameter:	*2.0 in*
Driller:	*R. Rumptz / H. Pace*	Screen Length:	*5.0 ft*
Equipment:	*CME-750 & CME-550*	Screen Mesh:	*0.007 in*
Well Type:	*Monitoring*	Screen Type:	*Stainless Steel*

FIGURE NO.

MONITORING WELL NO: OB-35A

NTH CONSULTANTS, LTD.

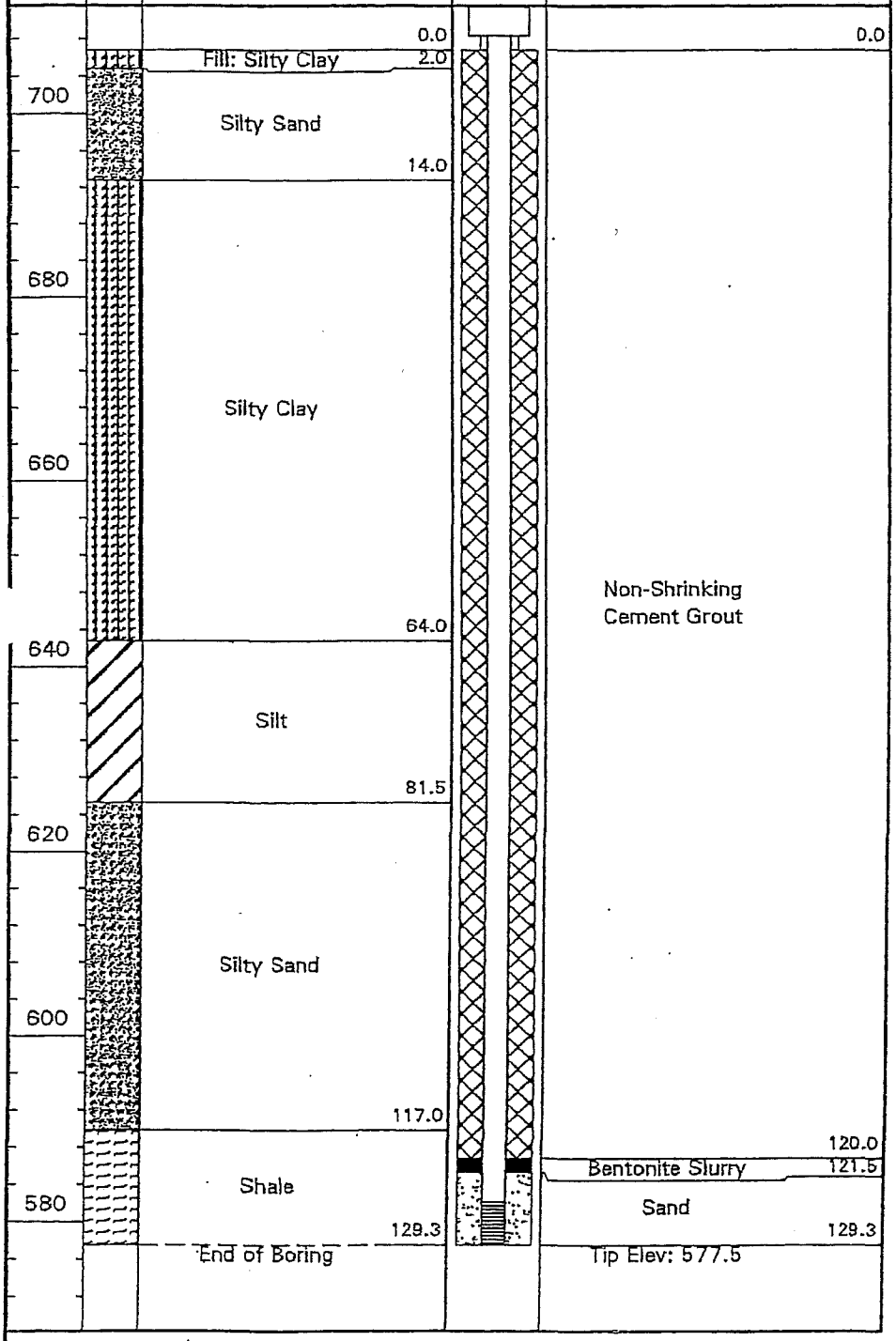
Project Name: *WAYNE DISPOSAL, INC.*

NTH Proj. No: *13-020395-01*

Project Location: *BELLEVILLE, MICHIGAN*

Checked By: RBM

LOG OF MONITORING WELL



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
06-24-03	n/a	due to use of drilling fluids

NOTES

[1] For details of subsurface strata, see Log of Test Boring OB-35A.

Started:	*06/19/03*	Casing Diameter:	*2.0 in*
Completed:	*06/20/03*	Casing Length:	*128.89 ft*
Inspector:	*K. Warning*	Casing Type:	*Stainless Steel*
Contractor:	*American Drilling & Testing Co.*	Screen Diameter:	*2.0 in*
Driller:	*R. Rumptz / H. Pace*	Screen Length:	*5.0 ft*
Equipment:	*CME-750 & CME-550*	Screen Mesh:	*0.007 in*
Well Type:	*Monitoring*	Screen Type:	*Stainless Steel*

FIGURE NO.

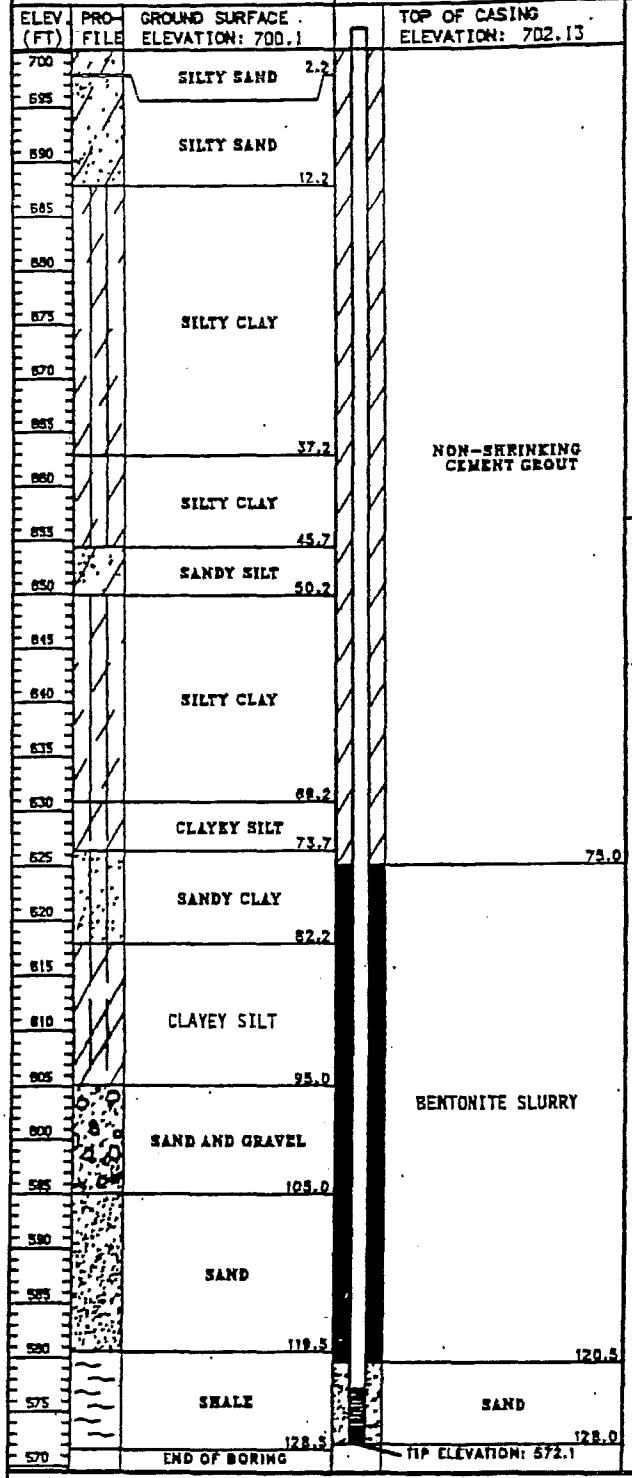
NEYER, TISEO & HINDO, LTD.

MONITOR WELL NO. OB-36

Project Name: WAYNE DISPOSAL LANDFILL – SITE NO. 2 — NTH Pro. No. 94315 OW

Project Location: VAN BUREN TWP., WAYNE COUNTY, MICHIGAN — Chk. By: RLB

LOG OF MONITOR INSTALLATION



GROUNDWATER DATA

Date	Groundwater Elev.(ft)	Comments
10/22/87	649.70	

NOTES :

[1] FOR DETAILS OF SUBSURFACE STRATA, SEE LOG OF TEST BORING NO. OB-36

[2] TOP OF CASING AND GROUND SURFACE ELEVATIONS PROVIDED BY WAYNE DISPOSAL, INC.

Started:	10/1/87	Casing Diam.:	2"
Completed:	10/1/87	Casing Length:	125'
Inspector:	M. TAKACS / R. BURNS	Casing Type:	70' GAVL. / 55' SS
Driller:	S. REMPALSKI	Screen Diam.:	2"
Contractor:	MATECO DRILLING COMPANY	Screen Length:	5'
Equipment:	CME-550	Screen Mesh:	0.007"
Observation Type:	MONITORING WELL	Screen Type:	STAINLESS STEEL

Figure No. 15

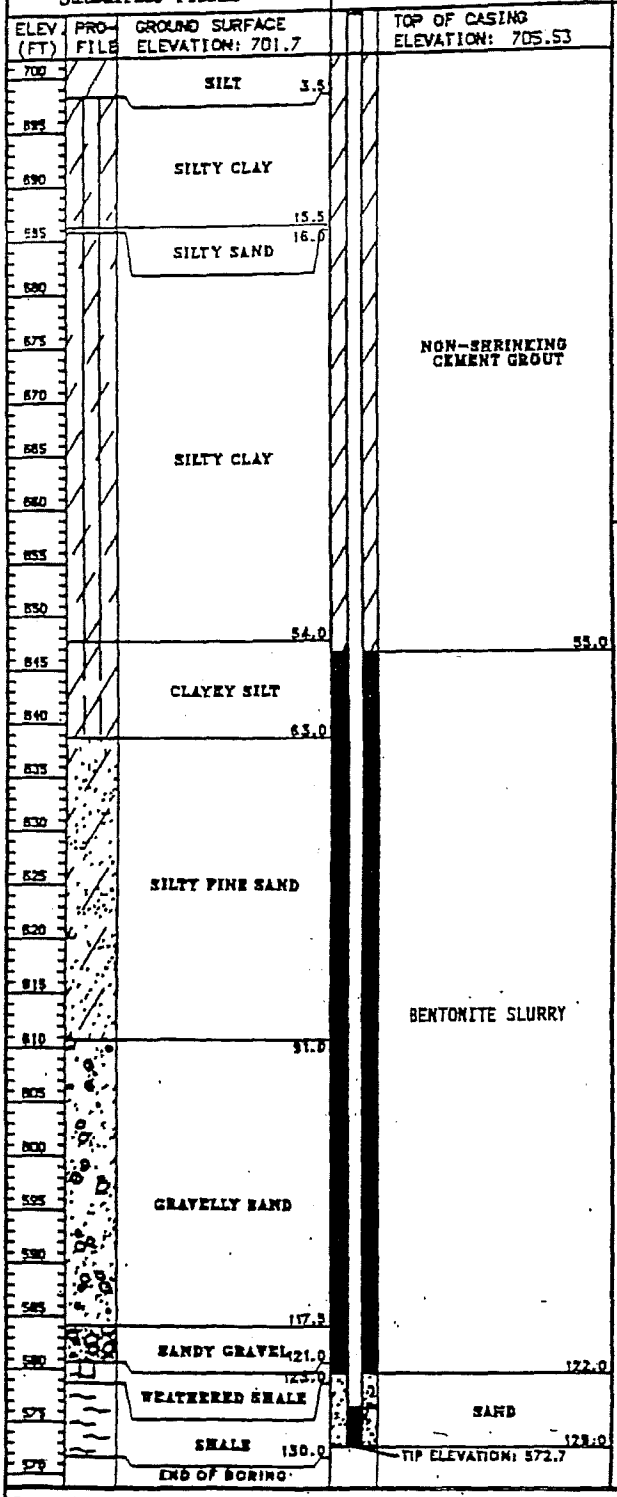
NEYER, TISEO & HINDO, LTD.

MONITOR WELL NO. OB-37

Project Name: WAYNE DISPOSAL LANDFILL – SITE NO. 2
Project Location: VAN BUREN TWP., WAYNE COUNTY, MICHIGAN

NTH Pro. No. 94315 OW
Chk. By: RLB

LOG OF MONITOR INSTALLATION



GROUNDWATER DATA

Date	Groundwater Elev.(ft)	Comments
7/25/87	663.21	
7/28/87	652.10	

NOTES :

[1] FOR DETAILS OF SUBSURFACE STRATA, SEE LOG OF TEST BORING NO. OB-37
[2] TOP OF CASING AND GROUND SURFACE ELEVATIONS PROVIDED BY WAYNE DISPOSAL, INC.

Started:	9/23/87
Completed:	9/24/87
Inspector:	R. BURNS
Driller:	S. REMPALSKI
Contractor:	MATECO DRILLING COMPANY
Equipment:	CME-550
Observation Type:	MONITORING WELL

Casing Diam.:	2"
Casing Length:	128.3'
Casing Type:	54.3' GALV. / 75' SS
Screen Diam.:	2"
Screen Length:	3.5'
Screen Mesh:	0.01"
Screen Type:	STAINLESS STEEL

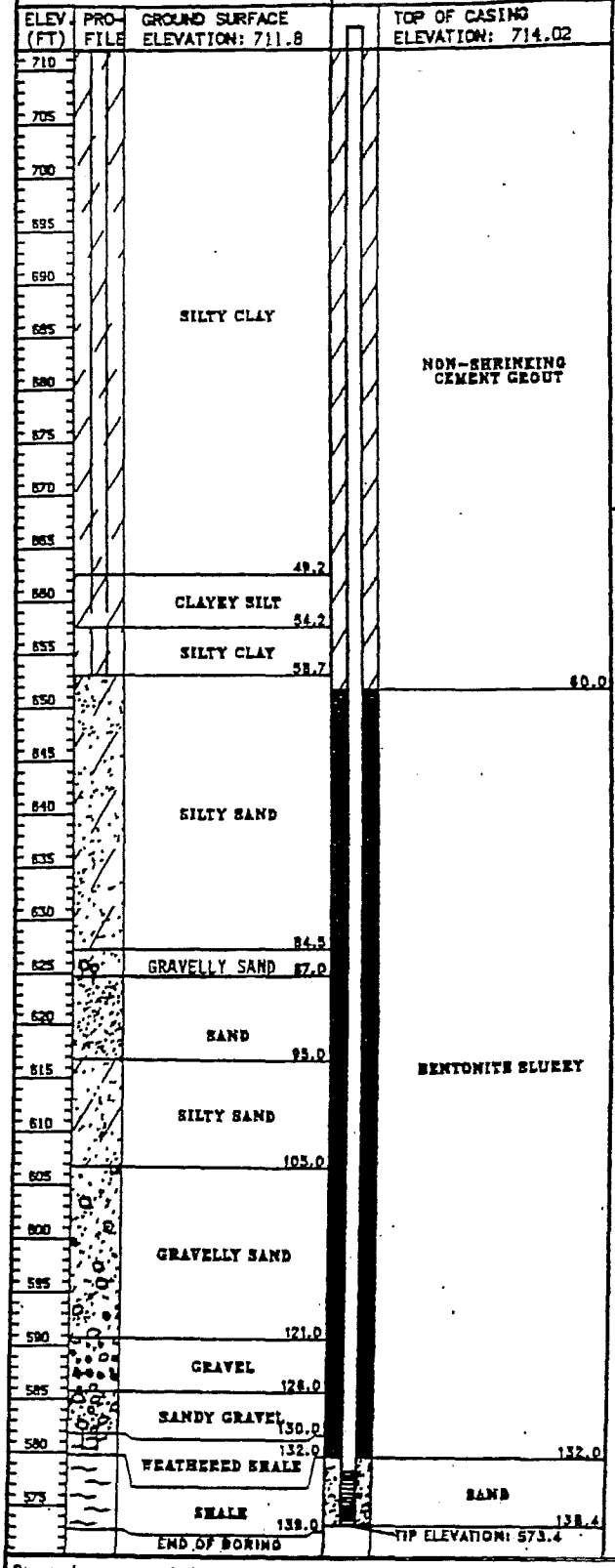
Figure No. 16

NEYER, TISEO & HINDO, LTD.

MONITOR WELL NO. OB-38

Project Name: WAYNE DISPOSAL LANDFILL - SITE NO. 2 NTH Proj. No. 94315 OW
Project Location: VAN BUREN TWP., WAYNE COUNTY, MICHIGAN Chk. By: RLB

LOG OF MONITOR INSTALLATION



GROUNDWATER DATA

Date	Groundwater Elev. (ft)	Comments
9/18/87	653.12	
9/23/87	651.13	
9/24/87	651.02	
9/25/87	650.86	
9/28/87	650.70	

NOTES :

[1] FOR DETAILS OF SUBSURFACE STRATA, SEE LOG OF TEST BORING NO. OB-38
[2] TOP OF CASING AND GROUND SURFACE ELEVATIONS PROVIDED BY WAYNE DISPOSAL, INC.

Started: 9/9/87
Completed: 9/10/87
Inspector: R. BURNS / M. TAKACS
Driller: S. REMPALSKI
Contractor: MATECO DRILLING COMPANY
Equipment: CME-550
Observation Type: MONITORING WELL

Casing Diam.: 2"
Casing Length: 137.1'
Casing Type: 50.1' GALV. / 87' SS
Screen Diam.: 2"
Screen Length: 3.5'
Screen Mesh: 0.01"
Screen Type: STAINLESS STEEL

Figure No. 17

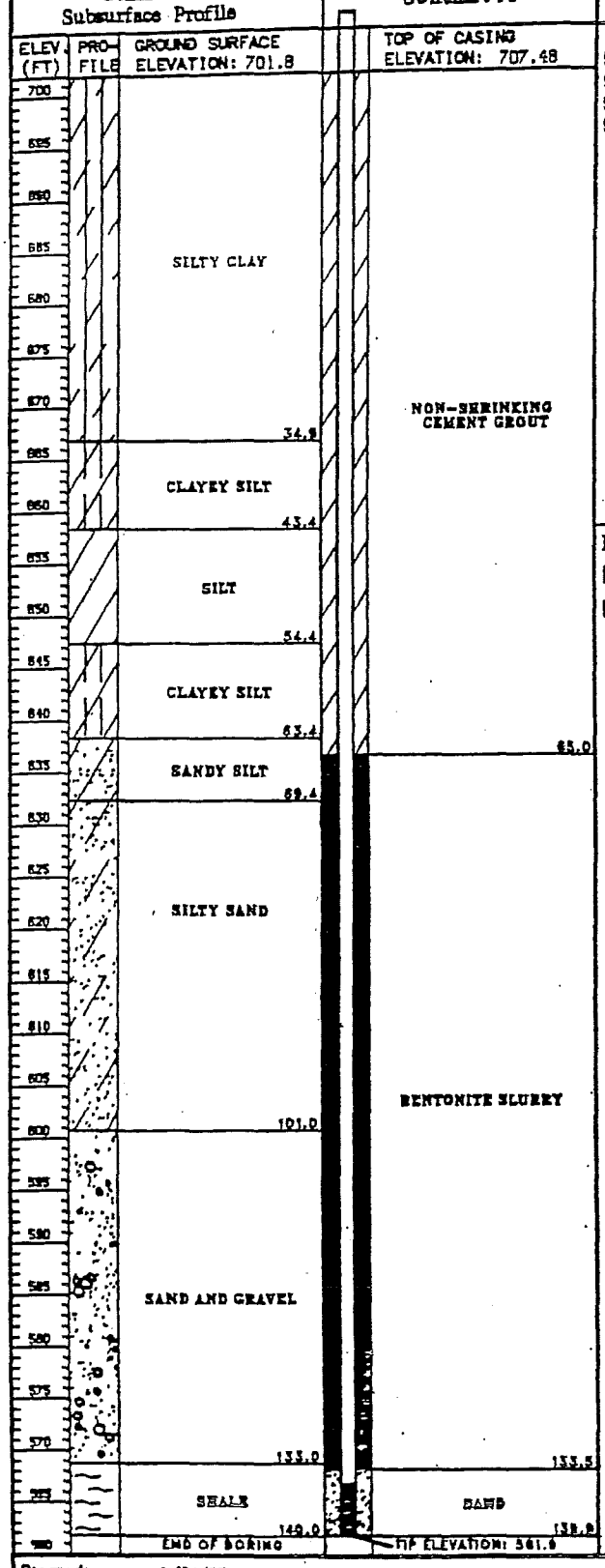
NEYER, TISEO & HINDO, LTD.

MONITOR WELL NO. OB-39

Project Name: WAYNE DISPOSAL LANDFILL - SITE NO. 2 NTH Proj. No. 94315 OW

Project Location: VAN BUREN TWP., WAYNE COUNTY, MICHIGAN Chk. By: RLB

LOG OF MONITOR INSTALLATION



GROUNDWATER DATA

Date	Groundwater Elev.(ft)	Comments
9/1/87	652.28	
9/4/87	651.50	
9/9/87	650.88	
9/22/87	650.50	

NOTES :

[1] FOR DETAILS OF SUBSURFACE STRATA, SEE LOG OF TEST BORING NO. OB-39

[2] TOP OF CASING AND GROUND SURFACE ELEVATIONS PROVIDED BY WAYNE DISPOSAL, INC.

Started:	8/31/87
Completed:	9/1/87
Inspector:	R. BURNS
Driller:	S. REMPALSKI
Contractor:	MATECO DRILLING COMPANY
Equipment:	CME-550
Observation Type:	MONITORING WELL

Casing Diam.:	2"
Casing Length:	140.4'
Casing Type:	65.4' GALV. / 75' SS
Screen Diam.:	2"
Screen Length:	5'
Screen Mesh:	0.007"
Screen Type:	STAINLESS STEEL

Figure No. 18

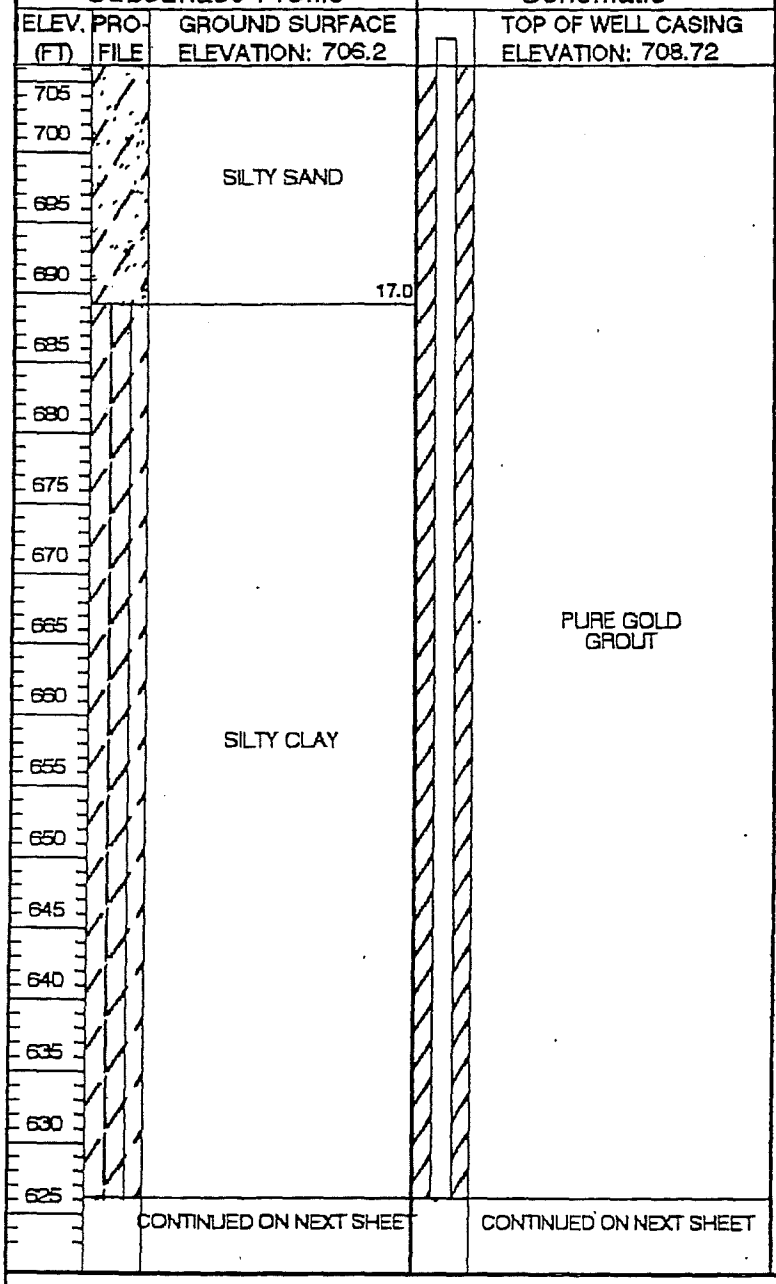
NTH Consultants, Ltd.

MONITORING WELL NO. OB-40R

Project Name : WAYNE DISPOSAL, INC. - SITE NO. 2 NTH Proj. No: 13-3051 00

Project Location : VAN BUREN TOWNSHIP, WAYNE COUNTY, MICHIGAN Checked By : ACE

LOG OF MONITORING WELL



GROUNDWATER DATA

Date	Ground-water Elev. (ft)	Comments
02/01/93	659.72	BEFORE DEVELOPMENT
02/09/93	658.14	BEFORE DEVELOPMENT
02/25/93	656.69	

NOTES :

[1] FOR DETAILS OF SUBSURFACE STRATA, SEE LOG OF TEST BORING NO. OB-40R.

[2] TOP OF CASING & GROUND SURFACE ELEVATIONS PROVIDED BY WAYNE DISPOSAL, INC.

[3] WELL INSTALLED TO REPLACE MONITORING WELL NO. OB-40.

[4] CENTRALIZERS WERE USED TO MAINTAIN THE VERTICALITY OF THE WELL ASSEMBLY IN THE BOREHOLE.

FIELD MEASUREMENTS DURING DRILLING:

pH: 8.10
SPEC. COND: 310 µmhos/cm

FIELD MEASUREMENTS AFTER DEVELOPMENT:

pH: 8.03
SPEC. COND: 302 µmhos/cm

Started: 01/29/93
Completed: 02/01/93
Inspector: C. ENDLER
Driller: G. QUALLS
Contractor: GEO-TEK, INC.
Equipment: CME-750 ALL-TERRAIN DRILLING RIG
Well Type: MONITORING

Casing Diameter: 2.0"
Casing Length: 93.5'
Casing Type: STAINLESS STEEL
Screen Diameter: 2.0"
Screen Length: 5.0'
Screen Mesh: 0.007"
Screen Type: STAINLESS STEEL

Figure No. A-6a

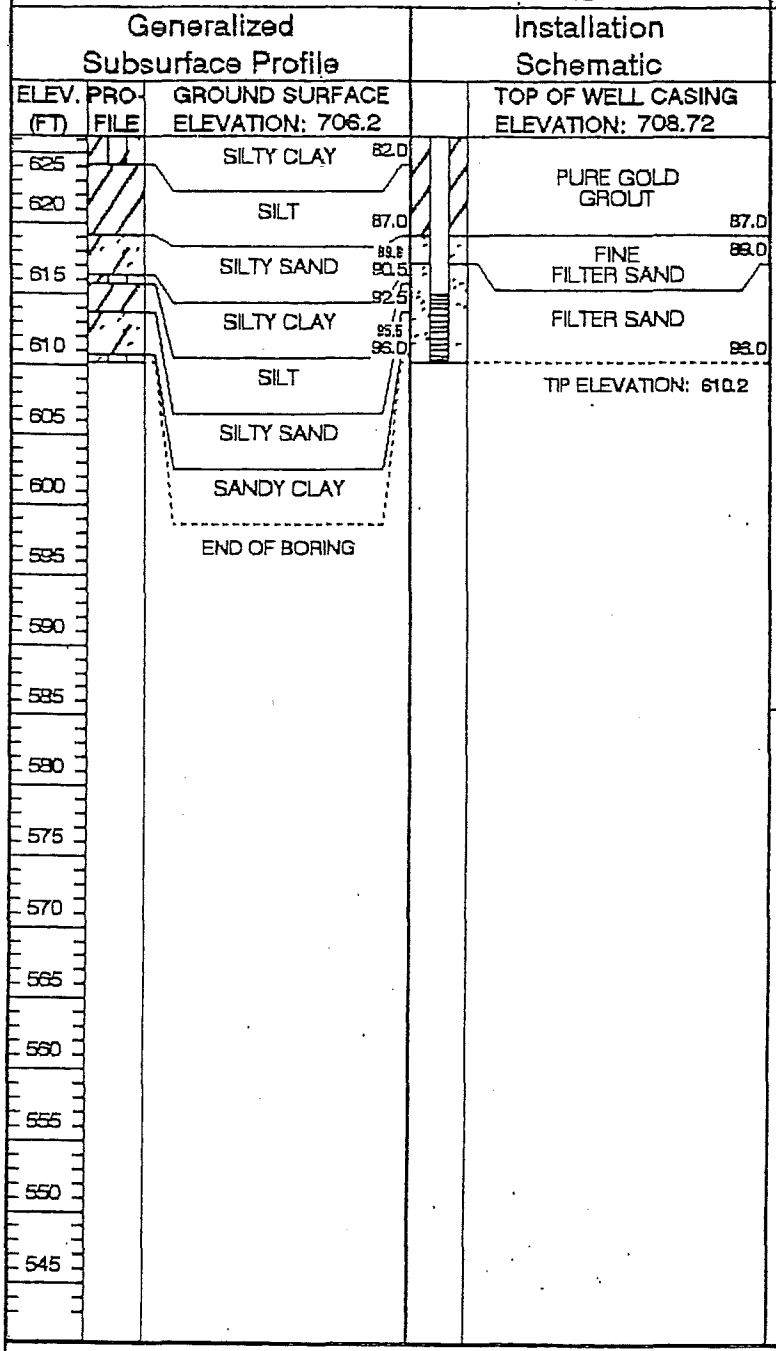
NTH Consultants, Ltd.

MONITORING WELL NO. OB-40R

Project Name : WAYNE DISPOSAL, INC. - SITE NO. 2 NTH Proj. No: 13-3051 00

Project Location : VAN BUREN TOWNSHIP, WAYNE COUNTY, MICHIGAN Checked By : ACE

LOG OF MONITORING WELL



GROUNDWATER DATA

Date	Ground-water Elev. (ft)	Comments
02/01/93	659.72	BEFORE DEVELOPMENT
02/09/93	658.14	BEFORE DEVELOPMENT
02/25/93	656.69	

NOTES :

[1] FOR DETAILS OF SUBSURFACE STRATA, SEE LOG OF TEST BORING NO. OB-40R.

[2] TOP OF CASING & GROUND SURFACE ELEVATIONS PROVIDED BY WAYNE DISPOSAL, INC.

[3] WELL INSTALLED TO REPLACE MONITORING WELL NO. OB-40.

[4] CENTRALIZERS WERE USED TO MAINTAIN THE VERTICALITY OF THE WELL ASSEMBLY IN THE BOREHOLE.

FIELD MEASUREMENTS DURING DRILLING:

pH: 8.10
SPEC. COND: 310 μmhos/cm

FIELD MEASUREMENTS AFTER DEVELOPMENT:

pH: 8.03
SPEC. COND: 302 μmhos/cm

Started: 01/29/93
Completed: 02/01/93
Inspector: C. ENDLER
Driller: G. QUALLS
Contractor: GEO-TEK, INC.
Equipment: CME-750 ALL-TERRAIN DRILLING RIG
Well Type: MONITORING

Casing Diameter: 2.0"
Casing Length: 93.5'
Casing Type: STAINLESS STEEL
Screen Diameter: 2.0"
Screen Length: 5.0'
Screen Mesh: 0.007"
Screen Type: STAINLESS STEEL

Figure No. A-6b

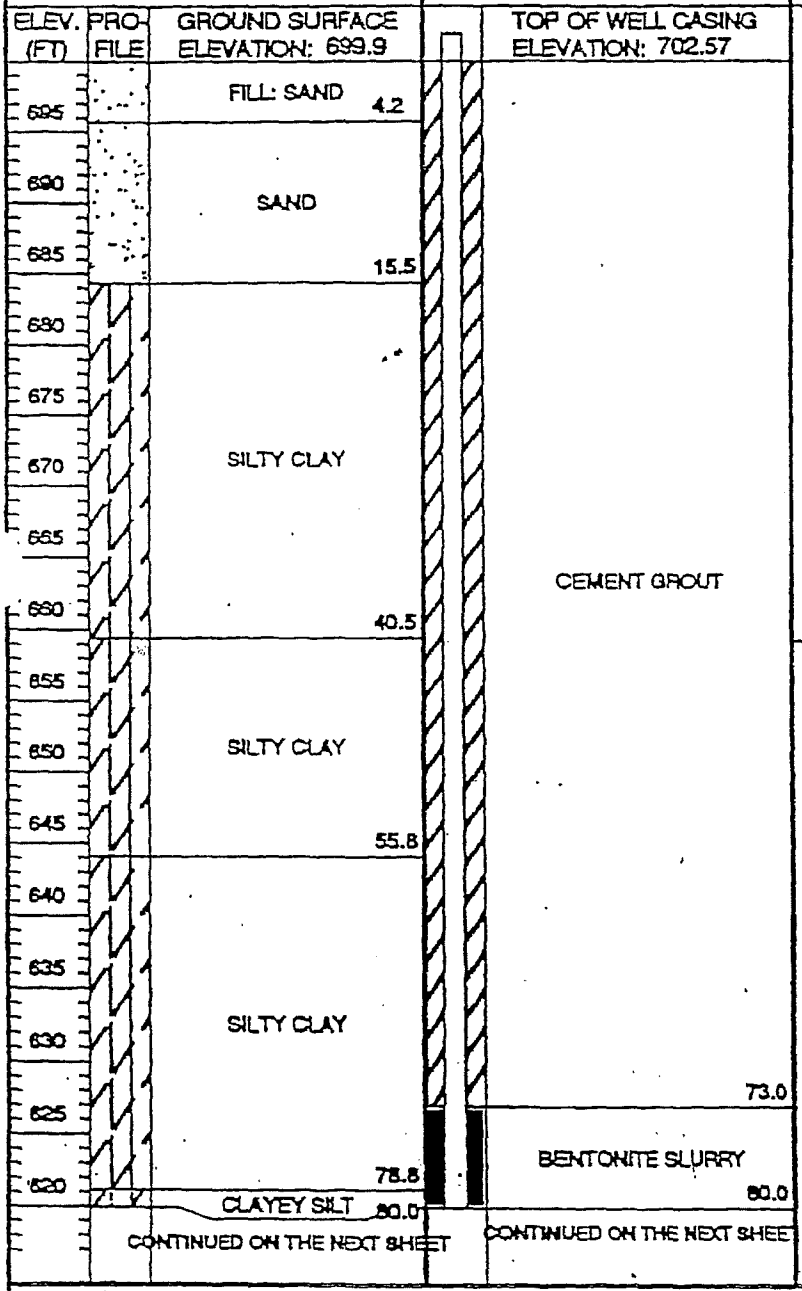
NTH Consultants, Ltd.

MONITORING WELL NO. OB-47

Project Name : MICHIGAN DISPOSAL, INCORPORATED — NTH Proj. No: 90323 OW

Project Location : VAN BUREN TWP, WAYNE COUNTY, MICHIGAN — Check By :

LOG OF MONITORING WELL



GROUNDWATER DATA

Date	Ground-water Elev. (ft)	Comments
07/12/90	652.96	
07/16/90	652.95	

NOTES :

[1] FOR DETAILS OF SUBSURFACE STRATIGRAPHY, SEE LOG OF TEST BORING OB-47.

[2] WELL DEVELOPED WITH COMPRESSED AIR ON 07/16/90.

[3] TOP OF CASING AND GROUND SURFACE ELEVATIONS DETERMINED BY WDI PERSONNEL.

[4] DEPTH TO FIRST COUPLING IS 0.3 FEET BELOW GROUND SURFACE; SECOND COUPLING IS 10.3 FEET BELOW GROUND SURFACE.

Started: 07/02/90
Completed: 07/12/90
Inspector: G. CROCKFORD
Driller: M. PUFFPAFF
Contractor: ENVIRONMENTAL DRILLING & SERVICES, INC.
Equipment: FAILING F-7
Well Type: MONITORING WELL

Casing Diameter: 2" I.D.
Casing Length: 103 FT
Casing Type: 60' STAINLESS/43' GALVANIZED
Screen Diameter: 2"
Screen Length: 5'
Screen Mesh: .007
Screen Type: STAINLESS STEEL

Figure No. 2

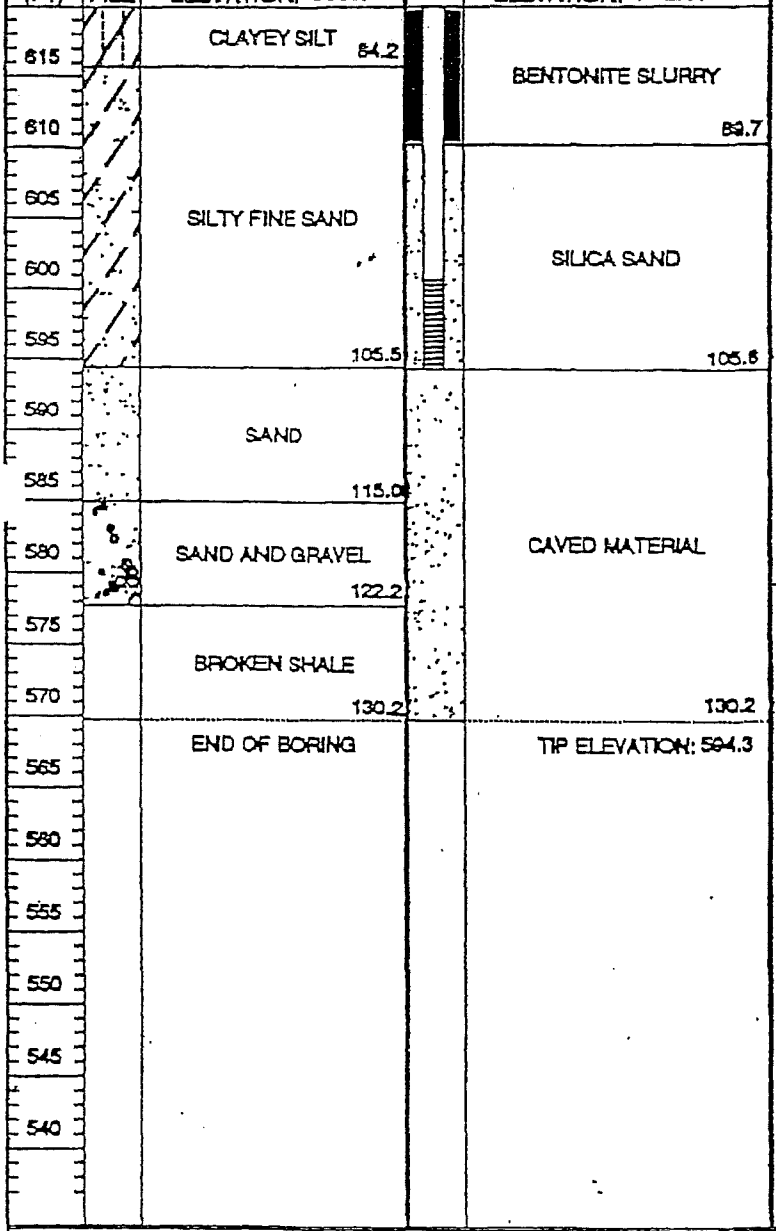
NTH Consultants, Ltd.

MONITORING WELL NO. OB-47

Project Name : MICHIGAN DISPOSAL, INCORPORATED — NTH Proj. No: 90323 OW

Project Location : VAN BUREN TWP, WAYNE COUNTY, MICHIGAN — Check By :

LOG OF MONITORING WELL



GROUNDWATER DATA

Date	Ground-water Elev.(ft)	Comments
07/12/90	652.96	
07/16/90	652.95	

NOTES :

[1] FOR DETAILS OF SUBSURFACE STRATIGRAPHY, SEE LOG OF TEST BORING OB-47.

[2] WELL DEVELOPED WITH COMPRESSED AIR ON 07/16/90.

[3] TOP OF CASING AND GROUND SURFACE ELEVATIONS DETERMINED BY WDI PERSONNEL.

[4] DEPTH TO FIRST COUPLING IS 0.3 FEET BELOW GROUND SURFACE; SECOND COUPLING IS 10.3 FEET BELOW GROUND SURFACE.

Started: 07/02/90
Completed: 07/12/90
Inspector: G. CROCKFORD
Driller: M. PUFFPAFF
Contractor: ENVIRONMENTAL DRILLING & SERVICES, INC.
Equipment: FAILING F-7
Well Type: MONITORING WELL

Casing Diameter: 2" I.D.
Casing Length: 103 FT
Casing Type: 60' STAINLESS/43' GALVANIZED
Screen Diameter: 2"
Screen Length: 5'
Screen Mesh: .007"
Screen Type: STAINLESS STEEL

Figure No. 2

OBSERVATION WELL NO: WW OB-48

NTH CONSULTANTS, LTD.

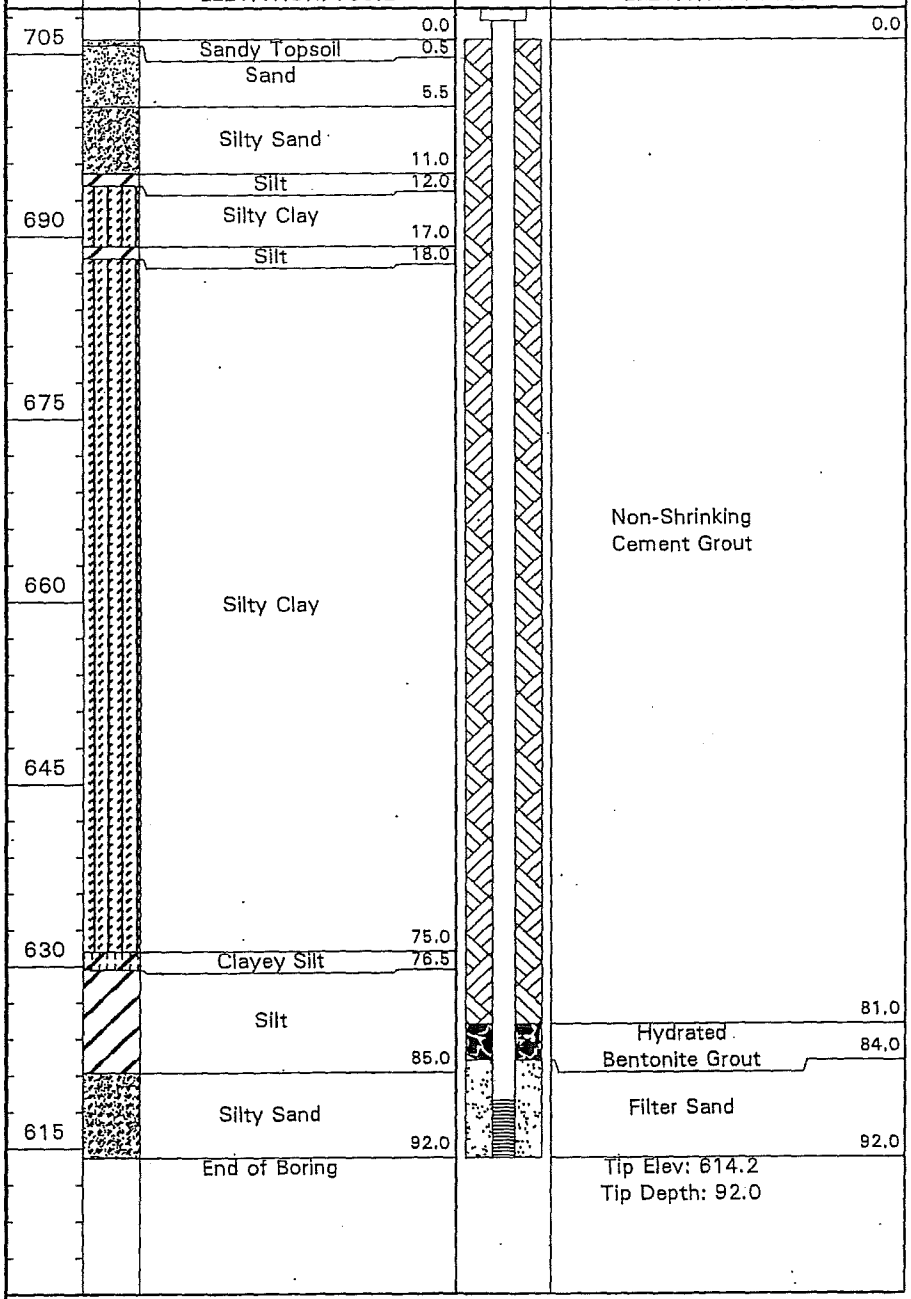
Project Name: *WAYNE DISPOSAL, INC. - WOOD LOT*

Project Location: *BELLEVILLE, MICHIGAN*

NTH Proj. No: *62-080376-01*

Checked By: dlp

LOG OF OBSERVATION WELL



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
12-07-08	655.21	
02-09-09	655.10	

NOTES

[1] For details of subsurface strata, see Log of Test Boring TB-W-1.

[2] Location Coordinates: E 3690.00
N 7660.02

Started:	*07-16-08*
Completed:	*07-16-08*
Inspector:	*M. McNamara*
Contractor:	*Mateco Drilling Co.*
Driller:	*J. Pitsch*
Equipment:	*CME-750 ATV Drill Rig*
Well Type:	*Observation*

Casing Diameter:	*2.0 in*
Casing Length:	*89.5 ft*
Casing Type:	*PVC*
Screen Diameter:	*2.0 in*
Screen Length:	*5.0 ft*
Screen Mesh:	*0.010 in*
Screen Type:	*PVC*

FIGURE NO. B-15

MONITORING WELL: MW-OB-49

Project Name: WDI Groundwater Wells
Project Location: Belleville, Michigan

NTH Consultants, Ltd.
NTH Proj. No.: 13-060921-20
Checked By: CRK

LOG OF MONITORING WELL

SUBSURFACE PROFILE					INSTALLATION SCHEMATIC		GAS DATA		
ELEV. (FT)	PRO-FILE	ELEV	GROUND SURFACE ELEVATION: 705.5	DEPTH	DEPTH (FT)	Well Detail	TOP OF WELL CASING ELEVATION: 708.0 ft	DATE	ELEV (FT)	Gas Reading
				0.0			0.0			
700			PROFILE DRILLED		10					
690					20					
680					30					
670					40					
660					50					
650					60		pH Neutral Bentonite Grout			
640					70					
630					80					
620		615.5		90.0	90					
610		608.5	Hard Gray SILTY CLAY with Trace Sand and Gravel	97.0	100					
600		601.5	Very Compact Fine to Coarse SAND and GRAVEL	104.0						
		597.5	Very Compact Fine to Medium SAND and GRAVEL	108.0	110					
590		592.5	Very Compact Fine to Medium SAND and GRAVEL	113.0						
		587.5	Compact Fine to Coarse SAND and GRAVEL	118.0	120		122.0			
580							Bentonite Pellets 125.0			
		576.5	Very Stiff to Hard Gray SILTY CLAY	129.0	130		Sand 133.0			
570		572.5	Hard Gray SILTY CLAY with Dry Sand and Gravel	133.0						
			SHALE							
560			END OF BORING AT 133.0 FEET.							

Total Depth: *133.0 FT*
Installation Date: *5/7/2014*
Inspector: *M. McNamara*
Contractor: *Mateco*
Driller: *Gary Swift*
Equipment: *CME-55 track mounted ATV rig with 4-1/4" I.D. HSA to EOB.*

Notes:

Casing Diameter: *2"*
Casing Length: *130'*
Casing Type: *Stainless Steel*
Tip Elevation: *572.5*
GPS Coordinates:

Screen Diameter: *2"*
Screen Length: *5'*
Screen Mesh: *0.010"*
Screen Type: *Stainless Steel*

Well Type: *MONITORING WELL*

Figure No. 6

MONITORING WELL LOG MW 13-060921-20.GPJ NTH CORPORATE.GDT 8/6/14

MONITORING WELL: MW-OB-50

Project Name: WDI Groundwater Wells
Project Location: Belleville, Michigan

NTH Consultants, Ltd.
NTH Proj. No.: 13-060921-20
Checked By: CRK

LOG OF MONITORING WELL

ELEV. (FT)	PRO-FILE	ELEV	GROUND SURFACE ELEVATION: 712.0	DEPTH	DEPTH (FT)	Well Detail	TOP OF WELL CASING ELEVATION: 715.4 ft
				0.0			0.0
710			Very Stiff to Hard Gray SILTY CLAY with Trace Sand and Gravel (Clay Recompact)		10		
700		693.0		19.0	20		
690		689.0	Loose Fine to Medium SILTY SAND	23.0			
			Very Stiff to Hard Gray SILTY CLAY with Trace Sand and Gravel		30		
680							
670					40		
			Very Stiff to Hard Gray SILTY CLAY with Trace Sand and Gravel		50		pH Neutral Bentonite Grout
660							
650					60		
		643.0		69.0	70		
640			Very Stiff to Hard Gray SILTY CLAY with Trace Sand and Gravel				
		632.5	Wet, Gray CLAYEY SILT with Trace Sand	79.5	80		
630		631.0	Very Stiff Gray SANDY CLAY with Trace Silt and Gravel	81.0			
			Hard to Very Hard Gray SILTY CLAY with Trace Sand and Gravel		90		
620		617.0		95.0			
		612.0	Medium Compact Gray CLAYEY SILT with Trace Sand and Gravel	100.0	100		100.0
610							Bentonite Pellets 102.0
		604.0	Very Compact Coarse SAND and GRAVEL	108.0	110		
		602.0	Very Compact Medium to Coarse SAND and GRAVEL	110.0			Sand 110.0
600			Very Compact Fine to Medium SAND with Little Gravel				
590			END OF BORING AT 110.0 FEET.				
580							

GAS DATA

DATE	ELEV (FT)	Gas Reading

Total Depth: *110.0 FT*
Installation Date: *4/29/2014*
Inspector: *M. McNamara*
Contractor: *Mateco*
Driller: *Gary Swift*
Equipment: *CME-55 track mounted ATV rig with 4-1/4" I.D. HSA to EOB.*

Notes:

Casing Diameter: *2"*
Casing Length: *108.43'*
Casing Type: *PVC*
Tip Elevation: *602.43*
GPS Coordinates:

Screen Diameter: *2"*
Screen Length: *5'*
Screen Mesh: *0.007"*
Screen Type: *PVC*

Well Type: *MONITORING WELL*

Figure No. 7

MONITORING WELL LOG MW 13-060921-20.GPJ NTH CORPORATE.GDT 8/6/14

MONITORING WELL: MW-OB-51

NTH Consultants, Ltd.

Project Name: WDI Groundwater Wells
Project Location: Belleville, Michigan
NTH Proj. No.: 13-060921-20
Checked By: CRK

LOG OF MONITORING WELL

SUBSURFACE PROFILE					INSTALLATION SCHEMATIC		GAS DATA		
ELEV. (FT)	PRO-FILE	ELEV	GROUND SURFACE ELEVATION: 715.5	DEPTH	DEPTH (FT)	Well Detail	TOP OF WELL CASING ELEVATION: 719.2 ft	DATE	ELEV (FT)	Gas Reading
				0.0			0.0			
710		711.0	Stiff Gray SILTY CLAY Cap Material	4.5	10					
		702.5	Dry Gray CLAYEY SILT with Trace Sand and Gravel and Trace Debris	13.0	20					
700			Very Stiff Gray SILTY CLAY with Trace Sand and Gravel		30					
690					40					
680			Very Stiff Gray SILTY CLAY with Trace Sand and Gravel		50					
		675.5		40.0						
670		671.5	Stiff Gray SILTY CLAY with Occasional Wet Silt Lenses	44.0						
		661.0	Very Stiff to Hard Gray SILTY CLAY with Trace Sand and Gravel	54.5			pH Neutral Bentonite Grout			
660		658.5	Dry SILT with Trace Clay	57.0	60					
650			Hard Gray SILTY CLAY with Numerous Dry Silt Seams		70					
		646.5		69.0						
640			Hard Gray SILTY CLAY with Numerous Dry Silt Seams		80					
			Wet Gray CLAYEY SILT							
630		631.5		84.0	90					
620			Very Hard Gray SILTY CLAY with Trace Sand and Gravel		100					
		616.5		99.0			101.0			
610		612.5	Wet Gray SILT with Trace Sand	103.0			Bentonite Pellets 103.0			
		605.5	Very Compact Medium to Coarse SAND and GRAVEL with Trace Silt	110.0	110		Sand 110.0			
600			Very Compact Medium to Coarse SAND and GRAVEL with Trace Silt							
590			END OF BORING AT 110.0 FEET.							
580										

Total Depth: *110.0 FT*
Installation Date: *4/24/2014*
Inspector: *M. McNamara*
Contractor: *Mateco*
Driller: *Gary Swift*
Equipment: *CME-55 track mounted ATV rig with 4-1/4" I.D. HSA to EOB.*

Notes:

Casing Diameter: *2"*
Casing Length: *108.69'*
Casing Type: *PVC*
Tip Elevation: *606.19*
GPS Coordinates:

Screen Diameter: *2"*
Screen Length: *5'*
Screen Mesh: *0.007"*
Screen Type: *PVC*

Well Type: *MONITORING WELL*

Figure No. 8

MONITORING WELL LOG MW 13-060921-20.GPJ NTH CORPORATE.GDT 8/6/14

MONITORING WELL: MW-OB-52

Project Name: WDI Groundwater Wells
Project Location: Belleville, Michigan

NTH Consultants, Ltd.
NTH Proj. No.: 13-060921-20
Checked By: CRK

LOG OF MONITORING WELL

SUBSURFACE PROFILE						INSTALLATION SCHEMATIC		GAS DATA		
ELEV. (FT)	PRO-FILE	ELEV	GROUND SURFACE ELEVATION: 705.9	DEPTH	DEPTH (FT)	Well Detail	TOP OF WELL CASING ELEVATION: 709.2 ft	DATE	ELEV (FT)	Gas Reading
				0.0			0.0			
700		702.9	FILL: Hard Brown and Gray SILTY CLAY with Trace Sand and Gravel and Trace Debris	3.0						
		698.9		7.0						
		696.9	FILL: Very Stiff Gray SILTY CLAY with Trace Sand and Gravel	9.0	10					
		694.9	DEBRIS: Dry Paper, Cloth, Wood, Concrete, Brick and Plastic	11.0						
690			Stiff Gray SILTY CLAY with Trace Sand and Gravel		20					
680			Very Stiff to Hard Gray SILTY CLAY with Trace Sand and Gravel		30					
670							pH Neutral Bentonite Grout			
					40					
660			Very Stiff to Hard Gray SILTY CLAY with Trace Sand and Gravel							
					50					
650		651.4		54.5						
		650.9	Wet Very SILTY CLAY	55.0						
		647.9	Very Stiff Gray SILTY CLAY with Trace Sand and Gravel	58.0	60					
		643.9	Stiff, Wet, Very SILTY CLAY with Trace Sand	62.0						
640			Loose to Medium Compact Fine CLAYEY SAND with Trace Silt		70					
		632.9	Loose to Medium Compact Fine CLAYEY SAND with Trace Silt	73.0			74.0			
630			Medium Compact to Compact Wet Fine SILTY SAND				Bentonite Pellets 77.0			
		625.9		80.0	80					
			Very Compact Wet Fine SILTY SAND				Sand			
620		620.9		85.0			85.0			
			END OF BORING AT 85.0 FEET.							
610										

Total Depth: *85.0 FT*
Installation Date: *5/1/2014*
Inspector: *M. McNamara*
Contractor: *Mateco*
Driller: *Gary Swift*
Equipment: *CME-55 track mounted ATV rig with 4-1/4" I.D. HSA to EOB.*

Notes:

Casing Diameter: *2"*
Casing Length: *83.34'*
Casing Type: *PVC*
Tip Elevation: *620.9*
GPS Coordinates:

Screen Diameter: *2"*
Screen Length: *5'*
Screen Mesh: *0.007"*
Screen Type: *PVC*

Well Type: *MONITORING WELL*

Figure No. 9

MONITORING WELL LOG MW 13-060921-20.GPJ NTH CORPORATE.GDT 8/6/14

OBSERVATION WELL NO: WW08 OB-53

NTH CONSULTANTS, LTD.

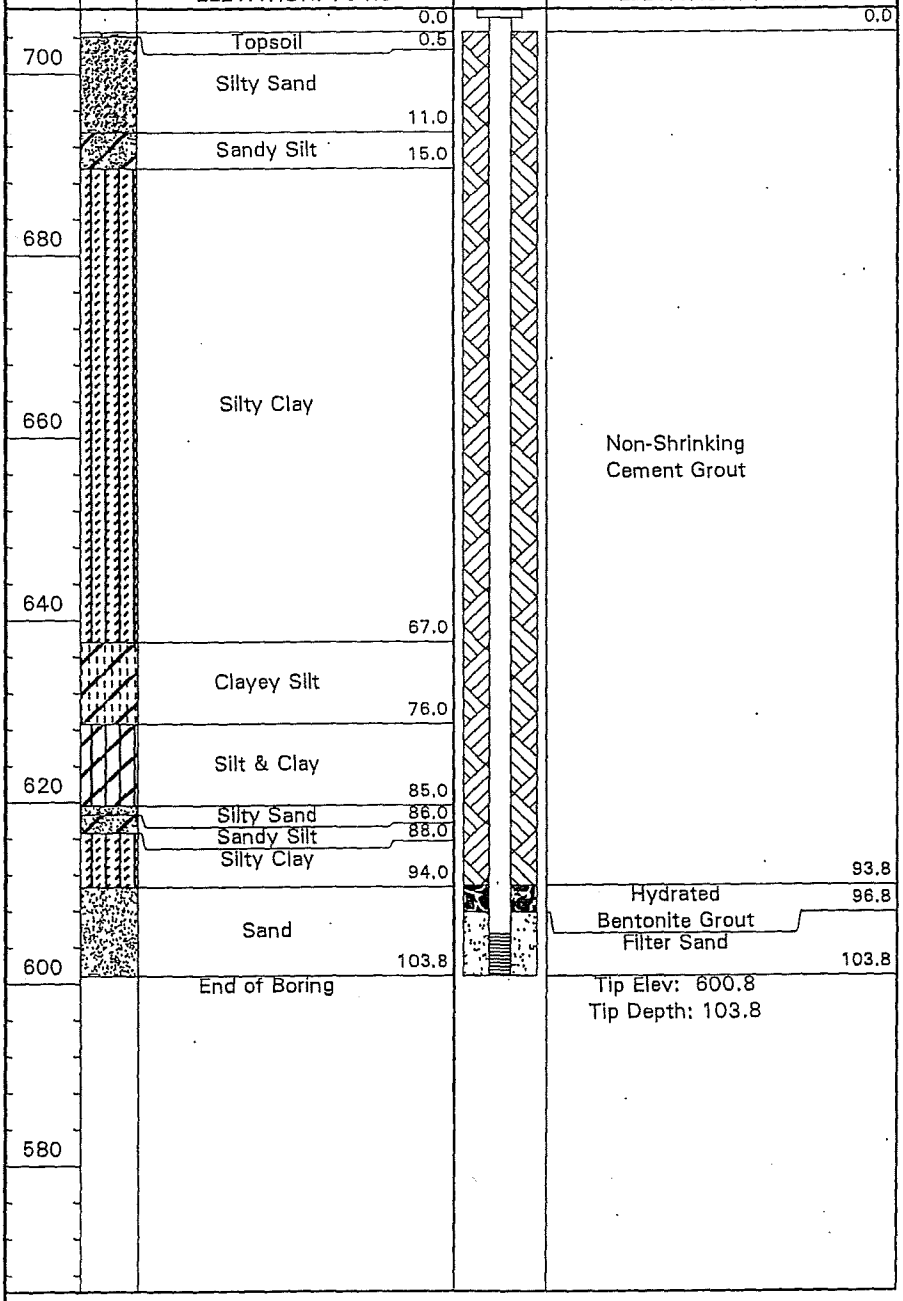
Project Name: *WAYNE DISPOSAL, INC. - WOOD LOT*

Project Location: *BELLEVILLE, MICHIGAN*

NTH Proj. No: *62-080376-01*

Checked By: dlp

LOG OF OBSERVATION WELL



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
12-07-08	652.79	
02-09-09	652.77	

NOTES

[1] Generalized subsurface profile based on adjacent test boring TB-W-10.

[2] Location Coordinates: E 3704.07
N 7052.42

Started:	*07-12-08*	Casing Diameter:	*2.0 in*
Completed:	*07-12-08*	Casing Length:	*101.2 ft*
Inspector:	*M. McNamara*	Casing Type:	*PVC*
Contractor:	*Mateco Drilling Co.*	Screen Diameter:	*2.0 in*
Driller:	*J. Pitsch*	Screen Length:	*5.0 ft*
Equipment:	*CME-750 ATV Drill Rig*	Screen Mesh:	*0.010 in*
Well Type:	*Observation*	Screen Type:	*PVC*

FIGURE NO. B-18

Attachment C

Chain of Custody &
Monitoring Well Damage Report

TriMatrix Laboratories, Inc.
5560 Corporate Exchange Court SE Grand Rapids, MI 49512
Phone (616) 975-4500 Fax (616) 942-7463
www.trimatrixlabs.com

Chain of Custody Record

COC No. 115809

Page ____ of ____

For Lab Use Only

art

OA Rack/Tray

ceipt Log No.

oject Chemist

aboratory Project No.

Client Name	Project Name
Address	Client Project No. / P.O. No.
	Invoice To ☐ Client ☐ Other (comments)
Phone	Contact/Report To
Fax	

Analyses Requested

⇦ PRESERVATIVES

A NONE pH~7
B HNO_3 pH<2
C H_2SO_4 pH<2
D 1+1 HCl pH<2
E NaOH pH>12
F ZnAc/NaOH pH>9
G MeOH
H Other (note below)

est roup	Matrix Code	Laboratory Sample Number		Sample ID	Cooler ID	Sample Date	Sample Time	COMP	GRAB	Matrix	Container Type (corresponds to Container Packing List) / Number of Containers Submitted	Total	Sample Comments
			1										
			2										
			3										
			4										
			5										
			6										
			7										
			8										
			9										
			10										

ampled By (print)

ampler's Signature

ompany

How Shipped? Hand Carrier_____

Tracking No.

Comments

1. Relinquished By	Date	Time	2. Relinquished By	Date	Time	3. Relinquished By	Date	Time
1. Received By	Date	Time	2. Received By	Date	Time	3. Received For Lab By	Date	Time

TriMatrixCOC_.OC

WHITE COPY - REPORT YELLOW COPY - LABORATORY PINK COPY - FIELD

MONITORING WELL INSPECTION/DAMAGE REPORT

DATE: _____

NAME: _____

SITE: _____

***Place a check-mark for any of the items that are not acceptable and provide comments below.**

WELL ID	LOCK	Annular Seal	Protective Casing	Markings	Dedicated Pump	Casing
OB-1A						
OB-2A						
OB-3						
OB-4						
OB-5						
OB-6						
OB-7						
OB-8						
OB-9						
OB-10						
OB-11A						
OB-12						
OB-13						
OB-14						
OB-15						
OB-16						
OB-17						
OB-18						
OB-19R						
OB-20						
OB-21						
OB-22						
OB-23A						
OB-24						
OB-25						
OB-26A						
OB-27A						
OB-28						
OB-29						
OB-30						
OB-31AR						
OB-32						
OB-34A						
OB-35A						
OB-36						
OB-37						
OB-38						
OB-39						

WELL ID	LOCK	Annular Seal	Protective Casing	Markings	Dedicated Pump	Casing
OB-40R						
OB-41						
OB-42						
OB-43						
OB-44						
OB-45						
OB-46						
OB-47						

DETAILS OF PROBLEM(S) ENCOUNTERED: _____

_____

_____

_____

_____

_____

_____

ACTIONS REQUIRED TO REMEDY THE PROBLEM(S): _____

_____

_____

_____

_____

_____

SUBMIT THIS FORM IMMEDIATELY TO THE SITE MANAGER AND THE REGULATORY AFFAIRS MANAGER OR THEIR DESIGNEE

Attachment D

Operating Procedures for the Water Level Indicator

INSTRUCTION MANUAL

ET-89

ELECTRIC TAPE

Attachment D

KECK INSTRUMENTS, INC.

KECK TAPE GUARD

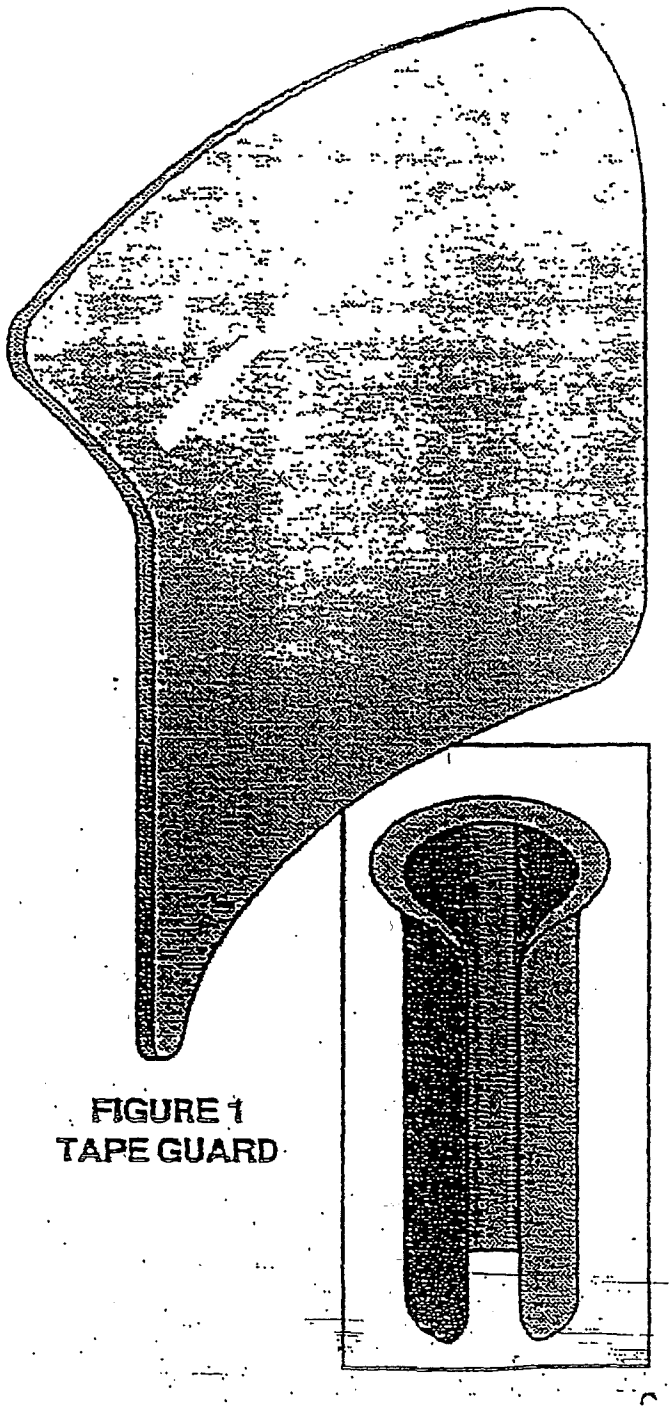


FIGURE 1
TAPE GUARD

The Keck "Tape Guard" was developed to protect instrumentation, tapes and sample tubing from the wearing edges of well casing. Made of smooth flexible polystyrene, the "Tape Guard" easily adapts to any 2" or 4" well.

Instructions

Simply compress the "Tape Guard" and insert

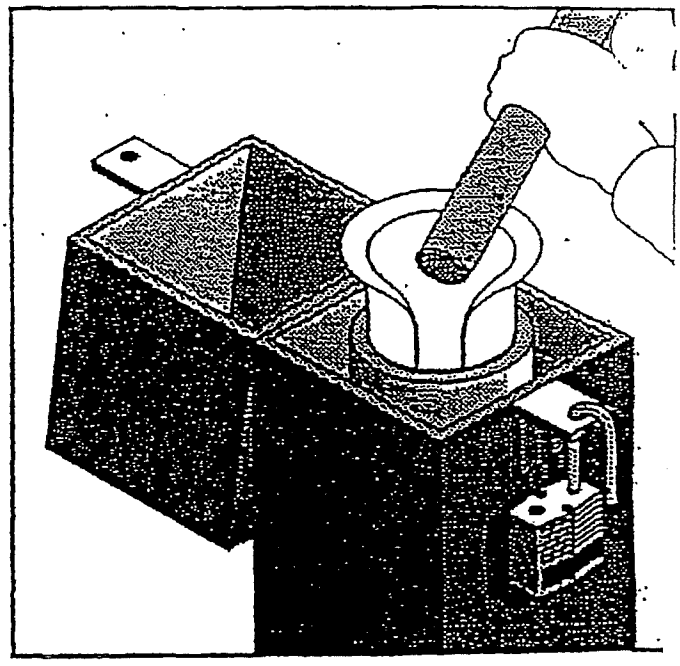


FIGURE 2
TAPE GUARD USAGE

into the opening of any 2" to 4" well pipe. Allow instrumentation, tubing or tape to ride on the smooth surface of the "Tape Guard" to prevent wear.

ET-89

The Keck Instruments ET-89 is a portable reel mounted device used to accurately measure water levels in a borehole. Water levels are detected by a 5/8" O.D. stainless steel probe attached to a 100 FT. Tefzel coated engineer's tape. The tape is graduated in 100ths of a foot with metric divisions on the reverse side. The ET-89 relies on fluid conductivity to determine the presence of water and emits on audible signal with light. Controls include a sensitivity adjustment to eliminate false readings due to cascading water or casing effect and a battery test switch.

Operational Procedure

1. Turn the instrument "On" and check the battery voltage by pressing the "Batt Test" button. A dim red light indicates a low battery and should be replaced.
2. Lower the probe down the well to the water surface, the light and buzzer should be activated. At this point adjust the probe sensitivity counter-clockwise until the light and buzzer turn off.
3. With the probe still in contact with the water, adjust the probe sensitivity until the light and buzzer barely activate. In this setting the probe will detect water level and not be effected by condensation from the casing well.
4. Water level measurements can now be taken from the top of the casing.
5. After completion of water level measurements the device should be properly stored.

Maintenance and Cleaning Procedures

1. Remove the three faceplate screws.
2. Release the faceplate using the sensitivity knob to pull the components out of the reel.
3. Make note of the battery location on the circuit board and the position in reel cavity.
4. Remove the 9 volt battery from the connector by grasping the battery and the black connector. Replace with new battery.
5. Position the battery in the notch of the circuit board and align the battery with the recessed slot in the reel.
6. Place the faceplate in the reel and replace the three retaining screws. Do not over tighten these screws.

Decontamination and Cleaning

The ET-89 can be cleaned with any detergent or lab soap such as Liquinox that does not effect polypropylene. The reel should not be submerged at any time but can be wiped with a damp cloth.

Please call our technical staff if further assistance is required at 1-800-542-5681.

Attachment E

Summary of Monitoring Well Information

Attachment E

MONITORING WELL INFORMATION
WAYNE DISPOSAL SITE #2 LANDFILL

WELL ID	PROGRAM(S)	T.O.C. ELEV.	SCREEN ELEV.	WELL DEPTH	DESIG.	STRATUM SCREENED	WELL PAIR
OB-1A	Part 115	705.99	579.9	126	UG	SILT/ROCK	--
OB-2A	Part 115/MCIX	701.30	587.8	114	DG	SAND	OB-44
OB-3	Part 115	708.99	577.9	131	DG	SAND	--
OB-4	Part 115	712.59	638.9	74	UG	SAND	--
OB-5	Part 115	705.20	603.8	101	DG	SAND	--
OB-6/OB-56	Part 115/Part 111	704.75	627.1	78	DG	SAND	--
OB-7	Part 115/MCIX	703.58	627	77	UG	SILT/SAND	OB-32
OB-8/OB-60	Part 115/Part 111	707.58	629	79	DG	SAND	--
OB-9	Part 115	701.20	614.1	87	DG	SAND	--
OB-10	Part 115	707.80	621	87	DG	SAND	--
OB-11A	Part 115/MCIX	698.99	611.4	88	DG	SAND	--
OB-12R	Part 115	707.84	620.6	87	DG	SAND	OB-55
OB-13/OB-57	Part 115/Part 111	703.27	619.9	83	DG	SAND	--
OB-14	Part 115	702.10	600.1	102	DG	SAND	--
OB-15	Part 115	707.63	617.3	90	DG	SAND	--
OB-16	Part 115	700.83	596.5	104	DG	SAND	--
OB-17/OB-51	Part 115/Part 111	708.28	626.2	82	DG	SAND	--
OB-18	Part 111 (MDWTP)	703.11	589.2	114	UG	CLAY/ROCK	--
OB-19R	Part 111 (MDWTP)	709.17	585.6	124	UG	ROCK	--
OB-20	Part 111/TSCA	706.28	609.9	96	DG	SAND	--
OB-21	Part 111(MDWTP)/TSCA	705.00	600.9	104	DG	SAND	OB-36
OB-22	Part 111	704.00	568.3	136	DG	SAND/ROCK	OB-24
OB-23A	Part 111(MDWTP)/TSCA	702.67	577.5	125	DG	SAND	--
OB-24	Part 111(MDWTP)/TSCA	704.59	614.4	90	DG	SAND	OB-22
OB-25	Part 111/TSCA	711.00	620	91	DG	SAND	OB-37
OB-26A	Part 111/TSCA	714.15	628.5	86	DG	SAND	OB-38
OB-27A	Part 111	708.27	636.5	72	DG	SAND	OB-28
OB-28	Part 111	709.00	583.9	125	DG	SAND	OB-27A
OB-29	Part 111	705.53	609.4	96	DG	SAND	OB-39
OB-30	Part 111	703.92	607.4	97	DG	SAND	--
OB-31AR	Part 111/MCIX	700.65	628.1	73	UG	SAND	OB-32
OB-32	Part 111/MCIX	701.49	565.3	136	UG	ROCK	OB-31A
OB-34A	Part 111/TSCA	712.04	617.8	94	DG	SAND	
OB-35A	Part 111	711.36	577.5	134	DG	ROCK	
OB-36	Part 111 (MDWTP)	702.13	572.1	130	DG	ROCK	OB-21
OB-37	Part 111	711.30	572.7	139	DG	ROCK	OB-25
OB-38	Part 111	714.10	573.4	141	DG	ROCK	OB-26A
OB-39	Part 111	707.55	561.9	146	DG	ROCK	OB-29
OB-40R	Part 111/TSCA	708.84	610.2	99	UG	SILT/SAND	--
OB-41	MCIX	701.89	562	140	DG	ROCK	--
OB-42	MCIX	717.25	624.4	93	DG	SAND	OB-43
OB-43	MCIX	717.46	595.1	122	DG	SAND	OB-42
OB-44	MCIX	701.27	639.5	62	DG	SAND	OB-2
OB-45	Part 115/MCIX	701.31	628	73	DG	SAND	OB-46
OB-46	MCIX	701.19	600	101	DG	SAND	OB-45
OB-47	Part 111 (MDWTP)	702.70	594.3	108	DG	SAND	--
OB-48	Part 111	708.70	614.2	94.5	DG	SAND	OB-49
OB-49	Part 111	To be installed				ROCK	OB-48
OB-50	Part 111	To be installed				SAND	
OB-51	Part 111	To be installed				SAND	
OB-52	Part 111	To be installed				SAND	
OB-53	Part 111	707.01	600.8	106.21	DG	SAND	
OB-54	Part 111	To be installed				SAND	
OB-55	Part 111	To be installed				ROCK	OB-12R
OB-58	Part 111	To be installed				SAND	OB-59
OB-59	Part 111	To be installed				ROCK	OB-58

UG = Upgradient Well DG = Downgradient Well

Attachment E

MONITORING WELL INFORMATION
WAYNE DISPOSAL SITE #2 LANDFILL

WELL ID	PROGRAM(S)	T.O.C. ELEV.	SCREEN ELEV.	WELL DEPTH	DESIG.	STRATUM SCREENED	WELL PAIR
OB-1A	Part 115	705.99	579.9	126	UG	SILT/ROCK	--
OB-2A	Part 115/MCIX	701.30	587.8	114	DG	SAND	OB-44
OB-3	Part 115	708.99	577.9	131	DG	SAND	--
OB-4	Part 115	712.59	638.9	74	UG	SAND	--
OB-5	Part 115	705.20	603.8	101	DG	SAND	--
OB-6/OB-56	Part 115/Part 111*	704.75	627.1	78	DG	SAND	--
OB-7	Part 115/MCIX	703.58	627	77	UG	SILT/SAND	OB-32
OB-8/OB-60	Part 115/Part 111*	707.58	629	79	DG	SAND	--
OB-9	Part 115	701.20	614.1	87	DG	SAND	--
OB-10	Part 115	707.80	621	87	DG	SAND	--
OB-11A	Part 115/MCIX	698.99	611.4	88	DG	SAND	--
OB-12R	Part 115	707.84	620.6	87	DG	SAND	OB-55
OB-13/OB-57	Part 115/Part 111*	703.27	619.9	83	DG	SAND	--
OB-14	Part 115	702.10	600.1	102	DG	SAND	--
OB-15	Part 115	707.63	617.3	90	DG	SAND	--
OB-16	Part 115	700.83	596.5	104	DG	SAND	--
OB-18	Part 111 (MDWTP)	703.11	589.2	114	UG	CLAY/ROCK	--
OB-19R	Part 111 (MDWTP)	709.17	585.6	124	UG	ROCK	--
OB-20	Part 111/TSCA	706.28	609.9	96	DG	SAND	--
OB-21	Part 111(MDWTP)/TSCA	705.00	600.9	104	DG	SAND	OB-36
OB-22	Part 111	704.00	568.3	136	DG	SAND/ROCK	OB-24
OB-23A	Part 111(MDWTP)/TSCA	702.67	577.5	125	DG	SAND	--
OB-24	Part 111(MDWTP)/TSCA	704.59	614.4	90	DG	SAND	OB-22
OB-25	Part 111/TSCA	711.00	620	91	DG	SAND	OB-37
OB-26A	Part 111/TSCA	714.15	628.5	86	DG	SAND	OB-38
OB-27A	Part 111	708.27	636.5	72	DG	SAND	OB-28
OB-28	Part 111	709.00	583.9	125	DG	SAND	OB-27A
OB-29	Part 111	705.53	609.4	96	DG	SAND	OB-39
OB-30	Part 111	703.92	607.4	97	DG	SAND	--
OB-31AR	Part 111/MCIX	700.65	628.1	73	UG	SAND	OB-32
OB-32	Part 111/MCIX	701.49	565.3	136	UG	ROCK	OB-31A
OB-34A	Part 111/TSCA	712.04	617.8	94	DG	SAND	--
OB-35A	Part 111	711.36	577.5	134	DG	ROCK	--
OB-36	Part 111 (MDWTP)	702.13	572.1	130	DG	ROCK	OB-21
OB-37	Part 111	711.30	572.7	139	DG	ROCK	OB-25
OB-38	Part 111	714.10	573.4	141	DG	ROCK	OB-26A
OB-39	Part 111	707.55	561.9	146	DG	ROCK	OB-29
OB-40R	Part 111/TSCA	708.84	610.2	99	UG	SILT/SAND	--
OB-41	MCIX	701.89	562	140	DG	ROCK	--
OB-42	MCIX	717.25	624.4	93	DG	SAND	OB-43
OB-43	MCIX	717.46	595.1	122	DG	SAND	OB-42
OB-44	MCIX	701.27	639.5	62	DG	SAND	OB-2
OB-45	Part 115/MCIX	701.31	628	73	DG	SAND	OB-46
OB-46	MCIX	701.19	600	101	DG	SAND	OB-45
OB-47	Part 111 (MDWTP)	702.70	594.3	108	DG	SAND	--
OB-48	Part 111	708.70	614.2	94.5	DG	SAND	--
OB-49	Part 111	708.01	572.5	135.5	DG	ROCK	OB-53
OB-50	Part 111	715.43	602.4	113.0	DG	SAND	--
OB-51	Part 111	719.19	606.19	113.0	DG	SAND	--
OB-52	Part 111	709.24	620.9	88.3	DG	SAND	--
OB-53	Part 111	707.01	600.8	106.21	DG	SAND	OB-49
OB-54	Part 111	To be installed				SAND	--
OB-55	Part 111	To be installed				ROCK	OB-12R
OB-58	Part 111	To be installed				SAND	OB-59
OB-59	Part 111	To be installed				ROCK	OB-58

UG = Upgradient Well DG = Downgradient Well

* to become Part 111 well when Cell G Phase 1 wells are abandined

Attachment F

WELL WIZARD
Dedicated Sampling Systems

Installation, Operation and Maintenance User's Guide
Part No 34999

(This manual is on file at MDEQ-WHMD, Lansing, at Site II & enclosed via CD.)

Attachment G

Sample Container and Preservation Procedures

Attachment G.
Handling Requirements of Monitoring Parameters

Parameter	Perservation	Holding Time	Bottle Type	Minimum Volume
Total Phenolics	1,2	28 Days	Glass	0.5 L
Sulfate	2	28 Days	Plastic	50 ml*
Total Alkalinity	2	14 Days	Plastic	100 ml*
Fluoride	2	28 Days	Plastic	300 ml*
Chloride	2	28 Days	Plastic	50 ml*
Nitrate/Nitrite	1,2	48 Hrs	Plastic	0.5 L
Arsenic	3,5	6 Mos	Plastic	200 ml**
Cadmium	3,5	6 Mos	Plastic	200 ml**
Calcium	3,5	6 Mos	Plastic	200 ml**
Chromium	3,5	6 Mos	Plastic	200 ml**
Iron	3,5	6 Mos	Plastic	200 ml**
Potassium	3,5	6 Mos	Plastic	200 ml**
Lead	3,5	6 Mos	Plastic	200 ml**
Magnesium	2,3,5	6 Mos	Plastic	200 ml**
Manganese	2,3,5	6 Mos	Plastic	200 ml**
Molybdenum	2,3,5	6 Mos	Plastic	200 ml**
Nickel	2,3,5	6 Mos	Plastic	200 ml**
Sodium	3,5	6 Mos	Plastic	200 ml**
Zinc	3,5	6 Mos	Plastic	200 ml**
Cyanide	2,4	14 Days	Plastic	500 ml
Copper	3,5	6 Mos	Plastic	200 ml**
pH		Immediate	Plastic	25 ml
Bicarbonate	2	14 Days	Plastic	100 ml*
Carbonate	2	14 Days	Plastic	100 ml*
TOC	2,7	28 Days	Glass	100 ml
Specific Conductivity	2	28 Days	Plastic	100 ml
Volatile Organics	2,6	14 Days	Glass	2x40 ml

1) pH<2 with concentrated Sulfuric Acid
2) Store at 4 degrees Centigrade
3) pH<2 with nitric acid
4) pH>12 with sodium hydroxide
5) Filtered in the field using 0.45 micron membrane filters on the time of collection
6) 4 drops HCL, no headspace
7) pH<2 with hydrochloric acid

* Note: One liter for all of these parameters stored similarily
** Note: One liter for all of these parameters stored similarily

Attachment H

Ground Water Monitoring Parameter List

Attachment H

Ground Water Monitoring Parameter List

A. Primary Parameters

Benzene	1,2 Dichlorobenzene	Xylene
1,2 Dichloroethane	1,2 Dichloroethene	Ethylbenzene
Methylene Chloride	Toluene	Trichloroethene
1,1,1 Trichloroethane	Vinyl Chloride	1,1 Dichloroethane

PCB-1016[1]	**PCB-1221**[1]	**PCB-1231**[1]
PCB-1242[1]	**PCB-1248**[1]	**PCB-1254**[1]
PCB-1260[1]		

B. Secondary Parameters

Potassium	Sodium	Nickel
Chromium(t)	Lead	Molybdenum
Sulfate	Chloride	Bicarbonate
Carbonate	Arsenic	Cyanide[4]
Nitrate	Nitrite	Fluoride
Total Phenolics	Total Organic Carbon	Iron

C. Tertiary Parameters

Calcium[2]	Magnesium[2]	Copper[2]
Manganese[2]	Zinc[2]	Cadmium[2]
Silver	Mercury	Selenium
Barium	2,4-D	Endrin
Silvex	Methoxychlor	Toxaphene

D. Field Monitoring Parameters[3]

Specific Conductance Temperature pH

Notes:

1	PCB's to be analyzed in samples from wells OB-21, OB-23, OB-24, OB-34R and OBN-40R only.
2	Tertiary parameter that will be measured during detection monitoring.
3.	Parameter to be measured in field for all samples collected
4.	Amenable cyanide to be analyzed if cyanide is detected

Attachment I

Analytical Methods and Target Detection Limits

Attachment I

VOC Parameter	Detection Limit ppm (mg/l)	Method Reference
1,1-Dichloroethane	0.001	8260/8021
1,2-Dichloroethane	0.001	8260/8021
1,2-Dichloroethene	0.001	8260/8021
1,1,1-Trichloroethane	0.001	8260/8021
Trichloroethene	0.001	8260/8021
Vinyl Chloride	0.001	8260/8021
Methylene Chloride	0.005	8260/8021
1,2-Dichlorobenzene	0.001	8260/8021
Benzene	0.001	8260/8021
Toluene	0.001	8260/8021
Ethylbenzene	0.001	8260/8021
Xylenes (Total)	0.003	8260/8021
Indicator Parameter	**Detection Limit ppm (mg/l)**	**Method Reference**
Alkalinity (Total)	20	2320B
Bicarbonate Alkalinity	10	2320B
Carbonate Alkalinity	10	2320B
Chloride	1	4500-Cl E
Cyanide (Total)	0.005	4500-CN G
Fluoride	0.1	340.2
Nitrate/Nitrite	0.01	4500-NO3 F
pH	N/A	4500-H B
Phenolics (Total)	0.01	420.4/9066
Specific Conductivity	5(mmhos/cm)	2510B
Sulfate	2	ASTM D516-90
TOC	0.5	5310C
Metals	**Detection Limit ppm (mg/l)**	**Method Reference**
Arsenic	0.001	200.8/6020
Cadmium	0.0002	200.8/6020
Calcium	1	200.7/6010B
Chromium	0.001	200.8/6020
Copper	0.001	200.7/6010B
Iron	0.02	200.7/6010B
Lead	0.001	200.8/6020
Magnesium	1	242.1/7450
Manganese	0.005	200.8/6020
Molybdenum	0.025	200.7/6010B
Nickel	0.025	200.7/6010B
Potassium	0.1	200.7/6010B
Sodium	1	200.7/6010B
Zinc	0.01	200.7/6010B
PCB	**Detection Limit ppm (mg/l)**	**Method Reference**
PCB-1016	0.0001	8082
PCB-1221	0.0001	8082
PCB-1232	0.0001	8082
PCB-1242	0.0001	8082
PCB-1248	0.0001	8082
PCB-1254	0.0001	8082
PCB-1260	0.0001	8082

Methods referenced from:

1 Test Methods for Evaluating Solid Waste, USEPA SW-846
2 Standard Methods for the Examination of Water & Wastewater
3 USEPA Methods for Chemical Analysis of Water & Wastewater
4 Methods for Organic Analysis of Municipal & Industrial Wastewater
WHMD Operational Memo Gen-8, Revision 8, 12/22/06

Attachment I QA/QC Frequencies

Type	Description	Inorganics	Organics
Blank	Method or preparation	Minimum one per analytical batch*	Minimum one per analytical batch*
Duplicate (Inorganics)	Field and/or duplicate of sample	Minimum one per analytical batch	---
Laboratory Control Sample	Analyte fortified blank	Minimum one per analytical batch	Minimum one per analytical batch
Laboratory Control Sample Duplicate (if requested)	Analyte fortified blank	Minimum one per analytical batch	Minimum one per analytical batch
Matrix Spike	Analyte fortified blank	Minimum one per analytical batch	Minimum one per analytical batch
Matrix Spike	Duplicate of analyte fortified sample	---	Minimum one per analytical batch

The above is a general summary of quality control frequency.
A more complete definition of the above plus additional QC specific to each department will be found in the analytical method SOPs.

* Note: Maximum of 20 samples per analytical batch or monthly, whichever is more frequent.

Attachment J

Field Measurement Equipment and Procedures
Yellow Springs Instrument Co (YSI) Equipments Instructions
(pH, specific conductivity & temperature)

(This manual is on file at MDEQ-WHMD, Lansing & at Site II – enclosed via CD)

Attachment K

Current Laboratory's Quality Assurance Manual

(This manual is on file at Site II - & enclosed via CD)

Statistical Procedures for Ground Water Monitoring Program
Wayne Disposal, Inc

1.0 Introduction

The following statistical procedures are used to analyze the statistical significance of measured concentrations of ground water monitoring parameters at Wayne Disposal, Inc (WDI). This program was developed in accordance to meet the requirements of 40 CFR 264.97 and Rule 506 of the Administrative Rules for Part 111, Hazardous Waste Management, of the Natural Resources and Environmental Protection Act, 1995 PA 451, as amended.

2.0 Overview of Statistical Procedures

The statistical evaluation program for WDI is designed to signal statistically significant concentrations of monitoring parameters measured in samples collected quarterly or semi-annually from the wells in the monitoring well network. Different statistical techniques are used for different monitoring parameters depending on the nature of the data. The statistical comparisons are either intrawell (each well is compared to its own background) or based on the detection limit, which is generally the standard laboratory detection limit. When intrawell statistical comparisons are used, the statistical procedure is selected based on the degree that the background data are censored.

The monitoring parameters measured during each analysis are divided into four categories: primary parameters, secondary parameters, tertiary parameters, and field parameters (see Figure 1). The list of primary parameters is comprised of volatile organic compounds that are known to present within the waste. As these compounds do not generally occur in nature at measurable concentrations, a confirmed concentration above a statistically based detection limit for any single parameter will result in a statistically significant increase as defined by the operating license.

The secondary monitoring parameters are mainly inorganic parameters that are found in elevated concentrations within the leachate. As these parameters are naturally occurring, their presence in ground water may or may not be an indication of a release and it is often necessary to determine the significance of changes in concentration relative to estimates of the true background concentrations. In this program secondary parameters are used to detect a possible release in the following ways. First, a confirmed statistically significant change in the concentration of any two (or more) secondary parameters in a single well will result in a statistically significant increase as defined by the operating license. This approach is designed to detect relatively subtle changes in ground water quality as evidenced by several parameters at once. In addition, a confirmed, order of magnitude increase (10 times the background concentration) in the concentration any single parameter will also result in a statistically significant increase. This will ensure that a large increase in one secondary parameter is appropriately investigated.

The tertiary parameters are those parameters for which background has already been established. The tertiary parameters in this program are further subdivided into two groups: parameters that have an already established background but will not be measured during detection monitoring, and parameters that will continue to be measured during detection monitoring but will not be subjected to the statistical analyses described below. The former group is not being analyzed because they do not appear to be useful monitoring parameters. The analytical results from the latter group will be used to evaluate potential non-release related ground water quality changes, such as might be caused by well corrosion and grout contamination. These parameters will not be analyzed statistically because they are poor indicators of a release.

Field parameters are those parameters measured in the field during sample collection, mainly for the purpose of showing that ground water quality has stabilized during well purging. These parameters will not be analyzed statistically.

3.0 Description of Statistics for Detection Monitoring

The statistical tests to be used for all detection monitoring events are described in the following section. This section includes the definition and procedures for calculating "background", and the procedures for conducting the statistical analyses.

3.1 Parameters

The parameter list for the ground water monitoring program is presented on Figure 1. The following descriptions of background calculation and statistical analyses are presented separately for the primary and secondary parameters, respectively.

3.2 Background

The background statistics for all monitoring parameters are to be calculated using the methods described below. The recalculation of the moving background for secondary parameters, as described below, will also follow these procedures. For new wells, or replacement wells that cannot utilize the data from the replaced well, an interim background as defined in section 3.3 will be used for applicable secondary parameters until eight samples are collected. Then the background described below will apply.

Primary Parameters - The decision of whether or not there is a statistically significant increase in a primary parameter is essentially the decision of whether or not the parameter is present in the ground water. For all of the primary parameters the occurrence of the parameter above the laboratory's reported detection limit is considered to be a statistically significant event and re-sampling must be initiated to confirm or refute the occurrence.

Secondary Parameters - Determination of the initial intrawell background statistics was completed utilizing the first eight sampling events beginning in 1988. However, beginning at the end of 1995, each time four new analyses were completed, the oldest four measurements have been dropped from the database, the next four added, and the background statistics recomputed. This is repeated each year keeping about a six year lag between the background period and the detection monitoring samples.

If the program moves to semi-annual monitoring (such as in post-closure), the background will be updated every year until the moving background reaches the point where years with semi-annual sampling are to be included. Then the background will be updated every two years (after four new samples have been collected) and thus the moving background window will continue to lag at least six years behind.

The nature of the background statistics and the method of calculation of these statistics for the secondary parameters is based on the degree of censorship of each parameter at each well. The secondary parameter list includes parameters which are highly censored (at least half of the values are below detection limits), those which are moderately censored (more than half the values are above detection) and those which are essentially

all above method detection limits (the method detection limits are defined in the operating license). Some parameters exhibit varying degrees of censorship at different wells.

If the background data for a parameter contains at least five detectable background values, but contains some non-detects, the non-detects will be alternately assigned values of zero and the detection limit. If all of the background values are above detection, the background statistics will be calculated from the background data as is. The mean and standard deviations will be calculated using the standard statistical equations for these quantities and the data will be analyzed using control charts as described below. In no case will a standard deviation of less than 10 percent of the mean be used in a statistical test. If the calculated background standard deviation is less than 10 percent of the mean, then 10 percent of the mean will be substituted for the background standard deviation.

If half or more of the intrawell background measurements are below detection limits (4 or more BDL values), then the background statistics will be calculated based on the proportion of values above method detection limits. This quantity will be used to conduct a test of proportions as described below.

3.3 Performance of Statistical Tests

The methods to be used for statistical analyses of all primary and secondary parameters that have a background as defined in Section 3.2 are described below. For new wells, the primary parameters will be evaluated as described below but the secondary parameters will be evaluated using the "interim" statistical procedures contained in Appendix A. For replacement wells, a decision must be made as to whether the existing background from the well replaced is appropriate for the new well. If it is, such as might be expected when a damaged well is replaced by a well screened in the same stratum, then the existing background can be used with the statistical tests described below. If the replacement well can not be placed in the same strata, or the old well is believed to have yielded unrepresentative results, then the replacement well is considered a new well for the purposes of statistical analyses and will be handled as described above.

Primary Parameters - For the primary parameters, any measured concentration of any parameter which is above the laboratory reported detection limit will initiate quadruplicate re-sampling for confirmation of the affected parameter(s), in accordance with the operating license. If the statistical failure is repeated, then a statistically significant increase is confirmed. If the apparent increase is not confirmed, then normal detection monitoring will be resumed.

Secondary Parameters - The statistical analysis of secondary parameters will be conducted by one of two statistical tests depending on the degree that the intrawell background data are censored. If more than half the data are above method detection limits then a control chart approach will be used. If at least half the background data are below detection limits, a test of proportions will be used to analyze the data. There is

also a default provision to investigate a dramatic increase in any single parameter regardless of the results of outcome of the statistics.

If there are statistically significant increases for any two secondary parameters at any single well, and the increases represent less than a ten-fold increase over background, then WDI shall undertake the procedures identified in the operating license, including re-sampling in quadruplicate. In this case, both failures must be verified by re-sampling in order to confirm the statistical increase. If any single secondary parameter exhibits a ten-fold increase over background, then this occurrence must be verified by quadruplicate re-sampling. If the increase is confirmed then a statistically significant increase has occurred.

The statistical evaluation of moderately censored or uncensored secondary parameters will be conducted using intrawell statistical comparisons via a control chart approach. The combined Shewhart-CUSUM control chart will be used to analyze the statistical significance of the measured concentrations of secondary parameters. This approach consists of two statistical tests designed to detect different types of evidence of a release. The Shewhart limit is designed to detect a sharp increase in the concentration of a monitoring parameter in a single sample. The CUSUM limit is designed to detect gradual increases in the concentration of a parameter over time. The two techniques will be used as separate statistical tests. That is, failure of either test alone (or both) will signal a statistically significant increase for a given parameter. Therefore, if one parameter fails the CUSUM test and another exceeds the Shewhart limit, then an apparent statistically significant increase will have occurred and confirmation of both failures must be undertaken. Confirmation of an apparent failure of one of the two tests must be confirmed by an additional failure of that particular test.

The Shewhart control chart compares a detection monitoring concentration of a parameter to the intrawell background mean plus a selected number of standard deviations. The test is performed by calculating the standardized mean, Z, for the detection monitoring concentration. As individual samples are collected during each detection monitoring event, the standardized mean for each measured parameter is calculated by:

$$Z = (x_m - x_b)/s_b$$

where: x_b is the intrawell background mean

x_m is the measured concentration during detection monitoring

s_b is the standard deviation of the intrawell background

The value of Z is then simply compared to a selected value, U, which represents the number of standard deviations from the intrawell mean. The Shewhart limit (U), or upper control limit will be 4.5, as recommended in the Interim Final Guidance for Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities (USEPA, 1989). The

statistical test is performed by simply comparing the value of Z to the value of U. If Z is greater than U then it is concluded that a statistically significant increase has occurred.

The Shewhart control chart will be used in the following manner. If a secondary parameter(s) exceeds the Shewhart limit and at least two secondary parameters fail a statistical test at any given well during a given sampling event, the well would be re-sampled in quadruplicate for the offending parameters, and the mean(s) of the quadruplicate analyses would be used to confirm whether the Shewhart limit(s) is exceeded. If there is confirmation, then it would be concluded that there has been a statistically significant increase. If the increase is not confirmed, any unconfirmed measurements would be dropped from the control chart and replaced with the means of the quadruplicates.

The CUSUM control chart is designed to detect a trend of increasing concentrations over time, regardless of whether the Shewhart limit is exceeded or not. In the CUSUM procedure, the cumulative sum of the values for Z - k are tabulated over time, each time a round of samples are analyzed. The value for Z is computed as described above, and k is a selected parameter. During each analysis subsequent to the background determination period, a value for Z - k is computed and added to the previous total. As long as the cumulative total of Z - k is a negative number the cumulative sum (S) remains zero. As positive values accumulate, the value for S is compared to a selected value, h. If S is greater than h, then a statistically significant event has occurred. The values used for k and h will be k = 1 and h = 5, respectively, as recommended (USEPA ,1989).

The CUSUM limit will be utilized in conjunction to the Shewhart limit and proportions test as follows. If the CUSUM limit is exceeded and at least two or more secondary parameters have failed a statistical test at any given well during any given sampling period, quadruplicate re-sampling of the well in question will be initiated. The mean values of the quadruplicate sample will then be used to re-compute S. If S again exceeds h, then the increase is confirmed. If the increase is not confirmed then the mean values of the quadruplicate sampling replace the results of the anomalous (unconfirmed) values within the CUSUM statistic for future analyses. These non-confirmed exceedances must be removed from the CUSUM control chart because their inclusion may cause additional false positive results when subsequent sample results are added to the cumulative sum.

For parameters that contain at least half non-detectable concentrations in the intrawell background database, a statistical test to determine the significance of the proportion of detectable occurrences during detection monitoring will be used. The test of proportions, which is based on the binomial distribution, is statistical test suited to this purpose. This statistical procedure analyzes the significance of an increase in the rate of detectable occurrences over time.

To implement the test of proportions, the proportion of detectable occurrences during the 8 background samples will be compared to the rate of detectable occurrences in the most recent 4 detection monitoring samples. The statistic is computed by the equation:

$$Z^* = \frac{P_m - P_b}{[\,p(1-p)(1/N_m + 1/N_b)\,]^{0.5}}$$

where: P_m = proportion of detectable concentrations in the last four detection monitoring samples

P_b = proportion of detectable concentrations in the eight intrawell background samples

N_m = number of detection monitoring samples (4)

N_b = number of background samples (8)

p = weighted proportion defined as:

$$p = \frac{n_m + n_b}{N_m + N_b}$$

where: n_m = number of detection monitoring samples above method detection limits

n_b = number of background samples above method detection limits

The value of Z* is then simple compared to a critical value, Z_c, obtained from standard tables for the normal variant, Z, at the desired level of significance. The test will be conducted at the 0.05 level of significance, therefore Z_c is equal to 1.645. Any value of Z* greater than Z_c signals a statistical failure for that parameter.

Each time a new detection monitoring sample is collected, the result would be added to the previous three samples for determining the proportion of detectable occurrences. Thus, both the background and detection monitoring proportions involve a moving window, with the background lagging at least six years behind the window of detection monitoring. If detection limits are lowered during the monitoring program, the proportion of detectable occurrences will be the proportion of results above the older background detection limit until the background is updated to include the new lower detection limits. For example, if the old detection limit was 20 and the new detection limit is 10, then only concentrations above 20 (even though a concentration of 11 or above is now "detectable") will be considered detectable until the moving background window is based on samples with a detection limit of 10.

WDI will use the proportions test as follows. If there is a statistically significant increase in any two secondary parameters at a particular monitoring well (i.e. two failures of the test of proportions or a combination of control chart and proportions test failures), then re-sampling in quadruplicate would be initiated to confirm the suspected increase. Confirmation would be completed if both failures are repeated.

To guard against the unlikely possibility of a large increase in a single secondary parameter going unflagged by the above statistical program, WDI will consider any concentration of a secondary parameter that is greater than 10 times the background concentration (or the reported detection limit for highly censored parameters) as a default violation of the statistical tests described above. This will ensure that clearly anomalous data are evaluated even if only a single secondary parameter is affected.

Attachment 10

Ambient Air Monitoring Program Sampling and Analysis Plan

SITE 2

WAYNE DISPOSAL, IN C. (WDI)
&
MICHIGAN DISPOSAL WASTE TREATMENT PLANT (MDWTP)

BELLEVILLE, MI

AMBIENT AIR MONITORING PROGRAM

MI ACT 451, Part 111

Rule 299.9611

AMBIENT AIR MONITORING PROGRAM

MI Act 451, Part 111

Rule 299.9611

(Wayne Disposal – attachment #15) (Michigan Disposal – attachment # 14)

INTRODUCTION:

In accordance to the Michigan Department of Environmental Quality (MDEQ), Waste and Hazardous Materials Division (WHMD) Part 111, ambient air monitoring will be conducted as a requirement of the Hazardous Waste License. The ambient air monitoring plan is an attachment to the license and a stand alone document. The ambient air quality will be monitored at seven stations around the perimeter of the site, including six existing stations and one proposed station that will be added prior to the operation of landfill Cells VI-F&G. These locations are noted on the attached Figure 1. The ambient air monitoring program described will be used to characterize the air quality associated with both Michigan Disposal Waste Treatment Plant (MID 000724831) and Wayne Disposal, Inc. (MID 048090633) Site #2. All six sites are monitored for Polychlorinated Biphenyls (PCBs) using a polyurethane foam (PUF) sampler, metals using a high volume Total Suspended Particulate (TSP) sampler, and Volatile Organic Compounds (VOCs) using a sorbent tube sampler. Site 9 (82983) is a collocated site that has pairs of each sampling device. The AQD and WHMD recently approved the discontinuation of sampling for PM10 (particulate with a diameter of 10 microns and less). The sampling for all parameters will be conducted in accordance to the methods specified by the United States Environmental Protection Agency (USEPA) in Title 40 of the Code of Federal Regulations (CFR) Parts 50, 53, 58 and the

Toxic Organic Compendium Method, TO-17 for solid sorbent tubes. The sampling will be conducted on the prescribed sample days as determined by the (USEPA).

SAMPLING

Sampling for PCB's will be conducted with a high volume PUF sampler. Samples collected from the PUF sampler are analyzed and reported as total PCBs. Sampling for the PCB compounds will be conducted in adherence to the USEPA's Toxic Organic Compendium Methods TO-4A or TO-10A. The PUF samplers will operate every 12th day for a 24 hour period at an air sampling rate of approximately 200 to 280 lpm.

Metal concentrations will be determined from the samples collected in a reference method high volume TSP sampler. The sampling for multi-metals will adhere to the requirements of 40 CFR Part 50, Appendix G for the determination of lead. All sections referenced by Part 50, Appendix G will likewise be followed. Thenalysis will be performed using USEPA Reference Methods for lead and the other metals listed in the attached table to this monitoring plan. Quality control and assurance requirements specified in the method will be incorporated in the sampling protocol. Samples will be collected every 12 days for a twenty-four (24) hour period with a nominal flow rate of 50 cfm $\pm$ 10 cfm.

VOC's will be sampled utilizing a system of sorbent tubes capable of effectively collecting the listed compounds in the attached table. A constant flow sampling pump is operated at approximately 0.10 liters per minute (lpm). Samples will be collected at a flow rate adequate

to reach the required limits of detection. Sampling will be conducted in adherence to the USEPA's Toxic Organic Compendium Method, TO-17 for solid sorbent tubes. Sampling will be conducted on an every 12 – day schedule.

QUALITY ASSURANCE

On each run day, samples from the collocated site shall be analyzed and reported to the MDEQ, AQD for the assessment of sampler precision. One sample day per month, one blank sorbent tube and metals filter shall accompany the samples to the collocated site , not have air pulled through it, then submitted to the laboratory as a "trip blanks". All laboratory quality assurance, such as the analysis of blanks and standards, shall be made available to the MDEQ upon request for the determination of accuracy. If any parameter that is analyzed by the laboratory and determined to be non-detectable, the value of the method detection limit for that compound divided by 2 (MDL/2) shall be reported. Staff from the MDEQ AQD and WHMD may audit the ambient air monitoring program, files, and samplers at their discretion.

REPORTING

Within 60 days after the end of the month in which it was collected, all ambient air monitoring data will be reported in an acceptable electronic format to the MDEQ, AQD. The facility will keep copies of all ambient air data on-site for at least 3 years. A request can be made to the Chief of the WHMD to modify the monitoring plan if one year of sampling events show non-detectable levels of that parameter. The determination to alter the ambient air monitoring plan shall be made by staff from both the WHMD and the AQD. The final

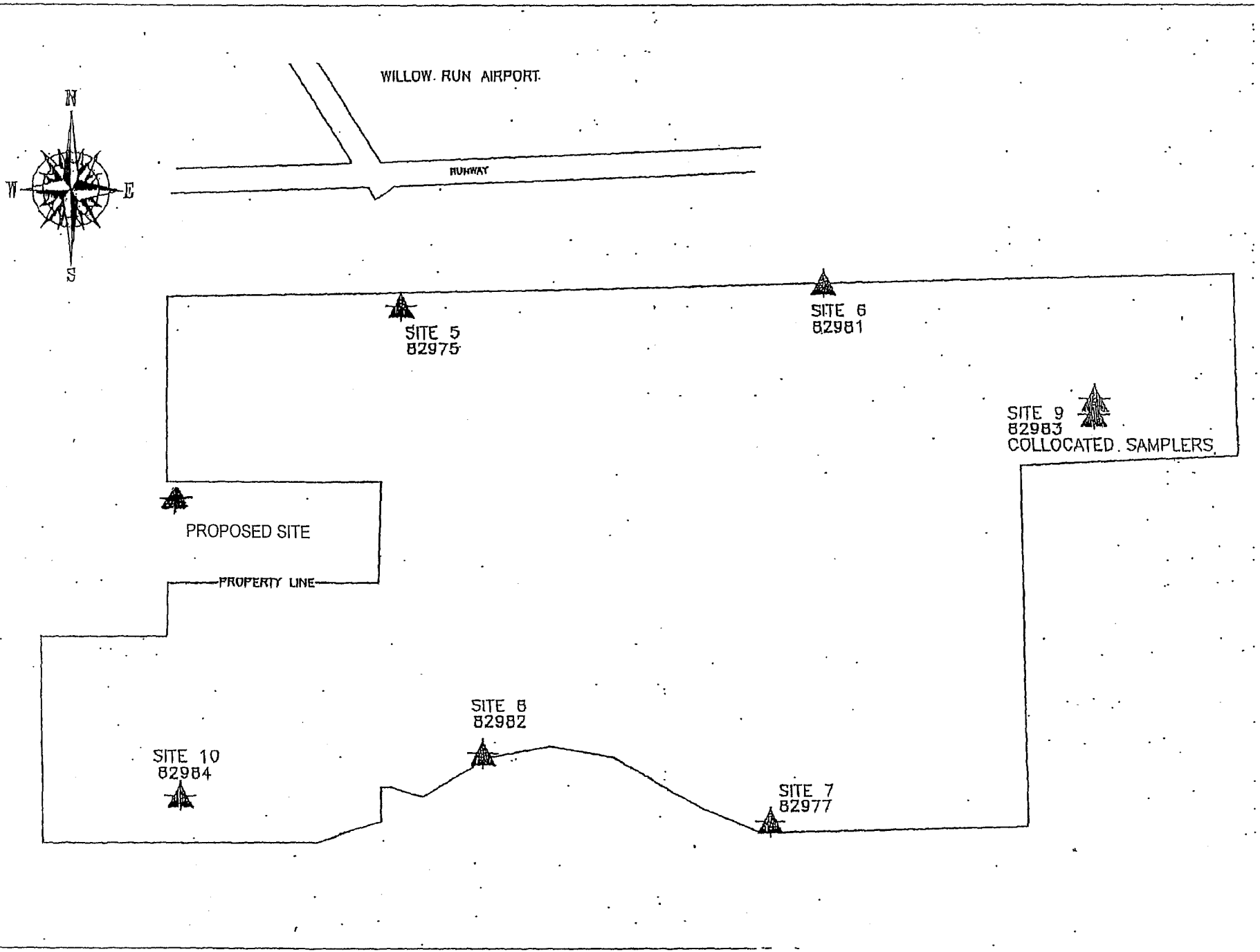
approval letter regarding any changes to the ambient air monitoring plan will be issued by the WHMD.

SITE 2 – AMBIENT AIR - MONITORING PARAMETERS (METALS and PARTICULATES)

COMPOUND	DETECTION LIMIT (ug/m^3)
CADMIUM	0.005
CHROMIUM	0.009
LEAD	0.025

SITE 2 – AMBIENT AIR - MONITORING PARAMETERS (ORGANIC COMPOUNDS)

COMPOUND	DETECTION LIMIT (ug/m^3)
BENZENE	0.04
CARBON TETRACHLORIDE	0.25
CHLOROFORM	0.05
ETHYLBENZENE	1.0
METHYLENE CHLORIDE	1.0
1,1-DICHLOROETHANE	1.0
1,1,1-TRICHLOROETHANE	1.0
TETRACHLOROETHENE	0.1
TRICHLOROETHENE	0.1
TOLUENE	1.0
XYLENE (TOTAL)	1.0
PCBs (TOTAL)	0.02



THE ENVIRONMENTAL QUALITY COMPANY

LOCATION: WAYNE DISPOSAL SITE NO.2 LANDFILL

TITLE: SITE LOCATIONS
MICHIGAN DISPOSAL WASTE TREATMENT PLANT

SCALE: 1" = 800'

DATE: 02/16/01

FILENAME: S2AUGS1

Attachment D. Revisions to Soil Monitoring SAP

Attachment 11

Soil Monitoring Program Sampling and Analysis Plan

Section 33

SOIL MONITORING
SAMPLING AND ANALYSIS PLAN

Version 1.0	December 2008
Version 1.1	February 2011
Version 1.2	September 2011
Version 1.3	August 2014

SOIL MONITORING
SAMPLING AND ANALYSIS PLAN

WAYNE DISPOSAL, INC. SITE #2
MID 048 090 633

1.0 INTRODUCTION

This Soil Monitoring Sampling and Analysis Plan (SM SAP) identifies the procedures for monitoring on-site soil and ditch sediment samples at Wayne Disposal, Inc. (WDI), Site 2 during the active life of the hazardous waste disposal facility. The soil monitoring program described in the SM SAP is designed to test on-site soil and ditch sediments for the presence of polychlorinated biphenyls ("PCBs"). PCBs detected in the soils or sediments could potentially be transported by storm water into the sedimentation basins at the site. The storm water in the sedimentation basins is treated for PCBs prior to discharge to Quirk Drain in accordance with a National Pollution Discharge Elimination System (NPDES) Permit. This monitoring program is one of the checks on the engineered controls and operational procedures employed by WDI to detect an on-site release of hazardous waste or hazardous waste constituents as early as possible and allow WDI to initiate efforts to locate and control the source and prevent an off-site release.

This SM SAP also prompts notification and response actions that WDI must take when an apparent or confirmed threshold level exceedance of PCBs in on-site soil/sediments occurs. This SM SAP does not apply to an off-site detection of PCBs in soil/sediments. In the event PCBs are

detected and/or confirmed in off-site soil/sediments, WDI must notify the MDEQ in accordance with the General Operating Conditions of the Operating License for Reporting Noncompliance that may endanger human health or the environment

2.0 REVISIONS

WDI may revise this SM SAP and submit the revised plan to the Chief of the Office of Waste Management and Radiological Protection of the Michigan Department of Environmental Quality (OWMRP/MDEQ) for review and approval prior to implementation.

3.0 SAMPLE LOCATIONS

Currently, there are thirty sampling locations for the soil monitoring program. There are 25 soil sampling locations and five sediment sampling locations, identified as SM-1 through SM-25, and SM-31 through SM-35 on Figure 1, which also depicts the boundaries for Area A and Area B watersheds. Location SM-30 will be added to the program when Cell VI-G Phase 3 is constructed. SM-9 through SM-15, SM-21, SM-22 and SM-25 will be removed when cell construction proceeds in those areas. As cells are closed, four additional soil sampling locations (SM-26 through SM-29) will be added after final cover is installed. The locations for the SM SAP samples are surveyed and are marked in the field with a monument.

One grab sample of soil will be collected from within 10 feet of the surveyed monument from each of the respective soil monitoring locations. One sediment sample will be collected from within the ditch at each of the respective drainage ditch locations within 10 feet of the surveyed monument in a linear fashion. At the time of sampling, the exact location for each of the

individual samples will be marked with a flag and a written description of the location (distance from monument and compass direction) will be recorded on the sample collection log so that a confirmation sample can be collected if necessary (see Section 5 below). Upon initiation of WDI's next routine sampling event, the flag will be moved to the new sampling location following the procedures described in this section of the SM SAP

4.0 SAMPLE FREQUENCY

The SM SAP samples are to be collected semiannually in March and September of each respective year.

5.0 SAMPLE COLLECTION

Samples from each of the 25 monitoring locations shown on Figure 1 are to be collected using a disposable hand trowel or other tool capable of excavating a short distance into the soil/sediment. Each individual sampling location is to be prepared by laying out an area approximately one-half foot square on the soil/sediment surface and carefully removing vegetation, sticks, rocks or other debris to expose a clear sampling surface. At each individual sampling location, one sample is to be collected by removing the top inch of soil/sediment from the one-half foot square area, placing the soil/sediment into a separate stainless steel bowl, disposable foil pan, or ziplock bag, gently mixing the soil/sediment in the selected type of container to homogenize the sample, and removing the homogenized soil/sediment from the container into clean glass sampling jars. A sample from each of the 25 sampling locations is to be submitted to the laboratory for PCB analysis.

Clean protective gloves must be worn during sample collection and must be replaced at each sample location. Care should be taken at all times when handling the samples. Each sample jar must be labeled with the sampling location, the time and date of the event, and the sampler's initials. If it is necessary to use non-disposable sampling equipment, the equipment will be decontaminated between sampling locations. In addition, one blind duplicate and one equipment blank for each piece of non-dedicated (if used) sampling equipment utilized in the sampling process (i.e. sample collection tools and homogenizing container) must be collected for each sampling event. The equipment blank must be collected by pouring clean de-ionized water over and/or into the decontaminated piece of equipment and collecting the rinsate in the appropriate jar for analysis. After collection, the samples must be stored in a clean cooler containing ice or ice packs. The coolers containing samples must be stored in a secure location, until being transported to the laboratory.

A sample collection log (Figure 2) must be filled out at each sampling location and any unusual conditions encountered must be noted. A chain of custody (COC) form must also be filled out for each sampling event. This COC must be filled out fully for each sample submitted for analysis and each person responsible for the handling of these samples must sign and date the form. When the samples are delivered to the laboratory and the lab has signed for their receipt, a copy of the COC must be retained on site in the Quality, Environment, Health and Safety (QEHS) Department records.

6.0 SAMPLE ANALYSIS

The samples from each of the 25 sampling locations will be analyzed for total PCBs where total PCBs equals the sum of the following PCB aroclors: PCB-1016, PCB-1221, PCB-1232, PCB-1242, PCB-1248, PCB-1254 and PCB-1260. The analytical method detection limit will be 0.1 mg/kg on a dry weight basis. Samples will be analyzed in accordance with USEPA SW-846 Method 8082. Samples will be analyzed within 40 days of collection to meet holding time requirements for the analytical method.

The laboratory quality control/quality assurance manual (QA/QC Manual) describing the required internal policies, guidelines and procedures of any WDI contract lab is contained in the Groundwater Sampling and Analysis Plan (GW SAP). WDI is to use this QA/QC Manual in evaluating the QA/QC standard operating procedures of any contract laboratory utilized for the purposes of this SM SAP and ensure that the laboratory employs generally acceptable practices that meet the specifications of the QA/QC Manual in the GW SAP.

7.0 DATA EVALUATION

The analytical data must be evaluated to determine whether there has been an apparent threshold level exceedance (ATLE). The applicable threshold level depends on whether the sample location is within Area A or Area B (see Figure 1). The threshold levels are defined as follows:

- Area A ATLE: Total PCBs (as defined in Section 6.0 of this SM SAP) at or above 0.75 mg/kg.

- Area B ATLE: Total PCBs (as defined in Section 6.0 of this SM SAP) at or above 0.1 mg/kg, the method detection limit for the PCB analyses.

8.0 RESPONSE ACTIONS

In the event of an ATLE, WDI must verbally notify the WHMD/MDEQ, Hazardous Waste Program Section staff immediately in accordance with the Environmental Monitoring Conditions of the Operating License and implement the procedures identified below to confirm the ATLE.

- Within 7 days of the ATLE, WDI must collect a verification sample at each soil sampling location for which an ATLE was reported. Each verification sample must be collected along the sides and bottom of the hole left by the prior sample. WDI must notify the WHMD/MDEQ prior to conducting verification sampling so that the WHMD/MDEQ can, if it chooses, split samples with WDI. .

If the ATLE is not confirmed by the additional sample analysis, WDI is to resume routine monitoring. If the ATLE is repeated upon analyzing the second sample a CTLE has occurred. In the event of a CTLE, WDI must notify the MDEQ in accordance with the Environmental Monitoring Conditions of the Operating License. Further, in the event of any CTLE, within 14 days of the CTLE, WDI is to collect the first phase of delineation samples to determine the extent of the areas exceeding the CTLE. Samples are to be collected and analyzed in accordance

with the requirements in Sections 5.0 and 6.0. WDI must notify the WHMD/MDEQ prior to conducting delineation sampling so that the WHMD/MDEQ can, if it chooses, split samples with WDI.

Different approaches for locating delineation samples are required to be implemented depending on whether the CTLE has occurred:

- On top of closed landfills or other open areas.
- Along linear features such as drainage ditches or interior roads.

The approach for locating delineation samples for each of these scenarios is defined below. Before immediately and automatically implementing the defined delineation approach provided below, a visual evaluation of the area is to be completed to determine if there are features in the area that suggest a preferential pattern for the PCB exceedance (e.g. visible dust patterns, erosion gullies, vegetative cover or lack thereof, low areas, etc). If it is determined that a preferential deposition pattern is present, WDI must collect samples from those locations as appropriate. Dependent on the type and size of the feature, samples from preferential area(s) may be included as extra samples or as part of the grid sampling procedure discussed below if their locations allow. If the visual check shows no features suggesting that the PCB exceedance may be preferentially located, the following procedure is to be used to locate delineation samples.

For a CTLE on top of closed landfills or other open areas, a grid sampling strategy is to be employed as follows:

- A 100 by 100 foot grid, divided into 25 by 25 foot grid intervals, is to be centered over the CTLE location and sixteen soil samples are to be collected from the center of each 25 by 25 foot grid interval. Of the sixteen soil samples, the four step-out soil samples immediately adjacent to the CTLE location and the four corner soil samples from the 100 by 100 foot grid are to be analyzed for PCBs. The laboratory is to hold the remaining eight soil samples pending the results from the initial eight soil samples. Close communication with the laboratory will be required to insure that initial samples are analyzed quickly so that analysis of the additional samples for delineation, if necessary, can be completed without violating the holding time requirements of the PCB analytical method. WDI may voluntarily perform additional sampling within the bounds defined by the above procedure in order to refine the delineated boundary of the area exceeding the threshold limit defined in Section 7.0.
- If none of the eight initially analyzed soil samples contain PCBs above the threshold level defined in Section 7.0, the horizontal extent of the exceedance is considered to be the area inside the square drawn by connecting the four sample points immediately adjacent to the CTLE location.
- If any of the eight initially analyzed samples contain PCBs above the threshold level defined in Section 7.0, WDI is to do the following:
    - Contact the laboratory and request them to conduct PCB analysis on the soil samples that were collected and held for all locations that are contiguous to the PCB exceedance.
    - Within 14 days following WDI's determination that a PCB exceedance in a response soil sample has occurred, submit a work plan, based upon a grid or

transect approach, to the WHMD/MDEQ for review and approval to identify the extent of the PCB contaminated area along with a schedule for completing the work.

For a CTLE along a linear feature, sampling is to occur as follows:

- For a CTLE in a drainage ditch, three samples are to be collected, one upstream and two downstream, at approximately 25 feet intervals, on each side of the CTLE (taking care to pick locations of sediment accumulation areas), assuming the linear feature extends the required length in each direction. If the linear feature does not extend the required length in either direction, sampling will occur at the largest possible interval before the end of the linear feature is encountered.
- For a CTLE along a roadway, two soil samples are to be collected by stepping out approximately 25 feet in both directions parallel to the roadway and two samples are to be collected from directly across the roadway if samples from the opposite side of the roadway area were not collected and analyzed as part of the original sampling.
- If none of the samples are above the threshold levels defined in Section 7.0, the extent of soil/sediments expected to exceed the remediation threshold of 1 ppm for Area A and .1 or the method detection limit for Area B, will be bounded by a 50-foot long area centered on the CTLE sampling location.
- If any of the samples are above the threshold levels defined in Section 7.0, WDI is to continue using the same approach, stepping out at 25 foot intervals (or the largest possible distance, whichever is less) in the direction of the linear feature to collect additional

samples. This sample pattern is to be repeated until the first location is found that is below the applicable threshold level in Section 7.0 or until the linear feature terminates.

After the delineation phase has been completed by obtaining the delineation phase sampling results identifying the area of soil/sediments with CTLE(s), the analytical data will be evaluated and WDI is to submit a plan to remove soils/sediments and to determine the source(s) or expected source(s) of the PCBs to the WHMD/MDEQ for review and approval. The plan is to be submitted to the WHMD/MDEQ within 14 days of completing the delineation phase. WDI shall remove at least the top six inches of soil/sediments (WDI may voluntarily remove more) of all soils at or above 1.0 mg/kg in Area A and at or above the method detection limit in Area B, perform verification sampling to confirm that the underlying soils/sediments are below the applicable threshold limit identified in Section 7, and the placement of clean soils to replace the excavated soils. The plan submitted to WHMD/MDEQ need only include a schedule to complete the excavation, fill and verification sampling described above; a drawing that shows the delineation sampling results, the limits of the soil to be removed, and the approximate locations of the verification samples; the source of the clean fill material, except if WDI will deviate from the removing 6 inches of soil in response to the CTLE, in such case WDI shall propose the corrective measure/remedy; and the steps to be taken to identify and control the source(s) of the PCBs. The verification sample locations are to be selected in accordance with the MDEQ Sampling Strategies and Statistics Training Materials for Part 201 Cleanup Criteria.

9.0 REPORTING REQUIREMENTS

For semi-annual reports, the final data must be received from the laboratory, evaluated and transmitted to the WHMD/MDEQ within 60 days of sampling. The report is to include a narrative of the sampling event, a map showing the locations sampled, copies of the sampling logs, a tabular summary and discussion of the data, a discussion of field and laboratory QA/QC, a description of any ATLEs or CTLEs, any resampling conducted, and any additional actions taken and/or proposed as a result of the report findings.

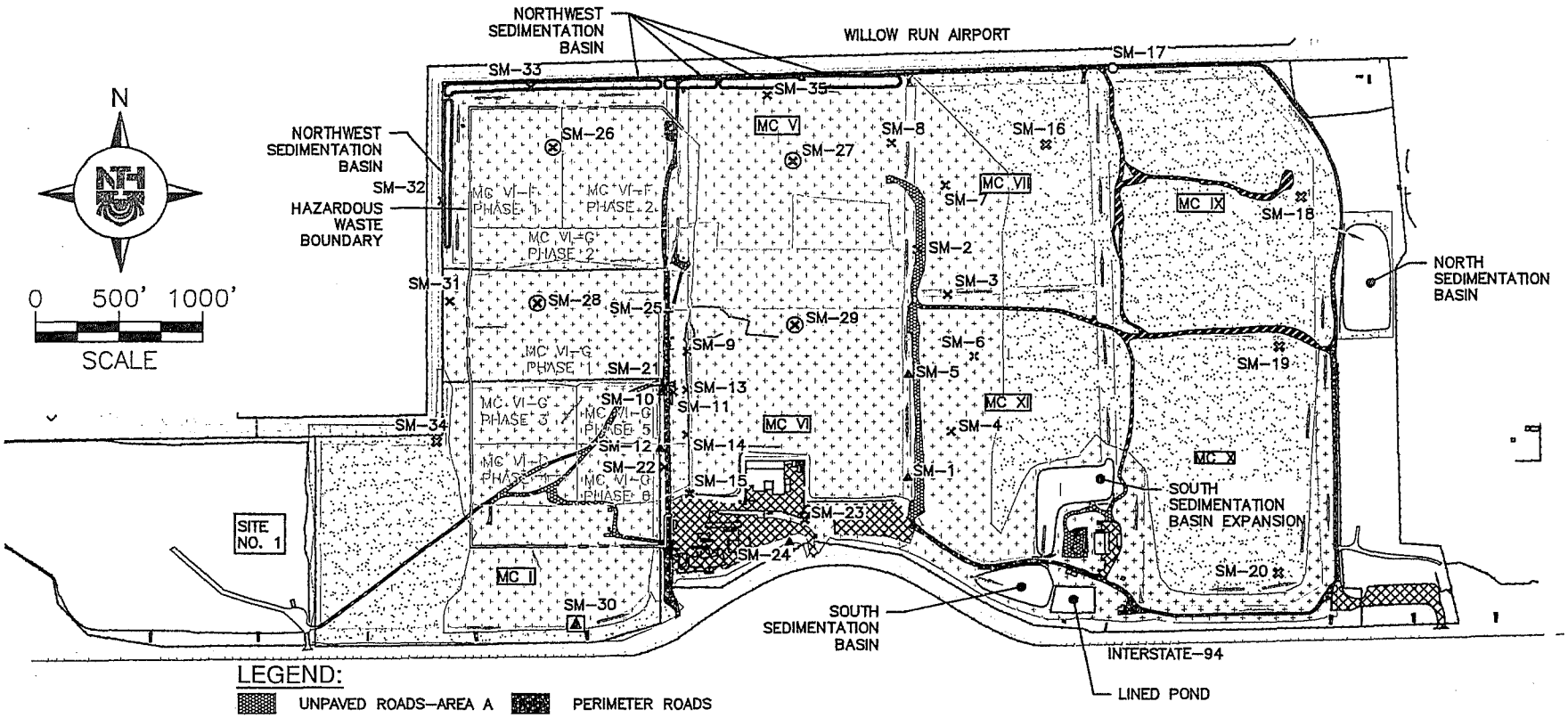
If a CTLE occurs, the data associated with the delineation phase, collected in accordance with Section 8.0, is to be received from the laboratory, evaluated, and transmitted to the WHMD/MDEQ within 45 days of the final sampling. The report is to include a narrative of the delineation sampling, copies of the sampling logs, a summary and discussion of the data, a drawing showing the delineation boundary, a schedule to perform soil removal (or an alternate plan, with schedule, in the event WDI proposes a remedy other than soil removal) and the steps to be taken to identify and control the source(s) of the PCBs.

Verification sampling data, collected to confirm that all soil/sediments exceeding the applicable threshold level has been removed in accordance with Section 8.0 is to be received from the laboratory, evaluated, and transmitted to the WHMD/MDEQ within 45 days following completion of the final round of verification sampling. The report is to include a narrative of the verification sampling, locations of all verification samples, copies of the sampling logs, a summary and discussion of the data, a drawing showing the limits of the excavation and the locations of the verification samples.

An annual summary report of the monitoring results must be submitted to WHMD/MDEQ by March 1 of the following year. At a minimum, the annual report must contain a map showing all locations sampled, a tabular summary and discussion of the analytical data collected during the previous year, a description of any threshold limit exceedances (i.e. ATLE and/or CTLE), any delineation and source investigation sampling conducted as a result of a CTLE, and any response actions performed to eliminate the source. Additionally, WDI must evaluate the sampling locations to determine whether the existing sample locations are adequate to effectively detect potential releases and prompt timely response activities.

10.0 RECORD KEEPING REQUIREMENTS

All analytical data and annual monitoring reports generated under this SM SAP must be stored on site within the QEHS filing system and be available to MDEQ staff for inspection.



LEGEND:

- UNPAVED ROADS–AREA A
- UNPAVED ROADS–AREA B
- PERIMETER ROADS
- PAVED SURFACES
- AREA A
- AREA B
- SM 2 — SOIL SAMPLING LOCATION – AREA A
- SM 1 — SEDIMENT SAMPLING LOCATION – AREA A
- SM 18 — SOIL SAMPLING LOCATION – AREA B
- SM 17 — SEDIMENT SAMPLING LOCATION – AREA B
- SM 26 — SOIL SAMPLING LOCATION – POST CLOSURE
- SM 34 — SOIL SAMPLING LOCATION – POST MC VI F/G CONSTRUCTION
- SM 30 — SEDIMENT SAMPLING LOCATION – POST MC VI F/G CONSTRUCTION
- DIRECTION OF INTERIM SURFACE WATER FLOW
- DIRECTION OF SURFACE WATER FLOW – POST MC VI F/G CONSTRUCTION

NOTES:
1. ROADWAYS ARE SHOWN FOR REFERENCE ONLY AND MAY NOT REPRESENT THE ACTUAL ROADWAY DIMENSIONS.
2. ANY REVISIONS TO THIS DRAWING REQUIRE THE APPROVAL OF THE MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY WASTE AND HAZARDOUS MATERIALS DIVISION. APPROVED REVISIONS MUST BE ATTACHED TO THE FOLLOWING DOCUMENTS: SOIL MONITORING SAP, SURFACE WATER MONITORING SAP, TRACKOUT MANAGEMENT SOP, FUGITIVE DUST MANAGEMENT SOP.
3. SM–9 THROUGH SM–15, SM–21, SM–22 AND SM–25 WILL BE REMOVED. SM–26 THROUGH SM–29 WILL REPLACE THE SAMPLING LOCATIONS THAT ARE REMOVED.

NTH PROJECT No.:	DESIGNED BY:	CHECKED BY:	DRAWING SCALE:	NTH Consultants, Ltd. Infrastructure Engineering and Environmental Services	WAYNE DISPOSAL, INC. SITE NO. 2	SOIL MONITORING LOCATION PLAN	FIGURE:
62080376	KRO	ACE	AS SHOWN		VAN BUREN TWP., WAYNE COUNTY, MICHIGAN		1
CAD FILE NAME:	DRAWN BY:	INCEPTION DATE:	PLOT DATE:				
080376–SMP	KRO	02/16/09	12/9/2014				

J:\62\62080376\Reports\Env\LIC\080376–SMP.dwg

Figure 2. Sample Collection Log for Soil Samples - WDI Site #2

Sample ID:	Sample Date:	Sample Time:
Sample Location:	Sample Depth	Sampler:
Soil Description/Comments*:		

Sample ID:	Sample Date:	Sample Time:
Sample Location:	Sample Depth	Sampler:
Soil Description/Comments*:		

Sample ID:	Sample Date:	Sample Time:
Sample Location:	Sample Depth	Sampler:
Soil Description/Comments*:		

Sample ID:	Sample Date:	Sample Time:
Sample Location:	Sample Depth	Sampler:
Soil Description/Comments*:		

* Note color and consistency and any sheen, odor or other relevant characteristics of the sample

Attachment 12

Surface Water Monitoring Program Sampling and Analysis Plan

Section 32

SURFACE WATER SAMPLING AND ANALYSIS PLAN

REVISION 3.0 – MARCH, 1996
REVISION 3.1- MAY, 1999
REVISION 3.2 – OCTOBER, 1999
REVISION 3.3 – OCTOBER, 2000
REVISION 3.4 – MARCH, 2001
REVISION 3.5 - JULY 2002
REVISION 3.6 – DECEMBER 2008
REVISION 3.7 – FEBRUARY 2011
REVISION 3.8 – SEPTEMBER 2014

SURFACE WATER SAMPLING AND ANALYSIS PLAN

WAYNE DISPOSAL, INC. SITE #2
MID 048 090 633

REVISION 3.0 – MARCH, 1996
REVISION 3.1- MAY, 1999
REVISION 3.2 – OCTOBER, 1999
REVISION 3.3 – OCTOBER, 2000
REVISION 3.4 – MARCH, 2001
REVISION 3.5 - JULY 2002
REVISION 3.6 – DECEMBER 2008
REVISION 3.7 – FEBRUARY 2011
REVISION 3.8 – SEPTEMBER 2014

1.0 INTRODUCTION

This Surface Water Sampling and Analysis Plan (SW SAP) identifies the procedures to be used for monitoring on-site surface water (storm water) samples from the perimeter ditches that convey on-site surface water run-off at Wayne Disposal, Inc. (WDI), Site 2 to the North and South Sedimentation Basins. All surface water collected in the two sedimentation basins is treated by sedimentation, filtration and activated carbon adsorption prior to discharge to Quirk Drain. The effluent from this treatment process is discharged into Quirk Drain in accordance with an effective National Pollutant Discharge Elimination System (NPDES) permit.

The surface water monitoring program described by this SW SAP is designed to test the quality of the on-site surface water to determine if hazardous waste or hazardous waste constituents are present within the surface water and prompt notification and response actions that WDI must take if an apparent or confirmed significant increase in a monitored parameter occurs. This monitoring program is one of the checks on the engineered controls and operational procedures employed by WDI to detect an on-site release of hazardous waste or hazardous waste constituents as early as possible and allow WDI to initiate efforts to locate and control the source and prevent the off-site release of hazardous waste or hazardous waste constituents.

2.0 REVISIONS

WDI may revise this SW SAP and submit the revised plan to the Chief of the Waste and Office of Waste Management and Radiological Protection of the Michigan Department of Environmental Quality (OWMRP/MDEQ) for review and approval prior to implementation.

3.0 SAMPLE LOCATIONS

Surface water grab samples are currently collected from each of the eight permanent locations shown on Figure 1 designated as SS-1, SS-2, SS-5, SS-6, SS-7, SS-8, SS-9 and SS10. SS-3 is the effluent from the treatment system and is monitored in accordance with an effective NPDES permit for the facility. SS-4 was abandoned due to changes to the drainage system at the site. Location SS-8 will be abandoned during the construction of MC VI-F. Location SS-11 will be added to the program when MC-VI-G Phase 3 is constructed. A description of each location, including its location with respect to being in "Area A" or Area B , is included on Table 1.

In addition, samples are also collected from three cap drains that shed water from the cover of Master Cell VII. The outlet to these drains are labelled VII-1, VII-2 and VII-3 and are located at the northwest, northeast and southeast corners of Master Cell VII, respectively. Samples are to be collected at the time surface water samples are collected unless no flow is present. The sampling of these drains must continue until such time the MDEQ agrees that the program can be terminated.

4.0 SAMPLE FREQUENCY

Each surface water sample location in the program are to be sampled quarterly following a rain event (defined as a 0.5 inches or more in 24 hours) when surface water is present within the ditches. Surface water samples will not be collected within the calendar quarter if there are no significant rain events that allow for the sampling to be completed.

5.0 SAMPLE COLLECTION

Surface water grab samples for each of the required parameters are to be collected from each of the sampling locations. Samples for volatile organic compounds (VOCs) are to be collected first and require zero headspace (no air bubbles) and minimal agitation of the water sample. Samples for PCBs are collected next followed by total phenolics and then the remaining parameters. Duplicate samples must be collected at each sample location for VOCs, PCBs and metals. The duplicate samples are to be held by the laboratory as potential confirmation samples to be analyzed in the event of an apparent statistically significant increase (ASSI) using the criteria

defined in Section 7.0 of this SW SAP. The duplicate sample for PCBs must be extracted when it arrives at the laboratory and the extract held in case a confirmation analysis is required.

Samples are to be collected by dipping the bottles provided by the laboratory into the water and directly filling the containers. If site conditions do not allow for the bottles to be hand lowered into the surface water, the bottles can be inserted into a Teflon dipper and lowered, via the Teflon Dipper, into the surface water to collect the sample. If a Teflon dipper is used for sample collection, the dipper must be properly decontaminated between locations by washing the device with a laboratory grade non-phosphate detergent and rinsing thoroughly with clean deionized water. Care must be taken to ensure that any preservatives in the bottles are not spilled during sample collection. Field measurements of pH, specific conductance, temperature and dissolved oxygen are collected with calibrated field instruments at the time of sampling. WDI is to use the instructions for the use and maintenance of these instruments contained in the Groundwater Sampling and Analysis Plan for equipment used to collect field measurements under this SW SAP.

Protective gloves must be worn during sample collection and clean gloves must be used at each sample location.. Care should be taken at all times when handling the samples. Samples to be analyzed for volatile organic compounds require zero-headspace, no air bubbles and minimal agitation of the sample. Samples collected for metals analyses are not to be filtered as the metals analyses are "totals" analyses. Each sample container must be carefully labeled with the

sampling location, time and date, and the sampler's initials. Field Quality Assurance/Quality Control samples must include:

- One trip blank in each cooler utilized for storing and shipping samples. The trip blank must be analyzed for VOCs and PCBs.
- One field blank for each day in which samples are collected. The field blank samples are to be collected by filling an identical set of sample bottles at a given location with clean deionized water. The field blank samples must be analyzed VOCs and PCB.
- One blind duplicate for each sampling event. The duplicate must be collected by filling an identical set of sample bottles at a given location and submitting them for an identical analysis.
- One equipment blank per sampling day for each piece of non-dedicated sampling equipment utilized in the sampling process (i.e. the Teflon dipper). The equipment blank must be collected by pouring clean deionized water over the decontaminated piece of equipment and collecting the rinsate in the appropriate jar for analysis. The equipment blank must be analyzed for VOCs and PCBs.

After collection, the samples must be stored in a clean cooler containing ice or ice packs. The coolers containing samples must be stored in a secure location until being transported to the laboratory.

A sample collection log (Figure 2) must be filled out at each sampling location and any unusual conditions (e.g. odors, sheens) encountered must be noted. A chain of custody (COC) form that lists each sample submitted to the laboratory must be fully filled out for each sampling event and each person who has custody of the samples, from sample collection through sample check-in, must sign and date the form. When the samples are delivered to the laboratory and the laboratory has signed for their receipt, a copy of this form must be retained on site in the Quality, Environment, Health and Safety (EHS) Department records.

6.0 SAMPLE ANALYSIS

One surface water grab sample from each of the required sampling locations must be analyzed for the parameters listed on Table 2 using the analytical methods and method detection limits specified in Table 2, which are consistent with Policy and Procedure Document OWMRP-111/115-8. Cap drain samples are analyzed for VOCs only. The potential confirmation duplicate samples from each surface water sampling location must be retained at the laboratory but need only be analyzed if an ASSI is detected in the first sample using the criteria described in Section 7.0 of this SW SAP.

In some cases the laboratory may not be able to attain the method detection limits specified due to factors such as sample dilution or matrix effects. If this is the case, the laboratory report must include an explanation for not achieving the specified method detection limits.

The laboratory quality control/quality assurance manual (QA/QC Manual) describing the required internal policies, guidelines and procedures of any WDI contract lab is contained in the WDI Groundwater Sampling and Analysis Plan (GW SAP). WDI is to use this QA/QC Manual in evaluating the QA/QC standard operating procedures of any contract laboratory utilized for the purposes of this SW SAP and ensure that the laboratory employs generally acceptable practices that meet the specifications of the QA/QC Manual in the GW SAP

7.0 DATA EVALUATION

The analytical data from the surface water samples is to be evaluated as follows:

- For VOCs, any reported concentration at or above the method detection limit is an apparent statistically significant increase (ASSI).

- For PCBs, the data will be evaluated as follows:
  - For samples obtained from Area B, any reported concentration at or above the method detection limit is an ASSI.
  - For samples obtained from Area A, any reported concentration at or above 0.5 mg/L is an ASSI.

- For metals and inorganic parameters, the data will be evaluated using the sign test as described in Attachment A. In addition, if a ten-fold increase in concentration is noted

in any metal or inorganic parameter between sampling events in any of the individual grab samples, then there has been an ASSI.

Due to the detection of VOCs in the cap drain samples, it is possible to have low level detections in surface water samples, especially at locations directly downstream of the cap drain discharge points (SS-2, SS-5 and SS-7). The compounds detected consistently in the cap drain discharge include 1,2-dichloroethane, 1,1-dichloroethane, trichloroethene, 1,2-dichloroethene, 1,1-dichloroethene and vinyl chloride. While the detection of any of these compounds in the surface water must be considered an ASSI, the historical surface water and cap drain data can be used in making a demonstration is to whether the ASSI indicates impact from the cap drain or a release from any other source.

For the cap drain sample results, no statistical analyses are performed, however any detection of a cap drain VOC in the NPDES discharge location (SS-3) that is monitored monthly in accordance with WDI's TSCA Approval must be reported as an ASSI as outlined in Section 8 of this document and WDI's Part 111 Operating License.

8.0 RESPONSE ACTIONS

In the event of an ASSI, WDI must verbally notify the OWMRP/MDEQ, Hazardous Waste Program Section staff immediately in accordance with the Environmental Monitoring Conditions of the Operating License and implement the procedures identified below to confirm the ASSI.

- If a VOC is present in a sample above its method detection limit, the duplicate sample must be analyzed.
- If a metal in any grab sample has met or exceeded ten times increase criteria identified in Section 7.0, an ASSI has occurred and the duplicate sample must be analyzed for the offending parameter(s) .
- If PCBs have met or exceeded the criteria identified in Section 7.0, an ASSI has occurred and the duplicate sample extract must be analyzed.
- If the sign test fails at any location then the sample location must be inspected closely and resampled as soon as there is water to sample and analyzed for all sign test procedures.

If the holding time for any sample or sample extract has been exceeded, the location where the ASSI sample was collected must be resampled as soon as there is water in the sample location and the sample must be analyzed.

If an ASSI is not repeated ,WDI will resume routine monitoring. If the ASSI is repeated upon analyzing the second sample, a confirmed statistically significant increase (CSSI) has occurred. In the event of a CSSI, WDI must notify the OWMRP/MDEQ in accordance with the General Operating Conditions of the Operating License for Reporting Noncompliance that may endanger human health or the environment. Further, in the event of a CSSI, within 30 days of becoming aware of a CSSI, WDI must:

- Determine whether a discharge of hazardous waste and/or hazardous waste constituents to off-site surface waters is occurring, determine the source, and take immediate steps to eliminate and prevent any such discharge. WDI may demonstrate a source other than the licensed facility caused the CSSI or that the CSSI resulted from error in sampling, analysis or evaluation.
- Submit a report to the OWMRP/MDEQ documenting WDI's investigation, response, and any further response actions proposed.

9.0 REPORTING REQUIREMENTS

For quarterly reports, the final data must be received from the laboratory, evaluated and the report transmitted to the OWMRP/MDEQ within 60 days of sampling. The report must include a narrative description of the sampling event, a map showing the locations sampled, copies of the sampling logs, a tabular summary and discussion of the analytical data and the data statistics, a discussion of field and laboratory QA/QC, the field measurements collected (pH, specific conductance, temperature and dissolved oxygen), a description of any statistically significant events (i.e. ASSI and/or CSSI), any resampling or additional sampling conducted as a result of a CSSI, and any additional actions proposed as a result of the reported data.

In addition to the quarterly reports, an annual summary report of surface water monitoring results must be submitted to the OWMRP/MDEQ by March 1 of the following year. At a minimum, the annual report must contain a map showing all locations sampled, a tabular summary and discussion of the analytical data collected during the previous year, a description of any

statistically significant events (i.e. ASSI and/or CSSI), any resampling of additional sampling conducted as a result of a CSSI, and any additional actions proposed as a result of the reported data. The report must also include a trend analysis and evaluation of the VOC concentrations detected in cap drain samples.

10.0 RECORD KEEPING REQUIREMENTS

All analytical data and quarterly and annual monitoring reports must be stored on site within the EHS filing system and be available for inspection as required.

Table 1. Description of Surface Water Monitoring Locations

Sampling Location	Stormwater Run-Off Source Unique to Location	Area Designation
SS-1	east side of MC VI and west side of MC XI	A
SS-2	southeast corner of MC VII, northeast corner of MC XI part of west side of MC X and southeast cover drain of MC VII	B
SS-5	east side of MC V (and VI-E), west and part of south sides of MC VII and part of north side of MC XI	A
SS-6	north side of MC-V	A
SS-7	east side of MC VII, west side of MC IX, part of north side of MC IX, and northeast cover drain of MC VII	B
SS-8	east side of MC-IV and west side of MC-V (to be abandoned for VI F&G construction)	A
SS-9	north of MCI VI-F (to be added when VI-F ditch is constructed)	A
SS-10	west of MC VI-F (to be added when VI-F ditch is constructed)	A
SS-11	south of MC-1/VI-G (to be added when cell VI-G is constructed)	A
samples collected quarterly unless no significant precipitation events for the calendar quarter		

Table 2. Surface Water Monitoring Parameters - WDI Site #2

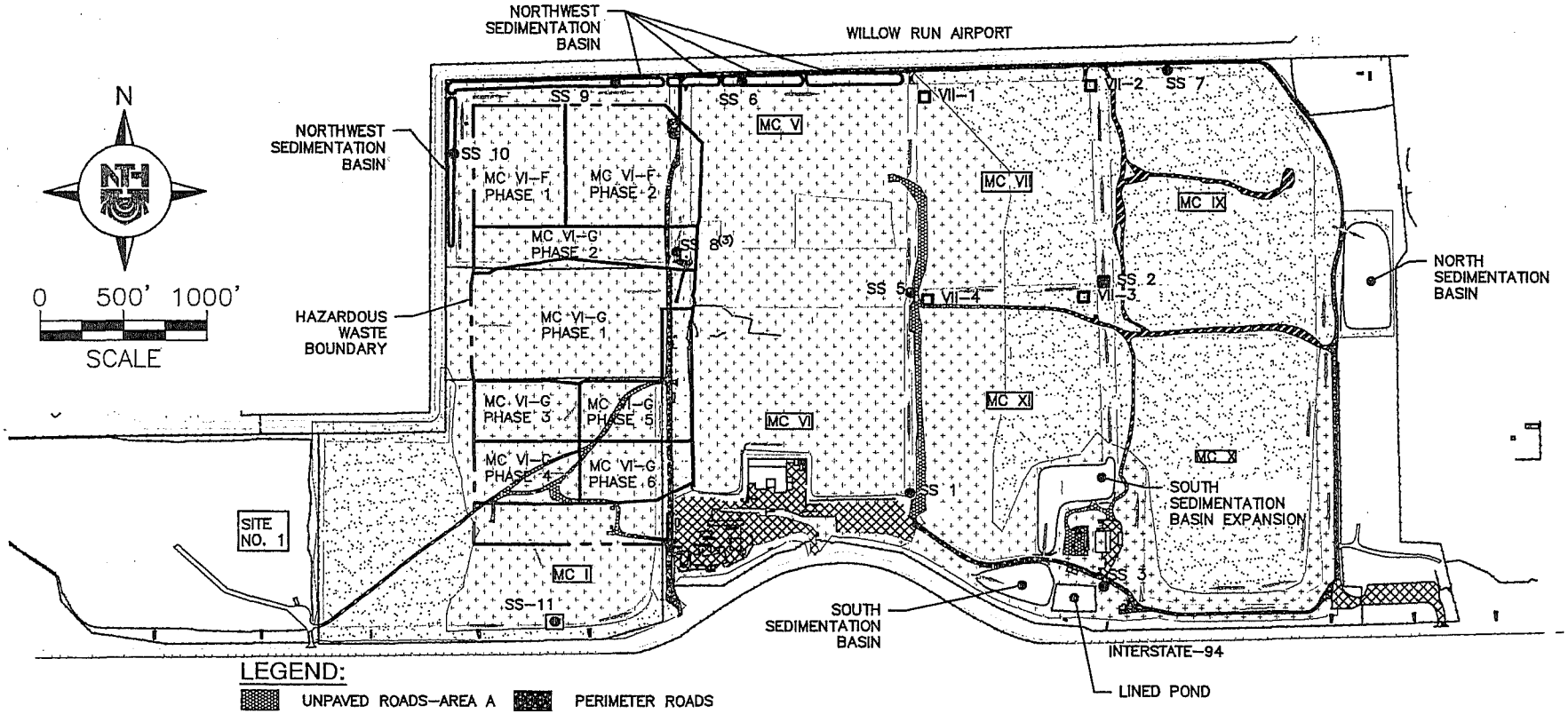
Parameters	MDL (mg/L)[3]	Method	Ref
Indicator Parameters			
Alkalinity	20	2320B	1
Bicarbonate	10	2320B	2
Carbonate	10	2320B	2
Chloride	1	4500-Cl E	2
Nitrate	0.01	4500-NO3 F	2
pH	0.5-12.5	4500-H B	2
Specific Conductance	1	2510B	2
Sulfate	2	ASTM D516-90	2
Total Suspended Solids	4	2540D	2
Total Phenolics	0.01	420.2/9066	1,2
Total Cyanide	0.005	4500-CN G	1
Amenable Cyanide	0.01	4500-CN G	2
Metals			
Arsenic	0.001	6020	1
Barium	0.005	6020	1
Cadmium	0.0002	6020	1
Calcium	1	6010	1
Chromium (total)	0.001	6020	1
Chromium (hexavalent)	0.005	7196	1
Iron	0.02	6010	1
Magnesium	1	6010	1
Manganese	0.005	6020	1
Mercury	0.0002	7470	1
Selenium	0.001	6020	1
Silver	0.0002	6020	1
Sodium	1	6010	1
Zinc	0.01	6020	1

1. TEST METHODS FOR EVALUATING SOLID WASTE, USEPA SW-846
2. STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, 20th Edition
3. Targer Detection Limits per Policy and Procedure Document OWMRP-111/115-8

Table 2. Surface Water Monitoring Parameters - WDI Site #2

Parameters	MDL (mg/L)[2]	Method	Ref
Organic Parameters			
Benzene	0.001	8260	1
Bromodichloromethane	0.001	8260	1
Bromoform	0.001	8260	1
Bromomethane	0.005	8260	1
Carbon Tetrachloride	0.001	8260	1
Chlorobezene	0.001	8260	1
Chloroethane	0.005	8260	1
2-Choroethylvinyl ether	0.005	8260	1
Chloroform	0.001	8260	1
Chloromethane	0.005	8260	1
Dibromochloromethane	0.001	8260	1
1,2 Dichlorobenzene	0.001	8260	1
1,3 Dichlorobenzene	0.001	8260	1
1,4 Dichlorobenze	0.001	8260	1
1,1 Dichloroethane	0.001	8260	1
1,2 Dichloroethane	0.001	8260	1
1,1 Dichloroethaene	0.001	8260	1
trans 1,2 Dichloroethene	0.001	8260	1
1,2 Dichloropropane	0.001	8260	1
cis 1,3 Dichloropropene	0.001	8260	1
trans 1,3 Dichloropropene	0.001	8260	1
Ethyl benzene	0.001	8260	1
Methylene chloride	0.005	8260	1
1,1,2,2 tetrachloroethane	0.001	8260	1
Tetrachloroethene	0.001	8260	1
Toluene	0.001	8260	1
1,1,1 Trichloroethane	0.001	8260	1
1,1,2 trichloroethene	0.001	8260	1
Trichloroethene	0.001	8260	1
Trichlorofluoromethane	0.001	8260	1
Vinyl chloride	0.001	8260	1
PCBs			
PCB-1016	0.0001	8082	1
PCB-1221	0.0001	8082	1
PCB-1232	0.0001	8082	1
PCB-1242	0.0001	8082	1
PCB-1248	0.0001	8082	1
PCB-1254	0.0001	8082	1
PCB-1260	0.0001	8082	1

1. TEST METHODS FOR EVALUATING SOLID WASTE, USEPA SW-846
2. Targer Detection Limits per Policy and Procedure Document OWMRP-111/115-8



LEGEND:

- UNPAVED ROADS–AREA A
- UNPAVED ROADS–AREA B
- PERIMETER ROADS
- PAVED SURFACES
- AREA A
- AREA B
- SS 1 — SURFACE WATER SAMPLING LOCATION
- SS 11 — SURFACE WATER SAMPLING LOCATION – POST MC VI F/G CONSTRUCTION
- VII–1 — CAP DRAIN OUTLETS
- DIRECTION OF INTERIM SURFACE WATER FLOW
- DIRECTION OF SURFACE WATER FLOW – POST MC VI F/G CONSTRUCTION

NOTES:
1. ROADWAYS ARE SHOWN FOR REFERENCE ONLY AND MAY NOT REPRESENT THE ACTUAL ROADWAY DIMENSIONS.
2. ANY REVISIONS TO THIS DRAWING REQUIRE THE APPROVAL OF THE MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY WASTE AND HAZARDOUS MATERIALS DIVISION. APPROVED REVISIONS MUST BE ATTACHED TO THE FOLLOWING DOCUMENTS: SOIL MONITORING SAP, SURFACE WATER MONITORING SAP, TRACKOUT MANAGEMENT SOP, FUGITIVE DUST MANAGEMENT SOP.
3. SS–8 WILL BE REMOVED WHEN CELL CONSTRUCTION BEGINS IN THIS AREA.

NTH PROJECT No.:	DESIGNED BY:	CHECKED BY:	DRAWING SCALE:	NTH Consultants, Ltd. Infrastructure Engineering and Environmental Services	WAYNE DISPOSAL, INC. SITE NO. 2	SURFACE WATER MONITORING LOCATION PLAN	FIGURE:
62080376	KRO	ACE	AS SHOWN		VAN BUREN TWP., WAYNE COUNTY, MICHIGAN		1
CAD FILE NAME:	DRAWN BY:	INCEPTION DATE:	PLOT DATE:				
080376–SWP	KRO	02/16/09	12/9/2014				

J:\62\62080376\Reports\Env\LC\080376–SWP.dwg

Figure 2. Sample Collection Log for Surface Water - WDI Site #2

Sample ID:	**Sample Date:**	**Sample Time:**
Sample Location:	**Sampling Method:**	**Sampler:**
Sample Description/Comments*:		
Field Measurements: pH ________ **Specific Conductance**_________ **Temperature**_______		

Sample ID:	**Sample Date:**	**Sample Time:**
Sample Location:	**Sampling Method:**	**Sampler:**
Sample Description/Comments*:		
Field Measurements: pH ________ **Specific Conductance**_________ **Temperature**_______		

Sample ID:	**Sample Date:**	**Sample Time:**
Sample Location:	**Sampling Method:**	**Sampler:**
Sample Description/Comments*:		
Field Measurements: pH ________ **Specific Conductance**_________ **Temperature**_______		

Sample ID:	**Sample Date:**	**Sample Time:**
Sample Location:	**Sampling Method:**	**Sampler:**
Sample Description/Comments*:		
Field Measurements: pH ________ **Specific Conductance**_________ **Temperature**_______		

* Note clarity of samples and any color, sheen, odor or other relevant characteristics of the sample

Attachment A
Statistical Monitoring Plan for Surface Water Monitoring

Wayne Disposal, Inc., Site #2
MID 048 090 633

Revision 1.0, December 1994
Revision 1.1, October, 1999

Statistical Monitoring Plan for Surface Water Monitoring

WDI Site #2 Hazardous Waste Landfill
MID 048 090 633

Revision 1.0, December 94
Revision 1.1, October 99

I. Introduction

The following statistical monitoring plan provides a description of the statistical procedures to be used for identifying a statistically significant increase of monitoring parameters in the surface water monitoring program for the above referenced facility. The program is intended to determine if hazardous waste constituents may be entering the storm water run-off from non-contact areas of the facility.

II. Statistical Evaluation

The statistical program provides two procedures to be used together for each set of monitoring data. The first procedure applies to the volatile organic and PCB compounds only and is not a true statistical test. For these compounds, any occurrence above the reported detection limit (which is a statistical quantity to some degree) is considered statistically significant. The second procedure is a comparison of the overall inorganic surface water quality to the average quality during a background period by using the sign test. This procedure is described in detail below.

Statistical Sign Test - The purpose of this statistical analysis of the surface water is to determine whether the overall surface water quality during a monitoring event is statistically different compared to "background" surface water quality. To determine the statistical significance of differences between monitoring and background samples, a test know as the sign test is used. This test applies to all inorganic parameters, which will generally be present in detectable concentrations. The sign test determines if enough of these parameters are higher than the background averages to conclude that there is a statistically significant difference in water quality.

The sign test will be performed at the 0.05 significance level to determine if the number of parameters that are present in the monitoring samples in higher concentrations than the background is statistically significant. To perform the sign test, the concentration of each inorganic monitoring parameter is compared to the background concentration for that sampling event. The current background concentrations utilized for the sign test are presented on Table 2. If the monitoring concentration is higher, then a "+" is assigned to that parameter; if the background concentration is higher then a "-" is assigned for that parameter; and if the concentration are equal then a "0" is assigned for that parameter. The total number of "+" parameters and the total number if "+" and "-" parameters are then used with the binomial probability table, Table 1, attached to this plan. To determine if the number of "+"parameters is statistically significant, the table is entered at n, the total number of "+" and "-" parameters and the corresponding value for y is determined for the largest number for alpha that is less than or equal to 0.05. This number y is the smallest number of "-" parameters that can be obtained without a statistically significant increase (e.g. if there are any less "-" parameters then there will be too many "+" parameters.) So the number of pluses is statistically significant if it is greater than the total number of pluses and minuses less the quantity y determined form the table. For instance, if there are eight parameters, the largest value of y corresponding to a value of alpha less than 0.05 is 1. Therefore, 8 - 1 = 7 plus values (or 8 plus values) would result in a failure of the test.

TABLE 1
BINOMIAL DISTRIBUTION
Alpha = P[X<y] for b(X;n,0.050)

n	y	Alpha	n	y	Alpha	n	y	Alpha	n	y	Alpha
1	0	0.5000	8	0	0.0039	12	0	0.0002	15	0	0.0000
1	1	1.0000	8	1	0.0352	12	1	0.0032	15	1	0.0005
			8	2	0.1445	12	2	0.0193	15	2	0.0037
2	0	0.2500	8	3	0.3633	12	3	0.0730	15	3	0.0176
2	1	0.7500	8	4	0.6367	12	4	0.1938	15	4	0.0592
2	2	1.0000	8	5	0.8555	12	5	0.3872	15	5	0.1509
			8	6	0.9648	12	6	0.6128	15	6	0.3036
3	0	0.1250	8	7	0.9961	12	7	0.0862	15	7	0.5000
3	1	0.5000	8	8	1.0000	12	8	0.9270	15	8	0.6964
3	2	0.8750				12	9	0.9807	15	9	0.8491
3	3	1.0000	9	0	0.0028	12	10	0.9968	15	10	0.9408
			9	1	0.0195	12	11	0.9998	15	11	0.9824
4	0	0.0625	9	2	0.0898	12	12	1.0000	15	12	0.9963
4	1	0.3125	9	3	0.2539				15	13	0.9995
4	2	0.6875	9	4	0.5000	13	0	0.0001	15	14	1.0000
4	3	0.9375	9	5	0.7461	13	1	0.0017	15	15	1.0000
4	4	1.0000	9	6	0.9102	13	2	0.0112			
			9	7	0.9805	13	3	0.0461			
5	0	0.0313	9	8	0.9980	13	4	0.1334			
5	1	0.1875	9	9	1.0000	13	5	0.2905			
5	2	0.5000				13	6	0.5000			
5	3	0.8125	10	0	0.0010	13	7	0.7095			
5	4	0.9687	10	1	0.0107	13	8	0.8666			
5	5	1.0000	10	2	0.0547	13	9	0.9539			
			10	3	0.1719	13	10	0.9888			
6	0	0.0156	10	4	0.3770	13	11	0.9983			
6	1	0.1094	10	5	0.6230	13	12	0.9999			
6	2	0.3437	10	6	0.8281	13	13	1.0000			
6	3	0.6562	10	7	0.9453						
6	4	0.8906	10	8	0.9893	14	0	0.0001			
6	5	0.9844	10	9	0.9990	14	1	0.0009			
6	6	1.0000	10	10	1.0000	14	2	0.0065			
						14	3	0.0287			
7	0	0.0078	11	0	0.0005	14	4	0.0898			
7	1	0.0625	11	1	0.0059	14	5	0.2120			
7	2	0.2266	11	2	0.0327	14	6	0.3953			
7	3	0.5000	11	3	0.1133	14	7	0.6047			
7	4	0.7734	11	4	0.2744	14	8	0.7880			
7	5	0.9375	11	5	0.5000	14	9	0.9102			
7	6	0.9922	11	6	0.7256	14	10	0.9713			
7	7	1.0000	11	7	0.8867	14	11	0.9935			
			11	8	0.9673	14	12	0.9991			
			11	9	0.9941	14	13	0.9999			
			11	10	0.9995	14	14	1.0000			
			11	11	1.0000						

Table 2.
Sign Test Background Data for Surface Water
Wayne Disposal, Inc. Site No. 2

Parameter	Units	Number of Values	Mean
Arsenic	mg/l	24	0.015
Barium	mg/l	24	0.64
Cadmium	mg/l	24	0.017
Calcium	mg/l	24	304
Chromium (total)	mg/l	24	0.06
Chromium (hexavalent)	mg/l	24	0.009
Iron	mg/l	24	46.4
Magnesium	mg/l	24	66
Manganese	mg/l	24	1.19
Mercury	mg/l	24	0.0007
Selemum	mg/l	24	0.0043
Silver	mg/l	24	0.01
Sodium	mg/l	24	28
Zinc	mg/l	24	0.54
Alkalinity (total)	mg/l	24	187
Alkalinity (bircarbonate)	mg/l	24	187
Alkalinity (carbonate)	mg/l	24	18
Chloride	mg/l	24	54
Fecal Coliforms	Count/100 ml	24	9637
Nitrate	mg/l	24	0.76
pH	Stnd. Units	24	7.5
Sulfate	mg/l	24	213
Tot. Susp. Solids	mg/l	21	2797

Notes:

Background data were complied from eight quarters during period from May 1989 to April 1991

Detection Limits values are used for data which are reported to be below the method detection limit.

Attachment 13

Leachate Monitoring Program Sampling and Analysis Plan

Section 28

LEACHATE MONITORING SAMPLING & ANALYSIS PLAN

WAYNE DISPOSAL, INC. SITE #2
MID 048 090 633

SAMPLING AND ANALYSIS PLAN FOR THE MONITORING OF LEACHATE AND LEACHATE LEVELS

WAYNE DISPOSAL, INC. SITE #2
MID 048 090 633

REVISION 3, MARCH 1996
REVISION 3.1, MAY 1999
REVISION 3.2, AUGUST 1999
REVISION 3.3, OCTOBER 2000
REVISION 3.4, FEBRUARY 2001
REVISON 3.5, MARCH 2001
REVISION 3.6, SEPTEMBER 2006
REVISION 3.7, NOVEMBER 2009
REVISION 3.8, FEBRUARY 2011
REVISION 3.9, AUGUST 2014

1.0 INTRODUCTION

The purpose of this document is to outline the procedures for monitoring leachate in compliance with current license and permit conditions and applicable regulations. Leachate monitoring includes the collection and analysis of leachate samples and monitoring leachate levels for the purpose of ensuring that leachate is effectively removed from operating and closed hazardous waste landfill cells.

Collection and analysis of leachate samples is conducted in order to characterize the leachate for the purpose of developing appropriate monitoring parameter lists for other monitoring programs such as groundwater and leak detection. Further, the composition of the leachate over time is an indication of the degree of stabilization of the wastes within the landfill.

Leachate level monitoring is necessary to ensure that leachate collection systems are functioning properly so as to limit the leachate head on the liner system. CFR 40 264.301(2) states that "The Regional Administrator will specify design and operating conditions in the permit to ensure that the leachate depth over the liner does not exceed 30 cm (1 foot)". Wayne Disposal, Inc. Site #2 monitors the volume of leachate pumped from each active and closed cell at the facility. The volume of leachate pumped from each cell per month is recorded in the operating log.

The following SAP describes how EQ maintains compliance with the conditions outlined above.

2.0 DESCRIPTION OF LEACHATE COLLECTION SYSTEMS

Leachate level control is a function of the design and operation of the leachate collection systems (LCS). Each LCS at WDI is designed to transmit leachate to the sump at rates sufficient to permit removal of leachate so that levels do not build up on the primary liner to a depth greater than one foot. The slope of the cell floor, permeability of granular materials, and the size and spacing of collector pipes are all taken into consideration in the design transmissivity of the LCS.

Once the leachate is conveyed to the collection sump, it must be removed at a rate sufficient to prevent leachate from backing up into the collection system to levels higher than one foot. The pumps are set within the sump beneath the level where the leachate conveyance pipes enter the sump (see Figure 1.). These 4" or 6" diameter HDPE pipes are directly on top of the liner. The pumps are set up on an automatic switch which turns the pump on when the leachate level in the sump rises to a certain level which is below the elevation of the pipes. As long as the pumps

keep the leachate levels in the sump below the top of the leachate collection system, then compliance with the one foot head rule is maintained. Therefore, the key to compliance is maintaining an operating collection system in each cell. Frequent inspection and swift repairs of these systems are necessary to ensure that any mechanical problems are remedied in a timely manner.

The volume of leachate pumped out of each sump is recorded on a totalizing flow meter which is placed in line in the discharge line from the pump. Leachate is conveyed to the wastewater pretreatment plant on site.

3.0 LEACHATE LEVEL AND VOLUME MEASUREMENTS

The keys to maintaining compliance with leachate level and volume record keeping requirements are frequency of inspection and maintenance of each system. To ensure proper performance of the leachate collection system, weekly inspections of the sump areas must be conducted. Figure 2 is a checklist form for recording the results of this weekly inspection. The main components of this inspection are determining leachate levels in the sump, whether the pump/meter is operating correctly and the monthly volume of leachate. An outline of these procedures in the form of a flow chart is included on Figure 3. The procedures for the weekly inspection are as follows:

Step #1. PUMP/METER FUNCTION

a. Take meter reading from flowmeter and record on form. If the meter has moved since the last reading then proceed to Step 2. If not, then proceed to step 1.b.

b. Change pump switch to "hand" position listen for the sound of the pump turning on and check for meter advancement. Then change pump switch back to "auto" position.

c. If the meter moves then proceed to step 2.

d. If meter does not move then:

i. Determine if pump intake is below leachate level in sump. This is done by visual inspection (can you see the pump above the leachate) and by sound (the pump makes a distinctive noise when trying to draw in air). If the levels are down, then the inspection is completed and the results should be noted on the form.

ii. If the pump intake is below the leachate level then further investigation is necessary. These next steps must be conducted in accordance with a confined space permit issued by the EHS Affairs Department. Record the apparent malfunction on the inspection form and report results to the Site Manager or his/her designee and proceed with steps 2 and 3.

Step #2. LEVEL MEASUREMENT

a. Measure the leachate level in sump from the top of the sump with an electronic water level sounding device.

b. Compare the depth to leachate with the minimum allowable depth listed on Figure 2. Determine whether the level is in compliance.

c. Record the result on the weekly inspection form.

d. Notify the Landfill or EHS Manager immediately if the levels are found to be above the allowable level.

Step #3. REPAIRS

a. Unless a specific problem is evident from the inspection (e.g. the pump doesn't turn on), the following steps should be conducted:

i. Remove the meter, switch back to "hand" position and check for flow.

ii. If there is flow, then field clean the meter, replace and check for meter advancement. If the meter advances, then switch back to "auto" position. If not, take the meter in for repair or replacement.

iii. If there is no flow, then disconnect power to pump and remove pump and pump switch from the sump. Inspect the electrical cord and the pump switch. Replace the pump and test functions. If the pump or the switch still doesn't work, remove the pump, have it power washed and get it repaired/replaced.

iv. If the pump and meter are functional but no flow is observed then arrangements must be made to clean out the pipes.

v. All actions taken and any repairs/replacements conducted must be reported to the Landfill or EHS Manager.

Note that pumping must continue as needed to keep leachate levels down even if the flow meter or the automatic pump switch is not functioning. If the meter is broken, note the time period in which there is no meter on line so that the missing volume data can be estimated. If the switch is bad, then the pump must be operated manually until the switch is fixed. The sump should be inspected daily to determine if pumping is required until the switch is fixed or until a pumping schedule suitable for maintaining the leachate level for that sump has been determined. If the pump itself is not working, then immediate steps must be made to replace and/or repair the pump. Spare parts and spare pumps must be kept in stock on site if they are not readily available from a reliable vendor.

The weekly inspection checklist forms are to be filed in the Landfill Manager's office. Also, the sumps must be inspected on a weekly basis for evidence of deterioration, etc. Any conditions noted that would require maintenance or repair should be noted on the weekly inspection form

(Figure 2) and reported to the Landfill Manager. Any repairs required on the sump or pump that is necessary to keep leachate levels in compliance must be given the highest priority.

On a monthly basis, the total volume recorded on the flow meters from each sump is summarized from the Weekly Inspection Checklist for Leachate Collection Systems onto an electronic spread sheet.

In addition to these inspections, periodic maintenance of the LCS is required. In particular, leachate clean-out pipes, where present, must be jetted once every two years unless experience indicates that a more or less frequent jetting program is necessary or adequate

4.0 LEACHATE SAMPLING AND ANALYSIS

Leachate samples are to be collected annually from each of the 18 currently operational collection sumps within Master Cells V, VI and VII as shown on Figure 4. When the additional phases -, of cell VI-F are constructed and put into operation, the two proposed leachate sump locations shown on Figure 4 must be sampled in accordance with this plan as well. The samples are collected during the third quarter of each year. Samples are collected by lowering a clean stainless steel sampling bucket (or disposable bailer) down into the sump and retrieving a sample. New (or dedicated) nylon rope is used each time a sump is sampled. The stainless steel bucket must be decontaminated between each sample location with cleaning solution and a distilled water rinse.

The sample is then carefully decanted into appropriate sampling containers. Samples for VOC's are collected first while ensuring that no headspace is present within the sampling vials.

Additional samples are then collected in order of decreasing volatility, semi-volatiles then total organic carbon then phenolics and finally metals and indicator parameters. Appropriate sample handling and container requirements are summarized on Figure 5. Metals are analyzed as "total metals" quantity; no filtration is required.

Protective gloves must be worn during sample collection and care should be taken to prevent spills on skin or clothing. Each sample container must be carefully labeled with the sampling location, time and date, identity of preservatives contained within and the sampler's initials. After collection, the samples shall be stored in a clean cooler containing ice or ice packs. The coolers containing samples must be stored in a secure location, on-site, until they are transported to the laboratory.

Field Quality Assurance/Quality Control samples must include:

- One trip blank for every ten samples collected. The trip blank must be stored in the cooler utilized for storing and shipping samples. The trip blank must be analyzed for VOCs.
- One field blank for each ten samples collected. The field blank samples are to be collected by filling an identical set of sample bottles at a given location with clean deionized water. The field blank samples must be analyzed VOCs.
- One blind duplicate for each sampling event. The duplicate must be collected by filling an identical set of sample bottles at a given location and submitting them for an identical analysis.

- One equipment blank per sampling day for each piece of non-dedicated sampling equipment utilized in the sampling process (i.e. the stainless steel bucket. The equipment blank must be collected by pouring clean deionized water over the decontaminated piece of equipment and collecting the rinsate in the appropriate jar for analysis. The equipment blank must be analyzed for VOCs.

A sample collection log (Figure 6) must be filled out at each sampling location. The log must be filled out to include the location, date, time, identity of sampler and a description of any unusual conditions encountered must be noted. A chain of custody form must be filled out for each sampling event. This form must be filled out fully for each sample submitted for analysis and each person responsible for the handling of these samples must sign and date the form. When the samples are delivered to the laboratory and the lab has signed for their receipt, a copy of this form must be retained on site in the operating record and another copy forwarded to QEHS Department.

Except as described below, each sample must be analyzed for the parameters listed on Figure 7, which also contains the analytical methods and targeted method detection limits. The detection limits listed on Table 7 (and Table 8) must be consistent with DEQ Policy and Procedures document OWMRP-111/115-8 or approved by MDEQ, and may need to be revised as analytical methods change. Exceptions to the parameter lists are as follows: 1) The PCB's listed on Figure 5 are only analyzed in samples from Master Cell VI. and 2) In order to fully characterize the leachate, each of the leachate sumps in MC V, MC VI-A (AN & AS) through VI-E and MC VII must be analyzed for a modified list of 40 CFR 264 Appendix IX parameters on a rotating basis.

The list is considered "modified" as dioxins and furans are analyzed at screening levels as opposed to a breakdown of the specific cogeners. Analysis of the cogeners requires the use of a specialty laboratory and the ultra-low detection limits have no practical use in this leachate characterization. Each year, two of the leachate samples must be analyzed for the modified list of Appendix IX parameters. The two cells sampled will change each year until all are sampled and then the process will be repeated throughout the operation of the facility. New cells will not be analyzed for the Appendix IX constituents until they have been producing leachate for at least one year. A list of Appendix IX parameters along with corresponding analytical methods and detection limits are presented on Figure 8. It is recognized that in most cases the detection limits shown on Figures 7 and 8 will not be attained due to sample dilutions and matrix effects.

Laboratory Quality control frequencies and precision/accuracy requirements are provided in the Groundwater Sampling and Analysis Plan for this facility, which includes the Quality Assurance Manual for the contract laboratory. This manual describes the internal policies, guidelines and procedures of Trimatrix and is not intended to describe the specific details of this particular monitoring program. Rather, we use this document as a guideline in evaluating Trimatrix's QA/QC and standard operating procedures to ensure that generally acceptable practices are employed.

5.0 REPORTING REQUIREMENTS

Within 60 days after each sampling event is completed, the analytical results must be submitted to MDEQ along with a summary of QA/QC data and the sampling documentation forms. The monthly leachate volumes as well as a summary of the leachate level data should be included in

this submittal. In addition to the reporting requirements described above, an annual leachate report must be filed with the MDEQ by March 1 of the following year. In this report, annual leachate production rates, leachate head levels and leachate analytical results are to be evaluated and summarized. This summary must also include a description of any non-compliances and associated corrective actions and of any major maintenance activities (such as jetting of leachate lines).

The leachate analytical data must be evaluated with respect to the need to refine secondary collection and groundwater monitoring programs by summarizing, in table form, the rate of detection and concentration of leachate monitoring parameters. The results of this summary will be compared to groundwater and leak detection parameter lists. Any parameter that is found in more than 50% of the leachate samples and/or in concentrations greater than 1 mg/L will be considered for inclusion in the leak detection and/or groundwater monitoring program(s). WDI will recommend whether to include such a parameter based on its chemical properties and any other relevant information.

Leachate volume and head level information must be evaluated in graphical and/or tabular form, respectively. Monthly and annual volumes for each cell must be plotted to determine if there are increases in production rates that should be evaluated. The head levels must be presented to show the dates and results of head measurements and identify any periods where heads exceed the 1 foot limit as well as the duration of the exceedance and the cause and correction of the exceedance.

SCHEMATIC OF LEACHATE COLLECTION SUMP ARRANGEMENT
WAYNE DISPOSAL SITE #2 HAZARDOUS WASTE LANDFILL

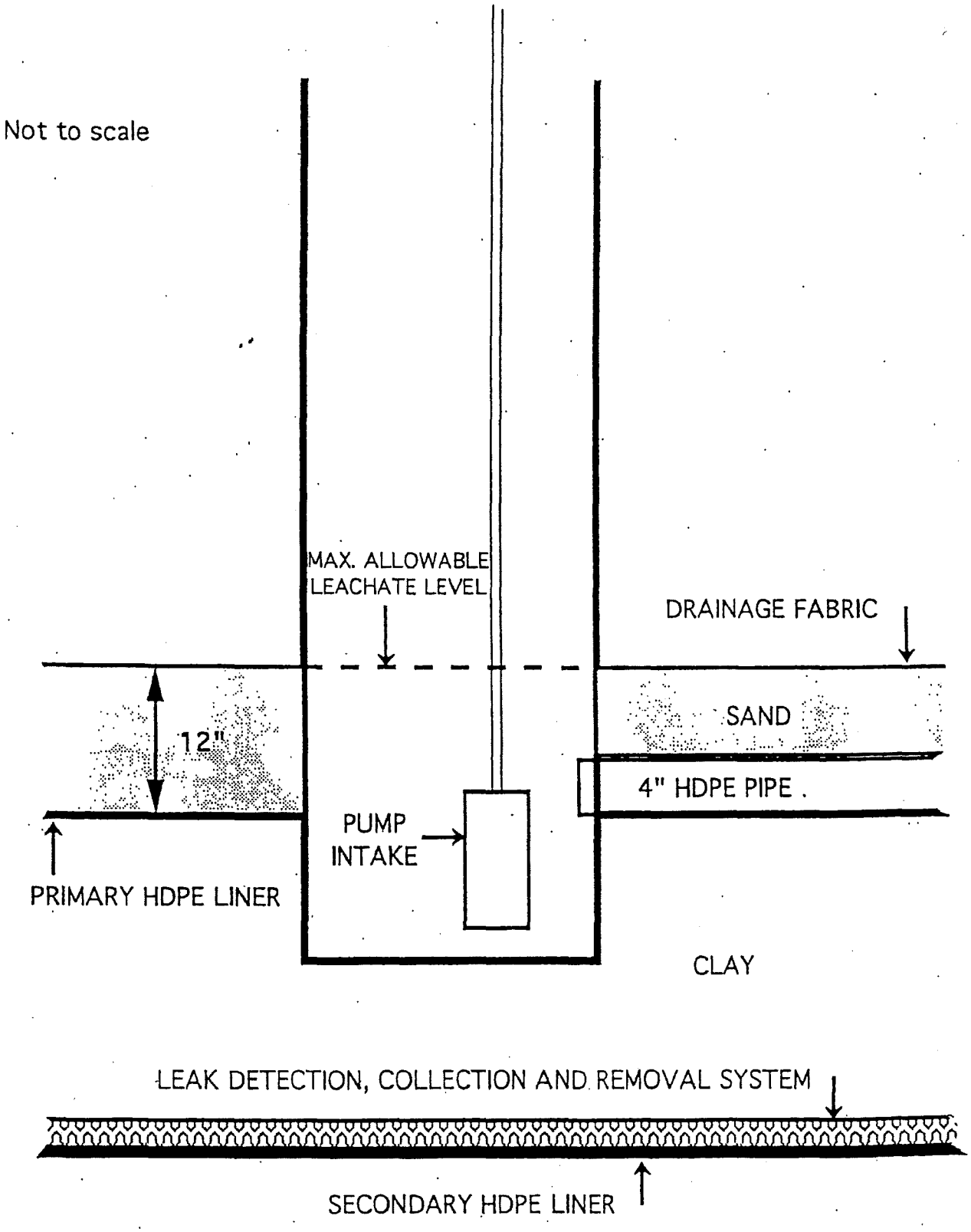


Figure 1

WEEKLY INSPECTION CHECKLIST FOR LEACHATE COLLECTION SYSTEMS
WAYNE DISPOSAL, INC. SITE #2 HAZARDOUS WASTE LANDFILL MASTER CELLS

Inspector: _____

Date: _____

CELL	METER READING	METER ADVANCE?		COMPLIANCE DEPTH TO LEACHATE (FT)	ACTUAL DEPTH TO LEACHATE (FT)	LEVEL IN COMPLIANCE?		PUMP FUNCTIONING?		METER FUNCTIONING?	
		Y	N			Y	N	Y	N	Y	N
V-A				68.8							
V-B				62.5							
V-C				55.9							
V-E				61.2							
VI-AS				127.0							
VI-AN				128.3							
VI-B				135.2							
VI-C				102.12							
VI-D				130.9							
VI-ENE				Not Yet Constructed							
VI-ENW				80							
VI-ESW				26							
VI-ESE				37							
VI-CONTACT											
VII-A				37.5							
VII-BN				49.3							
VII-BS				51.8							
VII-C				46.2							

COMMENTS/ACTIONS TAKEN: _____

NOTE: REPORT ITEMS NEEDING IMMEDIATE ATTENTION TO THE SITE MANAGER

Leachate Compliance Levels updated on 9/27/06 for MC-VI based upon top of manhole elevations

FIGURE 2

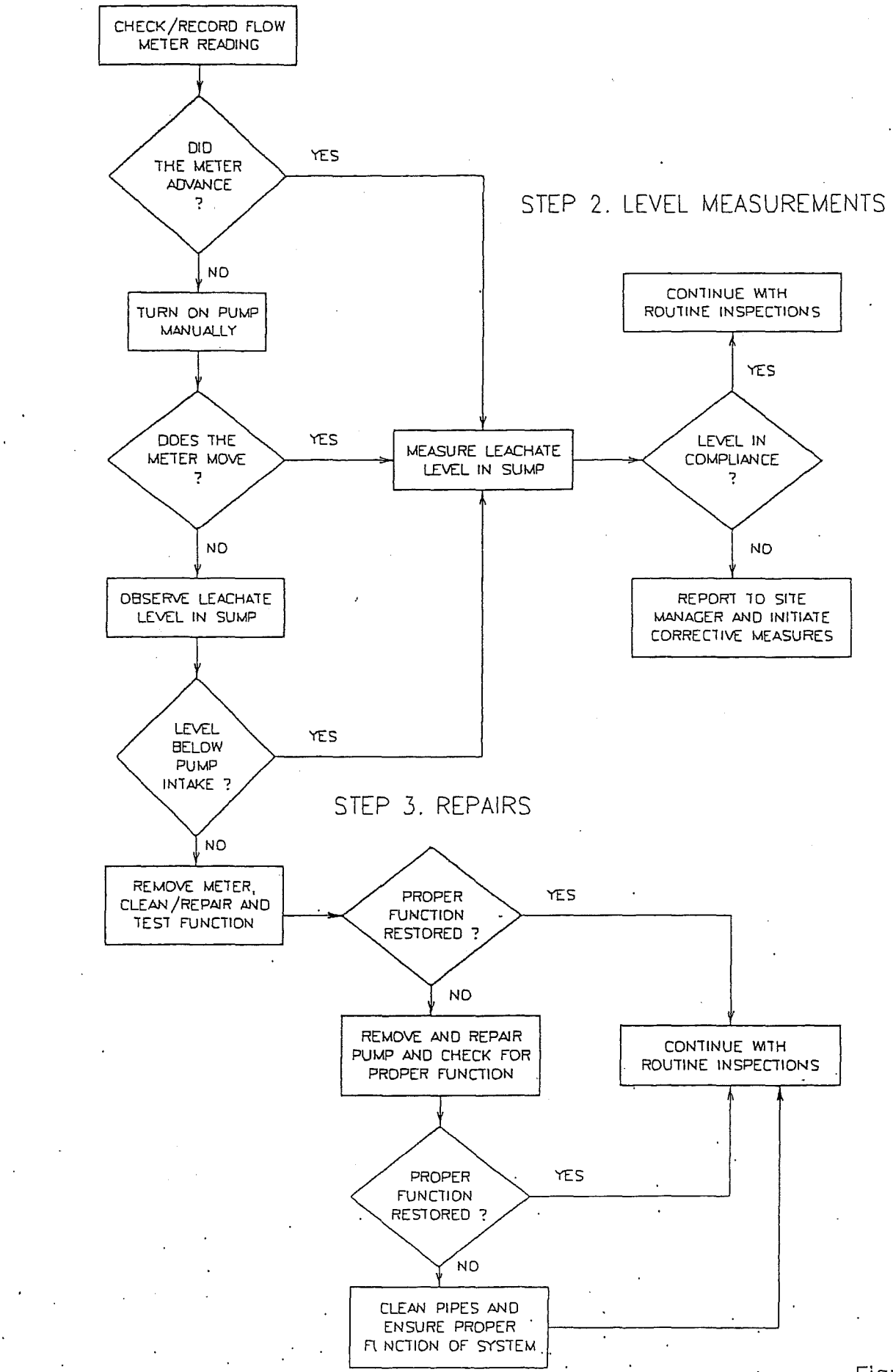

STEP 1. PUMP/METER FUNCTION
CHECK/RECORD FLOW METER READING
DID THE METER ADVANCE ?
YES
NO
TURN ON PUMP MANUALLY
DOES THE METER MOVE ?
YES
NO
OBSERVE LEACHATE LEVEL IN SUMP
LEVEL BELOW PUMP INTAKE ?
YES
NO
STEP 2. LEVEL MEASUREMENTS
MEASURE LEACHATE LEVEL IN SUMP
LEVEL IN COMPLIANCE ?
YES
CONTINUE WITH ROUTINE INSPECTIONS
NO
REPORT TO SITE MANAGER AND INITIATE CORRECTIVE MEASURES
STEP 3. REPAIRS
REMOVE METER, CLEAN/REPAIR AND TEST FUNCTION
PROPER FUNCTION RESTORED ?
YES
NO
REMOVE AND REPAIR PUMP AND CHECK FOR PROPER FUNCTION
PROPER FUNCTION RESTORED ?
YES
NO
CLEAN PIPES AND ENSURE PROPER FUNCTION OF SYSTEM
CONTINUE WITH ROUTINE INSPECTIONS

Figure 3.

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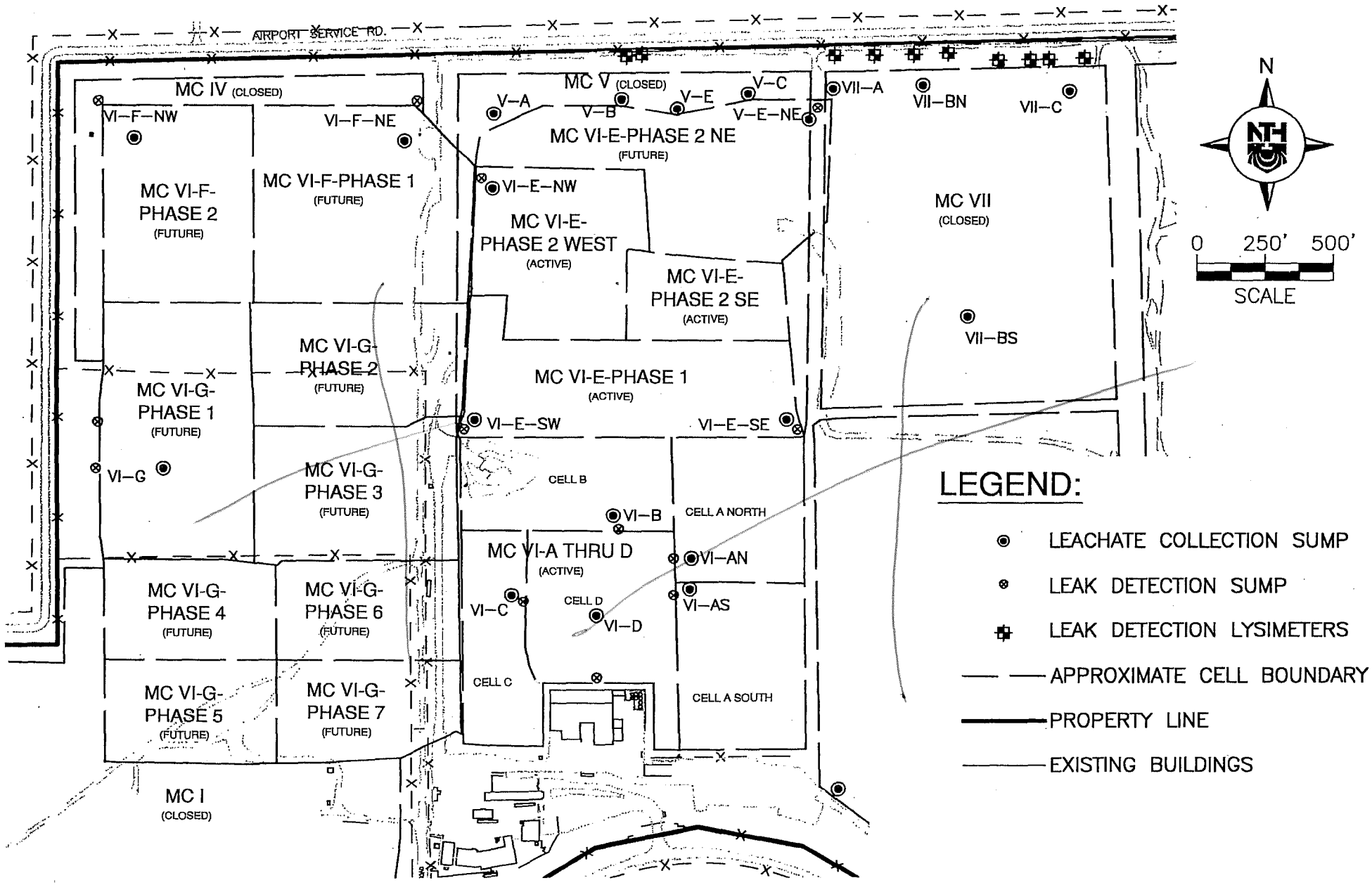

NTH PROJECT No.:	DESIGNED BY:	CHECKED BY:	DRAWING SCALE:	NTH Consultants, Ltd. Infrastructure Engineering and Environmental Services	LEACHATE COLLECTION & LEAK DETECTION LOCATIONS	FIGURE:
62-080376-00	KRO	DLP	AS SHOWN			4
CAD FILE NAME:	DRAWN BY:	INCEPTION DATE:	PLOT DATE:		WAYNE DISPOSAL, INC. SITE NO. 2 VAN BUREN TWP., WAYNE COUNTY, MICHIGAN	
080376-LCS	KRO	1/27/2011	2/8/11			

Figure 5. Handling Requirements of Monitoring Parameters

Parameter	Perservation	Holding Time	Bottle Type	Minimum Volume
Total Phenolics	1,2	28 Days	Glass	500 ml
Sulfate	2	28 Days	Plastic	50 ml*
Alkalinity	2	14 Days	Plastic	100 ml*
Chloride	2	28 Days	Plastic	50 ml*
Total Phosphorus	1,2	28 Days	Plastic	200 ml***
Total Cyanide	4	14 Days	Plastic	500 ml
Nitrate/Nitrite	1,2	48 Hours	Plastic	500 ml
Kjeldahl Nitrogen	1,2	28 Days	Plastic	200 ml***
Aluminum	3,5	6 Mos	Plastic	200 ml**
Antimony	3,5	6 Mos	Plastic	200 ml**
Arsenic	3,5	6 Mos	Plastic	200 ml**
Barium	3,5	6 Mos	Plastic	200 ml**
Beryllium	3,5	6 Mos	Plastic	200 ml**
Cadmium	3,5	6 Mos	Plastic	200 ml**
Calcium	3,5	6 Mos	Plastic	200 ml**
Chromium	3,5	6 Mos	Plastic	200 ml**
Chromium, Hexavalent	2,5	24 Hrs	Plastic	100 ml
Cobalt	3,5	6 Mos	Plastic	200 ml**
Copper	3,5	6 Mos	Plastic	200 ml**
Iron	3,5	6 Mos	Plastic	200 ml**
Potassium	3,5	6 Mos	Plastic	200 ml**
Lead	3,5	6 Mos	Plastic	200 ml**
Magnesium	3,5	6 Mos	Plastic	200 ml**
Manganese	3,5	6 Mos	Plastic	200 ml**
Mercury	3,5	6 Mos	Plastic	200 ml**
Molybdenum	3,5	6 Mos	Plastic	200 ml**
Nickel	3,5	6 Mos	Plastic	200 ml**
Selenium	3,5	6 Mos	Plastic	200 ml**
Silver	3,5	6 Mos	Plastic	200 ml**
Sodium	3,5	6 Mos	Plastic	200 ml**
Thallium	3,5	6 Mos	Plastic	200 ml**
Tin	3,5	6 Mos	Plastic	200 ml**
Vanadium	3,5	6 Mos	Plastic	200 ml**
Zinc	3,5	6 Mos	Plastic	200 ml**
pH		Immediate	Plastic	25 ml
Bicarbonate	2	14 Days	Plastic	100 ml*
Carbonate	2	14 Days	Plastic	100 ml*
Total Organic Carbon	1,7	28 Days	Glass	100 ml
Chemical Oxygen Demand	1,2	28 Days	Glass	250 ml
Specific Conductivity	2	28 Days	Plastic	100 ml
Semi-Volatile Organics	2	14 Days	Glass/Teflon	1000 ml
Volatile Organics	2,6	14 Days	Glass/Teflon	2x40 ml
PCBs	2	7 Days-Extraction	Glass	2 L
	2	40 Days-Analysis	Glass	40 ml

1) pH<2 with concentrated Sulfuric Acid
2) Store at 4 degrees Centigrade
3) pH<2 with nitric acid
4) pH>12 with sodium hydroxide
5) Filtered in the field or lab using 0.45 micron membrane filters on the daily of sample collection
6) 4 drops HCL, no headspace
7) pH<2 with hydrochloric acid

* Note: One liter for all these parameters stored similarily
** Note: One liter for all these parameters stored similarily
*** Note: One liter for all these parmeters stored similarily

Figure 6. Sample Collection Log for Leachate - WDI Site #2

Sample ID:	Sample Date:	Sample Time:
Sample Location:	Sampling Method:	Sampler:
Observations/Comments*:		

Sample ID:	Sample Date:	Sample Time:
Sample Location:	Sampling Method:	Sampler:
Observations/Comments*:		

Sample ID:	Sample Date:	Sample Time:
Sample Location:	Sampling Method:	Sampler:
Observations/Comments*:		

Sample ID:	Sample Date:	Sample Time:
Sample Location:	Sampling Method:	Sampler:
Observations/Comments*:		

Sample ID:	Sample Date:	Sample Time:
Sample Location:	Sampling Method:	Sampler:
Observations/Comments*:		

* Note anything unusual in the sample or conditions of or near the riser pipe

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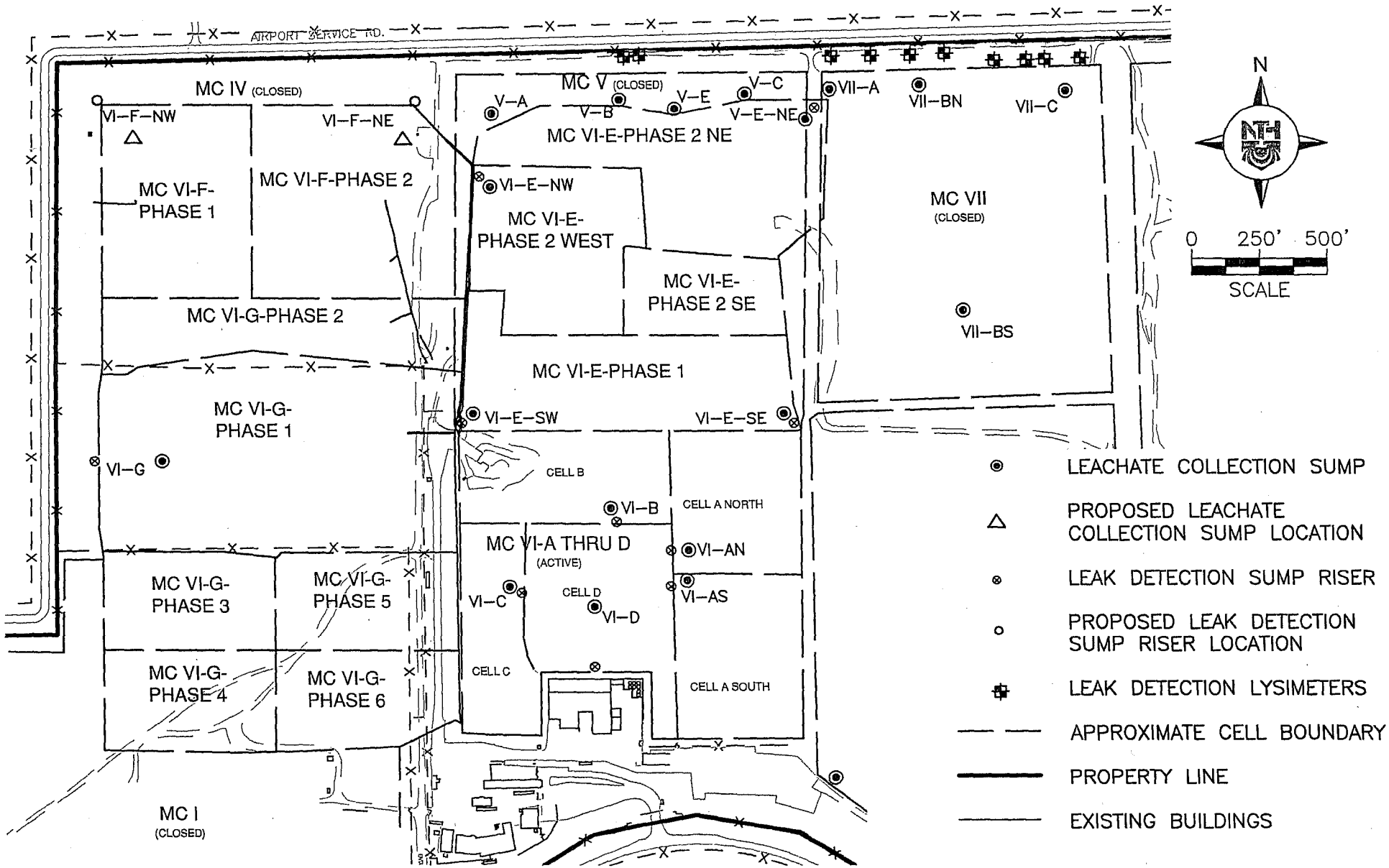

NTH PROJECT No.:	DESIGNED BY:	CHECKED BY:	DRAWING SCALE:	NTH Consultants, Ltd. Infrastructure Engineering and Environmental Services	LEACHATE COLLECTION & LEAK DETECTION LOCATIONS	FIGURE
62-080376-00	KRO	ACE	AS SHOWN			4
CAD FILE NAME:	DRAWN BY:	INCEPTION DATE:	PLOT DATE:		WAYNE DISPOSAL, INC. SITE NO. 2 VAN BUREN TWP., WAYNE COUNTY, MICHIGAN	
080376-LCS	KRO	1/27/2011	12/1/14			

FIGURE 7. METHODS AND DETECTION LIMITS

PARAMETER	MDL (mg/L)	METHOD
TOTAL PHENOLICS	0.01	9066
SULFATE	2	ASTM D516-90
TOTAL ALKALINITY	20	2320B
CHLORIDE	1.0	4500-Cl E
KJELDAHL NITROGEN	0.1	351.2
NITRATE/NITRITE	0.1	4500-NO3 F
TOTAL PHOSPHORUS	0.01	4500-P E
TOTAL CYANIDE	0.005	4500-CN G
ALUMINUM	0.05	6010/6020
ANTIMONY	0.001	6020
ARSENIC	0.001	6020
BARIUM	0.005	6010/6020
BERYLLIUM	0.001	6010/6020
CADMIUM	0.0002	6020
CALCIUM	1	6010
CHROMIUM	0.001	6010/6020
HEX. CHROMIUM	0.005	7196
COBALT	0.015	6010/6020
COPPER	0.001	6010/6020
IRON	0.02	6010
LEAD	0.001	6020
MAGNESIUM	1	6010
MANGANESE	0.005	6010/6020
MERCURY	0.0002	7470
MOLYBDENUM	0.025	6010/6020
NICKEL	0.002	6010/6020
POTASSIUM	0.1	6010
SELENIUM	0.001	7741/6020
SILVER	0.0002	6020/7760
SODIUM	1	6010
THALLIUM	0.002	6020/7841
TIN	0.5	6020
VANADIUM	0.002	6010/6020
ZINC	0.1	6010/6020
pH	N/A	4500-H B
BICARBONATE	10.0	2320B
CARBONATE	10.0	2320B
TOTAL ORGANIC CARBON	0.5	5310C
CHEMICAL OXYGEN DEMAN	10.0	5220D
SPEC. CONDUCTANCE	5.0	2510B
SEMI-VOLATILE ORGANICS*	**	8270
VOLATILE ORGANICS*	**	8260
PCB's	**	8082

* see attached lists of compounds

** detection limits are compound dependent

FIGURE 7 ORGANIC COMPOUNDS FOR LEACHATE MONITORING

VOLATILE ORGANIC PARAMETERS (8260)	MDL (mg/L)	SEMI-VOLATILE ORGANIC PARMETERS (8270)			
			MDL		MDL
Acetone	0.020	Acenapthene	0.001	Hexachlorobenzene	0.001
Bromodichloromethane	0.001	Acenapthylene	0.001	Hexachlorobutadiene	0.001
Bromoform	0.001	Anthracene	0.001	Hexachlorocyclopentadiene	0.010
Bromomethane	0.005	Benzidene	0.080	Hexachloroethane	0.001
Carbon Tetrachloride	0.001	Benzo(a)anthracene	0.001	Indeno (1,2,3-cd) pyrene	0.002
Chlorobenzene	0.001	Benzo(b)fluoranthene	0.001	Isophorone	0.001
Chloroethane	0.005	Benzo(k)fluoranthene	0.001	2-Methylnapthalene	0.005
2-Chloroethylvinyl Ether	0.010	Benzo(ghi)perylene	0.001	Napthalene	0.001
Chloroform	0.005	Benzoic Acid	0.050	2-Nitroaniline	0.020
Chloromethane	0.005	Benzo(a)pyrene	0.001	3-Nitoraniline	0.020
Dibromodifluoromethane	0.001	Benzyl alcohol	0.050	4-Nitroaniline	0.020
1,2 Dichlorobenzene	0.001	Bis (2-chloroethoxy) methane	0.002	Nitrobenzene	0.002
1,3 Dichlorobenzene	0.001	Bis (2-chloroethyl) ether	0.001	N-Nitrosodiphenylamine	0.002
1,4 Dichlorobenzene	0.001	Bis (2)chloroisopropyl) ether	0.001	N-Nitroso-di-n-propylamine	0.002
Dichlorodifluoromethane	0.001	Bis (2-ethylhexyl) phthalate	0.005	Phenanathrene	0.001
1,1-Dichloroethane	0.001	4-Bromo phenyl ether	0.002	Pyrene	0.001
1,2-Dichloroethane	0.001	Butyl benzyl phthalate	0.005	1,2,4-Trichlorobenzene	0.002
1,1-Dichloroethene	0.001	4-Chloroaniline	0.010	4-Chloro-3-methylphenol	0.005
1,2-Dichloroethene	0.001	2-chloronapthene	0.002	2-Chlorophenol	0.010
1,2 Dichloropropane	0.001	4-Chlorophenyl phenyl ether	0.001	2,4-Dichlorophenol	0.010
1,3 Dichloropropene	0.001	Chrysene	0.001	2,4-Dimethylphenol	0.005
1,1,2,2 Tetrachloroethane	0.001	Dibenz (a,h) anthracene	0.002	4,6-Dinitro-2-methylphenol	0.050
Tetrachloroethane	0.001	Dibenzofuran	0.004	2,4-Dinitrophenol	0.025
Tetrachloroethene	0.001	Di-n-butyl phthalate	0.005	2-Methylphenol	0.010
1,1,2-Trichloroethane	0.001	1,2-Dichlorobenzene	0.001	3-Methylphenol	0.010
1,1,1-Trichloroethane	0.001	1,3-Dichlorobenzene	0.001	4-Methylphenol	0.010
Trichloroethene	0.001	1,4-Dichlorobenzene	0.001	2-Nitrophenol	0.005
Trichlorofluoromethane	0.001	3,3'-Dichlorobenzene	0.020	4-Nitrophenol	0.025
Vinyl Chloride	0.001	Diethyl pthalate	0.005	Pentachlorophenol	0.020
Methylene Chloride	0.005	Dimethyl pthalate	0.005	Phenol	0.005
Methyl Ethyl Ketone	0.005	2,4-Dinitrotoluene	0.005	2,4,5-Trichlorophenol	0.005
Benzene	0.001	2,6-Dinitrotoluene	0.005	2,4,6-Trichlorophenol	0.004
Toluene	0.001	Di-n-octyl phthalate	0.005		
Ethylbenzene	0.001	Fluoranthene	0.001		
Total Xylenes	0.003	Fluorene	0.001		
4-Methyl-2-Pentanone	0.005				
Isobutyl Alcohol	1.000				
1,4-Dioxane	0.001				
PCB's (Method 8082)					
PCB-1016	0.0001	PCB-1232	0.0001	PCB-1248	0.0001
PCB-1221	0.0001	PCB-1242	0.0001	PCB-1254	0.0001
PCB-1260	0.0001				

FIGURE 8. METHODS AND DETECTION LIMITS FOR APPENDIX IX PARAMETERS

Constituent	Method	Detection Limit	Unit
Cyanide, Total	9012	0.005	mg/L
Sulfide	9030	0.020	mg/L
Antimony	6010/6020	0.001	mg/L
Arsenic	7061	0.001	mg/L
Barium	6010	0.005	mg/L
Beryllium	6010	0.001	mg/L
Cadmium	6010	0.0002	mg/L
Chromium	6010	0.001	mg/L
Cobalt	6010	0.015	mg/L
Copper	6010	0.001	mg/L
Lead	6010	0.001	mg/L
Mercury	7470	0.0002	mg/L
Nickel	6010/6020	0.002	mg/L
Selenium	7741	0.001	mg/L
Silver	6010	0.0002	mg/L
Thallium	6010	0.002	mg/L
Tin	6010	0.200	mg/L
Vanadium	6010	0.002	mg/L
Zinc	6010	0.010	mg/L
Aldrin	8081	0.01	ug/L
alpha-BHC	8081	0.02	ug/L
beta-BHC	8081	0.02	ug/L
delta-BHC	8081	0.02	ug/L
gamma-BHC (Lindane)	8081	0.02	ug/L
Chlordane	8081	0.01	ug/L
4,4'-DDD	8081	0.02	ug/L
4,4'-DDE	8081	0.02	ug/L
4,4'-DDT	8081	0.02	ug/L
Dieldrin	8081	0.02	ug/L
alpha-Endosulfan	8081	0.02	ug/L
beta-Endosulfan	8081	0.03	ug/L
Endosulfan sulfate	8081	0.05	ug/L
Endrin	8081	0.02	ug/L
Endrin aldehyde	8081	0.02	ug/L
Heptachlor	8081	0.01	ug/L
Heptachler epoxide	8081	0.01	ug/L
Isodrin	8081	0.05	ug/L
Kepone	8081	0.10	ug/L
Methoxychlor	8081	0.05	ug/L
Toxaphene	8081	0.1	ug/L
PCB-1016	8082	0.10	ug/L
PCB-1221	8082	0.10	ug/L
PCB-1232	8082	0.10	ug/L
PCB-1242	8082	0.10	ug/L
PCB-1248	8082	0.10	ug/L
PCB-1254	8082	0.10	ug/L
PCB-1260	8082	0.10	ug/L
Disulfoton	8270	2.00	ug/L
Methyl parathion	8270	0.50	ug/L
Thionazin*	8270	10.0	ug/L
Parathion	8270	0.50	ug/L
Phorate	8140	2.00	ug/L

FIGURE 8. METHODS AND DETECTION LIMITS FOR APPENDIX IX PARAMETERS

Constituent	Method	Detection Limit	Unit
2,4-dichlorophenoxy-acetic acid	8150	0.50	ug/L
2,4,5-TP (Silvex)	8150	0.50	ug/L
2,4,5-T	8150	0.50	ug/L
Acetone	8260	0.020	mg/L
Benzene	8260	0.001	mg/L
Bromodichloromethane	8260	0.001	mg/L
Bromoform	8260	0.001	mg/L
Bromomethane	8260	0.005	mg/L
2-Butanone	8260	0.005	mg/L
Carbon disulfide	8260	0.001	mg/L
Carbon Tetrachloride	8260	0.001	mg/L
Chlorobenzene	8260	0.001	mg/L
Chloroethane	8260	0.005	mg/L
2-Chloroethylvinyl ether	8260	0.010	mg/L
Chloromethane	8260	0.005	mg/L
Dibromochloromethane	8260	0.001	mg/L
1,2-Dichlorobenzene	8260	0.001	mg/L
1,3-Dichlorobenzene	8260	0.001	mg/L
1,4-Dichlorobenzene	8260	0.001	mg/L
1,1-Dichloroethane	8260	0.001	mg/L
1,2-Dichloroethane	8260	0.001	mg/L
1,1-Dichloroethene	8260	0.001	mg/L
1,2-Dichloroethene (total)	8260	0.001	mg/L
1,2-Dichloropropane	8260	0.001	mg/L
cis-1,3-Dichloropropene	8260	0.001	mg/L
trans-1,3-Dichloropropene	8260	0.001	mg/L
Ethylbenzene	8260	0.001	mg/L
2-Hexanone	8260	0.005	mg/L
Methylene Chloride	8260	0.005	mg/L
4-Methyl-2-pentanone	8260	0.005	mg/L
Styrene	8260	0.001	mg/L
1,1,2,2-Tetrachloroethane	8260	0.001	mg/L
Toluene	8260	0.001	mg/L
1,1,1-Trichloroethane	8260	0.001	mg/L
1,1,2-Trichloroethane	8260	0.001	mg/L
Trichloroethene	8260	0.001	mg/L
Vinyl acetate	8260	0.050	mg/L
Vinyl chloride	8260	0.001	mg/L
Xylenes (total)	8260	0.003	mg/L
Acetonitrile	8260	0.050	mg/L
Acrolein	8260	0.100	mg/L
Acrylonitrile	8260	0.050	mg/L
2-Chloro-1,3-butadiene (Chloroprene)	8260	0.050	mg/L
3-Chloropropene(Allyl Chloride)	8260	0.010	mg/L
1,2-Dibromo-3-chloropropane	8260	0.005	mg/L
1,2-Dibromomethane	8260	0.001	mg/L
trans-1,4-Dichloro-2-butene	8260	0.005	mg/L
Dichlorodifluoromethane	8260	0.005	mg/L
1,4-dioxane	8260	0.001	mg/L
Ethyl methacrylate	8260	0.300	mg/L
Iodomethane	8260	0.050	mg/L
Isobutyl alcohol	8260	1.0	mg/L

FIGURE 8. METHODS AND DETECTION LIMITS FOR APPENDIX IX PARAMETERS

Constituent	Method	Detection Limit	Unit
Methacrylonitrile	8260	0.010	mg/L
Methyl methacrylate	8260	0.010	mg/L
Propionitrile	8260	0.100	mg/L
1,1,1,2-Tetrachloroethane	8260	0.001	mg/L
Trichlorofluoromethane	8260	0.001	mg/L
1,2,3-Trichloropropane	8260	0.001	mg/L
Acetopheneone	8270	0.010	mg/L
2-Acetylaminofluorene	8270	0.010	mg/L
4-Aminobiphenyl	8270	0.010	mg/L
Aniline	8270	0.040	mg/L
Aramite	8270	0.010	mg/L
Chlorobenzilate	8270	0.010	mg/L
Diallate	8270	0.010	mg/L
Dimethoate	8270	0.010	mg/L
p-(Dimethylamino)azobenzene	8270	0.010	mg/L
7,12-Dimethylbenz[a]anthracene	8270	0.010	mg/L
3,3'-Dimethylbenzidine	8270	0.040	mg/L
alpha, alpha-Dimethyphenethlamine	8270	0.100	mg/L
1,3-Dinitrobenzene	8270	0.010	mg/L
Diphenylamine*	8270	0.010	mg/L
Ethyl methanesulfonate	8270	0.010	mg/L
Farmphur	8270	0.010	mg/L
Hexachlorodibenofurans	8270	0.010	mg/L
Hexachlorodibenzo-p-dioxins	8270	0.010	mg/L
Hexachloropropene	8270	P/A	mg/L
Isosafrole	8270	0.010	mg/L
Methapyrilene	8270	0.010	mg/L
3-Methylcholanthrene	8270	0.080	mg/L
Methyl methanesulfonate	8270	0.040	mg/L
1,4-Naphthoquinone	8270	0.010	mg/L
1-Naphthylamine	8270	0.010	mg/L
2-Naphthylamine	8270	0.010	mg/L
5-Nitro-o-toluidine	8270	0.010	mg/L
4-Nitroquinoline-1-oxide	8270	0.010	mg/L
N-Nitroso-di-n-butylamine	8270	0.010	mg/L
N-Nitrosodiethylamine	8270	0.010	mg/L
N-Nitrosodimethylamine	8270	0.005	mg/L
N-Nitrosomethylethlamine	8270	0.005	mg/L
N-Nitrosomorpholine	8270	0.010	mg/L
N-Nitrosopyrrolidine	8270	0.010	mg/L
N-Nitrosopiperdine	8270	0.010	mg/L
Pentachlorobenzene	8270	0.010	mg/L
Pentachlorodibenzofurans	8270	0.010	mg/L
Pentachlorodibenzo-p-dioxins	8270	0.010	mg/L
Pentachloroethane	8270	0.010	mg/L
Pentachloronitrobenzene	8270	0.010	mg/L
Phenacetin	8270	0.010	mg/L
p-Phenylene diamine	8270	0.010	mg/L
2-Picoline	8270	0.080	mg/L
Pronamide	8270	0.080	mg/L
Pyridine	8270	0.020	mg/L
Safrole	8270	0.010	mg/L

FIGURE 8. METHODS AND DETECTION LIMITS FOR APPENDIX IX PARAMETERS

Constituent	Method	Detection Limit	Unit
Sulfotepp**	8270	0.010	mg/L
1,2,4,5-Tetrachlorobezene	8270	0.010	mg/L
Tetrachlorodibenzofurans	8270	0.010	mg/L
Tetrachloroibenzo-p-dioxins	8270	0.010	mg/L
o-Toluidine	8270	0.010	mg/L
o,o,o,-Triethylphosphorothioate	8270	0.010	mg/L
1,3,5-Trinitrobenzene	8270	0.010	mg/L
Tris (2,3-dibromopropyl) phosphate	8270	0.200	mg/L
2,6-Dichlorophenol	8270	0.010	mg/L
Dinoseb	8270	0.020	mg/L
Hexachlorophene	8270	0.080	mg/L
3-Methylphenol	8270	0.010	mg/L
2, 3,4,6-Tetrachlorophenol	8270	0.010	mg/L
Acenaphthene	8270	0.001	mg/L
Acenaphthylene	8270	0.001	mg/L
Anthracene	8270	0.001	mg/L
Benzidine	8270	0.080	mg/L
Benzo (a) anthracene	8270	0.001	mg/L
Benzo (b) fluoranthene	8270	0.001	mg/L
Benzo (k) fluoranthene	8270	0.001	mg/L
Benzo (ghi) perylene	8270	0.001	mg/L
Benzoic acid	8270	0.050	mg/L
Benzo (a) pyrene	8270	0.001	mg/L
Benzyl alcohol	8270	0.050	mg/L
Bis (2-chloroethoxy) methane	8270	0.002	mg/L
Bis (2-chloroethyl) ether	8270	0.001	mg/L
Bis (2-chloroisopropyl) ether	8270	0.001	mg/L
Bis (2-ethylhexyl) phthalate	8270	0.005	mg/L
4-Bromophenyl phenyl ether	8270	0.002	mg/L
Butyl benzyl phthalate	8270	0.005	mg/L
4-Chloroaniline	8270	0.010	mg/L
2-Chloronaphthalene	8270	0.002	mg/L
4-Chlorophenyl phenyl ether	8270	0.001	mg/L
Chrysene	8270	0.001	mg/L
Dibenz (a,h)anthracene	8270	0.002	mg/L
Dibenzofuran	8270	0.004	mg/L
Di-n-butyl phthalate	8270	0.005	mg/L
1,2-Dichlorobenzene	8270	0.010	mg/L
1,3-Dichlorobenzene	8270	0.010	mg/L
1,4-Dichlorobenzene	8270	0.010	mg/L
3,3'-Dichlorobenzidine	8270	0.020	mg/L
Diethyl phthalate	8270	0.005	mg/L
Dimethyl phthalate	8270	0.005	mg/L
2,4-Dinitrotoluene	8270	0.005	mg/L
2,6-Dintrotoluene	8270	0.005	mg/L
Di-n-octyl phthalate	8270	0.005	mg/L
Fluoranthene	8270	0.001	mg/L
Fluorene	8270	0.001	mg/L
Hexachlorobenzene	8270	0.001	mg/L
Hexachlorobutadiene	8270	0.001	mg/L
Hexachlorocyclopentadiene	8270	0.010	mg/L
Hexachloroethane	8270	0.001	mg/L

FIGURE 8. METHODS AND DETECTION LIMITS FOR APPENDIX IX PARAMETERS

Constituent	Method	Detection Limit	Unit
Indeno (1,2,3-cd) pyrene	8270	0.002	mg/L
Isophorone	8270	0.001	mg/L
2-Methylnaphthalene	8270	0.005	mg/L
Naphthalene	8270	0.001	mg/L
2-Nitroaniline	8270	0.020	mg/L
3-Nitroaniline	8270	0.020	mg/L
4-Nitroaniline	8270	0.020	mg/L
Nitrobenzene	8270	0.002	mg/L
N-Nitrosodiphenylamine*	8270	0.002	mg/L
N-Nitroso-di-n-propylamine	8270	0.002	mg/L
Phenanthrene	8270	0.001	mg/L
Pyrene	8270	0.001	mg/L
1,2,4-Trichlorobenzene	8270	0.002	mg/L
4-Chloro-3-methylphenol	8270	0.005	mg/L
2-Chlorophenol	8270	0.010	mg/L
2,4-Dichlorophenol	8270	0.010	mg/L
2,4-Dimethylphenol	8270	0.005	mg/L
4,6-Dinitro-o-cresol	8270	0.050	mg/L
2,4-Dinitrophenol	8270	0.025	mg/L
2-Methylphenol	8270	0.010	mg/L
4-Methylphenol	8270	0.010	mg/L
2-Nitrophenol	8270	0.005	mg/L
4-Nitrophenol	8270	0.025	mg/L
Pentachlorophenol	8270	0.020	mg/L
Phenol	8270	0.005	mg/L
2,4,5-Trichlorophenol	8270	0.005	mg/L
2,4,6-Trichlorophenol	8270	0.004	mg/L

Attachment 14

Leak Detection Monitoring Program Sampling and Analysis Plan

Section 29

LEAK DETECTION, COLLECTION AND REMOVAL SYSTEMS SAMPLING & ANALYSIS PLAN

MASTER CELL VI
WAYNE DISPOSAL, INC. SITE #2
MID 048 090 633

SAMPLING AND ANALYSIS PLAN FOR LEAK DETECTION, COLLECTION AND REMOVAL SYSTEMS

MASTER CELL VI
WAYNE DISPOSAL, INC. SITE #2
MID 048 090 633

REVISION 4.1, MAY 1999
REVISION 4.2, AUGUST 1999
REVISION 4.3, OCTOBER 2000
REVISION 4.4, FEBRUARY 2001
REVISION 4.5, MARCH 2001
REVISION 4.6, SEPTEMBER 2006
REVISION 4.7, OCTOBER 2009
REVISION 4.8, FEBRUARY 2011
REVISION 4.9, AUGUST 2014

1.0 INTRODUCTION

The following sampling and analysis plan outlines the standard procedures for measuring flow volumes and for the collection and analysis of samples of the liquids collected from the leak detection, collection and removal system (LDCRS) in Master Cell VI. There are currently tent LDCRS sumps within Master Cell VI: VI-A South, VI-A North, VI-B, VI-C and VI-D, VI-E-SE, VI-E-SW, VI-E-NW, VI-ENE and VI-G (phase 1). The locations of these sumps are shown on Attachment A. Three additional LDCRS sumps will located in subsequent phases of master cells , MC-VI-F and MC-VI -G however these will not be operational until these cells are constructed and begin to receive waste.

This document has been prepared to direct the efforts of monitoring personnel in the collection of samples and volume measurements so as to meet the requirements of the Operating Licnese issued under Part 111 of Michigan Act 451 for the facility and to ensure sound practices for the collection of these data.

This plan must be revised if there are any changes to the equipment or procedures contained herein. All proposed changes must be submitted to the Office of Waste Management and Radiological Protection (OWMRP) of the Michigan Department of Environmental Quality (MDEQ) for review and approval prior to implementation.

2.0 PUMPING/SAMPLING EQUIPMENT

Each LDCRS sump must be equipped with a Grundfos Redi-Flo2™ submersible pump with a Redi-Flo2 controller package and totalizing flow meter, or alternative pumping equipment that is approved by the OWMRP. The installation and operating instructions for this system are included in Attachment B. These pumps were selected for the following attributes: 1) they are composed of stainless steel and Teflon and thus have low potential to impact the quality of environmental samples, 2) the pumps are designed to collect groundwater samples with minimal aeration or perturbation of the sample and, 3) with the controller package the pumping rates are adjustable with high rates for removing liquids from the sump and low rates for sampling. Any alternative pump system installed in the LDCRS should have similar attributes for pumping and for collecting samples.

The reinforcement of the LDCRS in Master Cell VI subcell A-North completed in August, 2006 required the installation of a Black Hawk Model 101 pump system. This system was selected for its ability to draw water from a suction tube that extends through the 1-inch diameter slipline. The installation and operating instructions for this system are included in Attachment B.

The discharge tube for the pumps is composed of HDPE. At the surface, this tube is connected to a stainless steel or PVC discharge tube with the flow meter in line. The opening at the top of each LDCRS riser must be tightly covered with a cap in which the discharge tube and electrical cable penetrate through sealed ports. The discharge tube and electrical cable must be configured such that it does not come into contact with the ground surface and such that the end hava a valve that is protected. Any changes to the configuration of the LDCRS riser pipe as the waste surface ascends must ensure that the sampling tube is not susceptible to contamination.

3.0 VOLUME AND FIELD MEASUREMENTS

The volume of liquids removed from each LDCRS must be recorded weekly on Attachment C. The volume readings from the flow meters are generally collected during the weekly inspection. At the end of each month, Attachment C must be submitted to the EHS Department for recording and evaluation. The weekly volume data must be evaluated each month to determine the average flow rate produced on a gallons-per-acre-per day basis..

In addition to the weekly volume recording, each LDCRS must be inspected on a weekly basis to ensure that there is no evidence of damage or tampering that could allow waste or waste constituents to have entered the system. The weekly/after storm inspection form in the Inspection Plan is used for documenting these inspections. This form must be fully completed with evidence of malfunctioning equipment or other potential problems described in detail.

Once per month, a sample of the water from each LDCRS sump must be field tested for pH and specific conductivity. These values must be recorded on Attachment C. The monthly volume data and field parameter data must be submitted to the EHS Department at the end of each month.

4.0 COLLECTION OF SAMPLES

Unless there is an insufficient amount of liquid generated by a LDCRS during a month's time (time between monthly purging/volume recording events), samples must be collected for analysis on a quarterly basis from each LDCRS sump. In addition, any sump which yields volumes above the maximum expected volume (see Section 7.1) during a monthly purging/volume recording event must be sampled and analyzed for the quarterly parameter list. Further, any time a monthly field specific conductivity value exceeds the maximum expected value (see Section 7.1) a sample must be collected and analyzed for quarterly parameters, unless the conductivity measurement was made during the collection of the quarterly sample for that sump.

Prior to collecting the samples, the sump must be pumped until a minimum of 20 gallons are removed in order to ensure that the lines have been flushed (this is approximately 3 tubing volumes) unless the production rate of the sump indicates that less than 20 gallons will be available. Prior to sampling the flow rate of the pump must be throttled back to the minimum deliverable flow rate and then the samples are collected. The sump then must be pumped until dry.

Samples are collected within Wayne Disposal, Inc, nitrogen glove box. Prior to sampling, the glove box is purged with nitrogen for approximately 20 minutes. The sample containers are placed within the box during purging. The glove box is connected to the LDCRS pumps with a fitting that allows new Tygon tubing to be used for each sample. At the time of sampling, the flow from the LDCRS is diverted into the glove box by turning the valve on the back of the box. All containers are then filled within the box while under positive pressure from the nitrogen. All containers are closed before opening the glove box to remove them.

During the sample event, specific conductance and pH of the liquid must be measured on a sample of the liquid. The volume purge data and pH/conductance data for each sump must be recorded on the Attachment C.

Samples for VOC's are collected first while ensuring that no headspace is present within the sampling vials. Next, fill the bottles for total organic carbon, total phenolics and dissolved metals in that order. Finally, collect the remaining miscellaneous samples (e.g. sulfate, chloride, etc.). All samples are to be collected in the appropriate containers with the appropriate preservatives as outlined on Attachment D, "Handling Requirements of Monitoring Parameters." Care must be taken to ensure that preservatives are not spilled during sampling. Samples for dissolved metals may be field filtered with an in-line 0.45 micron filter cartridge and acidified to pH < 2 with HNO3, or, filtered and preserved at the laboratory upon delivery.

A trip blankand a field blank for VOC analyses must be maintained and submitted for analysis for each 10 samples collected and/or for each day samples are collected. In addition, one blind duplicate samples must be submitted for complete analyses for every other sampling event (two per year). Each sample container must be carefully labeled with the sampling location, time and date, identity of preservatives contained within and the sampler's initials. After collection, the samples shall be stored in a clean cooler containing ice or ice packs. The coolers containing samples must be stored in a secure location until transport to the laboratory.

5.0 ANALYTICAL PROCEDURES

Each sample is to be analyzed for the parameters listed on Attachment E, "Method Detection Limits for Organic and Inorganic Parameters." The analytical methods and targeted method detection limits must be those specified in Policy and Procedures Document OWMRP-111/115-8 unless the MDEQ approves alternate detection limits. If a revised OWMRP-111/115-8 is published by MDEQ, Attachment E must be modified (if necessary) to be consistent with the revisions. Laboratory Quality control frequencies and precision/accuracy requirements are provided in the Quality Assurance Manual for the current contract laboratory, TriMatrix, which is contained in the Groundwater Sampling and Analysis Plan for this facility. This manual describes the internal policies, guidelines and procedures of Trimatrix. This manual is not intended to describe the specific details of this particular monitoring program. Rather, we are to use this document as a guideline in evaluating Trimatrix's QA/QC and standard operating procedures to ensure that generally acceptable practices are employed.

6.0 RECORD KEEPING

In addition to the inspection/volume measurement forms contained in Attachment C and the weekly inspections, there are three other items required to ensure adequate record keeping for the LDCRS monitoring program. First, a field notebook must be maintained during sampling which includes, at a minimum, the identity of sampling personnel, the dates and time when samples are collected, a description of the sampling event (i.e. routine monthly, etc.), volume meter readings, and any pertinent observations of sample characteristics or sampling environment. Second, an equipment inventory, repair and maintenance log must be maintained in the Engineering Field Office at the site. This log shall contain the serial numbers of all sampling equipment and a record of any repairs, maintenance, calibration or replacement of this equipment. Finally, a chain of custody form must be filled out for each sampling event. A sample copy is included as Attachment F. This form must be filled out fully for each sample submitted for analysis and each person responsible for the handling of these samples must sign and date the form. When the samples are delivered to the laboratory and the lab has signed for their receipt, a copy of this form must be retained. Copies of these forms must then be transmitted to the EHS Department along with volume records.

7.0 DATA ANALYSIS AND REPORTING

Data analysis and reporting are required for both the volume data and the analytical data. Both volume and analytical data are evaluated statistically to determine if there has been a significant change.

7.1 Volume Rate Analysis

Volume data must be evaluated monthly to determine an average daily flow rate in gallons-per-acre-per-day (gpad). This is done by utilizing the following formula:

Flow Rate (gpad) = (Total Volume (gal)/Time (days))/Area of LDCRS (acres)

Areas, in acres, for the seven LDCRS are as follows: VI-AS (7.65), VI-AN (5.83), VI-B (6.13), VI-C (4.87) VI-D (7.24), VI-ESE (8.9), VI-ESW (4.6), VI-ENW (9.4), VI-ENE (13.6) and VI-G Phase 1 (17). Areas, in acres, for the future LDCRS for future phases of Cells VI-F and VI-G will be calculated based on as-built drawings.

Experience with LDCRS volume rate data suggest the following behaviors are expected: 1) volume rates generally decrease over time, 2) the rates are dependent on filling rates and initial moisture content of the compacted clay component of the area being filled, and 3) short term fluctuations in rates (e.g. weekly or daily) may be large compared to average monthly rates. Evaluating the volume rate data as an indication of performance of the primary liner must take into account the expected behavior of LDCRS.

The volume data for each individual LDCRS are evaluated by comparing each monthly rate to a maximum expected rate which is based on a moving window to account for trends or fluctuations. The maximum expected rate is defined as the mean plus three standard deviations calculated from the previous two years data for each sump individually. It must be noted that an exceedance of the maximum expected rate may be a normal response to an increase in the filling rate or the return to active filling over an area which has not received waste for a period of time. The volume data must be routinely reported to MDEQ with the quarterly analytical data. However, if the monthly volume yields a rate greater than the maximum expected rate then a

sample must be collected and analyzed for the parameters listed on Attachment E as soon as practical (allowing time for sump to recharge). The MDEQ must be notified of the nature of the exceedance and the intention to sample. Steps should also be taken to determine if increases in flow rate corresponds to filling rates or filling location as these may apply to the affected cell.

7.2 Evaluation of Field Specific Conductance Data

The monthly specific conductance data from each LDCRS sump must be evaluated for increases compared to recent data. This is done by comparing the measured specific conductance to the mean plus three standard deviations calculated from the previous eight conductance measurements from that sump. If the measured conductance exceeds this quantity then a sample must be collected and analyzed for the parameters listed on Attachment E as soon as practical unless the conductance measurement was collected at the time of the quarterly sample collection. The MDEQ must be notified of the nature of the exceedance and the intention to sample.

7.3 Analytical Data Evaluation

All quarterly analytical results must be evaluated statistically and reported to the Waste and Hazardous Materials Division of the MDEQ within 60 days of the completion of each sampling event. The statistical program for the LDCRS monitoring results is presented in Attachment G. In addition to the use of statistics to evaluate the occurrence of organic compounds, WDI also tracks the concentrations of all other monitoring parameters within a database. This database should be updated upon receipt of each set of analytical results and observed for unusual data points or trends. The quarterly report must also include a description of the sampling events, a

table of the volume measurements, a narrative description of the results of the statistical and trend analyses, and a summary of the QA/QC information both field and laboratory.

7.4 Annual Report

An annual report describing the sampling events, a summary of the QA/QC information, sampling documentation, an evaluation of the volume records (graphical and tabular) and analytical results and a summary of any non-compliance or maintenance items that occurred during the previous year must be prepared. This annual report must be submitted to MDEQ by March 1 of the following year.

8.0 DECONTAMINATION PROCEDURES

While the landfill cells are in operation, sampling of the LDCRS requires that the sampling vehicle drive into active cells and, in some cases onto the waste. For this reason, it is important that the sampling vehicle and equipment are properly decontaminated after sampling. The sampling vehicle must be power-washed by the mobile decon unit both outside and inside prior to leaving the cell area. All disposable PPE used by sampling personnel should be removed and disposed of in an appropriate receptacle at this time as well. The glove box should be cleaned with TSP or other non-organic detergent both inside and out on at least a quarterly basis.

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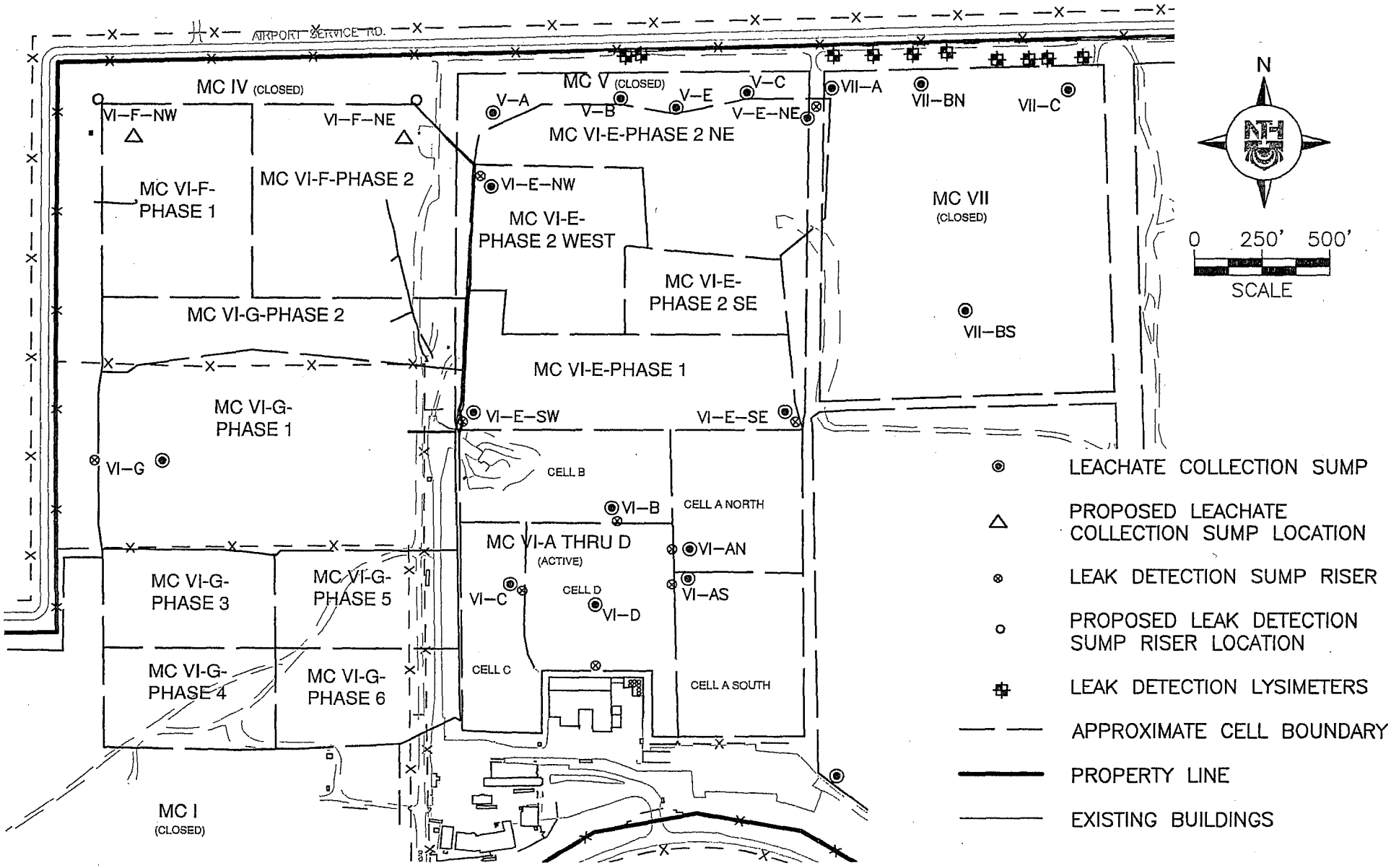

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080376-LCS	KRO	1/27/2011	12/1/14

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

LEACHATE COLLECTION & LEAK DETECTION LOCATIONS

WAYNE DISPOSAL, INC. SITE NO. 2
VAN BUREN TWP., WAYNE COUNTY, MICHIGAN

ATTACHMENT A

table of the volume measurements and a summary of the QA/QC information both field and laboratory.

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An annual report describing the sampling events, a summary of the QA/QC information, sampling documentation, an evaluation of the volume records (graphical and tabular) and analytical results and a summary of any non-compliance or maintenance items that occurred during the previous year must be prepared. This annual report must be submitted to MDEQ by March 1 of the following year.

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While the landfill cells are in operation, sampling of the LDCRS requires that the sampling vehicle drive into active cells and, in some cases onto the waste. For this reason, it is important that the sampling vehicle and equipment are properly decontaminated after sampling. The sampling vehicle must be power-washed by the mobile decon unit both outside and inside prior to leaving the cell area. All disposable PPE used by sampling personnel should be removed and disposed of in an appropriate receptacle at this time as well. The glove box should be cleaned with TSP or other non-organic detergent both inside and out on at least a quarterly basis.

Attachment G - LDCRS Statistical Monitoring Plan

STATISTICAL EVALUATION

The statistical program for LDCRS monitoring utilizes Nonparametric Prediction Limits (NPPLs) to evaluate the monitoring data. In order to balance false positive and statistical power with this test, resamples are used, the number of which are determined by the number of sampling points and the number of background observations. Since there is no "upgradient" in the LDCRS system, and there was no substantial pre-waste disposal sampling program, the definition of background is not defined in a traditional sense. Thus the use of resamples is selected somewhat arbitrarily (see below).

The NPPL is defined as the highest concentration of a monitoring parameter detected in a background sample. For parameters that are never detected in the background, the NPPL is defined as the reported detection limit. Since the parameters to be analyzed statistically are all organic compounds, the reported detection limit, as listed on Attachment E of the LDCRS Sampling and Analysis Plan are the NPPLs. Therefore, any reported concentration of an Attachment E parameter at or above these limits is considered an apparent statistically significant increase.

If an Attachment E compound is detected, then the NPPL been exceeded and WDI will immediately notify the Waste Management Division (WMD) of the Michigan Department of Environmental Quality (MDEQ) and arrange resampling as soon as possible to confirm or refute

the apparent statistically significant increase. Quadruplicate samples will be collected for confirmation purposes and analyzed for the offending parameter(s). Since these quadruplicates are not independent samples, it does not constitute a multiple resampling as defined by the NPPL test. Thus the quadruplicate samples constitute a single resampling. If three of the four quadruplicate samples are clean, then the statistical increase is not confirmed. If two or more of the quadruplicates contain the compound of interest the apparent increase will be deemed confirmed and WDI shall respond in accordance with the current Operating License.

ATTACHMENT A

Sump Location

ATTACHMENT B

Installation & Operating Instructions

For Gundfs & Blackhawk

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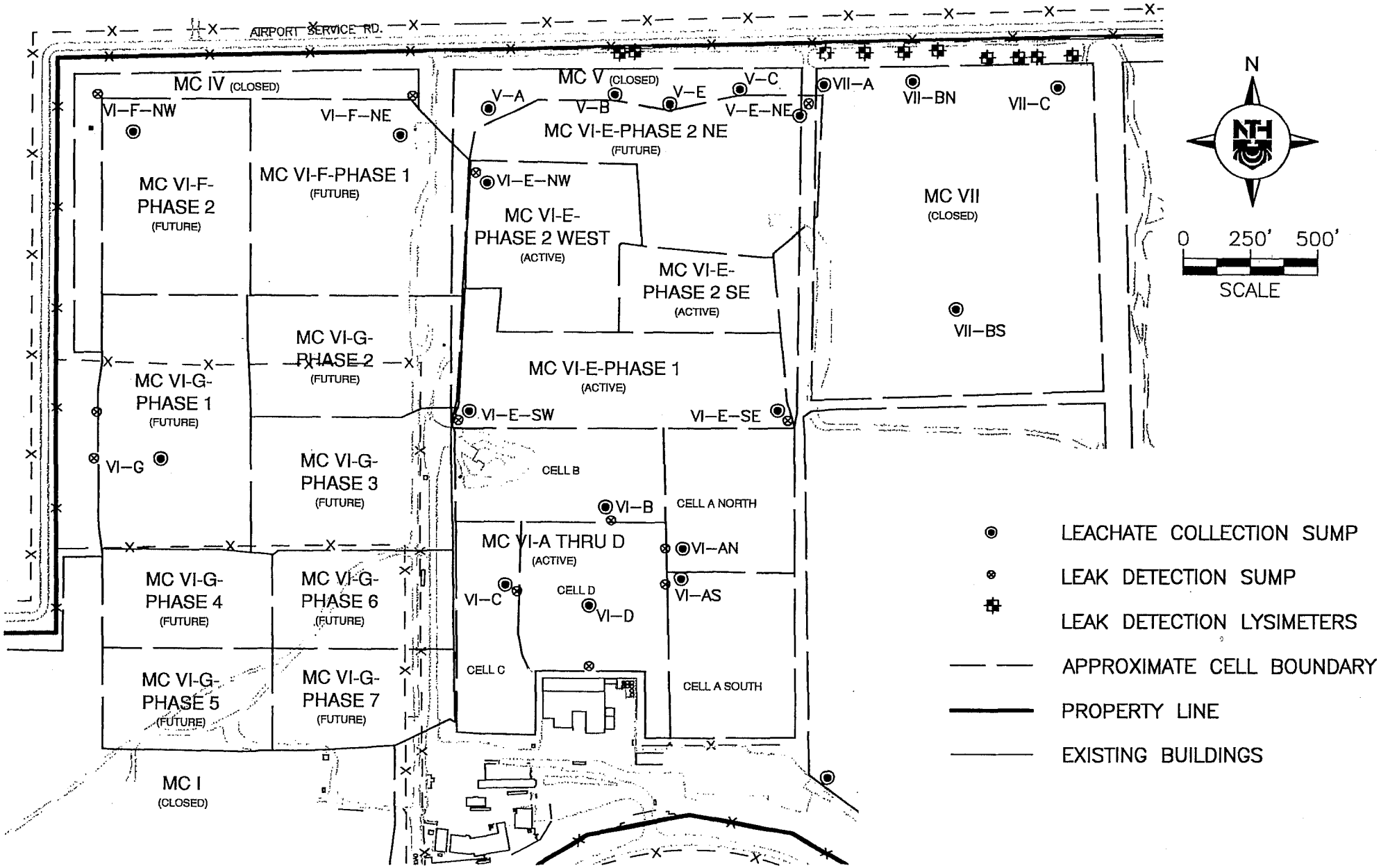

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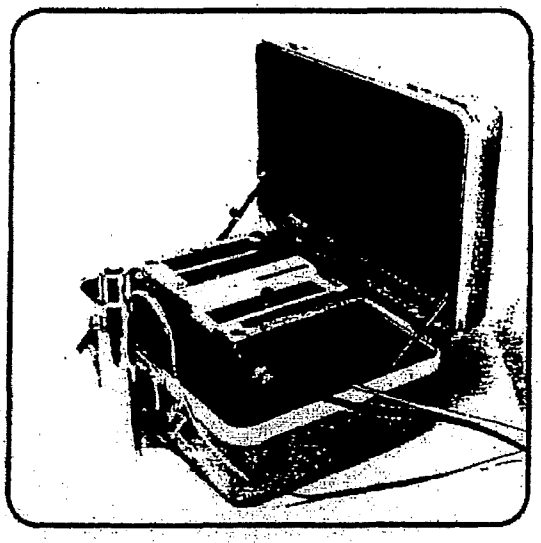
62-080376-00	KRO	DLP	AS SHOWN			A
CAD FILE NAME:	DRAWN BY:	INCEPTION DATE:	PLOT DATE:		WAYNE DISPOSAL, INC. SITE NO. 2 VAN BUREN TWP., WAYNE COUNTY, MICHIGAN	
080376-LCS	KRO	1/27/2011	2/8/11			

Redi-Flo2



Installation and Operating Instructions

GRUNDFOS

SAFETY WARNING

Adherence To Environmental Regulations

When handling and operating the Redi-Flo2 system, all environmental regulations covering the handling of hazardous material must be observed. When the pump is taken out of operation, great care should be taken to ensure that the pump contains no hazardous material that might cause injury to human health or to the environment.

Motor Fluid

The pump motor is filled with approximately .85 ounces (25 milliliters) of contaminant-free water. During operation, it is possible that a very small portion of this water could be replaced by the fluid being pumped. Therefore, there is a potential risk for cross contamination if used in portable applications. A filling syringe is provided with each pump to simplify the replacement of this water with clean water.

Returning A Pump For Service

Only pumps that are certified as uncontaminated will be accepted by GRUNDFOS for servicing. GRUNDFOS must receive this certification prior to receiving the pump. If not, GRUNDFOS will refuse to accept delivery of the pump. In these cases, all costs incurred in returning the product to the customer will be paid by the customer.

Electrical Hazards

The Redi-Flo2 pumping system is not approved for Class I, Division I, Group D locations as specified by the National Electrical Code (NEC). Consult local authorities and regulations if you have any doubt about its suitability for a specific application.

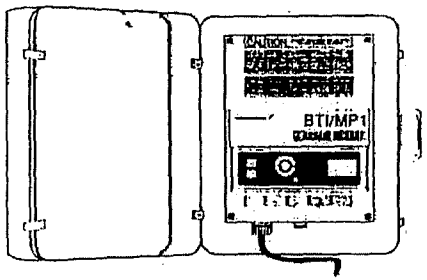
PRE-INSTALLATION CHECKLIST

Components of Your Redi-Flo2

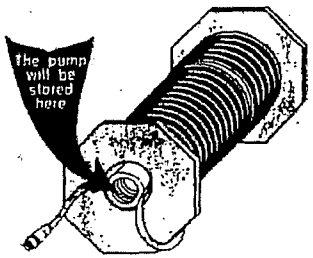
Your Redi-Flo2 Environmental Pumping system should contain the following components:

A. Converter in a protective carrying case
B. MP1 pump and motor with motor lead

A



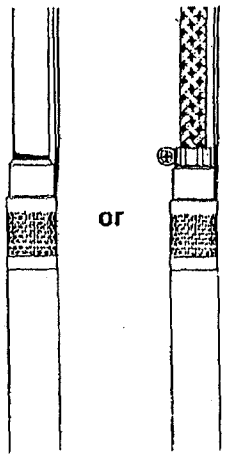
B



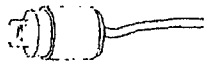
To operate the system you will also need:

C. Hose or pipe to connect to the pump and lower it into the well
D. An electrical plug to connect the converter power cord to your portable generator (or other power source)
E. Some type of safety cable (and attachments) for lowering and lifting the pump

C



D



(The exact type of plug used will depend upon your generator).

E

ASSEMBLING THE Redi-Flo2

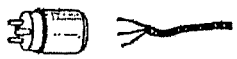
Assembly Instructions

All electrical work should be performed by a qualified electrician in accordance with the latest edition of the National Electrical Code, local codes and regulations.

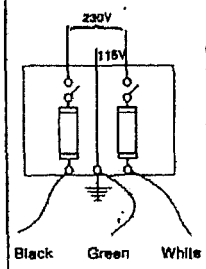
1

Unpack the components of the Redi-Flo2 system. The MP1 pump will be packed in the center of the motor lead roll.

2

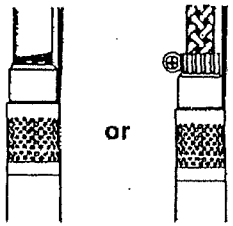


Strip the cord jacket and insulation from the ends of the converter power cord. Consult your local electrician to connect the leads to the electrical plug. (The ground wire should be connected to the elongated plug terminal and single phase 230 volt power should be measured across the black and white leads.)



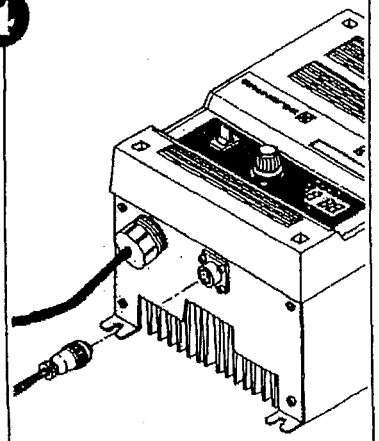
If the converter connects directly to a permanent power supply, consult your local electrician to connect the wires as shown.

3



Connect the MP1 pump to the pipe or hose through which the fluid will be pumped. If a hose is connected, a compression coupling should be used to ensure a strong, watertight fit. A safety cable may be attached to the pump (using a special bracket), as well as a plastic spiral flex clamp to secure the wire. A check valve may also be fitted to prevent liquid from flowing back into the pump after it is turned off (backflow prevention).

4



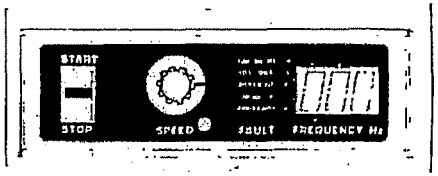
Fit the motor lead plug into the converter. Fit the converter plug into the generator (or other power source).

OPERATING THE Redi-Flo2

Starting

The Redi-Flo2 is easy to operate. Simply:

1. Submerge the pump in water.
2. Start the generator (or other power source).
3. If the generator has a circuit breaker, turn it on.
4. Check the frequency display on the front of the converter. It should read "0" (zero). If it doesn't, refer to the Troubleshooting section on pages 13-14.
5. If this is the first time the converter is being used or it has not been used for more than six months, leave the converter on for at least 15 minutes before proceeding to step 6.
6. Set the converter's speed dial near the middle of the dial (12 o'clock position).
7. Start the pump by pressing the **Start/Stop** switch into the "Start" position.
8. Adjust the pump performance by turning the speed dial.



Stopping

To stop the pump, press the **Start/Stop** switch on the converter to the "Stop" position. There is no need to reduce the pump speed first. Turn the POWER OFF at the generator ***BEFORE*** removing the motor lead from the converter.

Operating Conditions

To ensure the Redi-Flo2 operates properly, follow these guidelines:

- The MP1 pump must be installed vertically with the discharge end pointing upwards.
- The electrical voltage to the converter must always be between 190 and 253 volts (single phase, AC).
- The motor and pump must always be completely submerged in fluid to ensure lubrication of the shaft seal and cooling of the motor.
- While the pump is pumping, the distance down from the ground level to the level of the water in the well must not be greater than 270 feet.
- If the pump is used in a well larger than 4" in diameter, a shroud should be used around it to ensure proper motor cooling.
- The temperature of the water being pumped should be between 34°F and 86°F (1°C and 30°C).

Purging A Well

If the pump is being used to purge a well, start it at the maximum speed. Do not stop the pump until the pumped water contains no visible particles (to avoid blockage within the pump).

Thawing A Frozen Pump

If the liquid in the pump is frozen so the motor shaft cannot rotate, lower it into water and start it at the slowest speed. Continue to operate the pump at this speed for about 10 minutes, at which time it will be thawed and ready for operation.

MAINTENANCE AND CARE

Dismantling & Reassembling

The MP1 pump can be dismantled and reassembled quickly and easily by referring to the diagram on page 11 and following these steps:

DISMANTLING

1. Shut the pump off using the converter's Start/Stop switch.
2. Turn the generator (or other power supply) OFF.
3. Disconnect the motor lead from the converter.
4. Remove the pipe or hose connected to the pump (OPTIONAL).
5. Remove the Set Screw (position 12 in the diagram on page 11). Grasp the Inlet Screen (position 1) and slowly but forcefully pull it up over the Pump Housing (position 2).

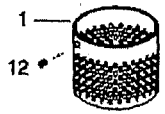
DO NOT ALLOW THE INLET SCREEN TO SCRAPE THE INSULATION FROM THE MOTOR LEADS.

5. Unscrew and remove the Pump Housing (counterclockwise when viewed from the top). This will expose the impeller assembly (guide vanes, wear rings, etc.), which can now be removed by hand for extended cleaning or replacement.

REASSEMBLY

To reassemble the MP1 pump, refer to the diagram on page 11 and:

1. Make sure the motor lead is not connected to the converter.
2. Return the impeller assembly components (guide vanes, wear rings, etc.) to the shaft in the proper order.
3. Screw the Pump Housing (position 2) back onto the top of the pump. If all of the impellers and chambers were replaced correctly, the Pump Housing should screw on easily. Hand tighten.
4. Slip the Inlet Screen (position 1) back over the Pump Housing. Screw the Set Screw (position 12) back into the Inlet Screen.



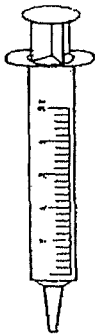
MAKE SURE YOU LINE UP THE MOTOR LEAD WITH THE RECESSED AREA IN THE PUMP HOUSING TO AVOID SCRAPING THE INSULATION FROM THE LEADS

Replacement Of Motor Fluid

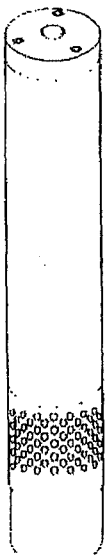
If the pump is moved from well to well, it should be thoroughly decontaminated prior to being installed in the next well. In addition to cleaning the individual components inside and outside, the water in the pump motor should be replaced using the syringe that came with your pump. This can be accomplished through the following steps:

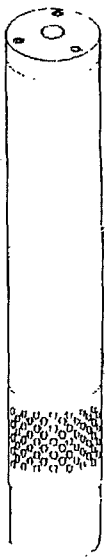
1. Shut the pump off using the converter's Start/Stop switch.
2. Turn the generator (or other power supply) OFF.
3. Unplug the pump from the converter.
4. Turn the pump and motor upside down.

5. Use a flat screwdriver to remove the filling screw on the bottom of the motor.



6. Empty the water from the motor and refill it using contaminant-free water and the syringe that came with your MP1 pump. The water level should be even with the bottom edge of the screw hole.
7. Replace and tighten the filling screw.
8. Turn the pump over several times, then remove the filling screw again to let any trapped air escape (if air is left inside the motor, the life of the motor will be shortened). Add more water, if necessary.
9. Replace and tighten the filling screw.





Replacing the Motor Lead

To replace the motor lead, refer to the diagram on page 11 and follow these steps:

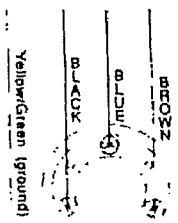
REMOVING THE OLD MOTOR LEAD

1. Make sure the power is turned **OFF**, the converter is turned **OFF**, and the motor lead is not connected to the converter.
2. Loosen and remove the Set Screw (position 12) from the Inlet Screen (position 1).
3. Slide the Inlet Screen off the pump. If you plan to use this motor lead again, be careful not to scrape insulation from it as the Inlet Screen is removed.
4. Loosen and remove the Pump Housing (position 2). Remove the impeller assembly (impellers, guide vanes, etc.).
5. Refer to the illustration on page 8. Use the special Motor Lead Screwdriver (shown at right) that came with your new motor lead to loosen and remove the Motor Lead Screw (position 14) for the ground lead (green/yellow wire).
6. Pull up on the ground lead to remove it. Using a small screwdriver and precision electronics pliers, pry up and remove the Teflon® Washer (position 15) and Brass Washers (position 16) from inside the enlarged Ground Motor Screw (position 13). Remove the Ground Motor Screw.
7. Use an allen wrench (2.5 mm) to remove the two Motor Screws (position 19) holding the Suction Interconnector (position 10) in place. Remove the Suction Interconnector but be very careful to note which of its slots is lined up with which motor lead -- this will be very helpful during reassembly. You may wish to scratch a mark on both the Suction Interconnector and the motor to aid in matching them up later.
8. Refer to the illustration at the bottom of this page. Use the special Motor Lead Screwdriver to loosen and remove the remaining Motor Lead Screws (position 14).
9. Pull up on each of the leads to remove them. Make a note which color conductor comes out of each hole -- **this is a MUST** when installing the new motor lead. Using a small screwdriver and precision electronics pliers, unscrew and remove the Teflon ® Washer (position 15) and the Grommet (position 17).

INSTALLING THE NEW MOTOR LEAD

10. Ensure the motor lead holes are clean and free of moisture.
11. String the Inlet Screen (position 1) onto the motor lead.
12. String the motor lead components (shown at right) onto the end of each motor lead wire (except the yellow/green ground wire).
13. For each wire, place the Crimped Pin (position 18) down into the motor lead hole. Press the Grommet (position 17) and Teflon ® Washer (position 15) down around the lead.

Motor Leads



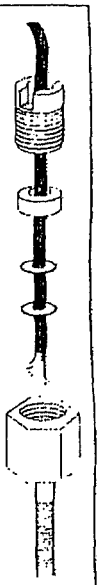
Top of Motor

Be sure to reconnect the lead wires in their previous pattern so that in clockwise order they are **black-blue-brown** as shown at left.

Power Conducting Motor Leads

14. While pushing the lead down into the motor lead hole, use the special Motor Lead Screwdriver to tighten the Motor Lead Screw (position 14) into place. Repeat for the other two lead wires.
15. Replace the Suction Interconnector (position 10). Replace the Ground Motor Screw (position 13). Since the ground wire will be attached to this screw, you will want to put it into the hole that will cause the least amount of twisting to the wire.
16. Replace and tighten the two Motor Screws (position 19) with an allen wrench.
17. Repeat steps 12-14 for the ground motor lead. Note on the illustration (at right) that the ground lead uses two Brass Washers (position 16) instead of a Grommet and Crimped Pin.
18. Return the impeller assembly to the top of the Suction Interconnector (position 10). Refer to the diagram on page 11 for the proper sequence.
19. Screw the Pump Housing (position 2) back onto the Suction Interconnector.
20. Position the motor lead in the recessed area of the Pump Housing.
21. Carefully push the Inlet Screen (position 1) over the Pump Housing and the Suction Interconnector.

Ground Motor Lead



BE VERY CAREFUL TO AVOID SCRAPING THE INSULATION FROM THE MOTOR LEAD AS THE INLET SCREEN IS FITTED.

22. Line up the screw hole in the Inlet Screen with the screw hole in the Pump Housing. Fit and tighten the Set Screw (position 12).
23. Connect the motor lead to the converter and test the rotation of the pump. Submerge the pump in water, start it at its slowest speed and make sure the pump shaft is turning counterclockwise (when viewed from the top). If the rotation is incorrect, switching any two power leads (with POWER OFF) will correct the problem.

24. Reconnect the hose or pipe.

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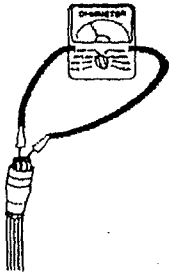
Periodic Motor Inspection

If the pump is operating at a decreased capacity and the impeller assembly components (impellers, guide vanes, etc.) do not appear to be the cause, the motor should be checked. A checklist of things to examine includes:

- ❑ Check the fluid level inside the motor (refer to page 6). Replace and refill as necessary.
- ❑ Inspect the outside of the motor for cracks, dents, etc.
- ❑ Remove the Inlet Screen (position 1), Pump Housing (position 2), and the impeller assembly (guide vanes, wear rings, etc.). Try to spin the motor shaft by hand. It should spin freely. If it does not, the motor must be replaced.
- ❑ Check the winding and insulation resistance of the motor and lead.

Winding Resistance



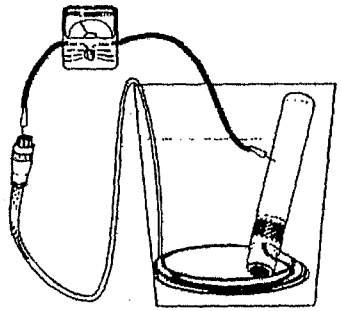
Turn off the power and disconnect the motor lead from the converter. Using an ohmmeter, set the scale to R X 1. Zero-adjust the meter and measure the resistance between any two power conducting leads (prongs on the motor lead plug).

If the ohm value is too low, the motor may be shorted. If too high, the motor windings or the leads may be open.

Lead Length	Ohm Value
0 feet	3.0 - 3.5 Ω
50 ft	3.6 - 4.1 Ω
75 ft	3.9 - 4.4 Ω
100 ft	4.2 - 4.7 Ω
125 ft	4.5 - 5.0 Ω
150 ft	4.8 - 5.3 Ω
175 ft	5.1 - 5.6 Ω
200 ft	5.4 - 5.9 Ω
250 ft	6.0 - 6.5 Ω
300 ft	6.6 - 7.1 Ω

Insulation Resistance

Turn the power off and disconnect the motor lead from the converter. Use a **mego**hmmeter or megger (1 Meg = 1 M = 1 million). Zero-adjust the meter and measure the resistance between any power conducting leads (prongs on the motor lead plug) and ground. A good way to accomplish this (as shown at right) is to submerge the motor lead and MP1 pump in a bucket of water. Touch one lead of the megohmmeter to the pump and one to a motor lead.

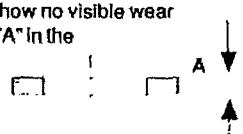


If the ohm value is lower than 2MΩ, the motor is defective and must be replaced.

Checking Components For Wear

The pump components should be periodically checked to ensure they are still within their minimum operating tolerances (illustrated below).

Impeller (position 5) ..... The impellers should show no visible wear.
Guide Vane (position 3) ..... The guide vanes should show no visible wear
Wear Ring (position 4) ..... The minimum thickness ("A" in the illustration) should never be less than 1.0 mm



In addition, visually check all components for cracks, corrosion, or wear.

Storage Requirements

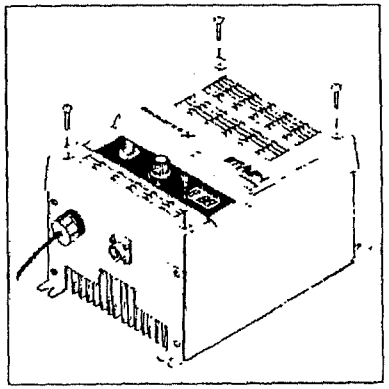
The pump should be thoroughly cleaned before storage to ensure no contamination is present. Both the pump and the converter should be stored in a clean and dry area in the following temperature range:

- 20°C to +50°C
or
0°F to 120°F

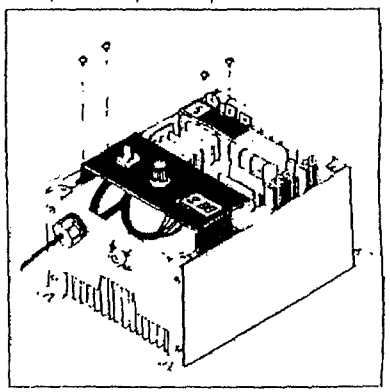
Replacing the Converter Fuses

The converter fuses can be replaced by following these steps:

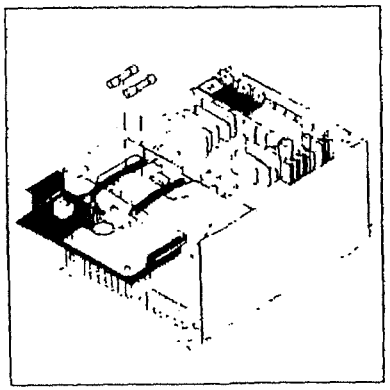
1. Turn the **POWER OFF.**
2. Disconnect the converter from the power source.
3. Wait at least 3 minutes to give the capacitors time to discharge any remaining voltage.
4. Remove the four screws holding the front cover of the converter in place and remove the front cover.



5. Remove the four screws holding the speed dial panel in place.



6. Replace the fuses as shown.



NOTE:
The BTI/MP1 converter uses two T30A. type FERRAZ fuses.

PART LIST

Pump Components

Position No.	Part Description	Number Used
1	Inlet Screen	1
2	Pump Housing	1
3	Guide Vane	2
4	Wear Ring	2
5	Impeller	2
6	Spacer Ring	2
7	Wear Plate	2
8	Motor Lead Assembly	4
9	Shaft	1
10	Suction Interconnector	1
11	Stator Housing	1
12	Set Screw	1
13	Ground Motor Screw	1
14	Motor Lead Screw	4
15	Teflon®Washer	4
16	Brass Washer	2
17	Grommet	3
18	Crimped Pin	3
19	Motor Screw	3

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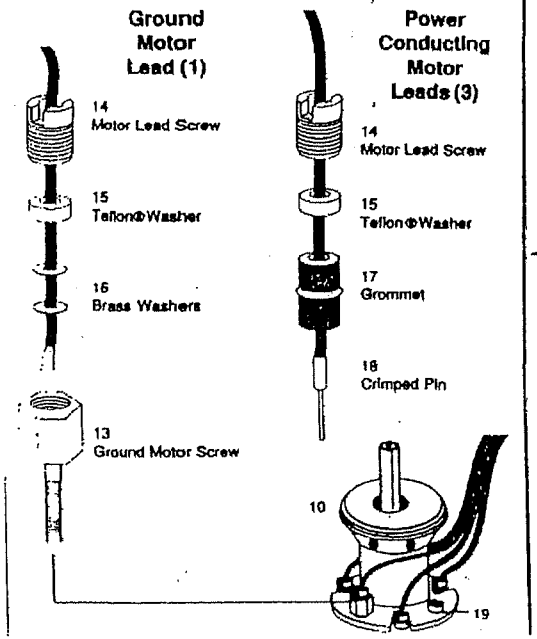
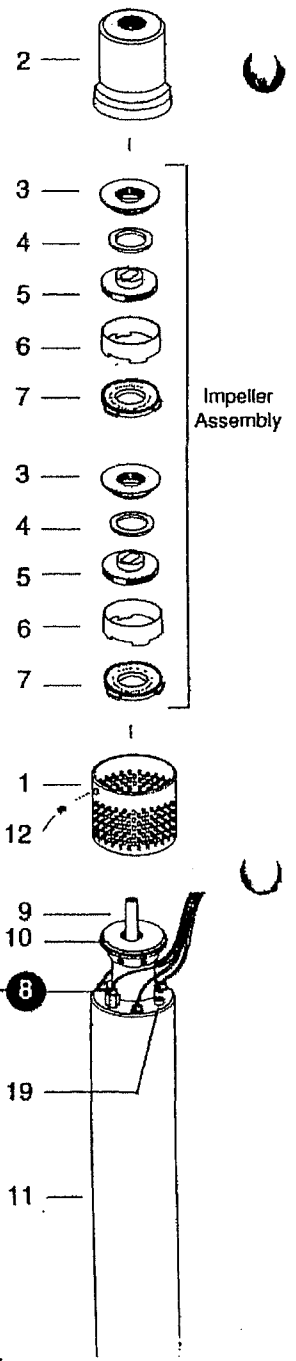
MOTOR LEAD ASSEMBLY (position 8)





Service Kits, Service Tools, and Motor Leads

Replacement parts, service tools, and motor leads are available using the following part numbers:

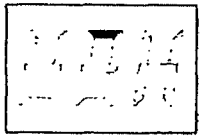
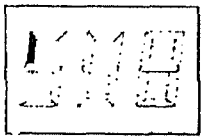
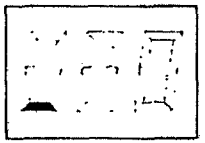
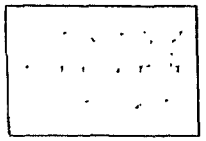
Service Kits			Part Number
Position No. In Diagram	Part Description	No. In Kit	
3	Guide Vane	2	125061
4	Wear Ring	2	
5	Impeller	2	
6	Spacer Ring	2	
7	Wear Plate	2	

Service Tools	Part Number
Special Motor Lead Screwdriver	SV0370
Syringe (to refill motor)	ID6066

Motor Leads		Part Number
All motor leads come with a Converter Plug attached and a special Motor Lead Screwdriver	50 foot length	1A 5081
	75 " "	1A 5082
	100 " "	1A 5083
	125 " "	1A 5084
	150 " "	1A 5085
	175 " "	1A 5086
	200 " "	1A 5087
	250 " "	1A 5088
	300 " "	1A 5089

TROUBLESHOOTING

The converter will shut itself off if any major faults occur, and signal (on the converter display) the cause of the fault. These include:

If the display shows this:	The fault is:	Which is caused by:	To correct, simply:
	**Function Loss**	· A thermal cut-out or shutdown	Wait until the motor has cooled to a normal temperature. Restart the motor using the on/off switch on the converter.
		· Defective motor lead or pump · Momentary problem (transient fault)	1. Reset the converter and restart it. If it shuts down again, then ... 2. Switch off the power supply. Turn the power supply back on and restart the converter. If the converter shuts down again, the pump or the motor lead may be defective. If the converter **doesn't** shut down again, it was probably a transient fault (momentary power surge, etc.). **IF ALL CHECKS INDICATE THAT THE PUMP IS O.K., THEN THE CONVERTER MAY BE DEFECTIVE**
	**Overvoltage**	· The input voltage is too high · There was a momentary power surge	1. Reset the converter and restart it. If it shuts down again, then ... 2. Reduce the voltage coming into the converter (refer to the "Technical Data" section on the following pages for operating ranges).
	**Low Line**	· The input voltage is too low · There was a momentary voltage drop	1. Reset the converter and restart it. If it shuts down again, then ... 2. Increase the voltage coming into the converter (refer to the "Technical Data" section on the following pages for operating ranges).
	**Power Supply**	The power supply is defective	Check the voltage of the incoming power supply (should be between 190-253 V).
	**Pump Problem** (if numbers climb only to about 50 - 130)	· The pump shaft is locked · One of the 3 motor leads is not making contact with the motor	1. Turn the speed dial to maximum frequency. If this results in a **Function Loss**, follow the troubleshooting instructions listed above. 2. If you **don't** get a Function Loss, the problem is with the converter.
	**No Display = No Power**	· The converter is not being supplied with power · The power being supplied is a very low voltage · The internal fuses are defective	1. Check the amount of the incoming voltage. If it is within allowable limits (190 - 253 V), then ... 2. Flip the generator circuit breaker (if it has one) to the "ON" position. Reset the converter and restart it. If the converter still shows no display, then ... 3. Switch the power supply off. Check the fuses in the converter and replace if necessary. If the fuses are OK, then ... 4. Check the electrical plugs to ensure all connections are made properly.

TECHNICAL SPECIFICATIONS

Converter Specifications

Power

Supplied By Generator/Power Supply

Voltage:	Single phase, 230 volt (+ or - 10%)
Frequency:	50-60 Hz (+ or - 2%)
Maximum Current:	10 amps

Produced By Converter

Output Voltage:	3 phase 25 volts to 3 phase 220 volt
Frequency:	46 - 400 Hz
Maximum Current:	5.5 amps
Internal Fuse:	2 each of T 30 A, type FERRAZ

Connections

Motor Lead Connector:	AMP CPC Plug, Type 206429-1
Power Cable:	Type SJOW, 14 AWG, 10' long

Dimensions and Weight

Dimensions:	Case is 9"x14"x18.5"
Net Weight:	25 lbs

Operating Conditions

Ambient Temperature:	32°F to 104°F (0° to 40° C)
Relative Air Humidity:	Maximum 95%
Radio Noise Filter:	Noise may occur when the converter is connected to the municipal electrical supply. It can be eliminated by adding a filter, such as a Siemens filter, type B 84112-B-A 120/20 A.

Storage Conditions

Ambient Temperature:	-13°F to 149°F (-25° to 65°C)
Relative Air Humidity:	Maximum 50% at 104°F (40°C) unlimited Maximum 90% at 68°F (20°C) for periods not exceeding 30 days per year. 75% annual average Non-condensing

Performance

Acceleration Time:	0 to 400 Hz in 10 seconds
Deceleration Time:	400 to 0 Hz in 10 seconds

Motor/Pump Specifications

Power

Input Power:	1.5 Kw (2 Horsepower)
Voltage:	3 phase, 220 volts at 400 Hz
Maximum Current:	5.5 amps
Motor Protection:	Thermal overload - Thermik Geratebau, Series SY6 Disconnect Temperature: 176°F (80°C) Rate Current: 5 amps Current Overload - Incorporated into converter

Connections

Discharge Port:	1/2" Female NPT
Net Weight:	5.5 lbs (includes pump)
Available Lead Lengths:	50, 75, 100, 125, 150, 175, 200, 250, and 300 feet

Operating Conditions

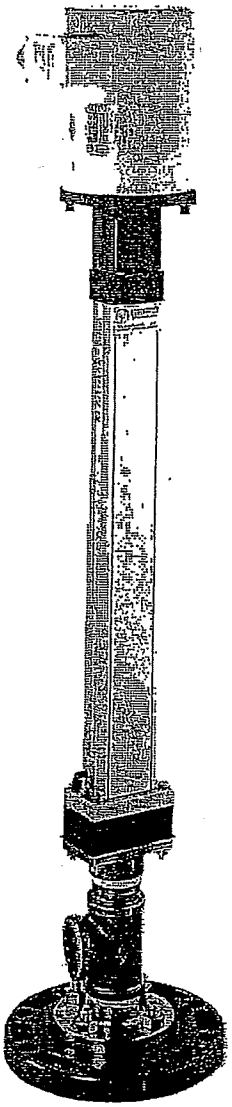
Max. Fluid Temp.:	86°F (30°C)
Min. Fluid Temp.:	34°F (1°C)

Dimensions and Weight

Dimensions:	(Including pump and motor) 11.3"x1.81" diameter
Net Weight:	5.5 lbs.

Installation and Operation Guide

Anchor Electric Piston Pump®



BLACKHAWK ENVIRONMENTAL COMPANY

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Phone: 630.469.4916 Fax: 630.469.4896
www.blackhawkco.com

AEPP 12-05

SECTION 1

SHIPMENT INSPECTION

Take an inventory of the components; pump cylinder, top head drive motor assembly, drive rod and piston. This Anchor Pump® should remain in it's shipping carton until it is ready to be installed. You will find a separate pump control box. It should be securely mounted at or near the well.

Installation Materials

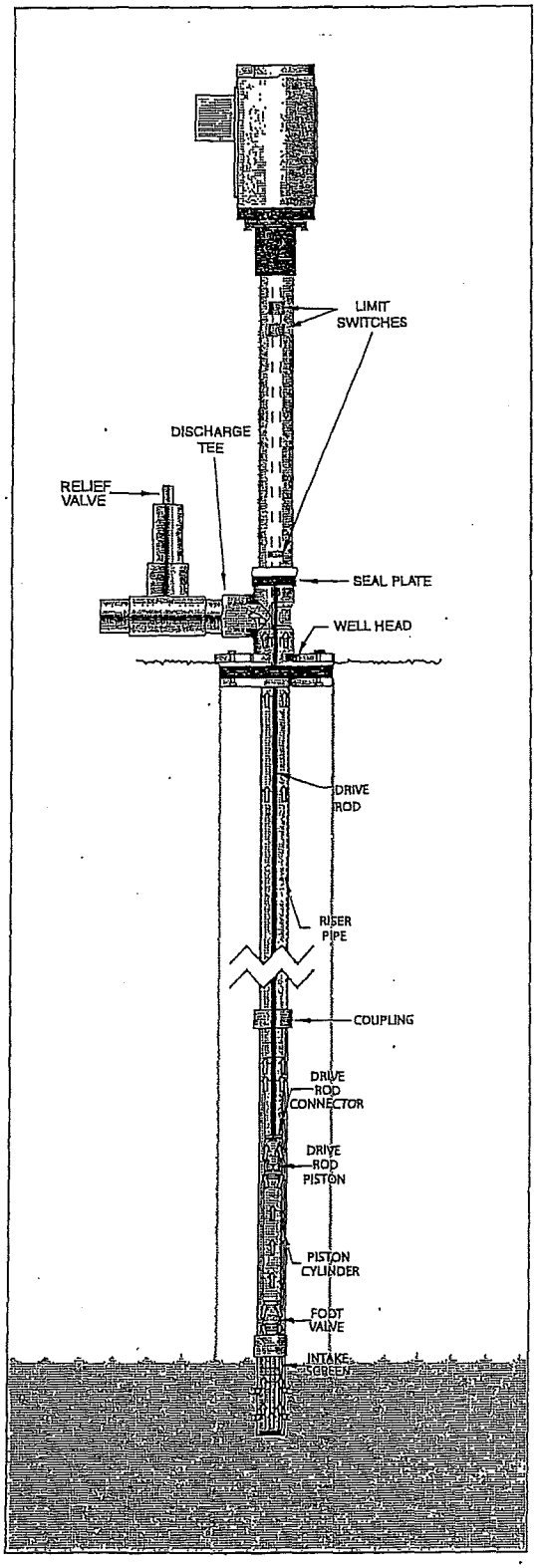
1. 10' rise pipe, NPT Thread on each end

   or

   HDPE riser pipe with stainless steel NPT transition fitting
2. Stainless steel couplings
3. Hoisting cable
4. 12" Pipe nipple for transition at well seal and discharge tee

Tools for Installation

1. Chained channel lock
2. Pipe wrenches
3. Vice grips
4. 1/2" Wrench
5. 11/16" Wrench
6. 5/8" Wrench
7. Tape measure
8. Water level indicator
9. Hacksaw
10. File and sand paper



SECTION 2

PRE-INSTALLATION CHECKLIST

Before beginning installation, the following checks should be made.

A Condition of the well.

If the pump is to be installed in a new well, the well should be fully developed and bailed or blown free of drill cuttings and pipe casing debris. The construction of the Anchor Pump® makes it resistant to abrasion; however no pump, made of any material, can forever withstand the destructive wear that occurs when constantly pumping sandy fluid. Determine the actual depth of the well, the static water level in the well, and the draw down level at the pumps maximum capacity. The pump selection and setting depth should be based on this data. The inside diameter of the well casing should be checked to ensure that it is not smaller than the pump.

B Condition of the fluid.

Anchor Pumps® are designed for fluids up to 200°F (PVC pipe up to 140° and steel pipe up to 200°. Fluids can be viscous up to #6 fuel oil, have tar pitch consistency or contain gas.

C Installation Depth.

Place pump one (1) foot above the bottom of the well. Remember not to block pump intake.

D Power supply.

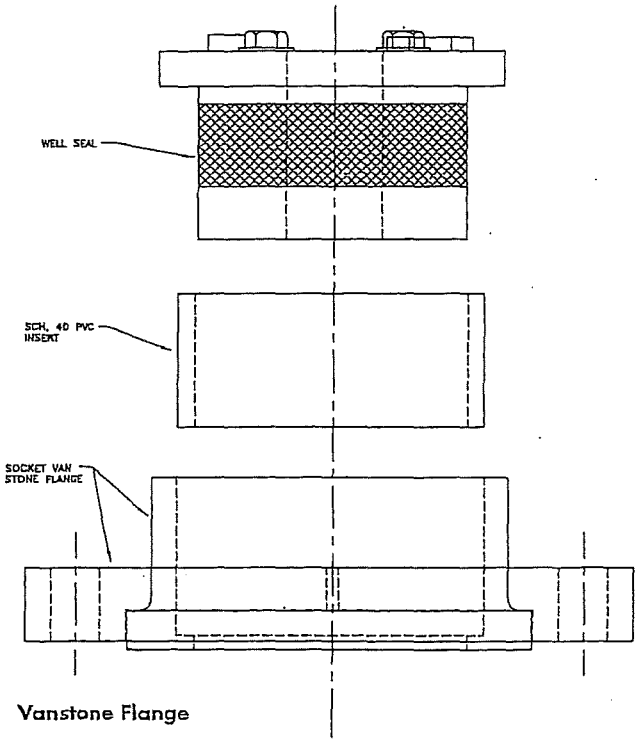
The drive motor power demand is noted on the name plate of the Anchor Pump® electric motor. Power supply can be 115V, 230V, 1HP or 220V/460V, 3HP. Power is converted by the VFD control to either 230V, 3hp or 460V, 3HP power to run the drive motor.

SECTION 3

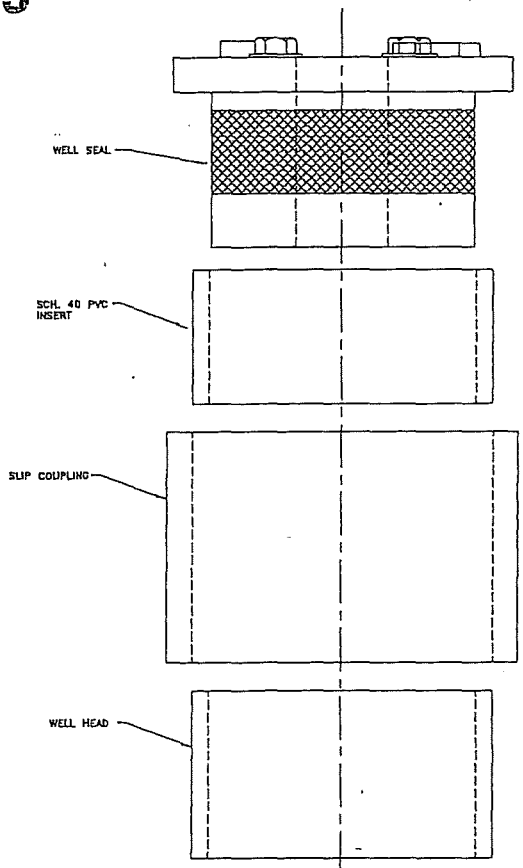
INSTALLATION

Step 1

Wellhead Preparation: Three Choices of Wellheads



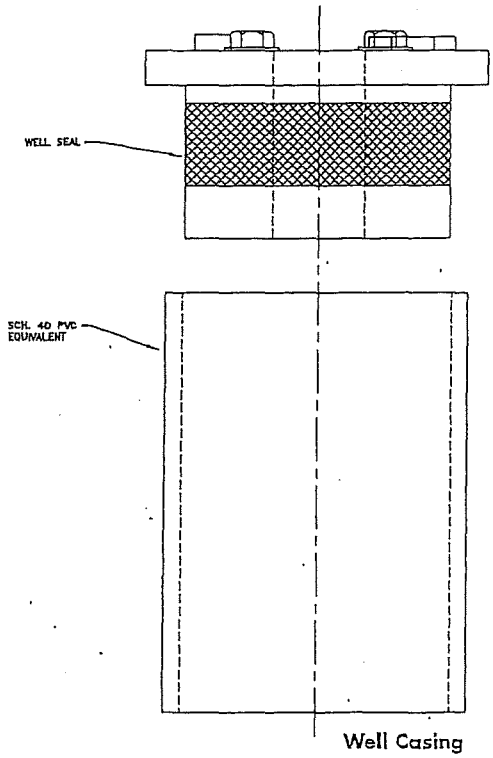
Vanstone Flange



Slip Coupling

Prepare top head well casing by removing all debris, caps or other closures, thus opening well, tank or sump for pump installation. Three typical well casing completions.

*Well casings may be vertical or horizontal.



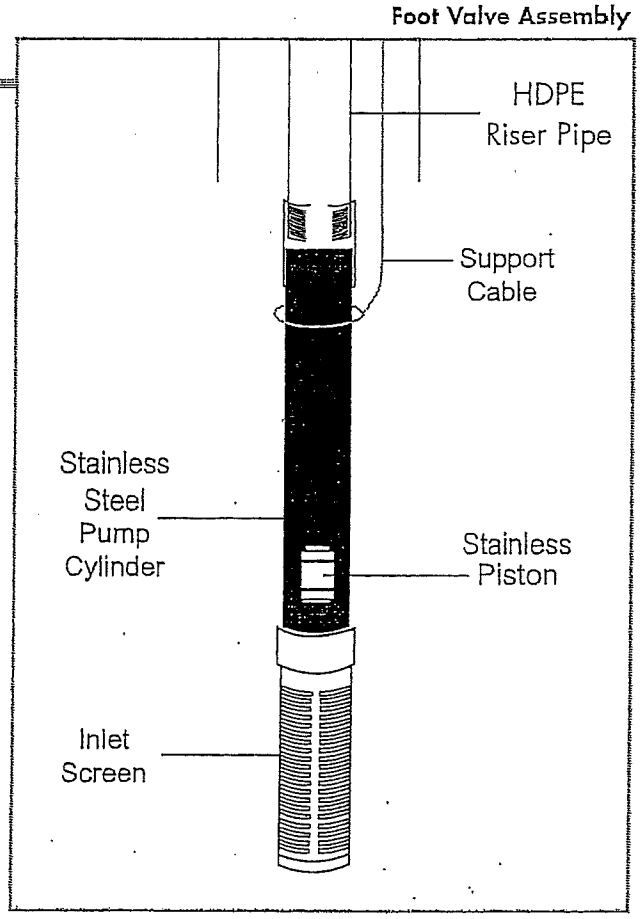
Well Casing

INSTALLATION CONT.

Step 2

ANCHOR PUMP FOOT VALVE CYLINDER INSTALLATION

- Attach foot valve cylinder assembly to bottom section of riser pipe.
- Note: Recommend attaching a support cable.
- Note: If using liquid level control device refer to separate installation sheet.



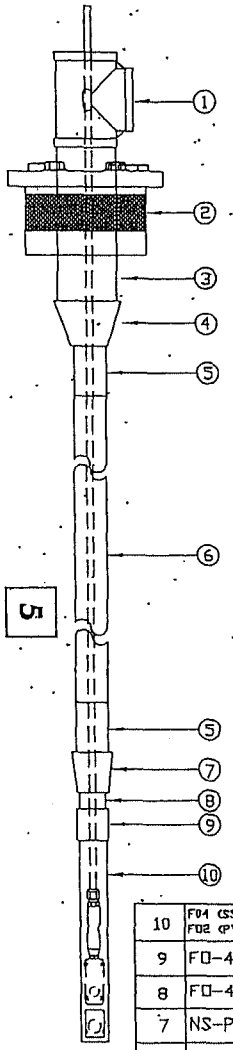
NOTE: When using HDPE, make sure the pistons are put in before attaching foot valve to HDPE pipe.

INSTALLATION CONT.

Step 3

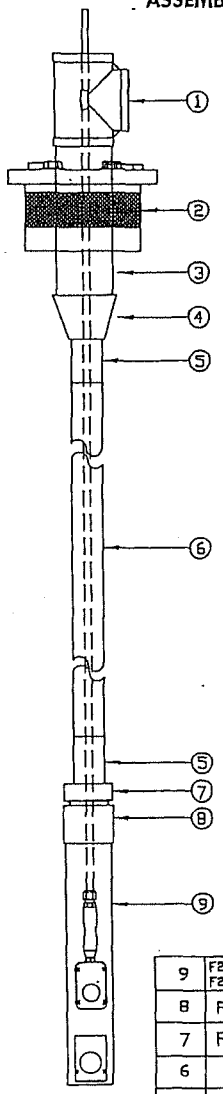
ANCHOR PUMP RISER PIPE INSTALLATION

F125E HDPE PIPE ASSEMBLY



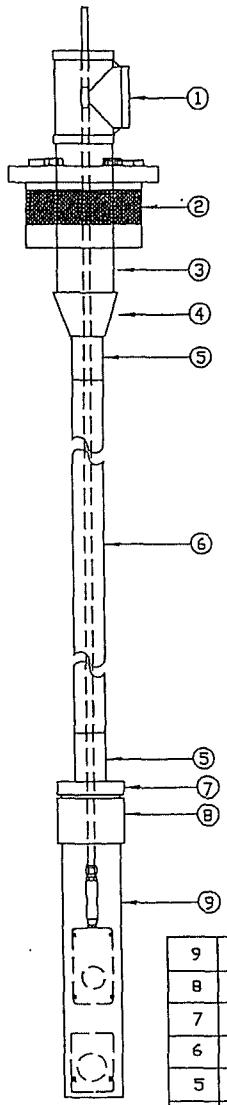
ITEM	PART NUMBER	DESCRIPTION
10	F01 (SS) F02 (PVC)	SS 1 1/4" FOOT VALVE ASSEMBLY PVC 1 1/4" FOOT VALVE ASSEMBLY
9	FO-40-7003	1 1/4" SS COUPLING (SUPPLIED WITH FOOT VALVE)
8	FO-40-7017	1 1/4" SS CLOSE NIPPLE (SUPPLIED WITH HDPE KIT)
7	NS-PD001	1 1/2" X 1 1/4" SS RED COUPLING (SUPPLIED WITH HDPE KIT)
6		1 1/2" HDPE PIPE (NOT SUPPLIED)
5	FO-40-8055	1 1/2" SS HDPE TRANSITION FITTING (SUPPLIED WITH HDPE KIT)
4	FO-40-8056	2" X 1 1/2" SS RED COUPLING (SUPPLIED WITH HDPE KIT)
3	SE-40-7002	2" X 15" SS PIPE (SUPPLIED WITH HDPE KIT)
2		WELL SEAL SIZE VARIES
1	SA-40-7001	SS 2" TEE

F200E HDPE PIPE ASSEMBLY



ITEM	PART NUMBER	DESCRIPTION
9	F24 (SS) F22 (PVC)	SS 2" FOOT VALVE ASSEMBLY PVC 2" FOOT VALVE ASSEMBLY
8	FO-40-7000	2" SS COUPLING (SUPPLIED WITH FOOT VALVE)
7	FO-40-8057	2" X 1 1/2" SS REDUCING BUSHING (SUPPLIED WITH HDPE KIT)
6		1 1/2" HDPE PIPE (NOT SUPPLIED)
5	FO-40-8055	1 1/2" SS HDPE TRANSITION FITTING (SUPPLIED WITH HDPE KIT)
4	FO-40-8056	2" X 1 1/2" SS RED COUPLING (SUPPLIED WITH HDPE KIT)
3	SE-40-7002	2" X 15" SS NIPPLE (SUPPLIED WITH HDPE KIT)
2		WELL SEAL SIZE VARIES
1	SA-40-7001	SS 2" TEE

F300E HDPE PIPE ASSEMBLY



ITEM	PART NUMBER	DESCRIPTION
9	F34 (SS)	SS 3" FOOT VALVE ASSEMBLY
8	FO-40-7004	3" SS COUPLING (SUPPLIED WITH FOOT VALVE)
7	FO-40-8058	3" X 1 1/2" SS REDUCING BUSHING (SUPPLIED WITH HDPE KIT)
6		1 1/2" HDPE PIPE (NOT SUPPLIED)
5	FO-40-8055	1 1/2" SS HDPE TRANSITION FITTING (SUPPLIED WITH HDPE KIT)
4	FO-40-8056	2" X 1 1/2" SS RED COUPLING (SUPPLIED WITH HDPE KIT)
3	SE-40-7002	2" X 15" SS NIPPLE (SUPPLIED WITH HDPE KIT)
2		WELL SEAL SIZE VARIES
1	SA-40-7001	SS 2" TEE

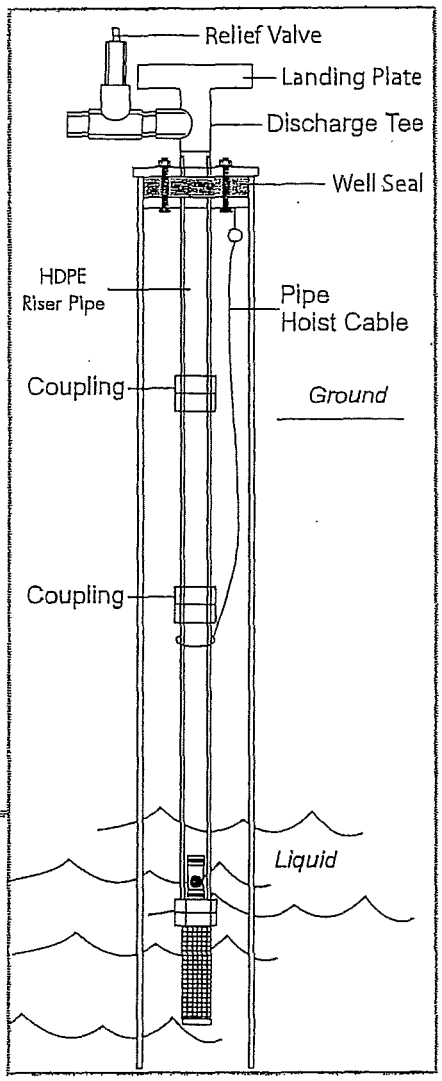
INSTALLATION CONT.

Step 4

ANCHOR PUMP RISER PIPE & WELL CAP INSTALLATION

a. Install all riser pipe until inlet screen is at specified depth and attach well cap onto riser pipe.
b. Attach cable to the bottom of the well cap.
c. Attach well cap to top of wellhead.
d. This riser pipe is to be suspended from the well head, not to be standing on bottom of well, tank or sump.

If using hard riser pipe it is recommended that maximum 10' pipe lengths with NPT Threads on both ends and threaded stainless steel couplings to be used for riser pipe.



Step 5

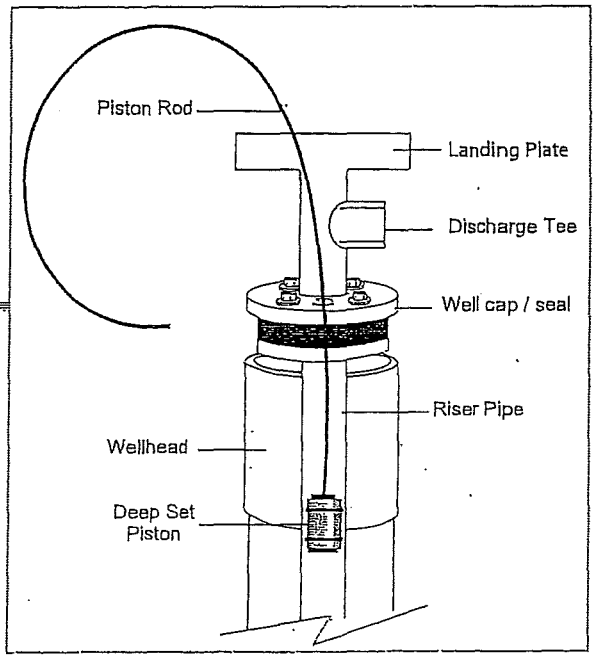
DRIVE ROD/PISTON INSTALLATION

A. Uncoil piston-rod-assembly
(Lay coil out in open area.)
(Caution: Coil under tension!)

B. Attach Drive Piston

C. Slide drive piston down riser pipe to bottom.

Note: Piston will have much more resistance for the final 2-3 ft. of install.

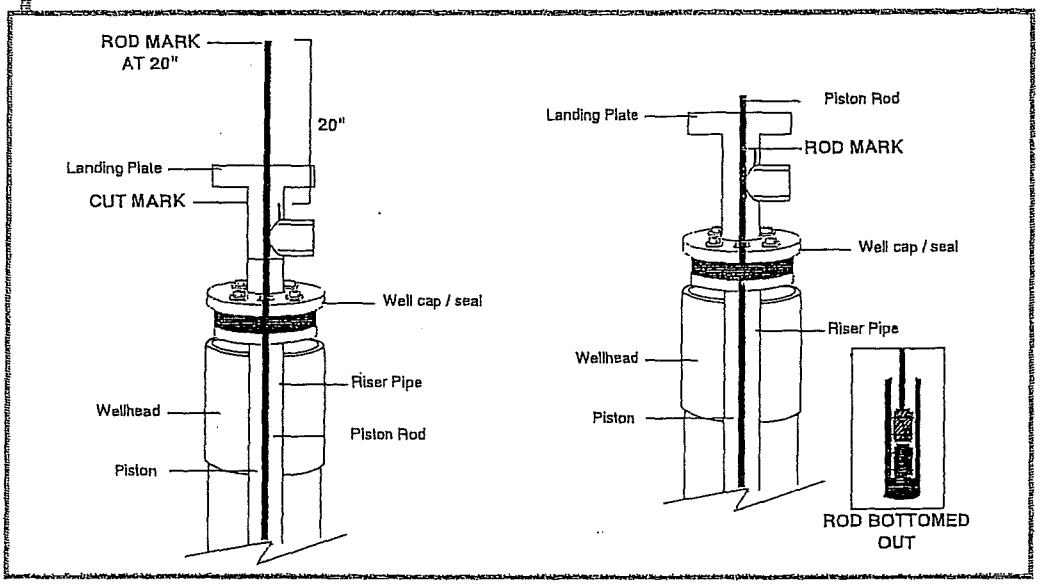


INSTALLATION CONT.

Step 6

CONNECTION OF ROD TO TOP HEAD DRIVE MOTOR ASSEMBLY

Hand pump well by moving the fiberglass drive rod up and down in the downhole foot valve cylinder assembly to ensure that the pump is pumping liquid.



A. Rod bottomed out – Mark rod at top of discharge tee. Clean and sand rod.

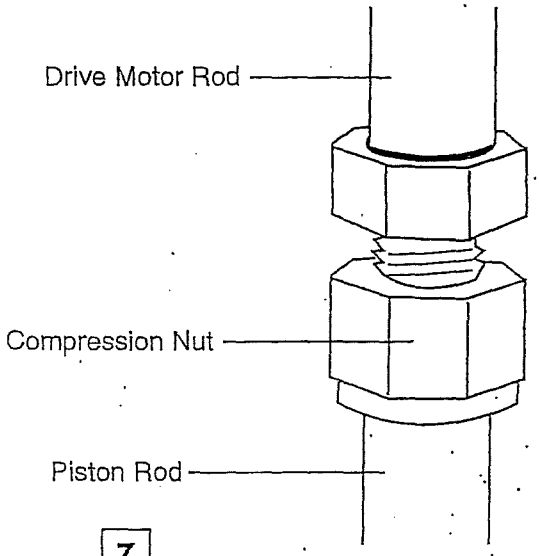
B. Lift rod up and cut 20" below mark.

Step 7

ATTACH COMPRESSION FITTING TO CUT END OF ROD AND SCREW INTO DRIVE MOTOR ROD

Attach ferrule and compression fitting to squared cut end of fiberglass rod. Make sure fiberglass compression ferrule digs deep into fiberglass drive rod to secure fiberglass piston.

A. Cut and square rod.
B. Rough-up finish with sandpaper.
C. Attach compression fitting to cut end of rod and screw into drive motor rod.
D. Excessively tighten nut.
E. Loosen nut to check that ferrule has crimped into rod.
F. Reattach to motor.



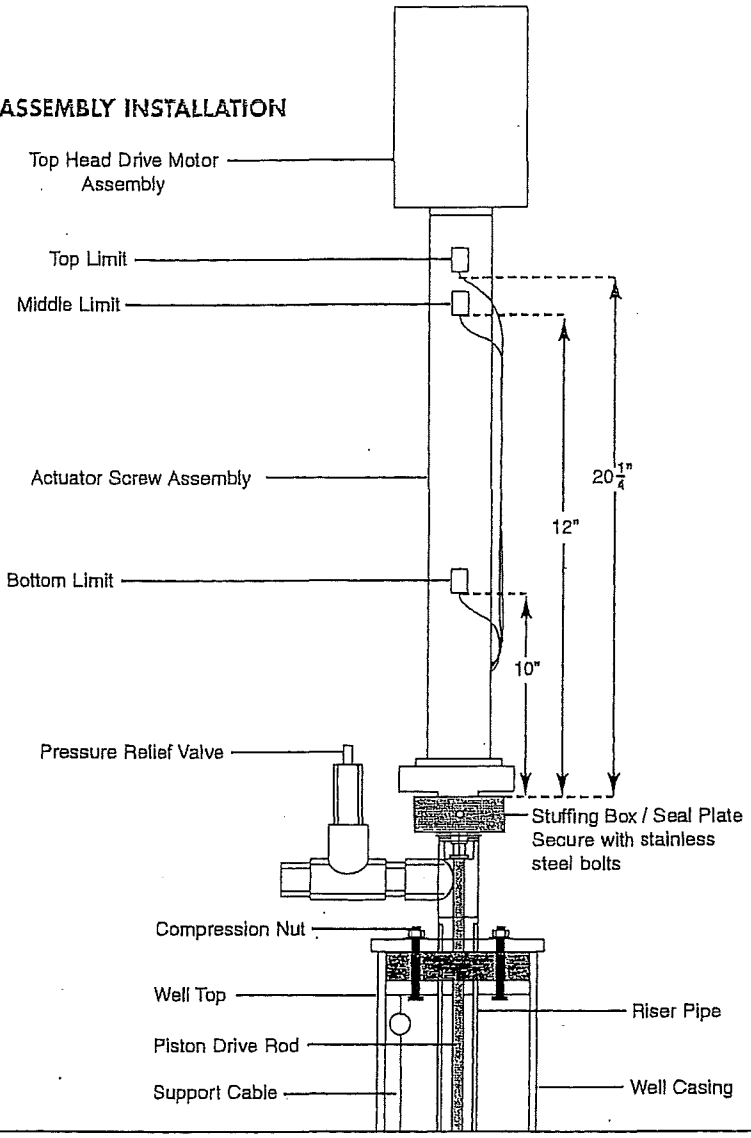
INSTALLATION CONT.

ANCHOR PUMP® TOP HEAD DRIVE MOTOR ASSEMBLY INSTALLATION

Step 8

Note: Before installing drive motor into well, refer to Electrical Control Panel Instructions (Section 5-7).

A. Install top head drive motor assembly onto well top.
B. Secure the well head landing plate with 4 bolts.
C. Attach Power supply/control panel.



SCM SUB-MICRO DRIVE INSTALLATION

LIMIT SWITCH SETUP

LIMIT SWITCH (NOTE 1)	TYPE	DISTANCE FROM TOP OF BASE PLATE TO BOTTOM OF SWITCH	TERMINAL CONNECTION
Bottom	Normally Open	10"	13E
Middle	Normally Open	12"	13A
Top	Normally Open	20.25"	13A

PARAMETER SETTINGS

SPEED	101gpm	102gpm	103gpm	SPM (Strokes per Min.)
60	1.35	3.27	7.37	20.06
50	1.19	2.89	6.53	19.98
40	1.02	2.47	5.58	19.03
30	0.82	1.98	4.47	16.75
20	0.58	1.40	3.16	12.75
10	0.30	0.73	1.65	6.97

SECTION 4

POWER SUPPLY

There are Five Typical Electric Drive Motor Control Panels.

–ELECTRIC DRIVE MOTOR REFER TO SECTION 5 FOR SEPARATE INSTALLATION AND OPERATION SHEET OF THE DRIVE MOTOR AND CONTROL PANEL SUPPLIED FOR JOB.

1. VFD Control only
2. NEMA 4 enclosure - Stop / Start
3. NEMA 4 enclosure - Auto restart, (start on power up.)
4. NEMA 4 enclosure - Auto restart, Level Control, Stroke Counter.
5. NEMA 4 enclosure - Auto restart, High Level Tank Shut Off, Stroke Delay Timer.

*Control Panels can be customized to application.

SECTION 5

ANCHOR ELECTRIC STARTUP

MOTOR ROTATION IS VERY IMPORTANT

Drive Unit not installed yet (The easiest and best way to check for rotation)

1. Set the drive on the ground with at least two feet of room for the rod to move in and out.
2. Pull the rod out by hand at least one foot. If you can not pull the rod out by hand turn the motor counterclockwise till it is extended at least one foot.
3. Make sure power feed is disconnected and wire up the feed and the motor as shown on the schematics. Be sure to connect the feed and motor ground to the drive.
4. Turn the power and drive switch on.
5. If the motor does not move. Read the LOGO! screen:
   - If the screen says **"ALARM HIGH TANK LEVEL"** it will not pump until the high tank level signal is removed.
   - If the screen says **"STROKE DELAY"** see "Changing LOGO! Stroke Delay and Stroke Dwell Time" sheet and set Parameter 11, "TH" to 00:00.
   - If the screen says **"STROKE DWELL"** turn the stroke dwell switch to **OFF**.
   - If the screen says **"LOW LEVEL"** set the Auto/Hand selector switch to Hand mode. This will bypass the level control and the screen should now display **"HAND RUN"**
5. The rod should move in toward the motor first and then cycle out and in. The motor should first rotate clockwise as seen from above the motor.
6. If the rod moves in toward the motor first the rotation is correct. Go to step #9

continued

7. If the rod moves out away from the motor first the rotation is wrong. Turn the drive switch and the power off. **WAIT THREE MINUTES** Switch two of the motor leads, either at the motor T1 and T3 or U and W at the SUB-Micro (AC Tech). **Do not switch the power feed wires or L1, L2, L3 this will not reverse the rotation.**
8. Return to step #4
9. Turn the drive switch and power off. Connect the sucker rod and install drive unit on the well.
10. If the Auto/Hand selector switch was set to Hand mode reselect the Auto mode. The level control can not work unless the Auto/Hand selector switch is in the Auto mode.

Drive Unit installed on well

(We do not recommend checking for rotation with the drive Unit installed.)

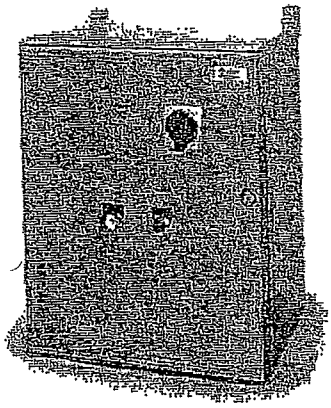
1. Make sure power feed is disconnected and wire up the feed and the motor as shown on the schematics. Be sure to connect the feed and motor ground to the drive.
2. If it is not possible to see motor rotation, remove any piping from the discharge tee. You will be able to see the rod moving inside the tee.
3. Turn the power and drive switch on. The motor should first rotate clockwise as seen from above the motor.
4. If the motor does not move. Read the LOGO! screen:
   - If the screen says **"ALARM HIGH TANK LEVEL"** it will not pump until the high tank level signal is removed.
   - If the screen says **"STROKE DELAY"** see "Changing LOGO! Stroke Delay and Stroke Dwell Time" sheet and set Parameter 11, "TH" to 00:00.
   - If the screen says **"STROKE DWELL"** turn the stroke dwell switch to **OFF**.
   - If the screen says **"LOW LEVEL"** set the Auto/Hand selector switch to Hand mode. This will bypass the level control and the screen should now display **"HAND RUN"**
5. If the rod moves up first or clockwise the rotation is correct. Go to step #8
6. If the rod moves down first or counter clockwise the rotation is wrong. Turn the drive switch and the power off. **WAIT THREE MINUTES** Switch two of the motor leads, either at the motor T1 and T3 or U and W at the SUB-Micro (AC Tech). **Do not switch the power feed wires or L1, L2, L3 this will not reverse the rotation.**
7. Return to step #3
8. Turn the drive switch and power off.
9. If the Auto/Hand selector switch was set to Hand mode reselect the Auto mode. The level control can not work unless the Auto/Hand selector switch is in the Auto mode.

SECTION 6

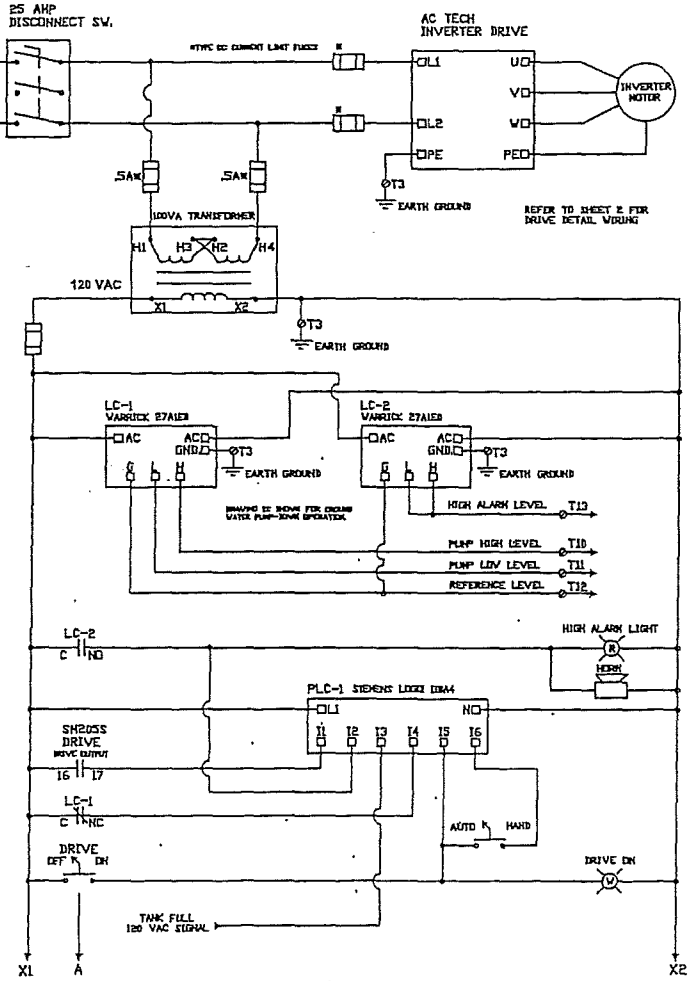
OPERATION

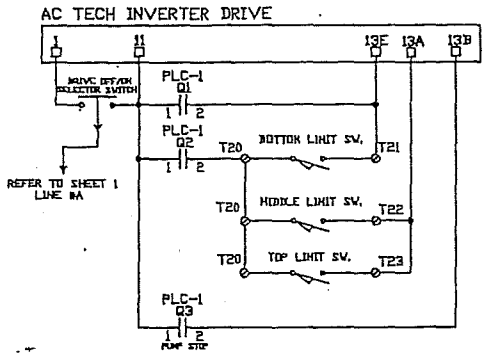
The Anchor Pump® and system should be periodically checked for fluid quality, pressure, drawdown, cycle rate, and performance of the stuffing box.

1. Visually inspect Anchor Pump® operation.
2. Check liquid discharge.
3. Check power connections.
4. Check seal plate relief ports.
5. Check piston seal.
   - Turn off power.
   - Remove power line from drive motor.
   - Disconnect pump driver from wellhead.
   - Disconnect pump driver from drive rod.
   - Extract piston rod from well.
   - Inspect piston seal and, if worn replace.
   - Reinstall.

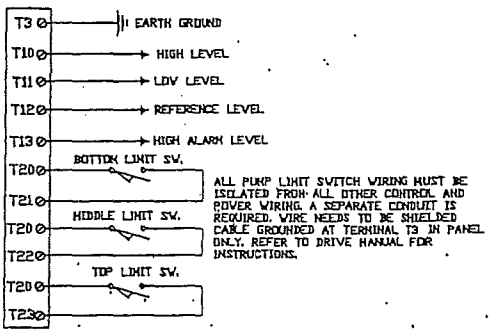


Control Panel



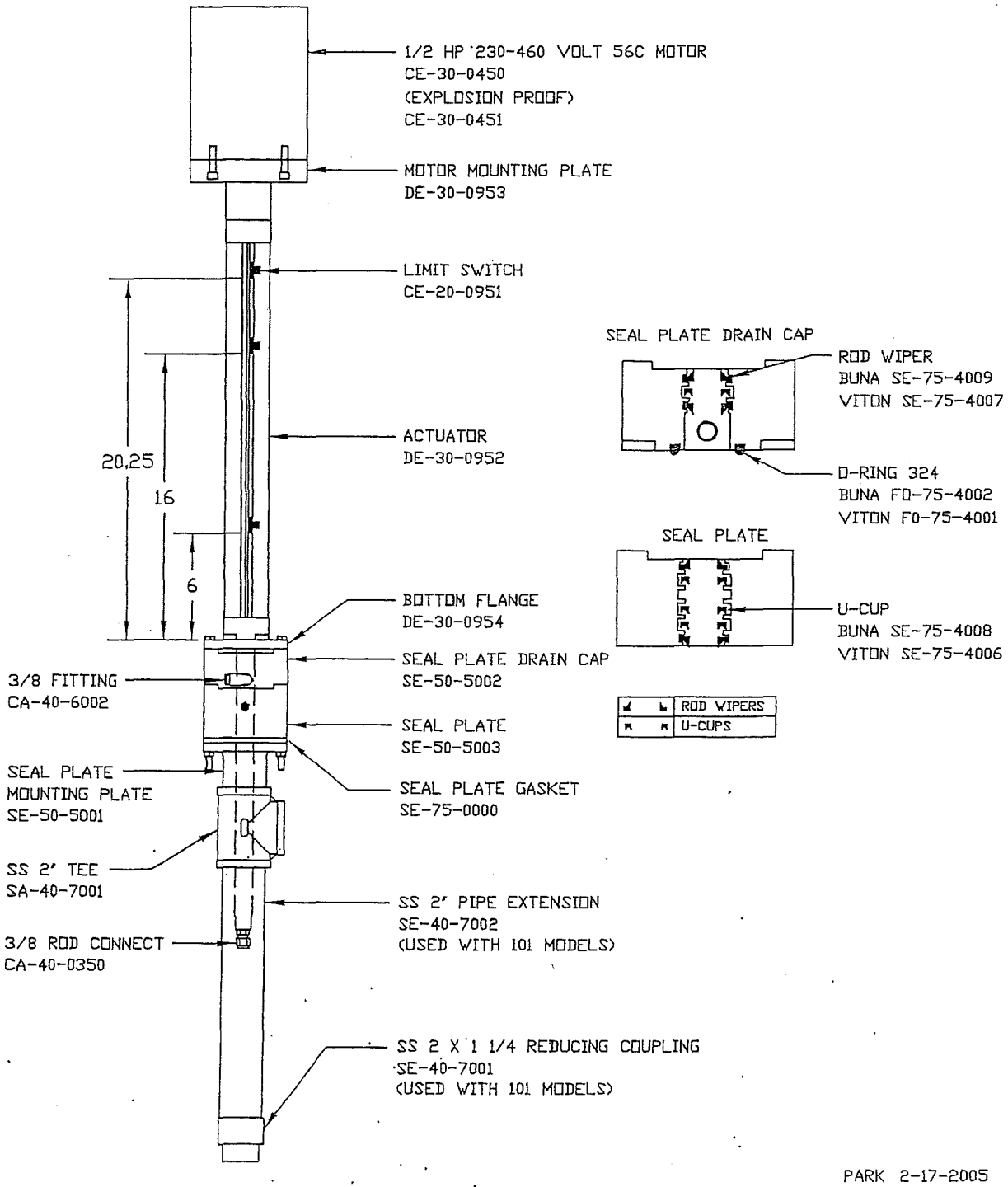


FIELD TERMINAL STRIP CONNECTION SUMMARY



SECTION 7

DRIVE MOTOR ASSEMBLY



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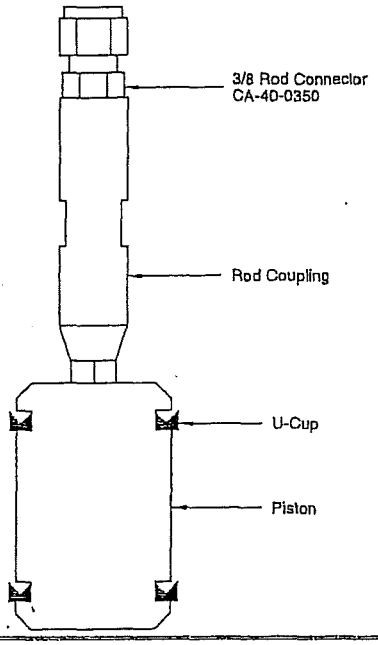
SECTION 8

DRIVE PISTON ASSEMBLY PARTS - SEAL KIT

CHK	ASSEMBLY TYPE	SEAL KIT NUMBER
	101 BUNA	P01DSB
	101 VITON	P01DSV
	102 BUNA	P02DSB
	102 VITON	P02DSV
	103 BUNA	P03DSB
	103 VITON	P03DSV



SECTION 9

Anchor Pump Troubleshooting Guide

OBSERVATION	CAUSE	SOLUTION
- Pump not operating	- No power	- Check to see that power supply is on, and that all connections are sound.
	- Variable Frequency Drive (VFD) fault	- Check VFD fault description in VFD booklet. If unable to get pump operating based upon booklet instructions.
- Electric driver not cycling properly	- Parameter settings or limit switch settings incorrect	- Remove electric driver from discharge tee (or well top). Disconnect down hole drive rod. Lay driver in dry flat space with room for rod to cycle in and out. Run system with provided control panel. If not cycling properly, check the limit switch positions and parameter settings on VFD and adjust if necessary.
- Pump driver operating (cycling), but not pumping liquid	- Restricted liquid discharge - Intake Plug - Piston drive disconnected - Drive piston not in pump cylinder	- Check for closed valve, clogged discharge, or any other obstruction. Remove obstruction and restart pump. - Reconnect down hole drive rod to electric drive rod. If separated at compression fitting, a replacement drive rod ferrule will be required. (Ferrules cannot be re-crimped.)

continued

Anchor Pump Troubleshooting Guide continued

OBSERVATION	CAUSE	SOLUTION
	- Down hole drive rod may have been cut incorrectly - Riser pipe string may have a leak	- Perform inflation (glove) test. Disconnect liquid discharge hose/pipe from pumps discharge tee. Hold latex glove (or other inflatable object) over discharge tee mouth. Seal with a tight grip. Allow pump to operate.
	- No liquid at pump intake (down hole) to pump	- Remove and re-cut or adjust rod length as per installation instructions. - Check pipe connections and check for cracks or leaks. Repair or replace compromised pipe or fittings. - Check to make sure that there is liquid to pump.
- *With drive rod and drive piston out of riser pipe, fill riser pipe with water.* Water drains out quickly	- Foot valve assembly/pipe string not water tight	- Remove riser pipe and footvalve assembly and inspect, replace, and/or repair.
- Water stays in riser pipe *(and drive rod and drive piston have been deemed OK)*	- Foot valve assembly/pump intake may be clogged	- Use drive rod extension poker to displace footvalve check ball and thus back flush foot valve and intake area. - If back flushing does not work, then remove riser pipe and footvalve assembly and inspect, replace, and/or repair.
- Drive rod / drive piston assembly tough to remove from footvalve assembly / riser pipe.	- Pump intake may be clogged	- Follow directions for clogged intake foot valve.
- Pump driver moving erratically when operating.	- Loose connections - Down hole drive rod length incorrect	- Check all connections to be sure they are tight. - Check rod length and adjust as per installation instructions.
- Pumped liquid in driver - Stuffing box drain port leakage.	- Pump driver exposed (submersed) to water - Stuffing box seals worn	- Replace stuffing box seals.

continued

CHANGING LOGO! STROKE DELAY AND STROKE DWELL TIME

Stroke delay allows the pump to be off for a time than on for a time (B11; TH and TL). Stroke dwell stops the pump at each up stroke for a given time it is selected by a Short, Medium and Long selector switch.

1. Press the "DOWN ARROW" once or twice to show the date and time.
2. Press "ESC".
3. Press "DOWN ARROW" to select "Set Param".
4. Press "OK".
5. Use the "UP ARROW" and "DOWN ARROW" to select:
   a) "B11" for stroke delay.
   b) "B33", "B34" and "B35" for short, medium or long dwell.
   c) Press "OK".
   d) For stroke delay use the "LEFT ARROW" and "RIGHT ARROW" to move between "TH" (time stopped) and "TL" (time running). Use the "UP ARROW" and "DOWN ARROW" to change the times. The time to the left of the ":" is hours and the numbers to the right of ":" is minutes. "Ta" should be ignored. If you do not wish to use stroke delay set "TH" to 00:00 and "TL" to 99:00.
   e) For stroke dwell use the arrows to move the cursor on "T", the numbers to the left of the ":" are minutes and the number to the right are seconds.
6. Press "OK" when finished.
7. Press "ESC" to get to main screen
8. Press "ESC" again.
9. Press the "UP ARROW" arrow to return to the message screen.

TROUBLESHOOTING SGM ELECTRIC DRIVE

1. Turn on the power and make sure that the LOGO! "Q1" momentary closes 3 seconds after being powered up. "Q2" closes after 4 seconds and "Q3" opens after 5 seconds. If "Q3" does not open after 7 seconds see below:
2. Read the LOGO! screen. If the screen says "ALARM HIGH TANK LEVEL" it will not pump until the high tank level is removed. This can be forced by removing the LOGO! I3 wire. Otherwise if the switch is turned to hand it will run. The LOGO! screen will say what condition the pump is in.
3. If the LOGO! screen says "STROKE DELAY" see "Changing LOGO! Stroke Delay and Stroke Dwell Time" sheet and set Parameter 11, "TH" to 00:00.
4. If the LOGO! screen says "STROKE DWELL" turn the stroke dwell switch to OFF.
5. If the LOGO! screen says "LOW LEVEL", at the Warrick Level control short "G", "L", and "H" together it should run now and it was not running because the water level was not high enough.

continued

TROUBLESHOOTING SCM CONTROL PANELS

Troubleshooting SCM Control Panels

1. Check Motor rotation. The power disconnect to the panel needs to be turned off for three minutes before each test. The correct rotation is clockwise looking at the motor from the top. See "ELECTRIC ANCHOR STARTUP" for details.
2. Turn on the power and make sure the drive switch is on.
3. If there is a wire connected to LOGO! I3 make sure there is not a 110 volt signal to it. This is the TANK FULL input. On panels with OBA4 LOGO!'s they will display "TANK FULL" when there is a signal. If there is a 110 volt signal the pump will not pump until the tank is emptied or the signal removed.
4. If there is a wire connected to LOGO! I4 make sure there is not a 110 volt signal to it. This is the LOW LEVEL input. On panels with OBA4 LOGO!'s they will display "LOW LEVEL" when there is a signal. If there is a 110 volt signal see step 10 for details.
5. Check limit switches for conductivity. Remove wires from terminal blocks in panel and test wires that come from the limit switches. The switches are normally open and close with a signal from a magnet. If limits have conductivity without a signal from a magnet or sporadic conductivity with a signal from a magnet replace limit switches. See actuator drawings for part numbers.
6. Check for 12 VDC at AC-Tech 1, 11, 13E, 13A, and 13B. AC-Tech 2 is the common lead.
7. If there is 12 VDC at 13B the pump will not run. That is the stop signal which comes from LOGO! Q3. Look at LOGO! Inputs.
8. If there is 12 VDC at 13E and 13A the pump will not run. Check limit switch conductivity again. 13E is the start signal from the LOGO! Q1 and the reverse signal from the bottom limit switch. 13A is the reverse signal from the middle and top limit switches. The AC-Tech can not run with two reverse signals.
9. To test the AC-Tech. Turn off the power disconnect to the panel. Label and remove the motor leads from the AC-Tech U, V, W, and PE. Label and remove 13E, 13A, and 13B. Turn on the power disconnect and the drive switch. Using a jumper wire touch 11 to 13E. The AC-Tech should display speed. Using a jumper wire touch 11 to 13A. The AC-Tech should count down then back up to speed. If the AC-Tech tests good turn off power disconnect and reconnect all wires.
10. To test Warrick. Label and remove probe wires from terminals T10, T11, and T12. The NC contact should be sending a 110 volt signal to LOGO! I4. On panels with OBA4 LOGO!'s they will display "LOW LEVEL" when there is a signal. Make sure power and drive switch are on. Jumper terminals on lower part of Warrick G, L, and H all together. The 110 volt signal now should not be at LOGO! I4. Remove the jumper going to H and the signal should still not be at LOGO! I4. Remove the jumper going to L and signal should now be back to LOGO! I4. If the Warrick tests good and Level control does not work properly there is a problem with the probes.

If you still have problems call Blackhawk at 630-469-4916.

SECTION 10

LIMITED WARRANTY

Anchor Pumps® manufactured by Blackhawk Environmental Company (Blackhawk) are warranted to the original user only to be free of defects in material and workmanship for a period of 12 months from date of manufacture. Blackhawk's liability under this warranty shall be limited to repairing or replacing at Blackhawk's option, without charge, F.O.B. Blackhawk's factory, any product of Blackhawk manufacture. Blackhawk will not be liable for any costs of removal, installation, transportation, or any other charges which arise in connection with a warranty claim. Products which are sold but not manufactured by Blackhawk are subject to the warranty provided by the manufacturer of said products and not by Blackhawk's warranty. Blackhawk will not be liable for damage or wear to said products by abnormal operating conditions, accident, abuse, misuse, unauthorized alteration or repair, or if the product was not installed in accordance with Blackhawk's printed installation and operating instructions.

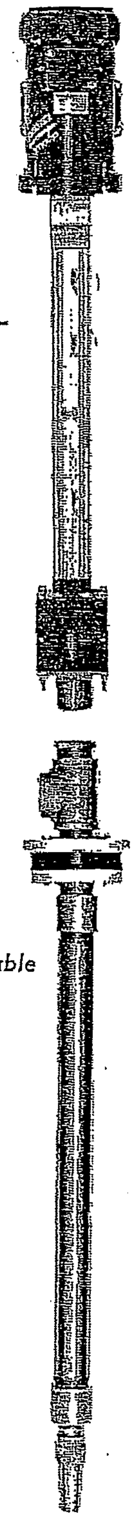
To obtain service under this warranty, the defective product must be returned to Blackhawk together with proof of purchase and installation date, failure date, and supporting installation data. Unless otherwise provided, contact will be made to Blackhawk for instructions prior to return of defective product. Any defective product to be returned to Blackhawk must be sent freight prepaid; documentation supporting the warranty claim and/or a Return Material Authorization must be included if so instructed.

Blackhawk will not be liable for any incidental or consequential damages, losses, or expenses arising from installation, use or any other causes. There are not expressed or implied warranties, including merchantability or fitness for a particular purpose, which extend beyond those warranties described or referred to above.

Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages and some jurisdictions do not allow limitations on how long implied warranties may last. Therefore, the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from jurisdiction to jurisdiction.

Anchor Electric Piston Pump® Model 101E

Patented Top-Head-Drive Piston Pump



Flow Range
0-1.35 US GPM 5.1 LPM
Operational Depth
804 Ft. 245 M with 1 hp motor
Well Casing Size
Minimum 2 In. 4.85 CM

Description

The Anchor Electric Piston Pump Model 101E is powered by electricity. The control motor is located at surface grade for easy installation and maintenance. Power to the pump is direct from grade through the sucker rod assembly. The pump removes water and product (e.g. oil, solvents, leachate) from a two (2) inch (4.85 cm) diameter well casing or greater to depths of 804 feet (245 meters) with a 1 hp motor. The fluid inlet is located at the bottom of the pump intake cylinder and removes water or product to 0 submergence depth.

Performance and Technical Data

Performance

Operational Depth	804'
Flow Range	0 to 1.35 US GPM / 5.1 LPM 1900 US GPD / 7300 LPD
Discharge per Stroke	.05 US Gallons per stroke Note: flow does not vary with depth
Motor	1/2 or 1 hp
Power Supply	120 or 230 Volt Single Phase or 230 or 460 Volt Three Phase
Maximum Discharge Pressure	348 PSI
Maximum Lift	804 feet of water or 348 PSIG Variable speed (stroke) control adjusts to well conditions; liquid drawn down to top of strainer.

Technical

Stroke Length	12" (30.48 cm)
Maximum External Diameter	2.9" (7.37 cm)
Total Cylinder Length	30" (76.2 cm)
Connection of Riser Pipe	1-1/4" (3.18 cm)
Connection to Sucker Rod	7/16" - 20
Recommended Internal Diameter of Bore Hole	2-3" (4.85 - 7.62 cm) or greater diameter
Weight of Cylinder	8 lbs.
Discharge Size	2" NPT
Installation	Unit can be installed vertically or horizontally
Driver Weight	40 lbs.
Driver Rod Weight	12 lbs./100'
Foot Valve Assembly Weight	8 lbs.
Minimum Well Casing Size	2"

* Up to 1000 feet.

Anchor Electric Piston Pump®

Model 101E

Materials of Construction:

(Materials of construction can be modified to meet specific applications)

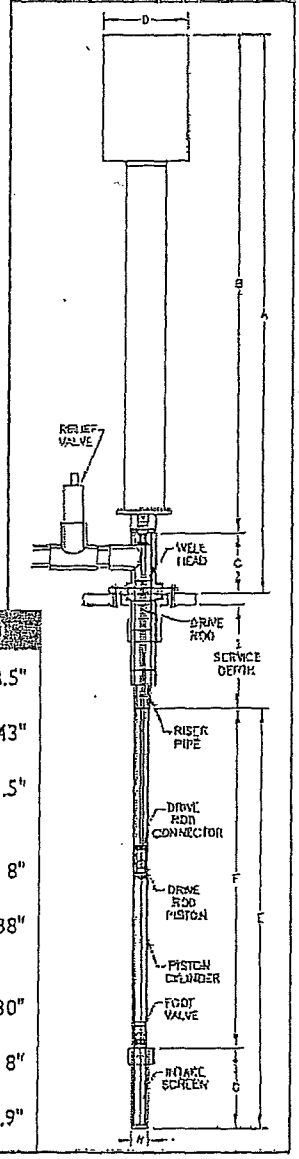
Above Ground

Drive Motor	Stainless Steel/Aluminum
Seal Plate	Delrin®
Seal Plate Seals	Nitrile/Viton
Relief Valve	Stainless Steel
Discharge Tee	PVC
Well Head	Steel

Downhole

Drive Rod	Fiberglass
Drive Rod Connector	Stainless Steel
Drive Piston Seal	Nitrile/Viton
Drive Piston Check Ball	Stainless Steel
Drive Piston	Delrin®
iston Cylinder	Stainless Steel/PVC
Foot Valve Check Ball	Stainless Steel
Foot Valve	Stainless Steel
Intake Screen	Stainless Steel/PVC

Pump Dimensions

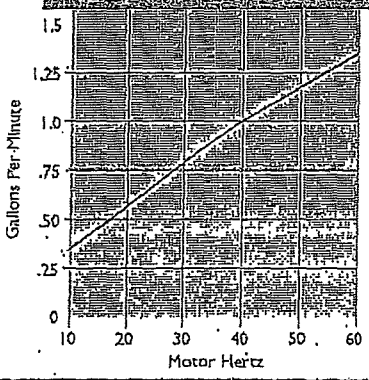


A	Above Well Height..... 48.5"
B	Driver Height..... 43"
C	Discharge Tee & Well Seal Height ..... 5.5"
D	Driver Diameter..... 8"
E	Foot Valve Assembly Length..... 38"
F	Foot Valve Length..... 30"
G	Intake Screen Length ..... 8"
H	Downhole Diameter .... 1.9"

Available Options

- ✓ Level Control Systems
- ✓ Hazardous Duty Components
- ✓ Metered Flow Control
- ✓ Flow Measurement
- ✓ Variable Frequency Drive
- ✓ SCADA Capability

Anchor 101E Electric Pump Flow Performance*



* Up to 1000 feet.

ATTACHMENT C

Monthly Volume & pH/Conductance Data Form

WAYNE DISPOSAL SITE #2

LEAK DETECTION SYSTEM PUMPING AND SAMPLING RECORD

DATE:_____

MASTER CELL:_____CELL: _____

NAME:_____

DATE OF LAST READING:_____

METER READING PRIOR TO PUMPING:_____

METER READING AFTER PUMPING:_____

SUMP PUMPED DRY? YES_____NO_____

VOLUME PUMPED (gallons):_____

SPECIFIC CONDUCTANCE:_____pH_____

CONDITION OF SUMP/METER: _____

_____

_____

_____

OTHER COMMENTS (INCLUDE DESCRIPTION OF SAMPLE IF ANY UNUSUAL CHARACTERISTICS ARE OBSERVED) :_____

_____

_____

_____

_____

NOTE: THIS RECORD MUST BE FILED IN QEHS FILES

ATTACHMENT D

Handling Requirements of Monitoring Parameters

Handling Requirements of Monitoring Parameters

Parameter	Code	Perservation	Holding Time	Bottle Type	Minimum Volume
Total Phenolics	PHN	1,2	28 Days	Glass	0.5 L
Sulfate	SO4	2	28 Days	Plastic	50 ml*
Alkalinity	ALK	2	14 Days	Plastic	100 ml*
Chloride	CL-	2	28 Days	Plastic	50 ml*
Nitrate/Nitrite	NPN	1,2	48 Hrs	Plastic	0.5 L
Aluminum	AL	3,5	6 Mos	Plastic	200 ml**
Antimony	SB	3,5	6 Mos	Plastic	200 ml**
Arsenic	AS	3,5	6 Mos	Plastic	200 ml**
Barium	BA	3,5	6 Mos	Plastic	200 ml**
Beryllium	BE	3,5	6 Mos	Plastic	200 ml**
Cadmium	CD	3,5	6 Mos	Plastic	200 ml**
Calcium	CA	3,5	6 Mos	Plastic	200 ml**
Chromium	CR	3,5	6 Mos	Plastic	200 ml**
Chromium, Hexavalent	CR6	2,5	24 Hrs	Plastic	100 ml
Cobalt	CON	3,5	6 Mos	Plastic	200 ml**
Copper	CU	3,5	6 Mos	Plastic	200 ml**
Iron	FE	3,5	6 Mos	Plastic	200 ml**
Potassium	K	3,5	6 Mos	Plastic	200 ml**
Lead	PB	3,5	6 Mos	Plastic	200 ml**
Magnesium	MG	2,3,5	6 Mos	Plastic	200 ml**
Manganese	MN	2,3,5	6 Mos	Plastic	200 ml**
Mercury	HG	3,5	6 Mos	Plastic	200 ml**
Molybdenum	MO	2,3,5	6 Mos	Plastic	200 ml**
Nickel	NI	2,3,5	6 Mos	Plastic	200 ml**
Selenium	SE	3,5	6 Mos	Plastic	200 ml**
Silver	AG	3,5	6 Mos	Plastic	200 ml**
Sodium	NA	3,5	6 Mos	Plastic	200 ml**
Thallium	TL	3,5	6 Mos	Plastic	200 ml**
Tin	SN	3,5	6 Mos	Plastic	200 ml**
Vanadium	VA	3,5	6 Mos	Plastic	200 ml**
Zinc	ZN	3,5	6 Mos	Plastic	200 ml**
pH	pH		Immediate	Plastic	25 ml
Bicarbonate	BAL	2	14 Days	Plastic	100 ml*
Carbonate	CAL	2	14 Days	Plastic	100 ml*
TOC	TOC	7	28 Days	Glass	100 ml
Specific Conductivity	CON	2	28 Days	Plastic	100 ml
Total Cyanide	TCN	2,4	14 Days	Plastic	500 ml
Amenable Cyanide	ACN	2,4	14 Days	Plastic	500 ml
Volatile Organics	VOC	2,6	14 Days	Glass	2x40 ml
PCBs	PCB	2	7 Days-Extraction	Glass	2 L
		2	40 Days-Analysis	Glass	40 ml

1) pH<2 with concentrated Sulfuric Acid
2) Store at 4 degrees centigrade
3) pH<2 with nitric acid
4) pH>12 with sodium hydroxide
5) Filtered in the field using 0.45 micron membrane filters on the time of collection
6) 4 drops HCL, no headspace
7) pH<2 with hydrochloric acid

* Note: One liter for all of these parameters stored similarily
** Note: One liter for all of these parameters stored similarily

ATTACHMENT E

Method Detection Limits for Organic & Inorganic Parameters

METHOD DETECTION LIMITS FOR INORGANIC PARAMETERS

PARAMETER	MDL (mg/L)	METHOD REFERENCE
TOTAL PHENOLICS	0.01	9066
SULFATE	2	ASTM D516-90
TOTAL ALKALINITY	10	2320B
CHLORIDE	1.0	4500-Cl E
NITRATE/NITRITE	0.01	4500-NO3 F
ALUMINUM	0.05	6020/202.2
ANTIMONY	0.001	6020/7041
ARSENIC	0.001	7061/6020
BARIUM	0.005	6010/6020
BERYLLIUM	0.001	6010/6020
CADMIUM	0.0002	6020/7131
CALCIUM	1.0	6010
CHROMIUM	0.001	6010/6020
HEX. CHROMIUM	0.005	7196
COBALT	0.015	6020/6010
COPPER	0.01	6010/6020
IRON	0.02	6010
LEAD	0.001	7421/6020
MAGNESIUM	1.0	6010
MANGANESE	0.005	6010/6020
MERCURY	0.0002	7470
MOLYBDENUM	0.025	6010/6020
NICKEL	0.002	6010/6020
POTASSIUM	0.1	6010
SELENIUM	0.001	7741/6020
SILVER	0.0002	6020/7760
SODIUM	1.0	6010
THALLIUM	0.002	6020/7841
TIN	0.2	6010/6020
VANADIUM	0.002	6010/6020
ZINC	0.01	6010/6020
pH	N/A	150.1
BICARBONATE	10	2320B
CARBONATE	10	2320B
TOTAL CYANIDE	0.005	4500-CN G
CYANIDE	0.005	4500-CN G
TOTAL ORGANIC CARBON	0.2	5310C
SPEC. CONDUCTANCE	5 (umhos/cm)	2510B

Note: Detection limits meet those in MDEQ Operational Memo Gen-8 Revision 8 - 12/22/06. This table should be revised in the event Op Memo Gen-8 is updated

References:
Methods referenced from TEST METHODS FOR EVALUATING SOLID WASTE, USEPA SW-846, STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, 20th Edition, and USEPA METHODS FOR CHEMICAL ANALYSIS OF WATER AND WASTEWATER, 3/83 and METHODS FOR ORGANIC ANALYSIS OF MUNICIPAL AND INDUSTRIAL WASTEWATER, 10/84

METHOD DETECTION LIMITS - ORGANIC ANALYSIS

Parameter	Method Reference	Detection Limit (mg/l)
Acetone	8260B	0.020
Bromodichloromethane	8260B	0.001
Bromoform	8260B	0.001
Bromomethane	8260B	0.005
Carbon tetrachloride	8260B	0.001
Chlorobenzene	8260B	0.001
Chloroethane	8260B	0.005
2-Chloroethylvinyl Ether	8260B	0.010
Chloroform	8260B	0.001
Chloromethane	8260B	0.001
Dibromodifluoromethane	8260B	0.001
1,2 Dichlorobenzene	8260B	0.001
1,3 Dichlorobenzene	8260B	0.001
1,4 Dichlorobenzene	8260B	0.001
Dichlorodifluoromethane	8260B	0.001
1,1-Dichloroethane	8260B	0.001
1,2-Dichloroethane	8260B	0.001
1,1-Dichloroethene	8260B	0.001
1,2-Dichloroethene	8260B	0.001
1,2 Dichloropropane	8260B	0.001
cis-1,3 Dichloropropene	8260B	0.001
trans-1,3 Dichloropropene	8260B	0.001
1,1,1,2, Tetrachloroethane	8260B	0.001
1,1,2,2, Tetrachloroethane	8260B	0.001
Tetrachloroethene	8260B	0.001
1,1,2-Trichloroethane	8260B	0.001
1,1,1-Trichloroethane	8260B	0.001
Trichloroethene	8260B	0.001
Trichlorofluoromethane	8260B	0.001
Vinyl Chloride	8260B	0.001
Methylene Chloride	8260B	0.005
2- Butanone (MEK)	8260B	0.005
Benzene	8260B	0.001
Toluene	8260B	0.001
Ethylbenzene	8260B	0.001
Total Xylenes	8260B	0.003
PCB-1016	8082	0.0001
PCB-1221	8082	0.0001
PCB-1232	8082	0.0001
PCB-1242	8082	0.0001
PCB-1248	8082	0.0001
PCB-1254	8082	0.0001
PCB-1260	8082	0.0001

Note: Detection limits meet those in MDEQ Operational Memo Gen-8 Revision 8 - 12/22/06. This table should be revised in the event Op Memo Gen-8 is updated

Reference: Methods referenced from TEST METHODS FOR EVALUTION SOLIDS WASTE, USEPA SW-846

ATTACHMENT F

Chain-of-Custody

Tr...atrix Laboratories, Inc.
5560 Corporate Exchange Court SE Grand Rapids, MI 49512
Phone (616) 975-4500 Fax (616) 942-7463
www.trimatrixlabs.com

Chain of Custody Record

COC No. 1[illegible]5809

Page ____ of ____

For Lab Use Only

art:

OA Rack/Tray:

eceipt Log No.:

roject Chemist:

aboratory Project No.:

Client Name	Project Name
Address	Client Project No. / P.O. No.
	Invoice To ☐ Client ☐ Other (comments)
Phone	Contact/Report To
Fax	

Analyses Requested

PRESERVATIVES
- A NONE pH~7
- B HNO_3 pH<2
- C H_2SO_4 pH<2
- D 1+1 HCl pH<2
- E NaOH pH>12
- F ZnAc/NaOH pH>9
- G MeOH
- H Other (note below)

Container Type (corresponds to Container Packing List)

Test Group	Matrix Code	Laboratory Sample Number		Sample ID	Cooler ID	Sample Date	Sample Time	COMP	GRAB	Matrix	Number of Containers Submitted										Total	Sample Comments
			1																			
			2																			
			3																			
			4																			
			5																			
			6																			
			7																			
			8																			
			9																			
			10																			

ampled By (print)	How Shipped? Hand Carrier________	Comments	
ampler's Signature	Tracking No.		
ompany	1. Relinquished By Date Time	2. Relinquished By Date Time	3. Relinquished By Date Time
	1. Received By Date Time	2. Received By Date Time	3. Received For Lab By Date Time

ATTACHMENT G

Statistical Program for the LDCRS

Attachment G - LDCRS Statistical Monitoring Plan

STATISTICAL EVALUATION

The statistical program for LDCRS monitoring utilizes Nonparametric Prediction Limits (NPPLs) to evaluate the monitoring data. In order to balance false positive and statistical power with this test, resamples are used, the number of which are determined by the number of sampling points and the number of background observations. Since there is no "upgradient" in the LDCRS system, and there was no substantial pre-waste disposal sampling program, the definition of background is not defined in a traditional sense. Thus the use of resamples is selected somewhat arbitrarily (see below).

The NPPL is defined as the highest concentration of a monitoring parameter detected in a background sample. For parameters that are never detected in the background, the NPPL is defined as the reported detection limit. Since the parameters to be analyzed statistically are all organic compounds, the reported detection limit, as listed on Attachment E of the LDCRS Sampling and Analysis Plan are the NPPLs. Therefore, any reported concentration of an Attachment F parameter at or above these limits is considered an apparent statistically significant increase.

If an Attachment E compound is detected, then the NPPL been exceeded and WDI will immediately notify the Waste Management Division (WMD) of the Michigan Department of Environmental Quality (MDEQ) and arrange resampling as soon as possible to confirm or refute

the apparent statistically significant increase. Quadruplicate samples will be collected for confirmation purposes and analyzed for the offending parameter(s). Since these quadruplicates are not independent samples, it does not constitute a multiple resampling as defined by the NPPL test. Thus the quadruplicate samples constitute a single resampling. If three of the four quadruplicate samples are clean, then the statistical increase is not confirmed. If two or more of the quadruplicates contain the compound of interest the apparent increase will be deemed confirmed and WDI shall respond in accordance with the current Operating License.

Attachment 15

Lysimeter Monitoring Program Sampling and Analysis Plan

Section 30

LYSIMETER MONITORING SAMPLING AND ANALYSIS PLAN

WAYNE DISPOSAL SITE #2 HAZARDOUS WASTE LANDFILL
MID 048 090 633

REVISION 2.0 – January, 1995
REVISION 2.1 – May, 1999
REVISION 2.2- October 2000
REVISION 2.3 – October 2009

LYSIMETER MONITORING SAMPLING AND ANALYSIS PLAN

WAYNE DISPOSAL SITE #2 HAZARDOUS WASTE LANDFILL
MID 048 090 633

REVISION 2.0 – January, 1995
REVISION 2.1 – May, 1999
REVISION 2.2- October 2000
REVISION 2.3 – October 2009

1.0 INTRODUCTION

The following sampling and analysis plan outlines the procedures to be used for the collection and analysis of samples from the suction lysimeters present beneath the hazardous waste management areas (HWMA) of Master Cells V and VII at Wayne Disposal Site #2 Hazardous Waste Landfill. The lysimeter monitoring program functions as an early leak detection program beneath the lowest point (leachate collection sumps) of the HWMA subcells within these Master Cells. There are ten lysimeters in place. They were installed as five pairs so that adequate volume could be extracted for samples at each location. Pairs are located beneath cells V-B, VII-A, VII-B and VII-C (2 pairs identified as VII-C west and VII-C east). The locations of the lysimeters are shown on Figure 1.

This sampling and analysis plan has been prepared to direct the efforts of monitoring personnel in the collection and analysis of samples so as to meet the requirements of Michigan Act 451, Part 111 for the facility and to ensure sound practices for the collection of these data. This plan must be revised if there are any changes to the procedures contained herein. Any proposed changes must be submitted to the Waste & Hazardous Materials Division (WHMD) of the Michigan Department of Environmental Quality (MDEQ) for review and approval before the changes are implemented..

2.0 DESCRIPTION OF EQUIPMENT

The lysimeters were placed beneath the cell by angle drilling at an angle of approximately 65° from vertical to a depth approximately 50 feet below ground surface and at least 5 feet below the lowest point of the bottom of the cell. A drawing of a typical installation is shown on Figure 2. The suction lysimeter system consists of a lysimeter, which takes in the moisture from the surrounding soil, vacuum tubing, and because of the depth, a transfer vessel at mid-depth. The lysimeters were manufactured by Timco Manufacturing and are composed entirely of Teflon™, as is the tubing and transfer vessel. There is a 2-inch PVC casing attached to the transfer vessel. The "sand-pack" placed around the lysimeter is a silica flour slurry. The whole system is cased in a 6-inch steel casing to within four feet of the lysimeter assembly. Bentonite pellets were used to seal the lysimeter and silica pack from possible seepage from above. At the surface there are three lines with stop-cocks: (one with a pressure gauge) for pressurizing the lysimeter, one to pressurize the transfer vessel and one for transmitting the sample.

3.0 SAMPLE COLLECTION PROCEDURES

Samples of the water collected by the lysimeters are collected on a semi-annual basis. The sampling process involves applying a vacuum to the system to draw moisture into the lysimeter, transferring the water from the lysimeter to the transfer vessel and then applying pressure to the transfer vessel to drive the sample to the surface. This is generally a 3-day process. During the first day, check to make sure the gauge is in working order. Then, set the initial vacuum by opening the stop-cock on the line with the pressure gauge and applying 10-20 psi using a hand pump. Close the stop-cock. On the second day, repeat this process. To sample the system on

the third day, hook-up a breathable quality compressed air tank or nitrogen tank to the line with the gauge. Open the stop-cocks on each line. Apply about 8-10 psi for 2-3 minutes. Hook-up the compressed gas tank to the transfer vessel pressure line and apply 25-30 psi. The sample will be discharged from the sample line. Collect the samples and close the stopcocks. Samples from pairs may be composited if insufficient sample is collected from a single lysimeter.

Protective gloves must be worn during sample collection and care should be taken to ensure minimal agitation/aeration of the samples. The vials must be filled completely with zero head-space. Each sample container must be carefully labeled with the sampling location, time and date, and the sampler's initials. After collection, the samples must be stored in a clean cooler containing ice or ice packs. The coolers containing samples must be stored in a secure location until transport to the laboratory.

A field blank must be collected with each lysimeter sample collected. A trip blank must be maintained for each day the lysimeters are sampled. Due to the difficulty in getting enough sample for analysis, duplicate samples are not collected for the lysimeter monitoring program.

A chain of custody form must be filled out for each sampling event. This form must be filled out fully for each sample submitted for analysis and each person responsible for the handling of these samples must sign and date the form. When the samples are delivered to the laboratory and the lab has signed for their receipt, a copy of this form must be forwarded to the QEHS Department.

4.0 SAMPLE ANALYSIS

Each sample must be analyzed for the parameters listed on Figure 3, which also contains the analytical methods and targeted method detection limits. Laboratory Quality control frequencies and precision/accuracy requirements are provided in the Quality Assurance Manual for the current contract laboratory, TriMatrix Laboratories, which is contained in the Groundwater Sampling and Analysis Plan for this facility. This manual describes the internal policies, guidelines and procedures of TriMatrix. This manual is not intended to describe the specific details of this particular monitoring program. Rather, we are to use this document as a guideline in evaluating the current laboratory's QA/QC and standard operating procedures to ensure that generally acceptable practices are employed.

5.0 RECORD KEEPING AND INSPECTION REQUIREMENTS

There are two items required to ensure adequate record keeping for the lysimeter monitoring program. First, the lysimeter sampling and inspection log (Figure 4) must be filled out at each sampling location during each sampling event. The log must include the identity of sampling personnel, the dates and time when samples are collected, a description of the sampling event, and any pertinent observations of sample characteristics or sampling environment. In addition, this form must be used to record an inspection of the lysimeter outlet including the pressure gauges, stopcocks and the outer protective casing. Second, a chain of custody form must be filled out for each sampling event, as described above. This form must be filled out fully for each sample submitted for analysis and each person responsible for the handling of these samples must sign and date the form.

6.0 DATA EVALUATION AND REPORTING REQUIREMENTS

The data must be received from the laboratory, evaluated and transmitted to the MDEQ within 60 days of sampling. The statistical analysis of the data is identical to that for the LDCRS monitoring program and is provided as Attachment A. An apparent statistically significant increase identified by the statistical test must be reported to MDEQ within 24 hours. An apparent statistically significant increase must be confirmed or refuted by resampling. In general, the lysimeters do not recharge for at least several months. Any lysimeter yielding an apparent statistically significant must be resampled within 3 months unless insufficient sample can be collected. If there is insufficient sample within 3 months this result must be reported to MDEQ along with a schedule for attempting the next sample. . Confirmed statistically significant increases must also be transmitted immediately to the MDEQ.

The semi-annual reports must include a description of the sampling event, a summary of field and laboratory QA/AC information, the field logs and a summary of any non-compliances or maintenance performed.

THE ENVIRONMENTAL QUALITY COMPANY	LOCATION: WAYNE DISPOSAL SITE #2	TITLE: LYSIMETER LOCATION PLAN
	SCALE: 1" = 300' DATE: 10/11/95	FILENAME: WDS2LYS

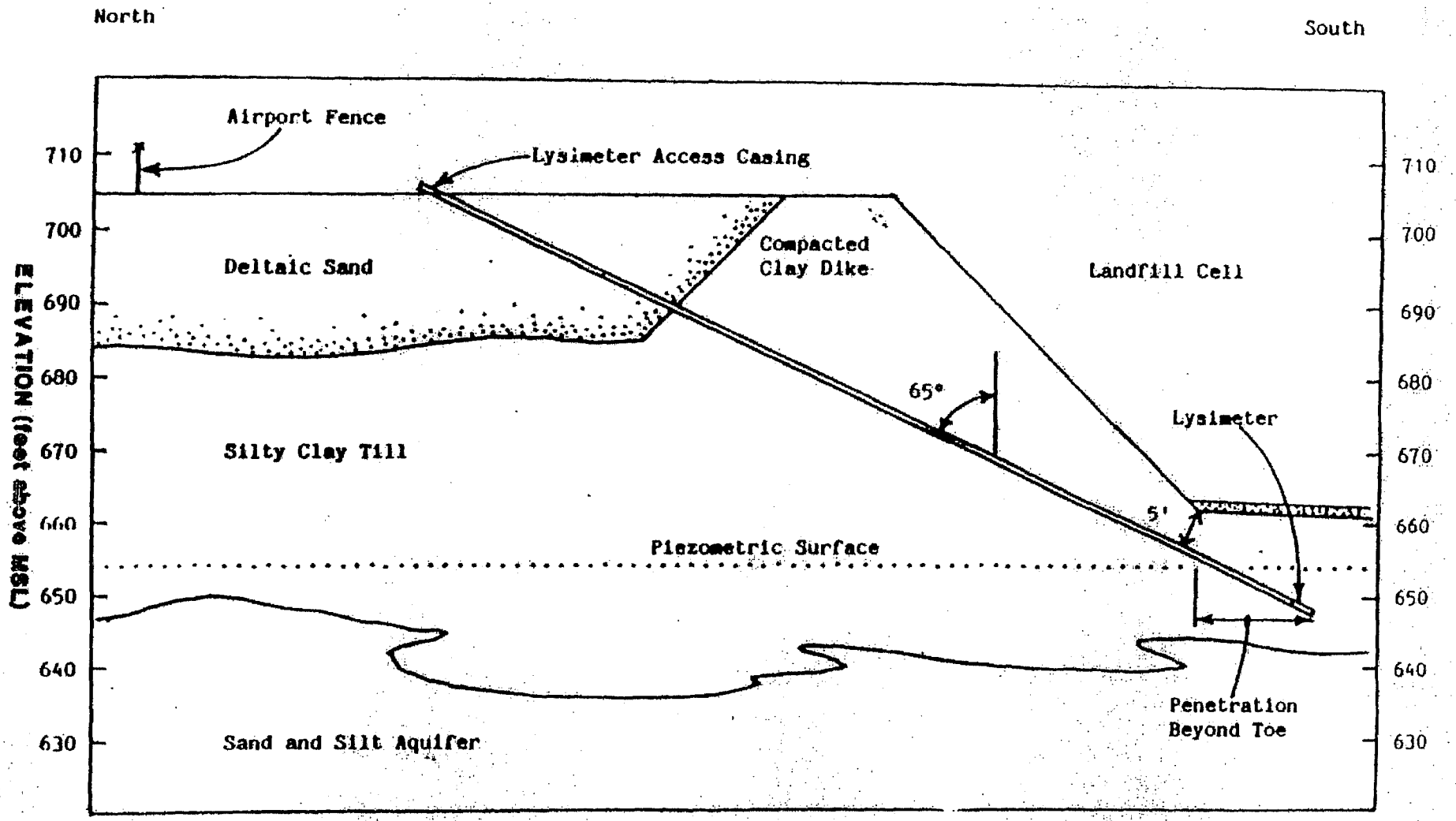


Figure 2

Lysimeter Installation Geometry at Wayne Disposal.

(HORIZONTAL NOT TO SCALE)

FIGURE 3. METHOD DETECTION LIMITS - ORGANIC ANALYSIS

Parameter	Method Reference	Detection Limit (mg/l)
Acetone	8260B	0.020
Bromodichloromethane	8260B	0.001
Bromoform	8260B	0.001
Bromomethane	8260B	0.005
Carbon tetrachloride	8260B	0.001
Chlorobenzene	8260B	0.001
Chloroethane	8260B	0.005
2-Chloroethylvinyl Ether	8260B	0.010
Chloroform	8260B	0.001
Chloromethane	8260B	0.001
Dibromodifluoromethane	8260B	0.001
1,2 Dichlorobenzene	8260B	0.001
1,3 Dichlorobenzene	8260B	0.001
1,4 Dichlorobenzene	8260B	0.001
Dichlorodifluoromethane	8260B	0.001
1,1-Dichloroethane	8260B	0.001
1,2-Dichloroethane	8260B	0.001
1,1-Dichloroethene	8260B	0.001
1,2-Dichloroethene	8260B	0.001
1,2 Dichloropropane	8260B	0.001
cis-1,3 Dichloropropene	8260B	0.001
trans-1,3 Dichloropropene	8260B	0.001
1,1,1,2, Tetrachloroethane	8260B	0.001
1,1,2,2, Tetrachloroethane	8260B	0.001
Tetrachloroethene	8260B	0.001
1,1,2-Trichloroethane	8260B	0.001
1,1,1-Trichloroethane	8260B	0.001
Trichloroethene	8260B	0.001
Trichlorofluoromethane	8260B	0.001
Vinyl Chloride	8260B	0.001
Methylene Chloride	8260B	0.005
2- Butanone (MEK)	8260B	0.005
Benzene	8260B	0.001
Toluene	8260B	0.001
Ethylbenzene	8260B	0.001
Total Xylenes	8260B	0.003

Note: Detection limits meet those in MDEQ Operational Memo Gen-8 Revision 8 - 12/22/06. This table should be revised in the event Op Memo Gen-8 is updated

Reference: Methods referenced from TEST METHODS FOR EVALUTION SOLIDS WASTE, USEPA SW-846

Figure 4. Lysimeter Sample Collection and Inspection Log - WDI Site #2

Sample ID:	Sample Date:	Sample Time:
Sample Location:	**Sampling Method:**	**Sampler:**
Sample Description/Comments*:		
Inspection Items: (indicate by checkmark if OK, comment if not) **Pro-Casing:**____________ **Gauge:**________________ **Stopcocks:**__________________________		

Sample ID:	Sample Date:	Sample Time:
Sample Location:	**Sampling Method:**	**Sampler:**
Sample Description/Comments*:		
Inspection Items: (indicate by checkmark if OK, comment if not) **Pro-Casing:**____________ **Gauge:**________________ **Stopcocks:**__________________________		

Sample ID:	Sample Date:	Sample Time:
Sample Location:	**Sampling Method:**	**Sampler:**
Sample Description/Comments*:		
Inspection Items: (indicate by checkmark if OK, comment if not) **Pro-Casing:**____________ **Gauge:**________________ **Stopcocks:**__________________________		

Sample ID:	Sample Date:	Sample Time:
Sample Location:	**Sampling Method:**	**Sampler:**
Sample Description/Comments*:		
Inspection Items: (indicate by checkmark if OK, comment if not) **Pro-Casing:**____________ **Gauge:**________________ **Stopcocks:**__________________________		

* Note clarity of samples and any color, sheen, odor or other relevant characteristics of the sample

Attachment A
Statistical Analysis

Attachment A – Lysimeter Statistical Monitoring Plan

INTRODUCTION

The following statistical monitoring plan provides a description of the statistical procedures used for identifying a statistically significant increase of monitoring parameters in the lysimeter monitoring program at WDI. The program is intended to provide an early warning that hazardous waste constituents may be penetrating the liner systems of cells V-B, VII-A, VII-B and VII-C East and VII-C West.

STATISTICAL EVALUATION

The statistical program for lysimeter monitoring utilizes Nonparametric Prediction Limits (NPPLs) to evaluate the monitoring data. In order to balance false positive and statistical power with this test, resamples are used, the number of which are determined by the number of sampling points and the number of background observations. Since there is no "upgradient" in the lysimeter network, and there were pre-waste disposal samples collected from these devices, the definition of background is not defined in a traditional sense. Thus the use of resamples is selected somewhat arbitrarily (see below).

The NPPL is defined as the highest concentration of a monitoring parameter detected in a background sample. For parameters that are never detected in the background, the NPPL is defined as the reported detection limit. Since the parameters to be analyzed statistically are all

volatile organic compounds, the reported detection limit, as listed on Figure 3 of the Lysimeter Sampling and Analysis Plan are the NPPLs. Therefore, any reported concentration of a Figure 3 parameter at or above these limits is considered an apparent statistically significant increase.

If a Figure 3 compound is detected, then the NPPL been exceeded and WDI will immediately notify the Waste Management Division (WMD) of the Michigan Department of Environmental Quality (MDEQ) and arrange resampling as soon as possible to confirm or refute the apparent statistically significant increase. Quadruplicate samples, if there is sufficient volume, will be collected for confirmation purposes and analyzed for the offending parameter(s). Since these quadruplicates are not independent samples, it does not constitute a multiple resampling as defined by the NPPL test. Thus the quadruplicate samples constitute a single resampling. If three of the four quadruplicate samples are clean, then the statistical increase is not confirmed. If two or more of the quadruplicates contain the compound of interest the apparent increase will be deemed confirmed and WDI shall respond in accordance with the current Operating License.

Attachment 16

Sedimentation Basin Monitoring Program Sampling and Analysis Plan

Section 31

SEDIMENTATION BASIN SAMPLING AND ANALYSIS PLAN

WAYNE DISPOSAL, INC., SITE #2 MID 048 090 633

REVISION 3.0 – MARCH, 1996
REVISION 3.1 – MAY, 1999
REVISION 3.2 – OCTOBER 2000
REVISION 3.3 – MARCH 2001
REVISION 3.4-JULY 2002
REVISION 3.5 – DECEMBER 2008
REVISION 3.6 – SEPTEMBER 2011
REVISION 3.7 – AUGUST 2014

SEDIMENTATION BASIN SAMPLING AND ANALYSIS PLAN

WAYNE DISPOSAL, INC., SITE #2 MID 048 090 633

1.0 INTRODUCTION

This Sedimentation Basin Sampling and Analysis (SB SAP) plan identifies the procedures to be used for monitoring sediment samples from the north sedimentation basin (NSB), the south sedimentation basin (SSB), and, the northwest sedimentation basin (NWSB) at Wayne Disposal, Inc. (WDI), Site 2. The sedimentation basins receive on-site surface water (storm water) run-off primarily from unpaved areas and final cover systems of the facility via a network of open ditches and subsurface pipes. The sedimentation basins do not receive run-off from active hazardous waste disposal cells. All surface water collected in the sedimentation basins is treated by sedimentation, filtration and activated carbon adsorption prior to discharge to Quirk Drain. The effluent from this treatment process is discharged into Quirk Drain in accordance with a National Pollutant Discharge Elimination System (NPDES) permit. This monitoring program is one of the checks on the engineered controls and operational procedures employed by WDI to detect an on-site release of hazardous waste or hazardous waste constituents as early as possible and allow WDI to initiate efforts to locate and control the source and prevent an off-site release.

The monitoring program described in this SB SAP is designed to monitor the chemical quality of the sediments that have accumulated in the bottom of each basin over time. Monitoring the composition of certain parameters within the sediment is done to determine if hazardous waste or hazardous waste constituents are present. This monitoring program is one of the checks on the

engineered controls and operational procedures employed by WDI to detect an on-site release of hazardous waste or hazardous waste constituents as early as possible and allow WDI to initiate efforts to locate and control the source and prevent the off-site release of hazardous waste or hazardous waste constituents. The SB SAP, in addition to describing the monitoring program prompts notification and response actions that WDI must take if an apparent or confirmed significant increase in a monitored parameter occurs.

2.0 REVISION

WDI may revise this SB SAP and submit the revised plan to the Chief of the Office of Waste Management and Radiological Protection on of the Michigan Department of Environmental Quality (OWMRP/MDEQ) for review and approval prior to implementation.

3.0 SAMPLE LOCATIONS

Each sedimentation basin is divided into six sections as shown in Figures 1, 2 and 3 for the SSB, NSB and NWSB, respectively. One grab sample is collected at random locations within each section of each basin during each sampling event. The locations for each sampling point are to be measured using a GPS or equivalent method and the coordinates listed on the sample log (Figure 3) included in this plan.

4.0 SAMPLE FREQUENCY

All sedimentation basins are to be sampled on an annual basis. The sampling event will include the SSB, NSB and the NWSB and should be scheduled in the spring at approximately the same time each year.

5.0 SAMPLE COLLECTION

For each basin, a grab sample is to be collected from each section of each basin shown in Figures 1, 2, and 3. In addition, a representative composite sample from each basin is to be created by combining equal portions from each grab sample from the basin. Sufficient volume of sediment must be collected at each grab sample location such that there is adequate volume to 1) perform the required grab sample analysis, 2) contribute a portion to the composite sample and 3) have enough left over sample to used by the laboratory for a confirmation of an apparent statistically significant increase of PCBs, if necessary. Confirmation procedures are specified in Section 8.0 of this document.

The individual grab samples from each section of each basin are to be collected from a small rowboat utilizing a Ponar grab-type sampler or an auger sampler with an extension. The person conducting the sampling will position the boat at one of the sampling locations, lower the sampling device and retrieve a sample. The sample will then be removed from the sampler and placed directly into the appropriate container using a clean Teflon hand trowel. The composite sample from each respective basin is to be collected by placing equal volumes of collected sediment from each individual grab sample location within the respective basin into a stainless steel bowl or disposable foil pan. After equal portions from all grab sample locations from the

respective basin have been collected and placed into the bowl/pan, the sediment in the bowl is to be gently mixed to homogenize the sample, and then placed into an appropriate container.

Clean protective gloves must be worn during sample collection and clean gloves must be used at each sample location. Care should be taken at all times when handling the samples to avoid sample cross-contamination. Each sample container must be labeled with the sampling location, the time and date of the sampling event, and the sampler's initials. The sample collection log (Figure4) is to be filled out at each sampling location and any unusual conditions (e.g. odors, sheens) encountered are to be noted. In addition, a chain of custody (COC) form is to be filled out for each sampling event. The COC is to be filled out fully for each sample submitted for analysis and each person handling the samples must sign and date the form. When the samples are delivered to the laboratory and the laboratory has signed for their receipt, a copy of this form is to be retained on site in the Environment, Health and Safety (EHS) Department records. After collection, the samples are to be stored in a clean cooler containing ice or ice packs. The coolers containing samples are to be stored in a secure location, until being transported to the laboratory.

All non-dedicated sampling equipment is to be thoroughly cleaned and decontaminated between sample locations by scrubbing with a brush and rinsing with de-ionized water to remove all visible soil/sediment material.

Field Quality Assurance/Quality Control samples collected for each sampling event, including confirmation sampling events, include:

- One trip blank for each cooler utilized for storing and shipping PCB samples. The trip blank is to be analyzed for PCBs.
- One blind duplicate for each sampling event. The duplicate sample is to be analyzed for the identical set of parameters as the samples. The duplicate is to be collected by filling an identical set of sample containers at a given location and submitting them for an identical analysis.
- One equipment blank per sampling day for each piece of non-dedicated sampling equipment utilized in the sampling process (i.e. sample collection tool/ponar and/or composite sample collection bowl/foil pan). The equipment blank is to be collected by pouring clean de-ionized water over the decontaminated piece of equipment and collecting the rinsate in the appropriate container for analysis. The equipment blank is to be analyzed for the identical set of parameters as the samples.

6.0 SAMPLE ANALYSIS

Each grab sample from the SSB, NSB and NWSB is to be analyzed for the parameters listed in Table 1 identified as grab sample parameters. The analytical methods and method detection limits specified are also listed on Table 1. Each composite sample from each basin is to be analyzed for all of the PCB aroclors listed on Table 1 using the analytical methods and method detection limits specified. In addition, all grab samples must also be extracted for PCB analyses but only analyzed if necessary as confirmation samples per Section 8.0. In some cases, the laboratory may not attain the method detection limits specified due to sample dilutions and

matrix effects. If this is the case, the laboratory report must include an explanation for not achieving the specified method detection limits.

The laboratory quality control/quality assurance manual (QA/QC Manual) describing the required internal policies, guidelines and procedures of any WDI contract lab is contained in the Groundwater Sampling and Analysis Plan (GW SAP). WDI is to use this QA/QC Manual in evaluating the QA/QC standard operating procedures of any contract laboratory utilized for the purposes of this SB SAP and ensure that the laboratory employs generally acceptable practices that meet the specifications of the QA/QC Manual in the GW SAP.

7.0 DATA EVALUATION

The analytical data from the sedimentation basin samples is to be evaluated as follows:

- For a SSB or NWSB PCB composite sample, an apparent statistically significant increase (ASSI) has occurred if the total concentration of the PCB compounds listed in Table 1 is greater than or equal to 1 mg/kg on a dry-weight basis.
- For a NSB PCB composite sample, an ASSI has occurred if the total concentration of the PCB compounds listed in Table 1 is greater than or equal to the method detection limit.
- For metals, phenols (all sedimentation basins), and total and amenable cyanide (south and northwest sedimentation basins only), the data will be evaluated using graphical trend analysis. An ASSI for any parameter has occurred if increasing concentrations are noted for any individual parameter in four consecutive sampling events and/or a ten-fold increase in concentration is noted in any parameter between sampling events in any of the

individual grab samples. If four consecutive samples show increasing concentrations, WDI must determine the difference between the first and fourth sample concentrations and determine if this quantity is greater than 10 percent of the mean of the concentration of those four measurements for that parameter. If the difference is greater than 10 percent of the mean then an ASSI is reported. If the difference is less than 10 percent of the mean then no ASSI will be reported.

8.0 RESPONSE ACTIONS

In the event of an ASSI, WDI is to verbally notify OWMRP/MDEQ, Hazardous Waste Program Section staff immediately, give them an opportunity to split confirmation samples, and implement the procedures identified below to confirm the ASSI. Confirmation samples must be collected and submitted for analysis within 7 days of providing notification of an ASSI.

- For the composite PCB samples, procedures to determine if a CSSI has occurred are as follows. The additional grab samples collected in each section of the basin that were sent to the lab and extracted are to be analyzed for PCBs. If any of the grab samples for which PCBs are detected are above the action levels defined in Section 7.0 (i.e. the ASSI is repeated), then a CSSI will have been confirmed for that section of the basin that the grab sample represented.
- For the metals, total and amenable cyanide, and phenols grab samples, procedures to determine if a confirmed statistically significant increase (CSSI) has occurred are as follows. Any section of the basins for which an ASSI is reported for metals, total and

amenable cyanide, and/or phenols is to be resampled by collecting four additional samples within the section of the basin with the ASSI. If the concentrations in two of the four confirmation samples are equal to or greater than the original sample, then the increase is a confirmed statistically significant increase (CSSI).

In the event an ASSI is not repeated, WDI will resume routine monitoring. In the event an ASSI is repeated upon analyzing the second sample, a confirmed statistically significant increase (CSSI) has occurred. In the event a CSSI has occurred, WDI must notify OWMRP/MDEQ in accordance with the General Operating Conditions of the Operating License for reporting noncompliance that may endanger human health or the environment. Further, within 30 days of becoming aware of a CSSI, WDI must implement the following actions depending upon the CSSI parameter and the CSSI location:

- For a metals CSSI in either basin and/or a phenolics, total cyanide, or amenable cyanide CSSI in the SSB or NWSB, submit a work plan for OWMRP review and approval to delineate the extent of contamination in the basin, identify and eliminate the source of the contamination, and determine if concentrations are sufficiently elevated to require removal of sediments from the impacted basin. Guidance regarding determining whether or not removal of contaminated sediments is required is provided in Attachment 3 of the Remediation and Redevelopment Division's (RRD) Operational Memorandum No 4.
- For a PCB CSSI in the SSB or NWSB, submit a work plan to delineate and/or remove sediments from the impacted basin for the OWMRP/MDEQ review and approval.

- For a PCB CSSI in the NSB, immediately implement a source assessment program by collecting quarterly grab samples for PCB analysis from each respective section of the basin for a minimum of one year and perform a trend analysis using the data.
    - If PCBs are detected above a concentration of 1 mg/kg in any individual sediment grab sample during any quarterly sampling event, submit a work plan within 30 days of the detection to delineate and/or remove sediments in the impacted basin for OWMRP review and approval. In addition, WDI will submit to the OWMRP/MDEQ for review and approval a work plan that provides for additional storm water sampling and analysis to identify the source of the PCBs in the NSB sediments and, depending upon the results from the additional storm water monitoring, recommend actions to eliminate the source and/or conduct additional source investigation.
    - If the PCB results from the required quarterly sampling are less than 1 mg/kg, continue to collect quarterly sediment grab samples for PCB analysis from each respective section of the basin until the one year period and the trend analysis of the data is complete. If PCBs are detected subsequent to the CSSI in any two grab samples from the basin, WDI will submit to the OWMRP/MDEQ for review and approval within 30 days of the second detection a work plan that provides for additional storm water sampling and analysis to identify the source of the PCBs in the NSB sediments and, depending upon the results from the additional storm water monitoring, recommend actions to eliminate the source and/or conduct additional source investigation and removal.

WDI may voluntarily remove sediments from any sedimentation basin without OWMRP/MDEQ approval if WDI verbally notifies OWMRP/MDEQ, Hazardous Waste Program Section staff of the removal at least five days in advance of the removal and performs the removal in compliance with all applicable laws. In the event WDI chooses to voluntarily remove sediments from either basin in response to an ASSI or CSSI, all source investigation and removal requirements defined above shall still be implemented.

9.0 REPORTING REQUIREMENTS

A final SB SAP Report (Report) documenting the annual sampling under this plan, including the data received from the laboratory, is to be submitted to the OWMRP/MDEQ within 60 days of each sampling event. All Reports must include a narrative description of the sampling event, a map of each respective basin showing each location sampled, copies of the sampling logs, a tabular summary and discussion of the data, the trend analysis calculations and discussion of the trend analysis results, a description of any ASSI and/or CSSI, as applicable, and any resampling conducted, and/or any additional actions required and/or recommended as a result of the Report findings. In addition to this report, an annual summary report of sedimentation basin monitoring results must be submitted to OWMRP/MDEQ by March 1 of the following year

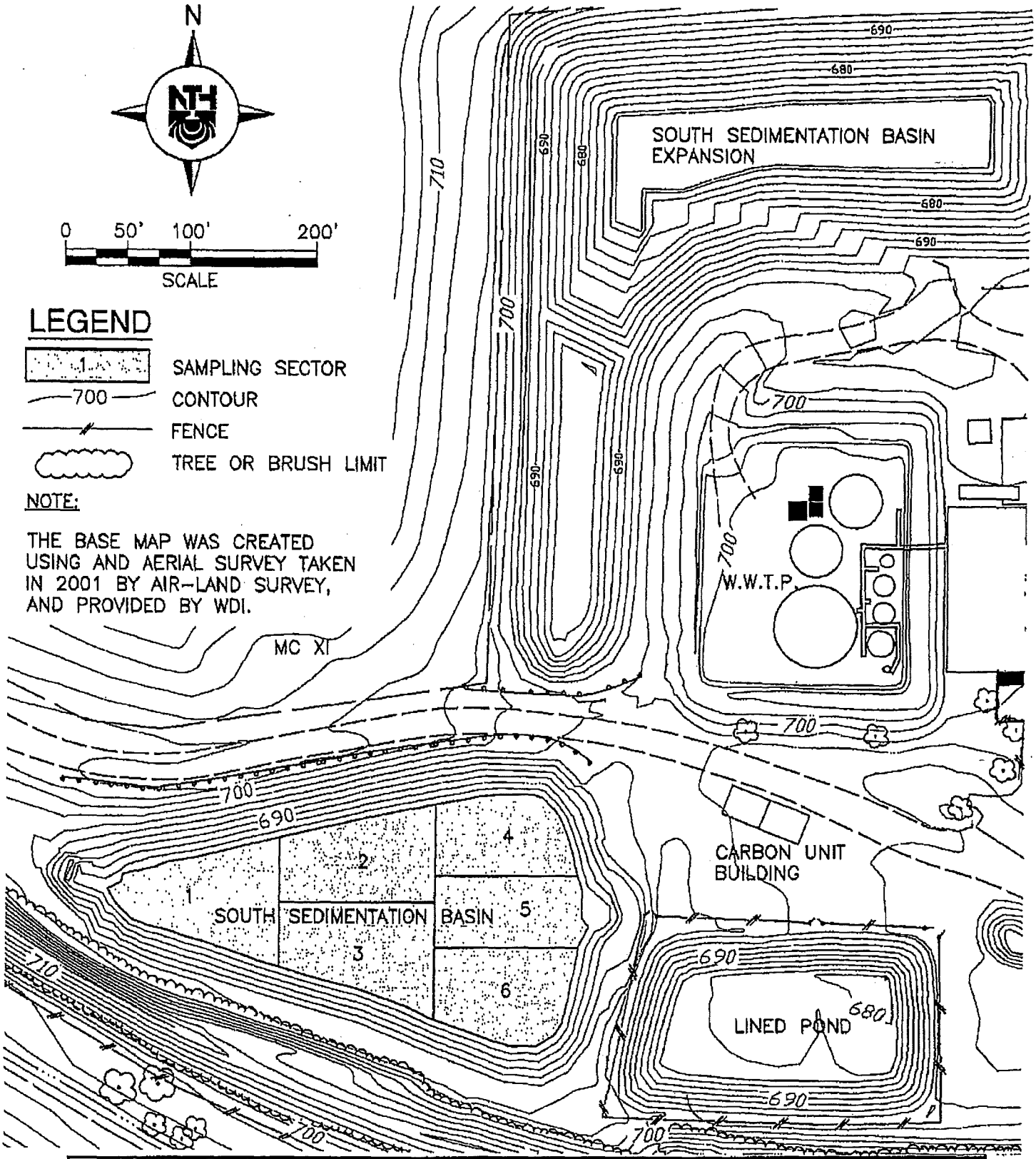
10.0 RECORD KEEPING REQUIREMENTS

All analytical data and Reports generated under this SB SAP must be stored on site within the QEHS filing system and be available to MDEQ staff for inspection.

Table 1. Sedimentation Basin monitoring Parameters

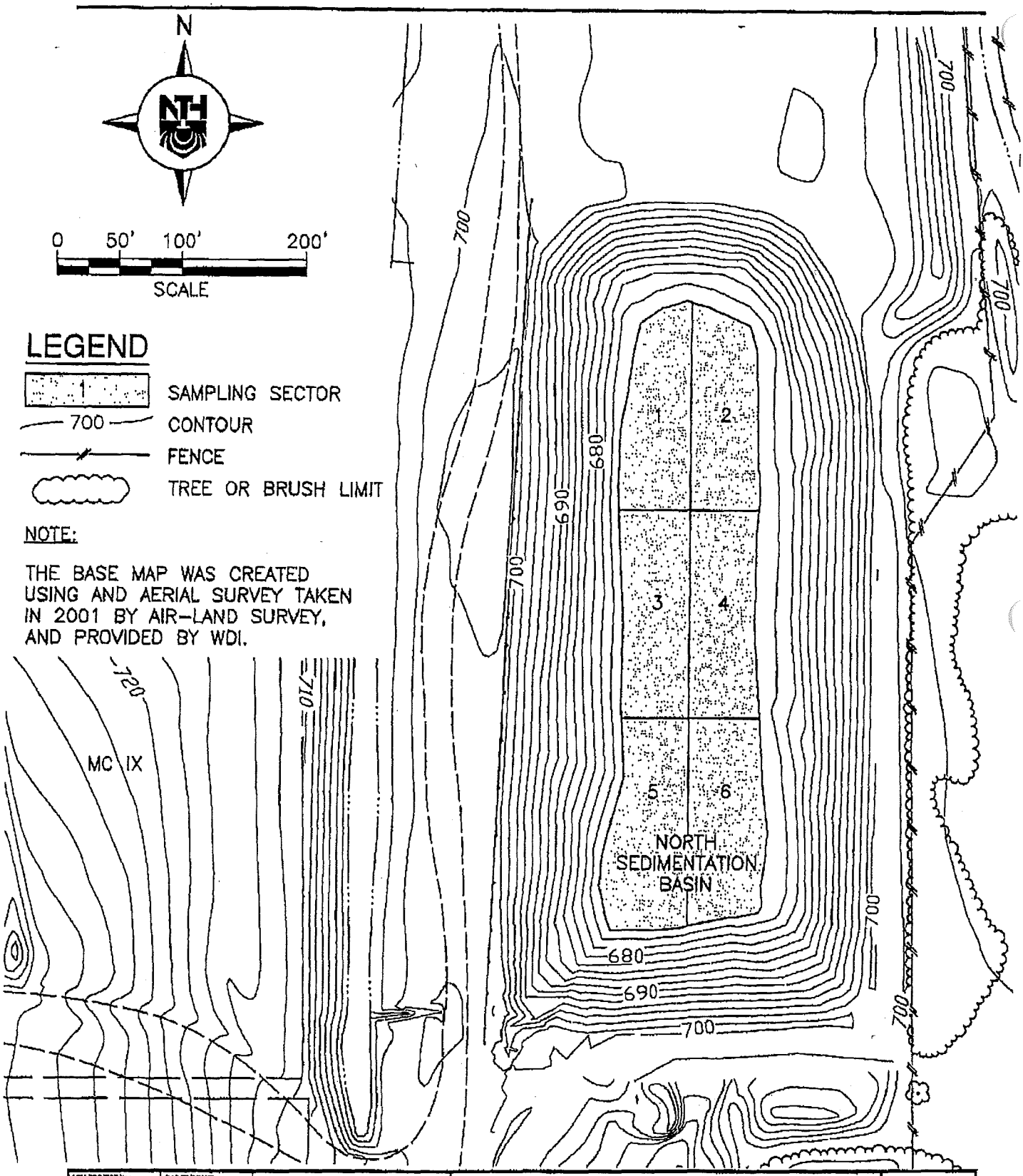
Grab Sample Parameters	RL[1] (mg/Kg)[2]	Approved Method[3]
Arsenic	0.5	6020
Barium	1	6020
Cadmium	0.2	6010
Chromium (total)	2	6010
Cobalt	0.5	6010/6020
Copper	1	6010/6020
Iron	5	6010
Lead	1	6010/6020
Mercury	0.05	7471
Molybdenum	1	6010/6020
Nickel	1	6010/6020
Selenium	0.2	6020
Silver	0.1	6010
Vanadium	1	6010/6020
Zinc	1	6010/6020
Total Phenolics[4]	0.4	9066
Total Cyanide[4]	0.1	9012
Amenable Cyanide[4]	NA	9012
Composite Sample Parameters		
PCB-1016	0.1	8082
PCB-1221	0.1	8082
PCB-1232	0.1	8082
PCB-1242	0.1	8082
PCB-1248	0.1	8082
PCB-1254	0.1	8082
PCB-1260	0.1	8082

1 - Target Reporting Limits from OWMRP-111/115-8
2 - Dry Weight Basis
3 - Test Methods For Evaluating Solid Waste, USEPA SW-846
4 - South and Northwest Sedimentation Basins Only



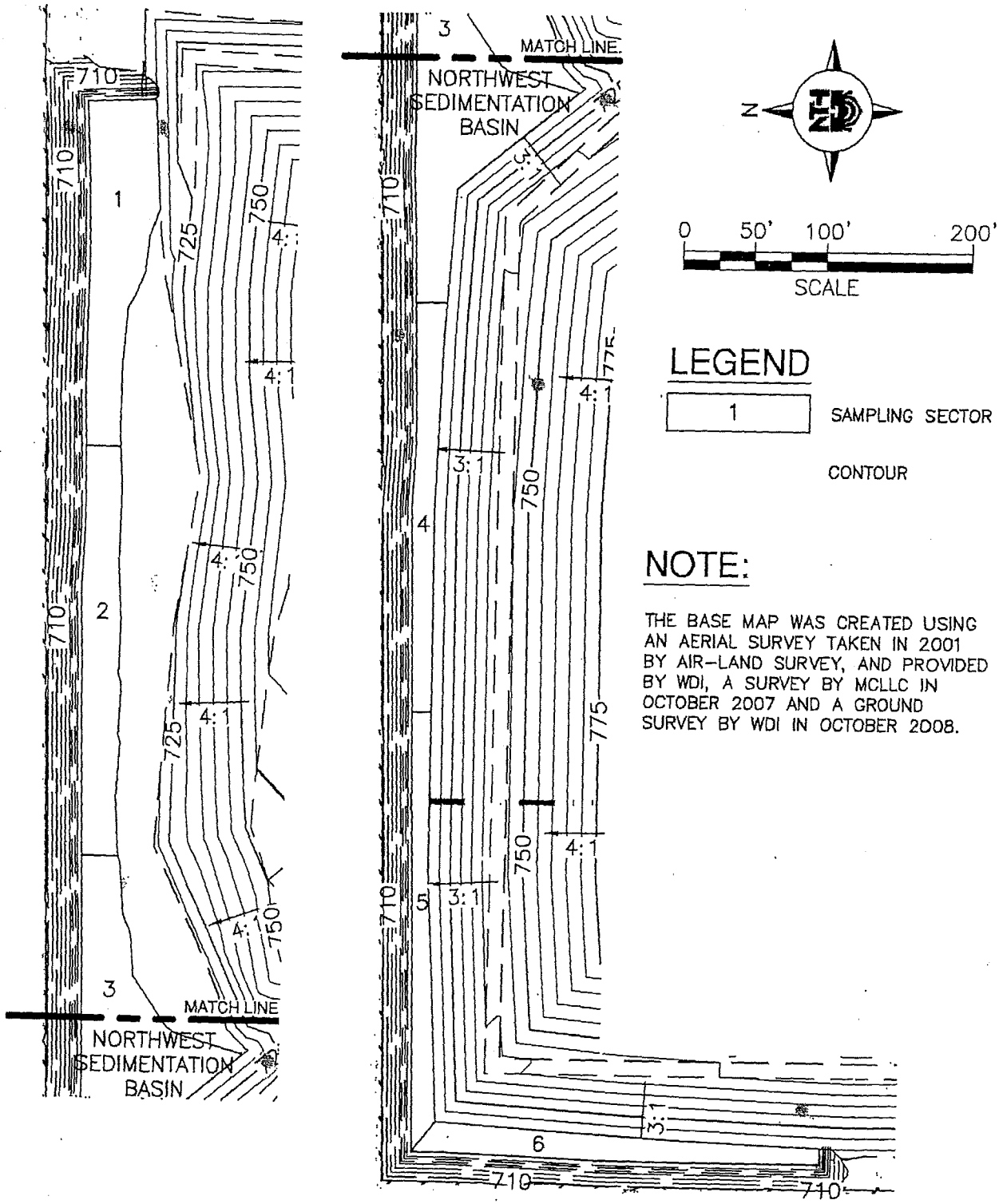
NTH PROJECT No.: 13-060921-07	CAD FILE NAME:	NTH Consultants, Ltd. Infrastructure Engineering and Environmental Services	SOUTH SEDIMENTATION BASIN MONITORING SAMPLE SECTORS
DESIGNED BY: KRO	PLOT DATE: 10/31/08		WAYNE DISPOSAL SITE NO. 2 BELLEVILLE, MICHIGAN
DRAWN BY: KRO	DRAWING SCALE: AS SHOWN		FIGURE 1
CHECKED BY: RBM	INCEPTION DATE: 10/30/08		

J:\Cad\13\Site 2 - SWMP\SAMPLING LOCATIONS\FIGURE 1-2 SED.dwg



NTH PROJECT No: 13-060921-07	CAD FILE NAME:	NTH Consultants, Ltd. Infrastructure Engineering and Environmental Services	NORTH SEDIMENTATION BASIN MONITORING SAMPLE SECTORS	FIGURE 2
DESIGNED BY: KRO	PLOT DATE: 10/31/08			
DRAWN BY: KRO	DRAWING SCALE: AS SHOWN		WAYNE DISPOSAL SITE NO. 2 BELLEVILLE, MICHIGAN	
CHECKED BY: RBM	INCEPTION DATE: 10/30/08			

J:\Cad\13\Site 2 - SWMP\SAMPLING LOCATIONS\FIGURE 1-2 SED.dwg



NTH PROJECT No.: 13-080921-03	CAD FILE NAME: FIGURE 3 SED
DESIGNED BY: DC	PLOT DATE: 9/21/2011
DRAWN BY: RMLJ	DRAWING SCALE: AS SHOWN
CHECKED BY: DC	INCEPTION DATE: 02/18/09

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

NORTHWEST SEDIMENTATION BASIN
MONITORING SAMPLE SECTORS
WAYNE DISPOSAL, INC. SITE NO. 2 - MC VI F&G
VAN BUREN TWP., WAYNE COUNTY, MICHIGAN

FIGURE: 3

J:\13\Site 2 - SWMP\SAMPLING LOCATIONS\FIGURE 3 SED.dwg

Sample Collection Log for Sediments - WDI Site #2

Sample ID: (Basin, Sector #)	Sample Date:	Sample Time:
Sample Location: (x,y coordinates)	Sampling Method:	Sampler:
Sample Description/Comments*:		

Sample ID: (Basin, Sector #)	Sample Date:	Sample Time:
Sample Location: (x,y coordinates)	Sampling Method:	Sampler:
Sample Description/Comments*:		

Sample ID: (Basin, Sector #)	Sample Date:	Sample Time:
Sample Location: (x,y coordinates)	Sampling Method:	Sampler:
Sample Description/Comments*:		

Sample ID: (Basin, Sector #)	Sample Date:	Sample Time:
Sample Location: (x,y coordinates)	Sampling Method:	Sampler:
Sample Description/Comments*:		

* Include any unusual characteristics such as color, sheen, odor, etc.

Figure 4.

De/Ginny/Joe/Op Lic
633

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

SEP 27 2013

REPLY TO THE ATTENTION OF:

CERTIFIED NO.: 7001 0320 0006 0185 5336
RETURN RECEIPT REQUESTED

Kerry Durnen
Director of Operations
Wayne Disposal, Inc.
49350 North I-94 Service Drive
Belleville, Michigan 48111-1854

Re: Final Federal TSCA Approval Modification,
Wayne Disposal, Inc., Belleville, Michigan

Dear Mr. Durnen:

Enclosed is the final federal Toxic Substances Control Act (TSCA) approval modification for Wayne Disposal, Inc.'s landfill in Belleville, Michigan. The approval is a chemical waste landfill approval to dispose of polychlorinated biphenyls (PCBs) issued pursuant to 40 C.F.R § 761.75 and replaces the approval issued on September 29, 2011.

On July 8, 2013, U. S. Environmental Protection Agency issued the draft federal Toxic Substances Control Act (TSCA) approval modification for Wayne Disposal, Inc.'s landfill in Belleville, Michigan for public comment. The draft federal TSCA approval was publicly noticed in the "The Belleville View" on July 3 and July 11, 2013. A copy of the draft federal TSCA approval was available for review at the Van Buren Township, 46425 Tyler Rd. Van Buren Twp, Michigan, 48111 and on the EPA website. In addition, EPA mailed fact sheets on the public comment period to community groups and individuals identified during Wayne Disposal's environmental justice analysis and community outreach activities. The public comment period was open through August 8, 2013, and EPA received no comments or meeting requests on the draft approval. As a result, EPA is now issuing Wayne Disposal, Inc., a final modified approval.

This approval may be withdrawn or further conditions may be added to it at any time the EPA has reason to believe that operation of the process represents an unreasonable risk of injury to human health or the environment. Withdrawal of this authorization or the imposition of further conditions may also result from future EPA rulemaking or development of guidance with respect to PCBs. Moreover, violation of any conditions included as part of this authorization may subject Wayne Disposal, Inc. to enforcement action and/or termination of this approval.

It is the responsibility of you and your company, Wayne Disposal, Inc., to ensure that all applicable provisions of TSCA and the Federal PCB regulations are followed. Violation of any of the applicable provisions may be cause for rescission of this approval. Furthermore, this approval does not relieve Wayne Disposal, Inc., of the responsibility to comply with all other Federal, State and local regulations and ordinances for transportation, siting, operation and maintenance of its facility.

The EPA reserves the right for its authorized representatives to observe Wayne Disposal, Inc. disposal activities and inspect records which the company is required to maintain under the Federal PCB regulations and this approval during normal operation and at other reasonable times.

If you have questions concerning the final federal TSCA approval, please contact Karen Kirchner, of my staff, at (312) 353-4669.

Sincerely,

Margaret M. Guerriero
Director
Land and Chemicals Division

Enclosure

cc: Timothy Thurlow, EPA
Peter Quackenbush, MDEQ
Michael Tackas, WDI
Scott Maris, WDI

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5

IN THE MATTER OF:	)	
	)	**CHEMICAL WASTE LANDFILL**
Wayne Disposal, Inc.,	)	**APPROVAL TO DISPOSE OF**
49350 North I-94 Service Drive,	)	**POLYCHLORINATED BIPHENYLS**
Belleville, Michigan 48111-1854,	)	**ISSUED PURSUANT TO**
MID 048 090 633	)	**40 C.F.R. § 761.75**
	)	
APPLICANT.	)	

AUTHORITY

This chemical waste landfill approval (Approval) is issued by the United States Environmental Protection Agency to Wayne Disposal, Inc. (WDI), pursuant to Section 6(e)(1) of the Toxic Substances Control Act (TSCA), 15 U.S.C. § 2605(e)(1), and the federal regulations for disposal of Polychlorinated Biphenyls (PCBs) at 40 C.F.R. § 761.75. This Approval replaces the September 29, 2011 Approval previously issued to WDI.

Section 6(e)(1)(A) of TSCA, 15 U.S.C. § 2605(e)(1)(A), requires that EPA promulgate rules to prescribe methods for the disposal of PCBs. The regulations at 40 C.F.R. § 761.75 require, among other things, that various types of PCBs and PCB Items be disposed of in chemical waste landfills approved by EPA for PCB disposal. 40 C.F.R. § 761.75(a) designates the Regional Administrator as the approval authority for such PCB disposal facilities. 40 C.F.R. § 761.75(b) sets out a number of technical requirements for PCB disposal facilities. 40 C.F.R. § 761.75(c) prescribes the process by which an owner or operator of a chemical waste landfill may obtain approval to dispose of PCBs.

EPA Headquarters Delegation 12-5 authorizes the re-delegation of approval authority for PCB disposal facilities from Regional Administrators to Regional Division Directors. Under EPA, Region 5 Delegation 12-5, dated October 22, 2007, the approval authority for PCB disposal facilities was delegated to the Director, Land and Chemicals Division (LCD), EPA, Region 5.

None of the information required to be maintained under or submitted pursuant to this Approval is subject to the requirements of the Paperwork Reduction Act, 44 U.S.C. § 3501, et seq., because such information is collected by EPA from WDI for the purpose of assuring compliance with this Approval.

EFFECTIVE DATES

This Approval is effective upon the date of signature of the Director of LCD, EPA, Region 5. WDI's authorization to dispose of PCBs and PCB Items in the WDI Landfill under this Approval will be valid for a period of five (5) years, unless such authorization is suspended or terminated, as provided herein, or unless the time period is modified by EPA. Upon signature by the Director, the issuance of this Approval shall be considered final agency action.

BACKGROUND

The WDI Landfill Site # 2, located at 49350 North I-94 Service Drive, Belleville, Michigan (WDI Landfill), is a 193-acre chemical waste landfill that is divided into Master Cells V, VI and VII. The WDI Landfill is owned and operated by Wayne Disposal, Inc. The Environmental Quality Company owns Wayne Disposal, Inc.

The WDI Landfill was originally authorized under authority granted by the Resource Conservation and Recovery Act (RCRA), as amended, 42 U.S.C. § 6901 et seq., and was operated pursuant to a RCRA Hazardous Waste Management Permit issued by EPA and a Hazardous Waste Management Facility Operating License issued by the predecessor agency to the Michigan Department of Environmental Quality (MDEQ). WDI Landfill Master Cells V and VII, which do not contain PCBs, have been filled and closed, and are currently in post-closure care.

On March 15, 1995, WDI, as lessee and operator of the Landfill, submitted an application to MDEQ for a Hazardous Waste Management Facility Operating License, pursuant to Part 111 of the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), for Master Cell VI of the WDI Landfill.

On July 10, 1995, WDI, as lessee and operator of the Landfill, submitted an application to EPA for approval under 40 C.F.R. § 761.75, to dispose of PCBs and PCB-contaminated waste in Master Cell VI of the WDI Landfill.

On April 14, 1997, MDEQ issued a Hazardous Waste Management Facility Operating License to WDI for Master Cell VI of the WDI Landfill.

On April 14, 1997, EPA issued a TSCA Approval to WDI to allow the disposal of PCBs and PCB Items in Master Cell VI of the WDI Landfill. On December 23, 1998, the Approval was modified to reflect a transfer of ownership of the landfill property from the Ford Motor Company to WDI.

On August 24, 1999, WDI submitted an application to MDEQ requesting a major modification of the April 14, 1997, Hazardous Waste Management Facility Operating License for the WDI Landfill. WDI sought a modification of the Operating License to allow for a design change to expand the capacity of Master Cell VI by extending the cell both vertically and horizontally over closed Master Cell V.

On March 23, 2000, WDI submitted to EPA an application, pursuant to TSCA and 40 C.F.R. § 761.75, for an amended Approval to allow the disposal of PCB waste in the redesigned and expanded Master Cell VI of the WDI Landfill.

On July 13, 2001, pursuant to Part 111 of Michigan Act 451 and RCRA, the MDEQ issued a major modification of the Hazardous Waste Management Facility Operating License for the WDI Landfill. The modified Operating License was set to expire on April 14, 2007.

On August 21, 2001, EPA issued a TSCA Approval pursuant to 40 C.F.R. § 761.75, to allow WDI to continue to dispose of PCBs in Master Cell VI of the WDI Landfill. The Approval allowed WDI to continue to dispose of PCB waste the remaining part of the previously approved 1.435 million cubic yards in Master Cell VI and generally authorized the disposal of an additional 2.89 million cubic yards of PCB waste in the Master Cell VI expansion area.

The August 2001 Approval required, among other things, that WDI construct an underlying grid and liner for Master Cell VI, Subcell E, which was to be constructed on top of closed Master Cell V. The Approval also required WDI to prepare and submit a Settlement Monitoring Plan for Master Cell VI, Subcell E, to assure the integrity of the liner during loading of Master Cell VI.

WDI submitted a Settlement Monitoring Work Plan for Master Cell VI, Subcell E on October 19, 2001, and a Settlement Monitoring Plan on August 12, 2002. On September 19, 2002, EPA approved the Settlement Monitoring Plan.

On November 3, 2003, WDI submitted to the MDEQ a Construction Documentation Report and Certification for Phase I of Master Cell VI, Subcell E. On June 4, 2004, MDEQ approved the certification and authorized waste disposal in a portion of Master Cell VI, Subcell E. Thereafter, WDI continued to construct Master Cell VI, Subcell E in phases, and MDEQ continued to approve certifications and authorize waste disposal as each newly constructed portion of Master Cell VI, Subcell E was completed.

On September 24, 2004, WDI submitted to EPA a Geotechnical Instrumentation Installation and Baseline Data Report that described the settlement monitoring instrumentation and pre-load background data for Master Cell VI, Subcell E.

On May 12, 2006, EPA extended the TSCA Approval for the WDI Landfill until April 14, 2007. At that time, EPA also agreed to change the frequency of PCB air sampling from once every sixth day to once every twelfth day.

On October 11, 2006, WDI submitted to EPA an Application for Renewal of the TSCA Approval for the WDI Landfill and to MDEQ a Hazardous Waste Management Facility Operating License Renewal Application for the WDI Landfill.

On April 23, 2007, EPA extended the TSCA Approval for the WDI Landfill until November 14, 2007.

On September 6, 2007, MDEQ determined that WDI's Hazardous Waste Management Facility Operating License Renewal Application was complete, which allowed the WDI Landfill to continue operating in accordance with the existing Operating License, pending a decision on the renewal application.

On November 16, 2007, EPA extended the TSCA Approval for the WDI Landfill until November 14, 2008.

On March 3, 2008, WDI submitted to MDEQ and to EPA a proposed design modification to increase the vertical and horizontal dimensions of Master Cell VI of the WDI Landfill. On January 23, 2009, WDI submitted a revised design modification for Master Cell VI.

On August 26, 2008, WDI submitted to EPA a request to terminate Settlement Monitoring for Master Cell VI, Subcell E of the WDI Landfill, based on monitoring indicating that Master Cell VI was able to adequately support the maximum approved waste load without adversely affecting the leachate collection system or the geomenbrane liner.

November 14, 2008, EPA extended the TSCA Approval for the WDI Landfill until November 14, 2009.

On April 9, 2009, EPA approved WDI's request to terminate Settlement Monitoring for Master Cell VI, Subcell E of the WDI Landfill.

On May 15, 2009, WDI entered into a Consent Order with the State of Michigan to resolve alleged RCRA violations regarding a flood event from storm water control structures and several onsite leachate releases at the WDI Landfill. The Consent Order included provisions for WDI to expand storm water management systems; treat storm water before discharge to surface water; enact SOPs for fugitive dust control, vehicle track-out, wind speed monitoring, and storm water management; and implement several enhancements to soil, surface water and sediment monitoring programs. The Consent Order required that those provisions be included in the next renewal of the Hazardous Waste Management Facility Operating License for the WDI Landfill.

On November 13, 2009, EPA extended the TSCA Approval for the WDI Landfill until May 14, 2010.

On December 17, 2009, WDI submitted to EPA a revised Application for Renewal of the TSCA Approval for the WDI Landfill and to MDEQ a revised Hazardous Waste Management Facility Operating License Renewal Application for the WDI Landfill. These Applications replaced the October 2006 Applications.

On May 14, 2010, EPA extended the TSCA Approval for the WDI Landfill until October 15, 2010.

On September 30, 2010, the Michigan Department of Natural Resources and the Environment

(MDNRE) issued to WDI a Hazardous Waste Management Facility Operating License for Master Cell VI of the WDI Landfill.

On October 12, 2010, EPA extended the TSCA Approval for the WDI Landfill until April 8, 2011.

On April 12, 2011, EPA extended the TSCA Approval for the WDI Landfill until September 30, 2011.

On September 29, 2011, EPA issued a TSCA Approval for the WDI Landfill that expires on September 29, 2016.

On March 4, 2011, WDI submitted an Application for an 11.73 million cubic yard expansion to the Hazardous Waste Landfill to the MDEQ. This application was revised in September 2011 to address comments by MDEQ.

On April 18, 2012, WDI submitted a request to amend its TSCA Approval to the EPA to include the 11.73 million cubic yard expansion area. The request included the September 2011 application submitted to MDEQ.

On May 4, 2012, the Michigan Department of Environmental Quality issued an Operating License for a Hazardous Waste landfill to WDI that includes the previously permitted 10.72 million cubic yards and the 11.73 million cubic yard expansion area.

On October 1, 2012, the U.S.EPA provided comments to WDI's request to amend its TSCA Approval.

On October 31, 2012, WDI submitted a response to EPA's comments on the TSCA Approval amendment request.

DEFINITIONS

The following terms are defined for the purposes of this Approval. Any conflict between the following definitions and those set forth under TSCA and the PCB regulations at 40 C.F.R. Part 761 shall be resolved in favor of the definitions in TSCA and the PCB regulations.

Application: All data, documents, licenses, permits, and other information submitted to date by WDI to EPA regarding the Agency's review of WDI's request for a TSCA Approval for the WDI Landfill, including particularly the December 17, 2009, Application and attachments.

Annual Reporting Period: A regulatory interval based on the calendar year. It includes a July 15 due date for the previous year's annual reports required by this Approval.

Artesian Conditions: Those hydraulic conditions where water naturally rises to elevations above the geologic unit in which the water is found.

Aquifer: A geologic formation or group of formations or part of a formation that is capable of yielding a significant amount of groundwater to a well or springs.

Aquiclude: A geologic unit through which virtually no water flows; typically a silty clay such as glacially derived fine sediments,

Batch: A specific volume that is handled as a whole and is sampled in a representative way.

Cell: The specially prepared unit into which PCBs are disposed. In the case of Master Cell VI of the WDI Landfill, it consists of the entirety of Master Cell VI (Subcells A, B, C, D, E, F, and G), as expanded, and any related appurtenances thereto.

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9601-9657.

Clay Pan: A continuous, laterally extensive, relatively impermeable, thick bed of high clay content material.

Closure: The cessation of the use of a subject site, and activities undertaken to secure the site and control, minimize or eliminate the threat to human health and the environment from the site. General closure requirements for hazardous waste facilities are set forth in the RCRA regulations at 40 C.F.R. Part 264, Subpart G (*Closure and Post-Closure*), and unit specific closure requirements for landfills are set forth at 40 C.F.R. Part 264, Subpart N (*Landfills*).

Closure and Post-Closure Plans: Written plans for achieving proper closure and implementing post-closure care of a subject site. Closure plan requirements for hazardous waste facilities are set forth in the RCRA regulations at 40 C.F.R. § 264.112 (*Closure plan; amendment of plan*), and post-closure plan requirements are set forth at 40 C.F.R. § 264.118 (*Post-closure plan; amendment of plan*).

Dilution: The avoidance of TSCA requirements and the Conditions of this Approval by combining non-TSCA regulated material with TSCA regulated material, or otherwise numerically averaging sample values from TSCA and non-TSCA cells so that the mixture becomes deregulated.

Dry Weight: Reporting based on a dry weight determination for all solids and semi-solids and fluids with a concentration of more than five tenths (0.5) percent solids content.

Expiration of Approval: The cessation of WDI's authorization to dispose of PCB waste in Master Cell VI of the WDI Landfill under this Approval. WDI's authorization to dispose of PCBs in Master Cell VI will cease five (5) years after the date the Approval is executed by the Director of the Land and Chemical Division, EPA, Region 5, unless that date is modified by the Director.

Facility: Cadastral boundaries of the property on which the WDI Landfill is located.

Financial Requirements: The mechanism, options and documentation by which an owner or operator of a subject facility estimates closure and post-closure costs and provides assurance of financial assets sufficient to satisfy potential liabilities for closure and post-closure care of the facility. Financial Requirements for closure and post-closure care of hazardous waste facilities are set forth in the RCRA regulations at 40 C.F.R. Part 264, Subpart H (*Financial Requirements*).

Flood: Internal to the Cell: to raise the leachate level to more than one foot above the liner. External to the Cell: to exceed the Facility's on-site water holding capacity so as to allow unauthorized offsite discharge.

Free Liquid: Fluid that drains freely from waste material under the Paint Filter Test, EPA SW-846 Method 9095. Wastes containing these fluids shall not be disposed of in the WDI Landfill. The Liquid Release Test is recommended to estimate leachate production.

Leachate: Water that filters through the waste and collects on the inner synthetic geomembrane (primary liner) of Master Cell VI of the WDI Landfill. Also, rainwater that flows into the Cell through manways is leachate if it mixes with leachate.

Leachate Collection System (LCS): The network of drains and sumps above the inner synthetic geomembrane (primary liner) of Master Cell VI of the WDI Landfill, used to collect, monitor and remove leachate that drains from waste in the Cell and collects above the primary liner.

Leachate Escape: Anything flooding out of the clean-out risers for Master Cell VI of the WDI Landfill, including rainwater in contact with waste or mixed with leachate that leaves the containment cell and overcomes the on-site control structures for Master Cell VI, whether or not it leaves the Facility boundary.

Leak Detection, Collection and Removal System (LDCRS): The network of drains and sumps between the inner geomembrane (primary liner) and the outer geomembrane (secondary liner) of Master Cell VI of the WDI Landfill, used to detect leaks from the primary liner.

Major Modification: A material change in the design or operation of the WDI Landfill. Such changes include, but are not necessarily limited to: any change in ownership; an increase in the disposal capacity of the Landfill; any change in the manner of waste placement; any significant change to the financial assurance estimate or commitment; any change to the closure/post-closure plan; cap repairs; and abandonment. A major modification requires the approval of the Director of the Land and Chemicals Division, EPA, Region 5.

Minor Modification: A minor change in the design, construction or day-to-day operation of the WDI Landfill or any other change in operations that is not a major modification. Such changes in operations include but are not limited to: changing the groundwater, leachate or air monitoring sites or the analytical methodology; any change to any portion of the leachate collection,

detection and removal system, not including repairs; changes in waste acceptance procedures; changes in the closure post-closure plan that are not major; and minor inflationary adjustments to WDI's annual cost estimates. A minor modification requires the approval of the Chief of the RCRA Branch, EPA, Region 5.

Operator: Wayne Disposal, Inc., 49350 North I-94 Service Drive, Belleville, Michigan 48111-1854, operates the WDI Landfill, including Master Cell VI.

Owner: Wayne Disposal, Inc., owns the WDI Landfill and the property upon which the WDI Landfill, including Master Cell VI, is located. The Environmental Quality Company, 36255 Michigan Ave., Wayne, Michigan 48184, owns Wayne Disposal, Inc.

PCB(s): Polychlorinated Biphenyl(s), as defined at 40 C.F.R. § 761.3.

PCB Contact Water: All untested fluids produced from within Master Cell VI of the WDI Landfill or fluid known to have contacted PCBs.

PCB Items: Articles, article containers, containers or equipment that contain PCBs, as defined at 40 C.F.R. § 761.3.

PCB Waste(s): PCBs and PCB Items that are subject to the disposal requirements of 40 C.F.R. Part 761, Subpart D.

Placement of PCBs: The use of equipment to bring PCB waste to Master Cell VI of the WDI Landfill, off-load PCB waste in Master Cell VI, compact PCB waste in Master Cell VI to proper density, and cover PCB waste.

Post-Closure Care: Long-term care provided at subject sites following closure. Such care at hazardous waste landfills usually includes requirements to monitor and maintain liners, final covers, leachate collection and removal systems, and leak detection systems to protect human health and the environment from releases of hazardous constituents. General post-closure requirements for hazardous waste facilities are set forth in the RCRA regulations at 40 C.F.R. Part 264, Subpart G (*Closure and Post-Closure*), and unit specific closure requirements for landfills are set forth at 40 C.F.R. Part 264, Subpart N (*Landfills*).

Post-Closure Period: The period of time after operations at the WDI Landfill have ceased and the final cap has been installed on the Landfill (i.e., after the Landfill has been closed). Under RCRA regulations at 40 C.F.R. § 264.117, the post-closure period for hazardous waste landfills generally runs for thirty (30) years after the facility is closed, unless that time period is shortened or extended pursuant to regulation.

PPM/ppm: A unit of measure, parts per million, used to establish regulatory thresholds for material under TSCA based on use of an appropriate gravimetric reporting methodology such as wet weight or dry weight.

Quarterly Reporting Period: A chronological system denoted by the beginning of the first, fourth, seventh and tenth calendar months of the year.

Significant Rainfall: One half inch or more of rainfall in twenty-four hours.

Site: The vertical and horizontal dimensions of Master Cell VI of the WDI Landfill, as expanded and defined by the architectural and engineering design documents submitted to EPA by WDI as part of its TSCA Approval application. The terms and conditions of this Approval apply to the operation of the WDI Landfill and are not limited in their applicability to only the Site.

Stabilization: The use of an additive material that permanently changes the waste to prevent the release of water or chemicals under the expected physical effects of the landfill process such as compression and leaching.

Statistically Significant Increase: A determination using statistical procedures appropriate to the respective sampling plan in the TSCA application as modified.

Suspension of Disposal Authorization: Temporary removal of WDI's authorization to place PCBs in Master Cell VI of the WDI Landfill. Such authority may be reinstated at EPA's discretion.

Termination of Disposal Authorization: Permanent revocation of WDI's authorization to continue to place PCBs in Master Cell VI of the WDI Landfill.

TSCA Disposal: The placement of PCBs and PCB Items in Master Cell VI of the WDI Landfill, and the operation and maintenance of Master Cell VI in accordance with this Approval.

Treatment: Changing the disposal status of a regulated waste by removing or destroying PCBs.

Upper Aquifer: The designated groundwater monitoring zone for a facility, as specified under RCRA Subtitle D and accepted as part of the TSCA approval process. The first water-bearing zone encountered below ground level.

Wet Weight: Reporting based on a wet weight measurement for fluids with solids content less than five tenths (0.5) percent.

FINDINGS

The following Findings are made pursuant to 40 C.F.R. § 761.75(c)(3), and are based on EPA's review of information submitted by WDI in its December 2009 Application for Renewal of its Hazardous Waste Operating License and Application for TSCA Approval, from the September 2011 revised Application for an Operating License to expand the Hazardous Waste landfill, revised September 2011 and pursuant to 40 C.F.R. § 761.75(c)(1) and (2).

1. WDI currently operates a EPA-approved TSCA chemical waste landfill with an active Cell, Master Cell VI, located at the WDI Landfill in Belleville, Michigan.

2. The WDI Landfill, including Master Cell VI, is also regulated by the State of Michigan under RCRA-equivalent Hazardous Waste Management regulations at Part 111 of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), and the rules promulgated thereunder.

3. WDI's mailing address and physical address is: 49350 North I-94 Service Drive, Belleville, Michigan 48111-1854.

4. The WDI Landfill is bounded on the north and west by the Willow Run Airport; to the south by the I-94 North Service Drive; and to the east by Beck Road.

5. Master Cell V and Master Cell VI (Subcells A, B, C, D, and E) are located on a thick, relatively impermeable large-area clay pan, as required by 40 C.F.R. § 761.75(b)(1) (*Soils*). Most of Master Cell VI, Subcell E is built on top of Master Cell V or overlies a narrow earthen berm of undisturbed clay pan between Master Cell V and Master Cell VI. Master Cell VI, Subcell E is isolated from everything below it by approximately 11 feet of geo-composite liner/pad.

6. The local soil profile is made up of five units:

   a. The Upper Sand Unit is thin, unprotected, permeable, water-bearing, silty sand. Although water-bearing, the Upper Sand Unit is not considered an aquifer due to the limited quantity and low quality of the water yielded. During construction of the Landfill, the whole Upper Sand Unit was removed from around the Cells and replaced with a ten-foot thick compacted clay isolation barrier.

   b. The Clay Pan is a laterally extensive, glacially-derived silty clay layer. It is a regional barrier to water flow and maintains a minimum of ten (10) feet of relatively impermeable material below both Master Cell V and Master Cell VI. The permeability under Master Cell VI is certified by laboratory soil testing to be less than 1×10^{-7} cm/sec. The permeability of native clay samples from under Master Cell V is similar to that under Master Cell VI, with permeability of 1×10^{-7} cm/sec or less.

c. The Transition Silt Unit is a partly water-bearing fine grained sand silt aquitard unit with as much as 16-35% clay in it, directly underlying most of the Clay Pan but overlying the Upper Aquifer. Permeability tests on the Unit yield laboratory values of 1.3×10^{-8} to 6.9×10^{-6} cm/sec.

d. The Lower Sand Drift Aquifer is a partly-confined, protected, highly permeable, and useable sandy aquifer located on fractured limestone and shale, whose pressure head varies from ten feet below the secondary liner to just at the base of the primary liner of Master Cell VI. The Drift Aquifer is defined as the Upper Aquifer for regulatory purposes despite being below the Clay Pan. Local groundwater resources are generally unused. The Drift Aquifer has generally been abandoned in favor of Detroit municipal water sources, but the Drift Aquifer may be used in the future so it is being monitored.

e. The bedrock units are non-water bearing Paleozoic Antrim Shale and Traverse Group limestones containing useable, but generally undesirable, water.

7. WDI has certified that Master Cell VI is designed and constructed with an engineered liner that exceeds the requirements of 40 C.F.R. § 761.75(b)(2) (*Synthetic membrane liners*), and with additional safety features such as:

a. an eighty (80) mil thick density polyethylene synthetic membrane primary liner and a sixty (60) or eighty (80) mil thick density polyethylene synthetic membrane secondary liner, each of which substantially exceeds the minimum membrane thickness specified in 40 C.F.R. § 761.75(b)(2) for a TSCA commercial landfill that was not located on a clay pan or a clay pad;

b. synthetic membranes separated by sixty (60) inches of re-compacted clay, which substantially exceeds the minimum compacted soil liner thickness specified in 40 C.F.R. § 761.75(b)(1);

c. a relatively impermeable clay dike surrounding Master Cell VI; and

d. a biaxial polymeric geo-grid to strengthen the base of Master Cell VI, Subcell E.

8. Pursuant to the prior TSCA Approval for the WDI Landfill, WDI conducted Settlement Monitoring on Master Cell V during the loading of Master Cell VI, Subcell E to assure the integrity of the liner under Master Cell VI, Subcell E.

9. According to the Hydrogeological Report submitted by WDI, which cited several related background reports prepared by its consultant over the years, the hydrogeological characteristics at the WDI Landfill site provide a level of hydrologic protection that exceeds the TSCA requirements specified in 40 C.F.R. § 761.75(b)(3) (*Hydrologic conditions*), for the following:

a. The Clay Pan underlying the WDI Landfill covers a large area of at least 480 acres, and is effectively continuous and relatively impermeable. Testing has demonstrated no downward natural seepage of water through the clay pan. Breakthrough times for the Clay Pan are very long, and piezometers installed in the clay indicate that the water flux across the clay is very low.

b. There is no hydraulic connection between the base of the Master Cell VI (Subcells A, B, C, D, E, F and G) lowermost geomembrane and standing or flowing surface water. The Clay Pan serves as an aquiclude and naturally protects the Upper Aquifer below it. The unprotected, thin Upper Sand Unit resting on the Clay Pan was excavated during construction so that the liner for Master Cell VI, Subcell E rests either on a clay cap or on the Clay Pan.

c. The bottom of the liner system for Master Cell VI (Subcells A, B, C, D, E, F and G) is underlain by at least ten (10) feet of clay with a permeability of less than 1 x 10^{-7} cm/sec. The bottom of the liner system for Master Cell VI, Subcell E is underlain by at least ten (10) feet of clay with a permeability of less than 1 x 10^{-7} cm/sec and by Master Cell V.

d. The WDI Landfill has monitoring wells and leachate collection systems.

e. The naturally protected Lower Sand Drift Aquifer below the Clay Pan (the regulatory Upper Aquifer), along with the low permeability of the Clay Pan, helps maintain the potentiometric or artesian forces that result in the local no flow zone in the Clay Pan below Master Cell VI.

f. Municipal water supplies are no longer drawn from the Lower Sand Drift Aquifer. The nine wells of the Bridge Road-Rawsonville Road array were shut down in 1994, and the seven-well array in the City of Ypsilanti and the well along Superior Road Bridge were shut down in 1996. These wells are all upstream of the WDI Landfill. Some of these wells may be used in the future.

10. Master Cell VI is located above the 100-year flood level. Master Cell VI has stormwater runoff control structures, as required by 40 C.F.R. § 761.75(b)(4) (*Flood protection*).

11. Master Cell VI is located on an area of relatively flat topography, as required by 40 C.F.R. § 761.75(b)(5) (*Topography*).

12. The requirements of 40 C.F.R. § 761.75(b)(6)(i) (*Water sampling*) have been met as follows:

a. all ground and surface water sample sites were sampled to establish background levels before PCB waste disposal began in Master Cell VI;

b. leachate from Master Cell V was tested to establish background levels before PCBs were disposed of in Master Cell VI, Subcell E;

c. on-site surface water (storm water) will be sampled pursuant to WDI's Surface Water Sampling and Analysis Plan; and

d. Quirk Drain, a surface water course designated under 40 C.F.R. § 761.75(c)(3)(ii), will be sampled for PCBs as required by National Pollution Discharge Elimination System (NPDES) Permit No. MI0056413, dated May 1, 2009.

13. WDI has certified that the WDI Landfill has a groundwater monitoring plan and requisite groundwater monitoring wells that meet the requirements of 40 C.F.R. § 761.75(b)(6)(ii) (*Groundwater monitor wells*). These wells include 22 wells monitored under the terms of WDI's Hazardous Waste Operating License and five wells monitored under the terms of the TSCA Approval. Additional wells will be added as the expansion area is constructed.

14. WDI is required to conduct analyses on all groundwater samples obtained from the TSCA monitoring wells, pursuant to 40 C.F.R. § 761.75(b)(6)(iii) (*Water analysis*).

15. The WDI Landfill has a compound leachate collection system in Master Cell VI that meets the specifications of 40 C.F.R. § 761.75(b)(7)(ii) (*Compound leachate collection*). The system consists of a Leachate Collection System (LCS) used to collect, monitor and remove leachate above the primary liner; and a Leak Detection, Collection and Removal System (LDCRS) designed to measure flow volumes, collect and analyze samples, and remove leachate above the secondary liner. The LCS currently utilizes eight collection sump pumps to remove leachate from the primary liner. The LDCRS currently utilizes eight additional sumps to monitor and remove leachate from the secondary liner. Leachate collected and removed from the LCS and the LDCRS is treated at WDI's on-site water treatment plant before being discharged to the local sanitary sewer system.

16. WDI's September 2011 Application indicates that operations at Master Cell VI of the WDI Landfill meet the requirements of 40 C.F.R. § 761.75(b)(8) (*Chemical waste landfill operations*), as follows:

a. WDI has procedures for placement of PCBs and segregation of other incompatible wastes.

b. The Waste Analysis Plan; Waste Delivery Procedures; Leachate Monitoring Plan; Leak Detection, Collection and Removal System Monitoring Plan; Personnel Training Program; Emergency Contingency Plan; and other information in the Application provide detailed explanations regarding recordkeeping; surface water handling; excavation and backfilling; waste segregation; vehicle and equipment movement; roadways; leachate collection systems; sampling and monitoring procedures; monitoring wells; emergency contingency plans; and security

measures at the WDI Landfill.

c. The WDI Landfill will not accept ignitable wastes.

d. WDI will maintain records for all PCB disposal operations, as required by the TSCA PCB regulations.

17. The WDI Landfill has features required by 40 C.F.R. § 761.75(b)(9) (*Supporting facilities*), including the following:

a. a fence around the site to prevent unauthorized persons and animals from entering, and full-time security personnel on site 24 hours per day;

b. roads adequate to support safe operations and maintenance of the Landfill, as described in the Waste Delivery Process section of the September 2011Application; and

c. operating procedures to prevent safety problems or hazardous conditions resulting from spills and windblown materials, including a Personnel Training Program, an Emergency Contingency Plan, and Preparedness and Prevention Plans and Procedures that address worker safety, spill response and procedures to prevent releases to the atmosphere.

18. WDI's September 2011 Application for the WDI Landfill and other submissions contain the information required by 40 C.F.R. § 761.75(c)(1).

19. WDI plans to fill the remaining authorized volume in Master Cell VI, Subcell E, consisting of approximately 1.47 million cubic yards and the 11.73 million cubic yards in the expansion area (Master Cell VI F & G), under this TSCA Approval.

20. WDI has the following current permits:

a. Michigan Department of Natural Resources and Environmental Part 111 Hazardous Waste Management Facility Operating License for MID 048 090 633; effective May 4, 2012 and expires May 4, 2022.

b. Industrial Pretreatment Program, Class D Wastewater Discharge Permit Number D-11201 issued by the South Huron Valley Utility Authority; effective May 30, 2008, and expires May 29, 2013.

c. NPDES Permit Number MI0056413, issued by MDEQ; effective May 1, 2009, and expires October 1, 2013.

21. WDI has submitted a "Notification of PCB Waste Activity," Form 7710-53 (12-89), and

received the unique EPA waste identification number MID 048 090 633.

22. WDI submitted to the MDEQ a letter of credit for Closure and Post-Closure Care of the WDI Landfill, effective May 4, 2012 in the amounts of $8,975,765 for closure and $9,791,490 for post-closure care.

23. PCB waste in excess of 100 ppm is regulated pursuant to Part 147 of the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. WDI's May 2012 Hazardous Waste Management Facility Operating License constitutes authorization pursuant to Part 147 of Act 451 to dispose of regulated PCB waste. The Operating License contains extensive requirements for management of PCB waste that are no less stringent in protection of health and the environment than the applicable TSCA requirements.

24. WDI's May 2012 Hazardous Waste Management Facility Operating License makes applicable to management of PCB waste in Master Cell VI of the WDI Landfill many of the RCRA-equivalent requirements for hazardous waste disposal facilities set out in the Michigan regulations at Part 111 of Act 451, including requirements for closure, post-closure care and financial assurance.

CONDITIONS OF APPROVAL

The following Conditions, including specified requirements and provisions necessary to ensure that operation of the WDI Landfill does not present an unreasonable risk of injury to health or the environment from PCBs, are authorized pursuant to 40 C.F.R. § 761.75(c)(3). In addition, all requirements, conditions and limitations regarding disposal of PCB waste, contained in the Hazardous Waste Management Facility Operating License for the WDI Landfill issued by the MDEQ on May 4, 2012, including, but not limited to, those provisions referenced below, are incorporated as Conditions of this TSCA Approval.

SITE LOCATION

25. PCB disposal must be carried out entirely within Master Cell VI of the WDI Landfill, as described in WDI's September 2011 Application.

RUN-ON RUNOFF SYSTEMS

26. WDI shall comply with the requirements in Part IV.C. (Design and Run-on, Runoff, and Contaminant Control) of the May 4, 2012 Hazardous Waste Management Facility Operating License, including:

    a. operating and maintaining a run-on control system capable of preventing storm water flow onto the active portions of the WDI Landfill during peak discharge from a 24-hour, 25-year storm; and

b. operating and maintaining a runoff management system to collect and control storm water volume resulting from a 24-hour, 100-year storm, as provided in the Storm Water Management Standard Operating procedure for the WDI Landfill.

WASTE IDENTIFICATION AND PLACEMENT

27. Any TSCA waste that fails the RCRA paint filter test (SW-846 Method BL), for reasons other than incidental liquids, shall not be disposed of in Master Cell VI of the WDI Landfill. Incidental water produced during transport may be handled according to the TSCA regulations.

28. Ignitable waste, as defined in 40 C.F.R. § 761.75(b)(8)(iii), shall not be disposed of in Master Cell VI of the WDI Landfill.

29. Any PCB waste or hazardous waste not listed in Attachment 8 to the May 2012 Hazardous Waste Management Facility Operating License, or any incompatible nonhazardous waste that meets any of the criteria set out in Condition IV.B.3. of the Operating License shall not be disposed of in Master Cell VI of the WDI Landfill.

30. Wastes placed in Master Cell VI of the WDI Landfill must be capable of attaining sufficient strength to prevent subsidence, ponding on the waste or on the cap, and slope movement or creep.

31. Indications of slope failure or leachate escape from Master Cell VI or any of its Subcells shall trigger all emergency notification processes and shall subject WDI to immediate corrective action, including possible work stoppage, drainage control, emergency berm construction, soil reinforcement, and possible closure of Landfill.

32. Each load of PCB waste received at the WDI Landfill must be inspected, compared and reconciled with the manifest and the Waste Analysis Plan, Attachment 1 to the May 2012 Hazardous Waste Management Facility Operating License.

33. PCB waste must be logged into the Master Cell VI waste placement coordinate system, as provided in Condition D.2.of Part IV of the May 2012 Hazardous Waste Management Facility Operating License..

34. Vehicles that enter the active portion of the WDI Landfill must be washed clean of soil before leaving the Landfill, and vehicles delivering waste to, but not entering the active portion of the Landfill, must be washed at the wheel wash house or equivalent wash before entering the public road, as provided in the Waste Analysis Plan, Attachment 1 to the May 2012 Hazardous Waste Management Facility Operating License.

35. All waste transport vehicles must be inspected in accordance with the May 2012 Hazardous Waste Management Facility Operating License. Vehicles that leak PCB waste must be contained immediately and not leave the Landfill until the leak is stopped.

36. PCB waste may not be placed anywhere in Master Cell VI if the waste is incompatible with the geomembrane. PCB waste may not be placed on top of wastes that carry residual heat, such as warm, stabilized hazardous waste.

GROUNDWATER MONITORING

37. WDI shall conduct Groundwater Monitoring as provided in Part V.A. (Groundwater Monitoring Program) of the May 2012 Hazardous Waste Management Facility Operating License, and detailed in Attachment 9 (Groundwater Monitoring Program Sampling and Analysis Plan) of the Operating License.

38. As specified in the revised October 2012 Attachment 9 of the May 2012 Operating License, the following groundwater wells are approved to monitor the Upper Aquifer around Master Cell VI for PCBs, pursuant to the requirements in 40 C.F.R. § 761.75(b)(6):

Existing Wells

a. OB-21
b. OB-23R
c. OB-24
d. OB-34R
e. OB-40R

Proposed Wells

f. OB-48
g. OB-49
h. OB-50
i. OB-51
j. OB-52
k. OB-53
l. OB-54
m. OB-55
n. OB-56
o. OB-57
p. OB-58
q. OB-59
r. OB-60

39. As required by 40 C.F.R. § 761.75(b)(6)(iii) (*Water analysis*), samples from the above groundwater monitoring wells must be analyzed for the following parameters:

a. PCBs
b. pH
c. Specific conductance
d. Chlorinated organics

40. As provided in 40 C.F.R. § 761.75(b)(6)(iii), all data and records of the groundwater sampling and analysis shall be maintained as required in 40 C.F.R. § 761.180(d)(1), and current EPA sampling methods and analytical procedures shall be followed.

41. Wells used to measure water level elevations at Master Cell VI must not be purged or otherwise disturbed prior to measuring the static water level.

AMBIENT AIR MONITORING

42. WDI shall conduct Ambient Air Monitoring as provided in Part V. B. (Ambient Air Monitoring Program) of the May 2012 Hazardous Waste Management Facility Operating License, and detailed in Attachment 10 (Ambient Air Monitoring Program) of the Operating License.

43. Sample sites around the perimeter of WDI Landfill must be sampled for PCBs at a frequency prescribed by the Ambient Air Monitoring Program. The sample sites referenced in Figure 1 of the Ambient Air Monitoring Program consist of:

a. Site 5 (82975)
b. Site 6 (82981)
c. Site 7 (82977)
d. Site 8 (82982)
e. Site 9 (82983)
f. Site 10 (82984)
g. Site 11 (proposed)

44. As specified in the Ambient Air Monitoring Program, sampling and analytical methodology must use EPA Method TO-4A or TO-10A. The analytical method must achieve a minimum method detection limit of two hundredths micrograms per cubic meter (0.02 ug/m3). Twenty-four hour time weighted average perimeter monitoring using a notification level of three tenth micrograms per cubic meter (0.3 ug/m3) is acceptable.

SOIL MONITORING

45. WDI shall conduct corrective action Soil Monitoring for PCBs in "Area A" of the WDI Landfill, and detection a Soil Monitoring for PCBs in "Area B" of the WDI Landfill, as provided in Part V.C. of the May 2012 Hazardous Waste Management Facility Operating License, and detailed in Attachment 11 (Soil Monitoring Program Sampling and Analysis Plan) of the Operating License.

SURFACE WATER MONITORING

46. WDI shall conduct Surface Water Monitoring, as provided in Part V.D. of the May 2012

Hazardous Waste Management Facility Operating License, and detailed in Attachment 12 (Surface Water Monitoring Program Sampling and Analysis Plan) of the Operating License.

47. As specified in Attachment 12 of the May 2012 Operating License, surface water grab samples must be collected from the following locations, every quarter following a significant rain event, pursuant to the requirements in 40 C.F.R. § 761.75(b)(6):

a. SS - 1
b. SS - 2
c. SS - 5
d. SS - 6
e. SS - 7
f. SS – 8
g. SS-9 (proposed)
h. SS-10 (proposed)
i. SS-11 (proposed)
j. SS-12 (proposed)

48. Surface water from SS-3 must be sampled once a month when water is being discharged from the surface water management system.

49. As required by 40 C.F.R. § 761.75(b)(6)(iii) (*Water analysis*), the above surface water grab samples must be analyzed for the following parameters:

a. PCBs
b. pH
c. Specific conductance
d. Chlorinated organics

50. As provided in 40 C.F.R. § 761.75(b)(6)(iii), all data and records of the surface water sampling and analysis shall be maintained as required in 40 C.F.R. § 761.180(d)(1), and current EPA sampling methods and analytical procedures shall be followed.

LEACHATE MONITORING

51. WDI shall conduct Leachate Monitoring as provided in Part V.E. (Leachate Monitoring Program) of the May 2012 Hazardous Waste Management Facility Operating License and detailed in Attachment 13 (Leachate Monitoring Program Sampling and Analysis Plan) of the Operating License.

52. As specified in Attachment 13 of the May 2012 Operating License, each of the leachate collection sumps at the WDI Landfill must be measured and inspected weekly; leachate production volume from each of the leachate collection sumps must be determined monthly; and each of the leachate collection sumps must be sampled and analyzed

annually, pursuant to the requirements in 40 C.F.R. § 761.75(b)(7) (*Leachate collection*).

53. Analysis of the samples from each of the existing leachate collection sumps in Master Cell VI of the WDI Landfill must comply with the requirements of 40 C.F.R. § 761.75(b)(6)(iii) (*Water analysis*) and include the following parameters:

    a. PCBs
    b. pH
    c. Specific conductance
    d. Chlorinated organics

54. WDI must perform the same annual PCB analysis on each additional leachate collection sump added to Master Cell VI.

LEAK DETECTION SYSTEM MONITORING

55. WDI shall conduct Leak Detection System Monitoring, as provided in Part V.F. (Leak Detection System Monitoring Program) of the May 2012 Hazardous Waste Management Facility Operating License and detailed in Attachment 14 (Leak Detection Monitoring Program Sampling and Analysis Plan) of the Operating License.

56. As provided in Part V.F. (Leak Detection System Monitoring Program) of the May 2012 Operating License and detailed in Attachment 14 of the Operating License, each leak detection sump in Master Cell VI of the WDI Landfill must be inspected weekly; the volume of liquid withdrawn from each leak detection sump must be recorded weekly; a sample of liquid from each leak detection sump must be subjected to a field analysis monthly; and each leak detection sump must be sampled, and the samples subjected to a full laboratory analysis, quarterly [or as soon as practicable if conditions set out in Section V.F.2(c) of the Operating License are triggered] for the parameters listed in Attachment 14 of the Operating License, including:

    a. PCBs
    b. pH
    c. Specific conductance
    d. Chlorinated organics

57. All notifications required in Part V.F. (Leak Detection System Monitoring Program) of the May 2012 Operating License regarding any statistically significant increase in a monitored parameter or a failure of the liner system in Master Cell VI of the WDI

Landfill, must be given to EPA, as well as to the Director of the MDEQ. WDI must consult with EPA regarding any actions taken under Section V.F.10 of the Operating License in response to a release of contaminants from Master Cell VI.

LEACHATE/WATER COLLECTION, HANDLING AND DISPOSAL

58. Dilution to avoid applicability of the TSCA PCB regulations is prohibited.

59. WDI shall ensure that leachate depth over the primary liner in Master Cell VI of the WDI Landfill does not exceed one (1) foot.

60. Pursuant to the monthly testing requirements of 40 C.F.R. § 761.75(b)(7) (*Leachate collection*), each month WDI must collect a composite sample representing leachate from the Primary Leachate Collection System in Master Cell VI before treatment (by sampling the combined force main pipe leading into the water treatment plant), and a composite sample representing liquid from the Leak Detection, Collection and Removal System in Master Cell VI before treatment, and analyze each sample for:

a. PCBs
b. pH
c. Specific conductance
d. chlorinated organics
e. physiochemical characteristics necessary to characterize the leachate for treatment and disposal

61. All leachate and all leak detector water, if any, from Master Cell VI must be sampled prior to mixing with leachate/water from other sources. All leachate/water from Master Cell VI with PCB concentrations of less than fifty (50) ppm must be treated at WDI's wastewater treatment plant in accordance with the Class D Waste Water Discharge Permit issued to WDI by the South Huron Valley Utility Authority or shipped off-site to a facility permitted to treat or dispose of PCB-contact wastewater.

62. All leachate/water from Master Cell VI with PCB concentrations of fifty (50) ppm or greater must be treated at a facility authorized to dispose of PCB wastewater, and stored in accordance with 40 C.F.R. Part 761, Subpart D storage requirements, pursuant to a Spill Prevention Control and Countermeasures (SPCC) plan, until removal for disposal.

SEDIMENT BASIN MONITORING

63. WDI shall conduct annual sediment basin monitoring for the North and South Sediment Basins at the WDI Landfill, as provided in Part V.H. of the May 2012 Hazardous Waste Management Facility Operating License, and detailed in Attachment 16 (Sedimentation Basin Monitoring Program Sampling and Analysis Plan) of the Operating License.

ANALYSIS

64. Chlorinated organics in the groundwater to be monitored under this Approval are the chlorine containing compounds listed in Attachment H to the Groundwater Monitoring Program Sampling and Analysis Plan (Attachment 9 of WDI's May 2012 Hazardous Waste Management Facility Operating License).

65. Chlorinated organics in the groundwater samples are to be analyzed by SW-846 Method 8260C (or future EPA updates).

66. The PCB levels in any air sample required by this Approval must be determined by using EPA Test Method TO-4A or TO-10A.

67. The PCB levels in any soil sample or solid sample required by this Approval must be determined by using:

    a. Appropriate procedures identified by SW-846 Method 3500C (or future EPA updates) for organic extraction and sample preparation.

    b. Procedures identified by SW-846 Method 3600C (or future EPA updates) for sample extract cleanup, when necessary/appropriate.

    c. SW-846 Methods 8082A (as updated by EPA) for analytical measurement. The results must be reported as total PCB, on a dry weight basis (103-105oC), calculated by comparison to Aroclor standards identified by SW-846 Methods 8082A when Aroclors are present. Identified Aroclors used for calculation of total PCB also are to be reported.

68 The PCB levels in any leachate sample required by this Approval must be determined by using:

    a. Appropriate procedures identified by SW-846 Method 3500C (or future EPA updates) for organic extraction and sample preparation.

    b. Procedures identified by SW-846 Method 3600C (or future EPA updates) for sample extract cleanup, when necessary/appropriate.

    c. SW-846 Methods 8082A (as updated by EPA) for analytical measurement.

69. The results of analyses of leachate samples required by this Approval must be reported as total PCB calculated by comparison to Aroclor standards identified by EPA Test Method SW-846 Method 8082A. Identified Aroclors used for calculation of total PCB are also to be reported.

70. Chlorinated organics in the surface water to be monitored under this Approval are the chlorine containing compounds listed in Table 2 of the Surface Water Monitoring Program Sampling and Analysis Plan (Attachment 12 of WDI's May 2012 Hazardous Waste Management Facility Operating License).

71. Chlorinated organics in the surface water samples are to be analyzed by SW-846 Method 8260C (or future EPA updates), with the provision that any reported 1,2 dichloroethene will include the sum of both isomers (cis and trans).

72. Chlorinated organics in the leachate to be monitored under this Approval are the chlorine containing compounds of the Volatile Organic Parameters (8260) and Semi-Volatile Organic Parameters (8270) identified/listed in Figure 7 of the Leachate Monitoring Program Sampling and Analysis Plan (Attachment 13 of WDI's May 2012 Hazardous Waste Management Facility Operating License).

73. Chlorinated organics in leachate samples are to be analyzed by SW-846 Method 8260C (or future EPA updates) for the volatile compounds, and by SW-846 Method 8270D (or future EPA updates) for the semi-volatile compounds. It is recognized that in many cases the detection limits shown in the Figure 7 of the Leachate Monitoring Program Sampling and Analysis Plan will not be attained for leachate due to sample dilutions or matrix effects.

74. Chlorinated organics in the leak detection water to be monitored under this Approval are the chlorine containing compounds identified/listed in Attachment E of the Leak Detection System Monitoring Program Sampling and Analysis Plan (Attachment 14 of WDI's May 2012 Hazardous Waste Management Facility Operating License).

75. Chlorinated organics in leak detection water samples are to be analyzed by SW-846 Method 8260C (or future EPA updates).

76. Analysis for PCBs, pH, specific conductance, and chlorinated organics must be performed in accordance with the Quality Assurance Manual for WDI's contract laboratory, included in Attachment 9 (Groundwater Monitoring Program Sampling and Analysis Plan) of WDI's May 2012 Hazardous Waste Management Facility Operating License.

77. EPA must approve of the removal of statistically significant increases from monitoring data.

78. Upon demand, WDI must provide EPA split sample material. EPA will spike this material, and WDI must arrange for its laboratory to analyze the spiked samples. The laboratory must be the one that WDI utilizes to analyze samples of the same matrix. The laboratory must provide sample results to EPA and to WDI at the same time.

RECORDKEEPING

79. WDI must comply with the recordkeeping requirements set out at 40 C.F.R. § 761.75(b)(8)(iv) and 40 C.F.R. § 761.180(b), including the requirements to maintain annual records on the disposition of PCB waste at the WDI Landfill and a written annual document log containing the information required by 40 C.F.R. § 761.180(b)(2).

80. As required by 40 C.F.R. § 761.180(b)(1), the annual records for the WDI Landfill shall include:

a. all signed and numbered manifests for each PCB waste shipment received at the Landfill for the calendar year;

b. all Certificates of Disposal generated by or received at the Landfill for the calendar year; and

c. all records of inspections and cleanups at the Landfill for the calendar year.

81. As required by 40 C.F.R. § 761.180(b)(2), WDI shall prepare, by July 1 for the previous calendar year, an annual document log that includes:

a. the name, address, phone number, and EPA identification number of the holder of the TSCA Approval, and the calendar year of the log;

b. the unique manifest number of every manifest received at the Landfill during the calendar year, and from each manifest the following information:

i. the generator's name for each shipment of PCB waste;

ii. the quantity of PCB waste disposed of expressed in cubic yards of waste and kilograms of PCB waste;

iii. the serial number (if available) or other means of identifying each PCB Article (e.g., properly drained transformer) and the weight of the PCB Article in kilograms;

iv. a unique number identifying each PCB Container, a description of the contents of each PCB Container;

v. a unique number identifying each PCB Article Container, a description of the contents of each PCB Article Container;

vi. the first date the PCBs, PCB Articles and PCB Items were removed from service for disposal; and

vii. the date the PCB waste was placed in the Landfill.

c. the quantity and PCB concentration of leachate produced from Master Cell VI of the WDI Landfill with a PCB concentration of one (1) ppm or greater and

d. the disposal destination of all leachate produced from Master Cell VI of the WDI Landfill with a PCB concentration at or greater than one ppm.

82. As required by 40 C.F.R. § 761.180(b), the annual records and annual document logs must be maintained for at least twenty (20) years after Master Cell VI is no longer used for the disposal of PCB waste. The required documents must be kept at one central location, and must be available for inspection by authorized representatives of EPA.

83. As required by 40 C.F.R. § 761.180(d), WDI shall collect and maintain for at least twenty (20) years after Master Cell VI is no longer used for the disposal of PCB waste, the following:

a. all water analyses obtained under this Approval and the applicable TSCA regulations; and

b. all operations records, including the burial coordinates of wastes, obtained under this Approval and the applicable TSCA regulations.

84. As required by 40 C.F.R. § 761.180(f), WDI shall maintain for at least twenty (20) years after Master Cell VI is no longer used for the disposal of PCB waste, the following:

a. all documents, correspondence and data provided by WDI to and State and local governmental agencies pertaining to disposal of PCB waste at the WDI Landfill;

b. all documents, correspondence and data provided by and State and local governmental agencies to WDI pertaining to disposal of PCB waste at the WDI Landfill; and

c. all applications and related correspondence sent from WDI to governmental agencies regarding specified permits for the WDI Landfill.

REPORTING

85. WDI must submit to EPA a Quarterly Report within sixty (60) days following the end of each calendar quarter. The Report must include the following data for the quarter:

a. all water elevation data, water table maps for the monitored aquifer and a north-south cross section showing the landfill, the aquifer and water elevations;

b. volume of liquid and analytical results from the Leachate Collection System for Master Cell VI, and from the Leak Detection, Collection and Removal System;

c. a tabular summary of all analytical results of groundwater sampling;

d. all PCB air monitoring results; and

e. a summary of the number of cubic yards and kilograms of PCB waste placed in Master Cell VI for the quarter, in addition to the requirements listed in 40 C.F.R. § 761.180(b)(3).

86. As required by 40 C.F.R. § 761.180(b)(3), WDI must submit to EPA an annual report by July 15 of each year for the previous calendar year and must include data for the previous calendar year. For each respective year, the annual report must contain a summary of the written annual disposal log records and annual records, and the following additional information:

a. sample site locations for leachate/water, groundwater, air, surface water, storm water, and sediment samples must be posted/plotted on maps and cross sections;

b. a graphical time plot of all analytical data from groundwater quality sampling;

c. piezometric surface elevation contour maps and cross sections for each quarter, showing Master Cell VI, flow paths and flow rates;

d. a graphical time plot of all leachate/water analytical data produced from the Leachate Collection System for Master Cell VI, and from the Leak Detection, Collection and Removal System;

e. a summary of the final PCB concentration of each batch of leachate/water treated on-site;

f. a graphical comparison between leachate quantity pumped/generated during the reported year and the leachate quantities pumped/generated from previous years together with the concentration, treatment method, and disposition of leachate with greater than or equal to one ppm PCB as pumped from the cell;

g. a summary of the number of cubic yards and kilograms of PCB waste disposed of in the calendar year, in addition to the requirements listed in 40 C.F.R. § 761.180(b)(3);

h. a graphical time plot of analysis of all TSCA surface water, sediment and air monitoring results;

i. closure and post-closure financial assurance estimates adjusted annually; and

j. any additional information as may be required by the Director of the Land and Chemicals Division, EPA, Region 5.

87. WDI must provide to EPA every PCB report sent to MDEQ; the results of local air monitoring work around the Master Cell VI working faces, including any temporary air monitoring site locations; any interim cleanup action results; and any MDEQ cleanup approvals.

NOTICE

88. Within one working day of when it knows or should have known of applicable analytical results, WDI must notify EPA by telephone of any statistically significant increase in monitored parameters in groundwater or Leak Detection, Collection and Removal System samples from the WDI Landfill. WDI also must provide a written notification of such increase within seven (7) days.

89. Within one working day of when it knows or should have known of applicable monitoring results, WDI must notify EPA by phone if the leachate over the primary liner of Master Cell VI exceeds one (1) foot depth, or the volume of water or leachate from Master Cell VI exceeds the mean value plus three (3) standard deviations calculated from the last two years records for the sample point.

90. Within one working day of when it knows or should have known of applicable monitoring results, WDI must notify EPA by telephone of any WDI Landfill perimeter air station sample result of three tenths micrograms per cubic meter (0.3 $\mu g/m^3$) of PCB or greater. WDI also must provide a written notification of such a result within seven (7) days.

91. For the required telephone notification, WDI must contact EPA Regional Office, RCRA/TSCA Programs at (312) 886-0838. Required written notification may be sent to:

Division Director, Land and Chemicals Division (L-8J)
U.S. Environmental Protection Agency
77 W. Jackson Blvd.
Chicago, Illinois 60604

92. If there is a spill or release of anything from Master Cell VI of the WDI Landfill which poses a threat to health or the environment, the event must be reported immediately to the EPA Regional Office, RCRA/TSCA Programs at (312) 886-0838. In addition, WDI must abide by all other applicable federal, State and local notification and reporting requirements regarding such an incident.

SAFETY AND HEALTH REQUIREMENTS

93. EPA may subject the WDI Landfill to operational changes if twenty-four (24)-hour perimeter air monitoring sample results exceed five tenths micrograms per cubic meter (0.5 $\mu g/m^3$) of PCB.

94. EPA may subject the WDI Landfill to temporary work stoppage if twenty-four (24) hour perimeter air monitoring sample results exceed one microgram per cubic meter (1.0 $\mu g/m^3$) of PCB.

95. PCBs must not be found in the air above Master Cell VI of the WDI Landfill at levels that constitute unacceptable work conditions using criteria compatible with those of the Occupational Safety and Health Agency (OSHA).

96. Operational changes and cleanups at Master Cell VI of the WDI Landfill must be completed in accordance with applicable TSCA PCB regulations.

97. WDI must follow the inspection guidelines in General Inspection Schedule, Attachment 2 to the May 2012 Hazardous Waste Management Facility Operating License.

98. All workers at WDI must receive training as provided in the WDI Personnel Training Program, Attachment 3 to the May 2012 Hazardous Waste Management Facility Operating License.

99. Master Cell VI of the WDI Landfill must remain secured to restrict public access at all times.

INSPECTION

100. EPA reserves the right of its employees and authorized representatives to perform inspections, review records, and take samples at the WDI Landfill at any reasonable time.

CLOSURE AND POST-CLOSURE

101. Closure of Master Cell VI of the WDI Landfill must be approved in writing by EPA prior to closure, and shall be implemented pursuant to updated Closure and Post-closure Plans approved in writing by the Director of the Land and Chemicals Division, Region 5, EPA.

102. WDI has submitted a Closure Plan (Attachment 5 of the May 2012 Hazardous Waste Management Facility Operating License) and Post-closure Plan (Attachment 6 of the Operating License) for Master Cell VI of the WDI Landfill. Within one hundred and eighty (180) days prior to closure of Master Cell VI, WDI shall provide updates of these Plans to EPA for review and approval.

103. The updated Closure and Post-closure Plans for Master Cell VI of the WDI Landfill shall comply with applicable RCRA requirements at 40 C.F.R. Part 264, Subpart G, as provided in Part II. J (*Closure*) and K (*Postclosure*) of the May 2012 Hazardous Waste Management Facility Operating License, and shall include any additional provisions necessary to ensure that Master Cell VI does not present an unreasonable risk of injury to health and the environment from PCBs during closure and the post-closure period. The updated Closure and Post-closure Plans must comply with the RCRA requirements at 40 C.F.R. § 264.310 (*Closure and post-closure care*) and include detailed descriptions of how Master Cell VI will be closed and the long-term care that will be provided after closure; updated closure and post-closure cost estimates; and an updated demonstration of financial responsibility for implementing closure and providing post-closure care throughout the post-closure period.

104. The current Closure Plan for Master Cell VI of the WDI Landfill requires installation of a final cap, and the Post-closure Plan provides for maintenance of the cap during the post-closure period. The final cap design must be approved in writing by EPA.

105. The current Post-closure Plan for Master Cell VI of the WDI Landfill contains a post-closure period of thirty (30) years applicable to RCRA hazardous waste landfills. At any time prior to closure of Master Cell VI or during the post-closure period in the EPA-approved Post-closure Plan for Master Cell VI, EPA may extend the post-closure period upon finding that an extended period of post-closure care is necessary to ensure that Master Cell VI does not present an unreasonable risk of injury to health or the environment from PCBs. Regardless, of any such extension, WDI shall maintain the approved final cap on Master Cell VI in perpetuity.

106. Upon closure, WDI must remediate areas outside of Master Cell VI of the WDI Landfill contaminated by PCBs in excess of one ppm or ten micrograms of PCBs per hundred square centimeters 10 $\mu g/100\ cm^2$). WDI may cap and seed areas which remain contaminated by PCBs at a level greater than one (1) ppm but less than ten (10) ppm, with ten (10) inches of clean soil.

FINANCIAL ASSURANCE FOR CLOSURE AND POST-CLOSURE CARE

107. WDI must establish and maintain financial assurance for closure Master Cell VI of the WDI Landfill, based on a closure cost estimate established pursuant to the RCRA requirements at 40 C.F.R. § 264.142 (*Cost estimate for closure*), and utilizing financial assurance mechanisms set out at 40 C.F.R. § 264.143 (*Financial assurance for closure*).

108. WDI must establish and maintain financial assurance for post-closure care Master Cell VI of the WDI Landfill, based on a post-closure cost estimate established pursuant to the RCRA requirements at 40 C.F.R. § 264.144 (*Cost estimate for post-closure care*), and utilizing financial assurance mechanisms set out at 40 C.F.R. § 264.145 (*Financial assurance for post-closure care*).

109. As required under the RCRA regulations at 40 C.F.R. §§ 264.142 and 264.144, WDI must adjust the closure and post-closure care cost estimates for Master Cell VI of the WDI Landfill for inflation annually, which may require an increase in the financial assurance.

110. WDI must revise the closure and post-closure care cost estimates for Master Cell VI of the WDI Landfill within thirty (30) days of any modification or change that increases such costs, including any extension of the post-closure time period. This may require an increase in the financial assurance.

111. WDI must submit proof of financial assurance for closure and post-closure care for Master Cell VI of the WDI Landfill to EPA annually. If EPA determines that the amount of financial assurance is inadequate to ensure that Master Cell VI does not present an unreasonable risk of injury to health or the environment from PCBs, WDI must obtain additional financial assurance funding. Failure to do so will result in a termination of WDI's authority to dispose of PCBs in Master Cell VI or, if Master Cell VI has been closed, may subject WDI to civil or criminal penalties under TSCA.

TRANSFER OF OWNERSHIP

112. The requirements under this Approval for closure and post-closure care of Master Cell VI of the WDI Landfill shall transfer to any new owner of the Landfill.

113. WDI must notify EPA, at least one hundred and eighty (180) days before transferring ownership of Master Cell VI of the WDI Landfill, where a new Approval must be issued, or thirty (30) days before transferring ownership of Master Cell VI where the Approval is current and the new owner's records are complete.

114. WDI must similarly notify State and local agencies before transferring ownership of Master Cell VI of the WDI Landfill.

115. Should the transferor fail to timely provide EPA with the required written documentation of sale or transfer of Master Cell VI of the WDI Landfill, this Approval may be terminated.

116. At least sixty (60) days before the transfer of Master Cell VI of the WDI Landfill, the prospective transferee must submit to EPA:

a. a written statement identifying the name, address and telephone number of the transferee;

b. copies of the transferee's last four (4) years of federal income tax returns, including all schedules;

c. a notarized affidavit signed by the transferee which states that the transferee will abide by the transferor's Approval;

d. a listing of past environmental violations by the transferee, its employees or assigns;

e. the qualifications of the principals and key employees;

f. proof of financial assurance acceptable to EPA and funding in a manner similar to that set forth at 40 C.F.R. §§ 264.142 and 145; and

g. any other applicable materials to document compliance with the requirements of 40 C.F.R. § 761.75.

117. After reviewing the notification, affidavit and background information, EPA will either issue an amended Approval in the transferee's name or require the transferee to apply for a new TSCA PCB disposal Approval. In the latter case, the transferee must abide by the transferor's Approval until the EPA issues the new Approval.

118. If the transferee is required to apply for a new TSCA PCB Approval, the transferee must submit to the Director of the Land and Chemicals Division, EPA, Region 5 a complete Application, pursuant to the requirements of 40 C.F.R. § 761.75.

BANKRUPTCY

119. In the event that WDI, or its successor or assigns, declares bankruptcy, WDI shall immediately provide written notice of such to the Director of the Land and Chemicals Division, Region 5, EPA.

MODIFICATIONS

Any major modification of this Approval requires the written approval of the Director of the Land and Chemicals Division, EPA, Region 5. If there is any question as to whether a change in operations at the WDI Landfill, or any other proposed modification, is a major or minor modification, such question should be submitted to an appropriate representative(s) of EPA as soon as possible. In such cases, EPA will determine whether a proposed change is major or minor. No oral modifications shall be granted.

Any minor modification of this Approval requires written approval of the Chief, RCRA Branch, Land and Chemicals Division, EPA, Region 5. No oral modifications shall be granted.

APPROVAL EXPIRATION

WDI's authorization to place PCB waste in Master Cell VI of the WDI Landfill will expire five (5) years after the date the Approval is executed by the Director, Land and Chemical Division, EPA, Region 5. WDI must submit a written request to the Director, at least one hundred and eighty (180) days prior to the expiration date, for a renewal of the Approval to extend this expiration date. The authorization to place PCB waste in Master Cell VI will remain in effect beyond the expiration date if WDI has submitted a timely, complete and adequate request for renewal of the Approval and, through no fault of WDI, the Division Director has not issued a renewal of the Approval.

SUSPENSION AND TERMINATION OF PCB DISPOSAL AUTHORIZATION

WDI's failure to comply with any provision of this Approval, TSCA, the PCB regulations at 40 C.F.R. Part 761, or any other applicable federal, State or local requirement may constitute a sufficient basis for suspension or termination of WDI's authorization to dispose of PCB waste in Master Cell VI of the WDI Landfill.

WDI's PCB disposal authorization may also be terminated if the Director of the Land and Chemicals Division, EPA, Region 5 determines that Master Cell VI of the WDI Landfill poses an unreasonable risk of injury to health or the environment.

The Director of the Land and Chemicals Division, EPA, Region 5 may reinstate WDI's authorization to dispose of PCB waste in Master Cell VI of the WDI Landfill or remove any disposal restrictions, if it is determined that any unsafe practices have been eliminated and unsafe conditions have been changed.

SEVERABILITY

All terms and conditions of this Approval are severable. If any provision of this Approval or any application of any provision, is changed, amended or held invalid, the remaining terms and conditions will still be valid and not affected thereby.

RESERVATIONS

Nothing in this Approval relieves WDI from the duty to comply with all applicable federal and State laws and regulations, including, but not limited to CERCLA, RCRA and TSCA and the regulations promulgated under those statutes.

Violation of the Approval, TSCA or the PCB regulations may subject WDI to civil or criminal enforcement action and associated penalties.

EPA reserves the right to impose additional Conditions of Approval if EPA finds such Conditions are necessary to ensure that operation of Master Cell VI of the WDI Landfill does not present an unreasonable risk of injury to health or the environment from PCBs, or if EPA issues new regulations or standards for TSCA PCB landfills.

EPA may require the removal of some or all of the PCBs disposed of in Master Cell VI of the WDI Landfill if EPA finds such actions are necessary to ensure that the Landfill does not present an unreasonable risk of injury to health or the environment from PCBs.

WDI is responsible for the actions of its agents, assigns, employees, and contractors regarding compliance with this Approval and all federal, State and local regulations applicable to operation of the WDI Landfill, including, but not limited to, emergency notification and reporting requirements.

WAIVER

EPA hereby waives for Master Cell VI of the WDI Landfill the requirement for a fifty-foot distance between the bottom of the landfill liner and the historical high groundwater table, set out at 40 C.F.R. § 761.75(b)(3). This requirement is waived because of Finding 6(b) herein which states the bottom of Master Cell VI is underlain by a clay pan that meets regulatory requirements consisting of ten (10) feet of clay with a permeability of 10^{-7} cm/sec, and Findings 7 and 15 which state that Master Cell VI is constructed with safety features that exceed regulatory requirements, such as two double-thick synthetic membrane liners with a thick clay interliner; a compound leachate collection system; and a leak detection, collection and removal system.

APPROVAL

In accordance with 40 C.F.R. § 761.75 and the Findings above, EPA has determined that WDI's Application is consistent with TSCA, and that Master Cell VI of the WDI Landfill, when operated in compliance with the Conditions of Approval, does not present an unreasonable risk of injury to health or the environment from PCBs. Provided that the Conditions of Approval described above are met, WDI's April 18, 2012, request for an amended Approval is granted.

WDI is authorized to dispose of PCB waste in the remaining part of its previously approved and constructed four million three hundred twenty-five thousand (4.325 million) cubic yards of volume in Master Cell VI of the WDI Landfill, and may dispose of up to another eleven million seven hundred thirty thousand four hundred eighty (11.730480 million) cubic yards of PCB waste in Master Cell VI, including Subcells F and G, after these Subbcells are so constructed and certified by the MDEQ.

Date: September 27, 2013

Margaret M. Guerriero, Director
Land and Chemicals Division
United States Environmental Protection Agency
Region 5