STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
Roger B. Wilson, Governor ♀ Stephen M. Mahfood, Director
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

MISSOURI HAZARDOUS WASTE MANAGEMENT FACILITY PERMIT
PART I
PERMIT NUMBER: MOD000624452

PERMITTEE

FACILITY OPERATOR

Browning-Ferris Industries Waste Systems
of North America, Inc. (BFINA)
12976 St. Charles Rock Road
Bridgeton, MO 63044

FACILITY OWNERS

BFINA
12976 St. Charles Rock Road
Bridgeton, MO 63044

Talon, Inc.
18216 Talon Drive
Holt, MO 64048

FACILITY LOCATION

8501 Stillhouse Road
Liberty, MO 64068
T51N, R30W, Clay County
North Latitude - 39º 15' 0"
West Longitude - 94º 17' 50"

FACILITY DESCRIPTION

BFINA operated a landfill near Missouri City, Missouri, from November 1972 to September 1983. The largest waste management portion of the site was owned by Lincoln Brothers Land, Inc. and had been used as a municipal landfill since 1972 when BFINA leased the property. In 1994 and 1995, Lincoln Brothers Land, Inc. failed to pay the taxes on that portion of the property and Talon, Inc. purchased the property from Clay County and obtained a Collector's Deed for Taxes in October 1998. As a result, Lincoln Brothers Land, Inc. no longer owns any of the BFINA facility property. BFINA owns a portion of the waste management unit to the south; therefore, this permit is issued to BFINA and Talon, Inc. as landowners and to BFINA as the facility operator.

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Additional facilities were constructed at the site in 1974 for the disposal of bulk liquid sludges. The waste management units at the site include a sanitary landfill, a Chemical Processing Center (CPC) where bulk liquid wastes were received for temporary storage prior to treatment by the LiqWaCon© fixation units, two LiqWaCon© fixation units, two LiqWaCon© gelation basins, seven bulk sludge disposal trenches, a chemical landfill, a wastewater treatment pond, a storm water retention pond, and sludge drying beds.

A closure plan for the facility was approved on December 4, 1984. The closure plan included a multicomponent final RCRA cap to cover all of the waste management units. The closure certification report was then submitted in November 1987. The approved post-closure plan for the facility was submitted in August 1986 and modified April 1997.

BFINA has implemented several corrective action measures during closure and post-closure to minimize off-site migration of contaminants and risk to human health and the environment. They include: installation of a multicomponent cap over various portions of the facility, installation of leachate and consolidation fluid collection systems, installation of a groundwater interceptor trench, installation of an active gas extraction system, acquisition of adjacent properties to the south and west, and installation of a groundwater seep collection trench.

Groundwater contamination will be contained/remediated via the groundwater seep collection trench installed as a groundwater stabilization measure. The effectiveness of the trench and extent of groundwater contamination will be assessed via continued operation of BFINA's groundwater monitoring program.

PERMITTED ACTIVITY

This Permit requires post-closure care including groundwater monitoring and corrective action for the hazardous waste disposal unit which was closed as a landfill. This Permit also contains contingent provisions for implementation of a site-wide corrective action program to address releases from other solid waste management units and areas of concern.

EFFECTIVE DATES OF PERMIT: December 19, 2000 to December 19, 2010

December 19, 2000
Date

[Original signed by John A. Young]
John A. Young, Director
Division of Environmental Quality

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INTRODUCTION

After public notice according to 10 CSR 25-8.124 and 40 CFR Part 124, and review of the Browning-Ferris Industries Waste Systems of North America, Inc.'s permit application, the Missouri Department of Natural Resources (hereafter referred to as the Department) has determined that the application substantially conforms with the provisions of the Missouri Hazardous Waste Management Law (and all standards, rules, and regulations adopted under this act), Section 260.350, et seq., RSMo. Following Section 260.375.13, RSMo, the Department hereby approves the application and issues Permit Number MOD000624452 to Browning-Ferris Industries Waste Systems of North America, Inc., as the facility operator and Browning-Ferris Industries Waste Systems of North America, Inc. and Talon, Inc., as the facility owners (hereinafter referred to jointly as the Permittee) for the post-closure operation of a hazardous waste management facility as set forth in the application. Part I of this Permit is issued under state authority, and Part II is issued under federal authority. Part I shall remain in effect even if Part II is terminated or has expired.

The permit application that was submitted by the Permittee and received by the Department on June 23, 1997, along with subsequent submittals and revisions dated August 12, 1997, September 4, 1997, May 12, 1998, and October 6, 1998, will hereafter be referred to as the "approved Permit application." The approved Permit application, along with all of the additional documents to be submitted under the Schedule of Compliance, are defined as the "consolidated Permit application."

Post-closure operation of this hazardous waste management facility shall be in accordance with the provisions of this Permit, the Missouri Hazardous Waste Management Law (Sections 260.350 through 260.434, RSMo), the rules and regulations promulgated thereunder [Code of State Regulations, Title 10, Division 25 (10 CSR 25)], as effective on the date of this Permit, the approved Permit application which is incorporated into the conditions of this Permit, and any other conditions, changes, or additions to the engineering plans, specifications, and operating procedures as specified in this Permit. The conditions specified in this Permit supersede any conflicting information in the approved Permit application. Where conflicts arise between Permit applications, the latest revision shall be effective.

Any inaccuracies found in information submitted may be grounds for the termination, revocation and reissuance, or modification of this Permit in accordance with 40 CFR Part 270 Subpart D, incorporated by reference in 10 CSR 25-7.270(1) and modified in 10 CSR 25-7.270(2)(D), and for potential enforcement action. The

Permittee shall inform the Department of any deviation from, or changes in, the information in the application which would affect the Permittee's ability to comply with the applicable regulations or permit conditions.

When the Department receives any information (such as inspection results, information from the Permittee, or requests from the Permittee), it may decide whether cause exists to modify, revoke and reissue, or terminate a facility's permit. All such changes to the permit will be in accordance with 10 CSR 25-7.270(2)(D), 10 CSR 25-8, and 40 CFR Part 270 Subpart D, incorporated by reference in 10 CSR 25-7.270(1).

The Permittee is required to comply with all applicable environmental laws and regulations enforced by the Department. These environmental laws and regulations are administered by the Air Pollution Control Program, the Hazardous Waste Program, the Land Reclamation Program, the Public Drinking Water Program, the Solid Waste Management Program, and the Water Pollution Control Program. Noncompliance with these environmental laws and regulations may, in certain circumstances, result in the suspension or revocation of this Permit and may subject the Permit holder to civil and criminal liability.

This Permit for post-closure and corrective action activities is issued only to the Permittee named above. This Permit is issued for a period of ten years and expires at midnight on December 19, 2010. This Permit is subject to review and modification by the Department in accordance with Section 260.395.12, RSMo.

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

All citations to federal regulations are for the sake of convenient reference. The federal regulations are adopted by reference in 10 CSR 25. In the instances where state regulations are more stringent, the appropriate state reference is given and shall apply.

Any appeals of the issuance or denial of the permit or specific permit conditions based on state authority shall be filed in accordance with Section 260.395.11., RSMo. The appeal shall be filed with the Missouri Hazardous Waste Management Commission within 30 days from the date of this Permit.

40 CFR §264.101(a), as incorporated by reference in 10 CSR 25-7.264(1), requires all owners or operators of facilities seeking a permit for the treatment, storage, or disposal of hazardous waste to institute corrective action as necessary to protect human health and the environment for all releases of hazardous waste or hazardous constituents from any solid waste management unit, regardless of the time at which waste was placed in such unit.

40 CFR §264.101(b), as incorporated by reference in 10 CSR 25-7.264(1), requires that permits issued under the Hazardous Waste Management Law, contain a schedule of compliance for corrective action (where corrective action cannot be completed prior to permit issuance) and assurances of financial responsibility for completing such corrective action.

40 CFR §264.101(c), as incorporated by reference in 10 CSR 25-7.264(1), requires that corrective action be taken by the facility owner or operator beyond the facility property boundary, where necessary to protect human health and the environment, unless the owner or operator demonstrates that, despite the owner/operator's best efforts, the owner or operator was unable to obtain the necessary permission to undertake such action. Further, 40 CFR § 264.101(c), as incorporated by reference in 10 CSR 25-7.264(1), stipulates that the owner/operator is not relieved of any responsibility to clean up a release that has migrated beyond the facility boundary where off-site access is denied. On-site measures to address such releases will be determined on a case-by-case basis. In addition, assurances of financial responsibility for completing such corrective action must be provided.

40 CFR 270.32(b)(2), as incorporated by reference in 10 CSR 25-7.270(1), and Section 260.395, RSMo, requires that each permit issued under that section contain terms and conditions as the Department determines necessary to protect human health and the environment.

On July 6, 1999, Missouri received final authorization for revisions to its hazardous waste management program, including the corrective action portion of the HSWA Codification Rule (July 15, 1985, 50 FR 28702) which had been previously adopted by the state. Thus, the corrective action requirements implemented by the state in lieu of the Environmental Protection Agency (EPA) are incorporated into Part I of this Permit and are under state authority. Federal administrative authority for other HSWA requirements for which the state has not adopted the applicable federal regulation and is not authorized, is retained by EPA under Part II of this Permit.

All Permit application information shall be available to the public unless nondisclosure is requested in writing as set forth in Section 260.430, RSMo. The Permit and accompanying material will be available for review by the public at the Department's central office in Jefferson City and the Mid-Continent Public Library-Liberty Branch located in Liberty, Missouri.

DEFINITIONS

For purposes of this Permit, all other terms used herein shall have the same meaning as those in 10 CSR 25-3, 10 CSR 25-4, 10 CSR 25-5, 10 CSR 25-7, 10 CSR 25-8, and Section 260.360, RSMo, unless this Permit specifically provides otherwise. Where terms are not defined in RCRA, the regulations, the Permit, or EPA guidance or publications, the meaning associated with such terms shall be defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term.

"Area of Concern (AOC)" means any area where an actual or potential release of hazardous waste or hazardous constituents which is not from a solid waste management unit, has occurred or is occurring and is determined by the Department to pose a current or potential threat to human health or the environment. Investigation and/or remediation of AOCs may be required pursuant to Section 260.395, RSMo, and 40 CFR 270.32(b)(2), as incorporated by reference in 10 CSR 25-7.270(1).

"Director" means the Director of the Missouri Department of Natural Resources.

"Facility" means:

> All contiguous land, and structures, other appurtenances, and improvements on the land, used for treating, storing, or disposing of hazardous waste.
>
> All contiguous property under the control of the owner/operator, for the purpose of implementing corrective action under 40 CFR 264.101, as incorporated by reference in 10 CSR 25-7.264(1) and as specified in Special Permit Conditions I. through XX. of this Permit.

"Hazardous constituent" means any chemical compound listed in 40 CFR Part 261 Appendix VIII, as incorporated in 10 CSR 25-4.261.

"Hazardous waste" means any waste, or combination of wastes, as defined by or listed in 10 CSR 25-4 or 10 CSR 25-11, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitating reversible, illness; or which may pose a threat to the health of humans or other living organisms.

"Release" means any spilling, leaking, pouring, emitting, emptying, discharging, injecting, pumping, escaping, leaching, dumping, or disposing of hazardous wastes (including hazardous constituents) into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles containing hazardous wastes or hazardous constituents).

"Solid Waste Management Unit (SWMU)" means any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at a facility at which solid wastes have been routinely and systematically released.

"Stabilization" means actions to control or abate threats to human health and/or the environment from releases at RCRA facilities and/or to prevent or minimize the further spread of contamination while long-term remedies are pursued.

SCHEDULE OF COMPLIANCE

A. No later than 60 days after the effective date of this Permit, the Permittee shall:

1. Submit four copies of the revised Part A permit application signed by the operator and both landowners.

2. Submit, in accordance with Special Permit Condition III.D.6. for the Department's approval, a revised Sampling and Analysis Plan (SAP) which reflects the additional requirements contained in this Permit. The Permittee shall also submit in the revised SAP, a surface water monitoring program as required by Special Permit Condition IV.

3. Submit to the Department two copies of the consolidated Permit application as required by 10 CSR 25-7.270(2)(B)7.

4. Submit a certification signed by the Permittee (BFINA and Talon, Inc.) that the Permittee has read this Permit in its entirety and understands all Permit conditions contained herein.

5. Submit a check or money order to the Department's Hazardous Waste Program payable to the State of Missouri for any outstanding engineering review costs.

6. Submit a check or money order to the Department's Hazardous Waste Program payable to the State of Missouri for $1,000 for each year the Permit is to be in effect beyond the first year. This Permit is effective for ten years. Since the Permittee has submitted a check for $1,000 with the Permit application, the remaining balance to be submitted by the Permittee is $9,000 for this ten-year Permit.

7. Submit, for the Department's approval, an updated post-closure cost estimate in accordance with Special Permit Condition II.E. The Permittee shall submit the updated financial assurance, in accordance with Special Permit Condition II.F., within 60 days after the Department's approval of the updated post-closure cost estimate.

8. Submit, for the Department's approval, two figures and a deed restriction notice that will be filed with the local zoning authority, or the authority with jurisdiction over local land use in accordance with Special Permit Conditions XIV.A. and B. Within 30 days of the Department's approval, the Permittee shall record these documents in accordance with Special Permit Condition XIV.C. A certification shall be submitted within 15 days of recording these documents in accordance with Special Permit Condition XIV.D.

B. No later than 120 days after the effective date of this Permit, the Permittee shall submit the certification of construction completion to the Department and EPA, in accordance with Special Permit Condition XV.

C. The Permittee shall comply with the schedule for planned groundwater monitoring and surface water monitoring activities as specified in this Permit and as summarized on Table II attached hereto.

D. The Permittee shall comply, as necessary, with the schedule for contingent corrective action activities as specified in this Permit and as summarized on Table IV attached hereto.

E. The Permittee shall submit an application for renewal of this Permit no later than 180 days prior to Permit expiration in accordance with 40 CFR 270.10(h).

STANDARD PERMIT CONDITION

I. The Permittee shall comply with the requirements set forth in the Missouri Hazardous Waste Management Law (and all standards, rules, and regulations adopted under this act), Section 260.350, et seq., RSMo, 40 CFR Part 264 Subpart H, 40 CFR 270.30, 40 CFR 270.40, 40 CFR 270.42, and 40 CFR 270.51 as incorporated and modified in 10 CSR 25-7 and 10 CSR 25-8.

GENERAL PERMIT CONDITIONS

I. Introduction

The Permittee shall comply with the requirements set forth in 40 CFR Part 264 Subpart B, 40 CFR Part 264 Subpart C, 40 CFR Part 264 Subpart D, 40 CFR Part 264 Subpart E, 40 CFR Part 264 Subpart H, 40 CFR Part 268, and 40 CFR Part 270, as incorporated and modified in 10 CSR 25-7 and 10 CSR 25-8.

II. Notification of an Emergency Situation [Chapter 260.505.4, RSMo]

The Permittee shall at the earliest practical moment upon discovery of an emergency involving the hazardous waste under their control, notify the Department's emergency response hotline at (573) 634-2436 and the National Response Center at 1-800-424-8802.

SPECIAL PERMIT CONDITIONS

I. Introduction

The Permittee shall comply with all applicable post-closure care requirements, groundwater monitoring, surface water monitoring, and corrective action requirements contained in 40 CFR Part 264 Subpart F and G, as incorporated by reference in 10 CSR 25-7.264(1), 10 CSR 25-7.264(2)(F) and (G), and this Permit for the former land disposal unit and any newly-identified SWMUs/AOCs or newly-identified releases from previously identified SWMUs/AOCs identified pursuant to the provisions of this Permit.

II. Post-Closure [40 CFR Part 264 Subpart G]

The Permittee shall comply with all applicable requirements of 40 CFR Part 264 Subpart G, as incorporated by reference in 10 CSR 25-7.264(1), and all provisions of this Permit.

A. Post-Closure Care (40 CFR 264.117).

Post-closure care begins after the acceptance of the closure certification of the hazardous waste management units and continues for 30 years after that date unless otherwise specified by the Department. The certification of closure for the land disposal unit was accepted on February 15, 1988. This facility, therefore, has a post-closure care period which shall last until February 15, 2018. Post-closure care shall be extended, at a minimum, until such time as the groundwater protection standard maximum concentration limits or alternate concentration limits, as applicable, are met for a period of three consecutive years under the compliance monitoring and/or corrective action program described in the Special Permit Conditions section of this Permit. Care during this period must consist of maintenance, monitoring, and reporting in accordance with 40 CFR Part 264 Subparts F, G, and N, as incorporated by reference in 10 CSR 25-7.264.

The Permittee may submit a request to the Department to shorten the post-closure care period. Justification for shortening the post-closure care period shall accompany any such request. If the Department finds that a

shortened post-closure care period is sufficient to protect human health and the environment, shortening of the post-closure care period shall be handled in accordance with the applicable permit modification procedures under 40 CFR Parts 124 and 270, as incorporated by reference in 10 CSR 25-7 and 10 CSR 25-8.

Post-closure use of the property shall be restricted by the Permittee to prevent disturbance of the integrity of the final cover on the closed land disposal unit and to prevent damage to the monitoring system. The Department may approve a use of the property that disturbs the integrity of the final cover if it is necessary for the proposed use of the property and will not increase the potential hazard to human health or the environment, or if it is necessary to reduce a threat to human health or the environment.

B. Post-Closure Plan and Amendments [40 CFR 264.118].

Post-closure care shall be in accordance with the Post-Closure Care Plan contained in the approved Permit application and all conditions of this Permit. The Post-Closure Care Plan may be amended at any time during the post-closure care period. The Permittee shall submit a written request to the Department for a permit modification to obtain a change in the approved Post-Closure Care Plan. Amendments are subject to the applicable permit modification requirements of 40 CFR Part 270 Subpart D, 10 CSR 25-7.270(2)(D), and 10 CSR 25-8. Written requests for amendments shall be submitted at least 60 days prior to the proposed change in site operations, or no later than 60 days after an unexpected event which has affected the plan. The Department may request modifications to the plan if changes in site operations affect the approved plan. The Permittee shall submit the modified plan no later than 60 days after receiving a Departmental request for modification of the plan. Any modifications requested by the Department will be approved, disapproved, or modified in accordance with the procedures in 40 CFR Parts 124 and 270, 10 CSR 25-7 and 10 CSR 25-8.

C. Future Removal of Hazardous Wastes [40 CFR 264.119(c)].

If the Permittee wishes to remove hazardous wastes, hazardous waste residues, contaminated soils, or contaminated sludges from within the

boundaries of the former land disposal unit, the Permittee shall request a modification to this Permit in accordance with the applicable requirements in 40 CFR Parts 124 and 270, and 10 CSR 25-7 and 10 CSR 25-8. The request for a modification shall include a demonstration that the action will not increase the potential hazard to human health or the environment, or the action is necessary to reduce the threat to human health or the environment. In addition, a demonstration shall be made indicating that the action will satisfy the criteria of 40 CFR 264.117(c). By removing contaminants, the Permittee may become a generator of hazardous waste and shall manage any removed material in accordance with all applicable requirements.

D. Certification of Completion of Post-Closure Care [40 CFR 264.120].

No later than 60 days after completion of the post-closure care period, the Permittee shall submit to the Department, by certified mail, a certification that the post-closure care period was completed in accordance with the approved Post-Closure Care Plan. For this Permit, the post-closure care certification is due by April 15, 2018, unless the post-closure period is otherwise amended. The certification shall be signed by the Permittee and an independent registered professional engineer licensed in Missouri, and documentation supporting the certification shall be furnished to the Department prior to the Permittee's release from the financial assurance requirements for post-closure care under 40 CFR 264.145(i).

E. Post-Closure Cost Estimate [40 CFR 264.144].

Within 60 days after permit issuance, the Permittee shall submit, for the Department’s approval, an updated post-closure cost estimate to provide for the additional requirements outlined in this Permit, in current dollars, of the annual cost of post-closure monitoring and maintenance of the facility. The estimate shall be based on the costs of hiring a third party to conduct these activities. The post-closure cost estimate shall be calculated by multiplying the annual cost estimate by the number of years of post-closure care and groundwater monitoring remaining.

Following approval of the updated cost estimate for post-closure care, annual adjustments of the estimate shall be made to account for inflation. The Permittee may make such adjustments by recalculating the post-

closure cost estimate in current dollars, or by multiplying the then current cost estimate by the inflation factor derived from the Implicit Price Deflator for Gross National Product published by the U.S. Department of Commerce in its *Survey of Current Business*. The inflation factor is the result of dividing the latest published annual deflator by the deflator for the previous year. The Permittee's annual cost estimate adjustments shall also take into account any modifications to the permitted post-closure activities. Updated post-closure care cost estimates shall be maintained in the facility Operating Record as referenced in the General Permit Conditions.

F. Post-Closure Financial Assurance [40 CFR 264.145].

The Permittee shall demonstrate compliance with 40 CFR 264.145 and 10 CSR 25-7.264(2)(H) and the documentation requirements of 40 CFR 264.151 (with the appropriate substitution of state terms) in at least the amount of the cost estimate required in Special Permit Condition II.E., above. The Permittee shall submit the updated financial assurance within 60 days after the Department's approval of the updated post-closure estimate required by Special Permit Condition II.E., above. Changes in financial assurance mechanisms shall be approved by the Department pursuant to 40 CFR 264.145 and 10 CSR 25-7.264(2)(H).

The Permittee shall comply with the provisions of 40 CFR 264.148.

III. <u>Groundwater Monitoring and Corrective Action Program - Capped Landfill [40 CFR 264.90 - 264.100].</u>

A. Groundwater Protection Standard, Hazardous Constituents, and Concentration Limits [40 CFR 264.92, 264.93, and 264.94].

The Groundwater Protection Standard (GPS) establishes the maximum concentration limits for hazardous constituents in the groundwater at and beyond the point of compliance during the compliance period. The hazardous constituents, current published health-based standards for each corresponding hazardous constituent, and maximum analytical detection limits are specified in Table I of this Permit. The listed GPS hazardous constituents have been detected in the groundwater beneath

and beyond the capped landfill and are reasonably expected to be in or derived from waste disposed at the landfill. The necessity for further corrective action shall be evaluated via the Permittee's periodic risk calculations performed on groundwater monitoring data, in accordance with Special Permit Condition III.E.2.b.

1. The maximum concentration limits for the GPS hazardous constituents listed on Table I are based on protection of human health and the environment and were derived from several different sources as explained by the footnotes to Table I.

2. The allowable GPS maximum detection limit shall never be greater than the GPS maximum concentration limit. If the GPS maximum detection limit for specific GPS hazardous constituents cannot be achieved due to matrix interferences or other analytical limitations (provided that appropriate supporting documentation is provided), the affected sample and associated chemical analysis will be exempted from this requirement. Such an exemption does not, however, in any way relieve the Permittee from complying with the GPS maximum concentration limits.

3. The Permittee may make a demonstration to the Department, at any time during the term of this Permit, for establishment of Alternate Concentration Limits (ACLs) in lieu of the GPS maximum concentration limits contained herein. Any such demonstration shall ensure that any and all ACLs proposed in lieu of the GPS maximum concentration limits are protective of human health and the environment in accordance with the requirements of 40 CFR 264.94(b). In proposing an ACL(s), the Permittee shall consider and formally address the factors listed in 40 CFR 264.94(b)(1) and (2) and EPA's Interim Final Alternate Concentration Limit Guidance, Part 1, OSWER Directive 9481.00-6C, EPA 530-SW-87-017, July 1987. Any ACLs approved by the Department shall require a permit modification in accordance with 40 CFR 270.42.

4. The Permittee shall propose modifications of the GPS to include any additional hazardous constituent(s) (40 CFR Part 261, Appendix VIII) in the groundwater which is/are identified during future sampling and analysis, if such constituents can be attributed to past operation of the

regulated unit(s) and/or the degradation of hazardous constituents known to be present in the groundwater. The biennial Appendix IX (40 CFR Part 264) groundwater sampling and analysis requirements contained in Special Permit Condition III.E.6. shall be used as the basis for determining if the addition of hazardous constituents to the GPS is necessary.

Any addition of hazardous constituents to the GPS as a result of the above determination shall require a Class 1 permit modification with prior director's approval. Any other changes to the GPS list of hazardous constituents shall require a permit modification in accordance with 40 CFR 270.42.

TABLE I - GROUNDWATER PROTECTION STANDARD*

Hazardous Constituent	Maximum Concentration Limit (mg/l)	Maximum Detection Limit (mg/l)**
Antimony	6 (a)	2
Arsenic	50 (a)	10
Barium	2000 (a)	20
Beryllium	4 (a)	3
Cadmium	5 (a)	2
Chromium	100 (a)	10
Copper	1300 (a)	60
Cyanide	200 (a)	40
Lead	15 (a)	5
Manganese	50 (b)	30

Hazardous Constituent	Maximum Concentration Limit (mg/l)	Maximum Detection Limit (mg/l)**
Nickel	100 (a)	40
Thallium	2 (a)	2
Chloromethane	10 (d)	10
Chloroform	100 (a)	5
2-Butanone	1900 (c)	100
Carbon Tetrachloride	5 (a)	5
Bromodichloromethane	5 (d)	5
1,2 – Dichloropropane	5 (a)	5
Trans - 1,3 – Dichloropropene	5 (d)	5
Dibromochloromethane	5 (d)	5
Chlorobenzene	100 (b)	5
Cis – 1,3 - Dichloropropene	5 (d)	5
Bromoform	5 (d)	5
Trichlorofluoromethane	1300 (c)	10
Benzene	5 (a)	5
Bromomethane	10 (d)	10
Chloroethane	10 (d)	10
1,1 Dichloroethane	800 (c)	5
1,2 Dichloroethane	5 (a)	5

Hazardous Constituent	Maximum Concentration Limit (mg/l)	Maximum Detection Limit (mg/l)**
1,1 Dichloroethene	7 (a)	5
Dichloroethene (cis-1,2-)	70 (a)	5
Dichloroethene (trans-1,2-)	100 (a)	5
2,4 – Dichlorophenol	110 (c)	10
Ethylbenzene	700 (a)	5
Methylene Chloride	5 (b)	5
1,1,2,2-Tetrachloroethane	5 (d)	5
Tetrachloroethene	5 (a)	5
Toluene	1,000 (a)	5
1,1,1 Trichloroethane	200 (a)	5
1,1,2 Trichloroethane	5 (a)	5
Trichloroethene	5 (a)	5
Vinyl Chloride	2 (a)	2
Lindane	0.2 (a)	0.1
Endrin	2 (a)	0.1
Methoxychlor	40 (a)	2
Toxaphene	3 (a)	2
2,4 – D	70 (a)	10
Silvex	50 (a)	2

Hazardous Constituent	Maximum Concentration Limit (mg/l)	Maximum Detection Limit (mg/l)**
2,4,5 – T	370 (c)	2
2,3,7,8-TCDD	0.03 (b)	0.005
TCDD	0.01 (d)	0.01
PCDD	0.025 (d)	0.025
HxCDD	0.025 (d)	0.025
HpCDD	0.025 (d)	0.025
OCDD	0.05 (d)	0.05
2,3,7,8 – TCDF	0.01 (d)	0.01
TCDF	0.01 (d)	0.01
PCDF	0.025 (d)	0.025
HxCDF	0.025 (d)	0.025
HpCDF	0.025 (d)	0.025
OCDF	0.05 (d)	0.05

* The Groundwater Protection Standards established by this Permit shall define the Permittee's corrective action program in accordance with 40 CFR 264.100. The need for further site investigation/remediation shall be based on the Permittee's risk assessment calculations at each point of compliance as outlined in Special Permit Condition III.E.2.b. The Maximum Concentration Limits provided in Table I for each hazardous constituent are current published health-based limits

for the corresponding hazardous constituent, which do not factor in the presence of other hazardous constituents. The Permittee shall factor in the sum of each hazardous constituents' toxic (noncarcinogenic) and carcinogenic effects in its risk assessment calculations at each sampling point. This shall be termed "cumulative" risk throughout this Permit.

** The lower of Method Detection Limits (MDLs) contained in the latest version of the EPA publication entitled: Test Methods for Evaluating Solid Waste - Physical/ Chemical Methods (SW-846) or method specific detection limits routinely achieved by the Permittee's laboratory.

(a) Denotes limits derived from state (10 CSR 60 Chapter 4) and federal public drinking water regulations, November 1997.

(b) Denotes limits derived from Missouri Water Quality Standards (10 CSR 20-7.031) for protection of groundwater, December 1999.

(c) Denotes limits derived from risk-based concentration values for tap water as contained on the EPA Region III Risk-Based Concentration Table dated October 1999.

(d) Denotes concentration limits which differ from published risk-based criteria. Health- and/or environmental-based levels are lower than the ability of current analytical technology to routinely attain detection limits at or below such levels. These hazardous constituents and their health-based criteria are listed below.

Hazardous Constituent	Maximum Concentration Limit (mg/l)
1,1,2,2 Tetrachloroethane	0.17 (b)
Bromoform	8.5 (c)
Bromomethane	8.5 (c)
Bromodichloromethane	0.17 (c)
Dibromochloromethane	0.13 (c)
1,3 Dichloropropene (cis & trans)	0.077 (c)
Chloromethane	2.1 (c)
Each chlorodibenzo p-dioxin and Chlorodibenzofuran	0.00003 (a)
Chloroethane	3.6 (c)

B. Point of Compliance [40 CFR 264.95].

At the ground surface, the point of compliance is defined as the boundary of the capped landfill. In the subsurface, the point of compliance is defined as a vertical surface that extends perpendicularly downward from the edge of the RCRA cap encompassing the landfill and other SWMUs into the uppermost aquifer underlying the facility. This definition is based upon the nature of the hazardous waste managed at the landfill and the existing data from the current sampling and monitoring at the site. Groundwater contamination at and beyond the point of compliance which exceeds the GPS maximum concentration limits shall be subject to corrective action pursuant to 40 CFR 264.100.

Based on current hydrogeologic conditions at the capped landfill, the following will serve as point-of-compliance monitoring points as depicted in Figure 1:

P-1L, P-1W, P-1F, P-2L, P-2AW, P-2F, P-3L, P-3W, P-3F, P-4L, P-4W, P-4F, P-5AL, P-5AF, P-10L, P-10W, P-10F, P-13F, P-16L, P-16W, P-16F, P-19L, P-20AF, P-20K, P-21K, P-22K, P-23K, and groundwater seeps SS-2, SS-3, SS-8, and SS-12.

Should the Permittee's ongoing site investigation reveal that the above sampling points do not adequately monitor groundwater passing the point of compliance, the Permittee shall propose a permit modification to install/establish new compliance monitoring points and/or exclude existing compliance monitoring points in accordance with 40 CFR 270.42.

C. Compliance Period [40 CFR 264.96].

The compliance period for the capped landfill shall be equal to the active life of the capped landfill. The active life of the landfill was from November 1972 to February 1988; therefore, the compliance period is 16 years. The compliance period shall begin on the effective date of this Permit.

If the GPS maximum concentration limits are being exceeded at the end of the compliance period at or beyond the point of compliance, the Permittee's groundwater corrective action program shall continue until the Permittee demonstrates that these limits have not been exceeded at and beyond the point of compliance for a period of three consecutive years.

D. General Groundwater Monitoring Requirements [40 CFR 264.97].

The Permittee shall comply with that portion of 40 CFR 264.97 applicable to monitoring programs conducted in accordance with 40 CFR 264.100 and the following additional requirements.

1. The Permittee's groundwater monitoring systems shall be designed, installed, operated, and maintained during the compliance period in a manner which ensures:

   a. Detection and/or delineation of the horizontal and vertical extent of groundwater contamination at and beyond the point of compliance (including beyond the facility property boundary, if necessary);

   b. Determination of representative concentrations of hazardous constituents and/or contaminant plume indicator parameters in the groundwater; and

   c. The Permittee's ability to determine the effectiveness of any groundwater corrective action activities in terms of contaminant removal, destruction, and/or containment.

2. During the term of this Permit, the number, location, and depth of the Permittee's monitoring wells shall be sufficient to define the horizontal and vertical extent of groundwater contamination beneath the Permittee's property, and beyond the facility property boundary. If at any time during the compliance period, the Permittee or the Department determines that the existing monitoring system fails to define the horizontal and vertical extent of groundwater contamination, the Permittee shall submit, within 30 days of such determination by the Permittee or receipt of written notification by the Department, a proposal for the installation of additional monitoring wells to define such extent.

   At such time as the Department determines that the Permittee has adequately redefined the horizontal and/or vertical extent of groundwater contamination, the wells defining such extent shall be incorporated into and designated for continued monitoring in the

Permittee's Groundwater Sampling and Analysis Plan (SAP). The Department will notify the Permittee in writing regarding this determination. Within 30 days of receipt of notification, the Permittee shall submit appropriate SAP revisions to the Department's Hazardous Waste Program.

3. Any new groundwater monitoring well(s) installed by the Permittee to meet the requirements of this Permit shall be designed and constructed in accordance with the requirements of 40 CFR 264.97, 10 CSR 23 Chapter 4 - Monitoring Well Construction Code of the Missouri Well Construction Rules and/or well-specific plans and specifications approved by the Department.

    a. The Permittee shall submit to the Department's Hazardous Waste Program a copy of the well certification report form and the resulting certification acceptance required by 10 CSR 23-4.020 for any new monitoring wells installed pursuant to this Permit. This information shall be reported as part of the Semi-Annual Groundwater Corrective Action Reports required by Special Permit Condition III.F.

    b. Any change in the number of monitoring wells at the regulated unit shall require a Class 2 permit modification in accordance with 40 CFR 270.42. The Permittee may elect to submit an annual modification request to address changes in the number of wells in lieu of submitting a modification for each individual change.

4. Plugging and abandonment of any groundwater monitoring well(s) operated by the Permittee pursuant to the requirements of this Permit shall meet the requirements of 10 CSR 23-4.080.

    a. The Permittee shall submit to the Department's Hazardous Waste Program a copy of the well registration report form and resulting registration acceptance required by 10 CSR 23-4.080 for any monitoring wells plugged pursuant to this Permit. This information shall be reported as part of the Semi-Annual Groundwater Corrective Action Reports required by Special Permit Condition III.F.

b. At such time as the Permittee's well registration has been accepted by the Department's Division of Geology and Land Survey (DGLS), the plugged wells shall be removed from the Permittee's Groundwater SAP. Within 30 days of DGLS' registration acceptance, the Permittee shall submit appropriate SAP revisions to the Department's Hazardous Waste Program.

5. The Permittee shall contact the Department at least five working days prior to conducting any field work associated with the construction or modification of the groundwater monitoring system required by this Permit. The Department shall then have the option of observing any portion of the system's construction or modification.

6. The Permittee shall revise and resubmit for Department approval the SAP for the capped landfill within 60 days of the effective date of this Permit to reflect the additional requirements contained in this Permit that are not contained in the Permittee’s October 1998 SAP. All SAP procedures and techniques used in groundwater sampling, analysis, and measurement of groundwater-related parameters shall be designed to meet the requirements of 40 CFR Part 264 Subpart F, as incorporated by reference in 10 CSR 25-7.264(1), and this Permit. The Permittee's sampling, analysis, and measurement protocols shall ensure the representative nature of all analysis and measurement results. The SAP will be reviewed in accordance with the procedures set forth in Special Permit Condition XIX., Review and Approval Procedures.

7. A monitoring well inspection and maintenance program shall be implemented for the duration of the compliance period. This program shall be designed to ensure the structural integrity of all monitoring well installations during the compliance period. The Permittee's revised SAP shall address the details of this program and meet the following requirements.

a. Surface well integrity inspections shall be performed at the time of each sampling event and shall be documented on an inspection log sheet. Surface integrity evaluations for each monitoring well shall include a visual inspection of the outer protective casing, inner casing riser, surface well seal, well cap, and locking mechanism to document any damage or deterioration. The ground surface in the immediate vicinity of each monitoring well and the annular space between the outer protective casing and casing riser shall be inspected for visible anomalies (e.g., collection or ponding of water, ground subsidence, etc.).

b. Subsurface well integrity inspections shall be performed annually in all wells, in accordance with the provisions contained in the Permittee's SAP and shall be documented on a well inspection log sheet. Subsurface well integrity inspections shall consist of one or more of the following: total well depth measurements, groundwater turbidity measurements, in-situ hydraulic conductivity tests, casing caliper logs, down-hole television camera surveys, and/or other methods capable of verifying the subsurface integrity of the well casing and screen.

c. The Permittee's SAP shall specify performance of an annual wellbore siltation evaluation to assess downwell siltation and well screen occlusion in all monitoring wells. This evaluation shall be designed to ensure the representative nature of the Permittee's groundwater sample analysis and field measurement results through minimization of sampling and measurement interferences (e.g., turbidity, excessive well screen occlusion, etc.).

   The Permittee's SAP shall specify a well redevelopment trigger criterion based on a percentage of well screen occlusion and the potential of such occlusion to compromise the representative nature of the Permittee's groundwater sample analysis and field measurement results. Wells demonstrating well screen occlusion equal to or in excess of the selected criterion shall be redeveloped prior to the next scheduled sampling event.

d. Monitoring well repairs shall be undertaken within 30 days of identification of any surface or subsurface well integrity problem.

If adverse weather or site conditions preclude the Permittee from gaining access to and repairing flood-impacted monitoring wells within 30 days, then the Permittee shall take appropriate action with respect to this requirement as soon as practicable. Written justification for any delay, completed well inspection log sheets, a narrative description of any well repairs and before/after photographic repair documentation (in the case of visible surface well repairs) shall be provided to the Department as part of the Semi-Annual Groundwater Corrective Action Reports required by Special Permit Condition III.F.

E. Corrective Action Program [40 CFR 264.100].

The capped landfill is subject to the corrective action program requirements of 40 CFR 264.100, as incorporated by reference in 10 CSR 25-7.264, and this Permit until such time as these requirements have been satisfied.

1. The Permittee's corrective action program for the capped landfill shall consist of groundwater monitoring, groundwater seep monitoring, surface water monitoring, and the continued operation of the Groundwater Sump Collection System in accordance with Special Permit Conditions III. and IV., and further site investigation, evaluation, and/or implementation of remedial measures to address site-wide groundwater contamination in accordance with Special Permit Conditions VIII.-XIII. This program is premised on:

   a. The inability to differentiate groundwater contamination related to releases from the capped landfill (regulated unit) versus that potentially related to nearby/adjacent SWMUs that are also underneath the RCRA cap which are subject to corrective action in accordance with 40 CFR 264.101.

   b. The desirability of implementing a holistic, site-wide approach to groundwater investigation, monitoring, and remediation given the foregoing circumstances.

2. The groundwater corrective action program shall continue until the GPS maximum concentration limits established in Special Permit Condition III.A. have not been exceeded for a period of three consecutive years at and beyond the point of compliance. The corrective action program shall address any hazardous constituents above the GPS maximum concentration limits that are reasonably expected to be in or derived from waste disposed of at the capped landfill that have migrated off site.

   a. This program is premised on the Permittee reducing the groundwater contaminant levels emanating from the landfill via operation of the Groundwater Sump Collection System trenches containing Sump #3 and Sump #4. Any groundwater removal, treatment, and/or disposal shall be conducted in accordance with all applicable federal, state, and local laws and regulations. Sampling and analysis of Sump #3 and Sump #4 shall be performed in accordance with the schedule in Table II.

   b. The Permittee shall perform risk assessment calculations for carcinogenic risk and noncarcinogenic risk (hazard indices) for each sampling point at and beyond the point of compliance exhibiting detectable levels of any hazardous constituent outlined in Table I with a corresponding published slope factor for calculating carcinogenic risk and/or with published oral reference doses for calculating the hazard index for noncarcinogenic risk. These calculations shall be performed after the analytical data has been obtained by the Permittee following each sampling event, and the results submitted with the Semi-Annual Groundwater Corrective Action Reports required by Special Permit Condition III.F. The Permittee's calculations for cumulative carcinogenic and noncarcinogenic risk shall be performed in accordance with appropriate procedures outlined in the most recent version of the EPA guidance document Risk Assessment Guidance for Superfund and in Section 3.11. of the Permittee's approved Corrective Measures Study, October 1995, for the pathway of ingestion of chemicals in groundwater. If these risk calculations lead to the determination that there is an unacceptable cumulative risk to human health or the environment that cannot be addressed by operation of Sump #3 and/or

Sump #4, the Permittee shall provide notification to the Department and prepare a Stabilization Measures Work Plan to address the risk in accordance with Special Permit Condition VIII. The maximum acceptable cumulative carcinogenic risk and the maximum allowable hazard quotient for the sum of the noncarcinogenic toxic effects at each sampling point shall be those specified in the Permittee's Department/EPA approved October 1995 Corrective Measures Study to ensure protection of human health. The Stabilization Measures Work Plan shall be submitted to the Department within 90 days of the Permittee's determination of an unacceptable toxic or carcinogenic risk to human health or the environment.

c. The Permittee shall begin operation of Sumps #1 and #2 of the currently idle groundwater collection trench if groundwater samples from wells P-20K, P-20AF, and/or P-20AF(S) contain levels of hazardous constituents which are calculated to pose an unacceptable cumulative risk to human health or the environment. The maximum allowable cumulative carcinogenic risk and the maximum allowable hazard index shall be those specified in the Permittee's Department/EPA approved October 1995 Corrective Measures Study.

3. The Permittee shall perform groundwater sampling/analysis and field measurement of groundwater-related parameters to monitor releases from the capped landfill according to the schedule presented in Table II.

a. Sampling and analysis in accordance with this schedule shall begin during the next regularly scheduled sampling event following approval of the revised SAP required by Special Permit Condition III.D.6. Given the potential lag time between the effective date of this Permit and approval of the revised SAP required by Special Permit Condition III.D.6., the Permittee shall continue sampling and analysis in accordance with the latest Department-approved version of the Permittee's SAP until such time as the revised SAP is approved.

b. Sampling and analysis of groundwater from any new wells required by 40 CFR Part 264 Subpart F and this Permit shall be performed no later than the next regularly scheduled sampling event following their installation.

c. Installation of additional wells to maintain continued knowledge of the extent of groundwater contamination during the compliance period may be necessary to meet the requirements of 40 CFR Part 264 Subpart F, as incorporated by reference in 10 CSR 25-7.264, and this Permit. If any such wells are installed, they may be subject to the monitoring requirements contained in Table II. Addition of monitoring wells shall be subject to the Permit modification procedures outlined in Special Permit Condition III.D.3.b.

d. Any future changes to the list of wells established in the Permittee's revised SAP shall be approved in writing by the Department. Within 30 days of receipt of this approval, the Permittee shall submit additional SAP revisions to incorporate the approved changes.

4. Only single sample analyses (as opposed to replicates) are required for the parameters listed in Table II, with the exception of duplicate samples taken for Quality Assurance/Quality Control (QA/QC) purposes.

5. Field parameter values measured and reported by the Permittee shall be representative of stabilized well conditions.

a. Downwell measurement of Non-Aqueous Phase Liquid (NAPL) thickness (when applicable), static water level, and total well depth shall be taken prior to well purging.

b. Specific conductance, pH, and temperature measurements reported to the Department shall be those taken immediately following well purging. Additional field parameter measurements, such as those taken to verify the adequacy of well purging, shall be recorded in the field logbook.

6. If the biennial sampling of the wells for the Appendix IX (40 CFR 264) constituents, in accordance with the schedule listed in Table II, identifies hazardous constituents in the groundwater which are not currently specified in the GPS, the Permittee may resample the groundwater in accordance with 40 CFR 264.99(g). If the Permittee's subsequent groundwater analyses confirm the presence of additional hazardous constituents or contamination indicator parameters, then the Permittee shall propose a Class 1 Permit modification with prior Director's approval to add the confirmed hazardous constituent(s) or contamination indicator parameter(s) to the GPS (Table I) and the monitoring program specified in Table II.

TABLE II
Groundwater Corrective Action Monitoring,
Sampling, Analysis, and Parameter Measurement Schedule

Parameters	Type*	Maximum Detection Limit (mg/l)	Frequency
Appendix IX (1)	HC	MDLs per SW-846**	Every 2 years
Volatile Organic Constituents: EPA Test Method 8260b	HC	Per Table I	Semi-annual (2)
Chlorinated Herbicides: EPA Test Method 8151	HC	Per Table I	Semi-annual (2)
Organochlorine Pesticides: EPA Test Method 8081	HC	Per Table I	Semi-annual (2)

Parameters	Type*	Maximum Detection Limit (mg/l)	Frequency
Total Recoverable Metals EPA Test Method 6010A (Barium, Beryllium, Cadmium, Chromium, Copper, Manganese, Nickel); Method 7060 (Arsenic); 7041 (Antimony); 7421 (Lead), 7841 (Thallium); and Method 7470 (Mercury)	HC	Per Table I	Semi-annual (2)
Chlorinated Dioxins and Dibenzofuran Compounds: EPA Test Method 8280	HC	Per Table I	Semi-annual (2)
pH	FM	Not Applicable	Quarterly (2)
Specific Conductance	FM	Not Applicable	Quarterly (2)
Static Groundwater Elevation (3)	FM	Not Applicable	Quarterly (2)
Temperature	FM	Not Applicable	Quarterly (2)
Total Well Depth	FM	Not Applicable	Annually

(1) Comprehensive Appendix IX (40 CFR 264) sampling performed on the following wells every two years: P-1L, P-3W, P-20AF, P-23K, and Sump 4.

(2) Wells P-11L, P-11W, P-11F, P-12AW, P-12AF, P-17L, P-17W, and P-17F shall be sampled every two years, Sumps 1, 2, 3, and 4 annually, and all other groundwater and surface water sampling locations sampled on a quarterly basis, in accordance with the Permittee's revised SAP submitted in accordance with Special Permit Condition III.D.6. For the quarterly sampling points, the parameters to be analyzed on a semi-annual basis shall be staged such that approximately half of the constituents are analyzed during one quarter and the other half are analyzed during the following quarter, per the facility's SAP. However, if the Permittee can demonstrate through the use of a low-flow

sampling technique that it can obtain sufficient sampling volume in one quarter for analysis of the consecutive quarters' analytes listed in Table II, then the Permittee will not be required to sample the next quarter for that corresponding well(s). The use of a low-flow sampling device shall be specified in the Permittee's revised SAP required by Special Permit Condition III.D.6.

(3) Potentiometric measurements shall be obtained at the time of each regularly scheduled sampling event from all monitoring wells/piezometers at the facility including those which are not being sampled regularly.

* HC = Hazardous Constituent FM = Field Measurement
** Current SW-846 version at time of sampling.

F. Groundwater-Related Reporting Requirements.

The Permittee shall prepare and submit on a semi-annual basis for the preceding calendar half-year Groundwater Corrective Action Reports providing a comprehensive evaluation of the facility-wide groundwater monitoring program. The Permittee's Semi-Annual Groundwater Corrective Action Reports shall be submitted to the Department by September 1 and March 1 for each preceding calendar half-year.

1. The Permittee's Semi-Annual Groundwater Corrective Action Report shall contain a narrative discussion of the nature and evolution of the Permittee's groundwater monitoring program as well as conclusions concerning the overall adequacy of the program as related to its intended purpose, including any interim measures/stabilization actions. Any conclusions concerning inadequacies in the Permittee's groundwater monitoring program shall be accompanied by a discussion of proposed remedies. Specific details concerning any proposed remedies should be further developed outside of the scope of these reports and/or as otherwise specified in this Permit.

2. The Semi-Annual Reports shall comprehensively address all of the technical requirements of 40 CFR Part 264 Subpart F and this Permit. The Permittee shall summarize relevant groundwater monitoring information and shall present this information in the form of narrative discussions, groundwater flow calculations, and/or diagrammatic illustrations (i.e., tabular groundwater and statistical data summaries,

hydrogeologic and potentiometric contour maps/cross-sections, chemical parameter trend graphs, calculated rate(s) of contaminant migration, contaminant isoconcentration maps/cross-sections, fence/isometric diagrams, groundwater flow nets, etc.), as appropriate.

3. The Permittee's Semi-Annual Groundwater Corrective Action Reports shall evaluate the effectiveness of the groundwater corrective action program, including, but not limited to, the following:

   a. The rate and direction of groundwater movement in underlying aquifers and potential effects on any corrective action measures being designed or implemented at the facility for removal, containment, or control of the groundwater contaminant plume(s).

   b. The horizontal and vertical extent and concentrations of hazardous constituents (Table I) in groundwater throughout the contaminant plume(s) as evaluated from the data obtained from the Permittee's groundwater monitoring program.

   c. Any surface and/or subsurface well integrity problems and their potential or actual influence on the groundwater data or efficiency of the groundwater corrective action program.

   d. The quantity of NAPL's and groundwater extracted from the subsurface as part of operation of the approved remedy, future stabilization activities, and/or as part of the groundwater monitoring program. This information shall be reported both as a total amount and per well or extraction location.

   e. The conclusions and summary, including risk assessment calculations for carcinogenic risk and noncarcinogenic hazard indices, of analytical results from groundwater, groundwater seeps, and surface water monitoring conducted during the reporting period.

   f. The conclusions and summary of analytical results from groundwater extraction and discharge monitoring to a local

Publicly Owned Treatment Works or other approved off-site disposal facility, including: a summary of the analytical results from the sampling and analysis of the groundwater and seep collection trench samples. The Permittee shall include contaminant trend analyses from year to year from the groundwater and seep collection trench samples' analytical results to help evaluate the effectiveness of their operation in removing subsurface contaminants, to track the overall progress/trends in cleaning up the groundwater, and to provide the basis for future decisions regarding operation of the collection systems and ultimately, cessation of pumping.

4. The Permittee shall submit to the Department, in the Semi-Annual Groundwater Corrective Action Reports, detailed boring logs for new exploratory borings and/or detailed as-built monitoring well diagrams for any new monitoring wells installed during the corresponding reporting period including the monitoring well-related information required by Special Permit Conditions III.D.3. and III.D.4.

5. The Permittee shall submit to the Department, in the Semi-Annual Groundwater Corrective Action Report, copies of all original, uninterpreted laboratory analytical reports providing data from the Permittee's groundwater sampling efforts for the preceding calendar half-year for the monitoring wells, seeps, surface water sampling points, and groundwater/seep collection sumps. The reports shall include groundwater analysis results, field parameter measurement results, copies of field sampling and well inspection log sheets, well repair documentation, QA/QC data, volumes of groundwater extracted, and other relevant groundwater-related information.

IV. Surface Water Monitoring Program [10 CSR 25-7.264(2)(F)4.]

A. The Permittee shall submit, within 60 days of the effective date of this Permit, a surface water monitoring program in accordance with the requirements of 10 CSR 25-7.264(2)(F)4. The Permittee's surface water monitoring program shall continue throughout the post-closure care period or until such time as the Permittee makes a successful demonstration for an exemption from these requirements.

1. The Permittee's surface water monitoring program shall be incorporated directly into and be submitted as part of the revised SAP required by Special Permit Condition III.D.6.

2. The Permittee's surface water sampling and analysis methods for chemical indicator parameters and hazardous constituents shall be consistent with those specified in Table II for groundwater monitoring. The revised SAP shall contain provisions to require sampling of point S-7 (for all constituents outlined in Table II) following detections of hazardous constituents in a sample from location S-2 during the preceding sampling event.

3. After Department approval of the revised SAP containing the surface water monitoring program, the Permittee shall initiate surface water sampling concurrently with the first groundwater sampling event performed under the approved revised SAP and this Permit.

4. Reporting and analysis of data/information collected as part of the surface water monitoring program shall be sufficient to ensure that the requirements of 10 CSR 25-7.264(2)(F)4. are met, and shall be included in the Semi-Annual Groundwater Corrective Action Reports required by Special Permit Condition III.F.

5. The Permittee shall perform risk assessment calculations for cumulative carcinogenic risk and calculate a noncarcinogenic hazard index for any surface water sample exhibiting detectable levels of any hazardous constituent outlined in Table I with a corresponding published slope factor for calculating carcinogenic risk and/or with published oral reference doses for calculating the hazard index for noncarcinogenic risk. The calculations, conclusions, and summary of

the risk assessment shall be provided to the Department in the Permittee's Semi-Annual Corrective Action Groundwater Reports. If the Permittee determines that the cumulative carcinogenic risk exceeds 1:100,000 and/or the noncarcinogenic risk hazard index exceeds a value of 1.0 for any surface water sampling point, the Permittee shall provide DNR with the notification and stabilization measure requirements to address the risk in accordance with Special Permit Condition VIII.

B. The Permittee may, at any time during the post-closure care period, make a demonstration to the Department for a surface water monitoring exemption. A successful demonstration for such an exemption shall, at a minimum, address the elements of 40 CFR 264.94(b) as applied to potentially affected surface water bodies. This demonstration shall be certified by an independent registered geologist or registered professional engineer licensed in Missouri. Departmental approval of the Permittee's surface water monitoring exemption shall necessitate a permit modification in accordance with 40 CFR 270.42. In addition, any such exemption does not affect any obligation on the part of the Permittee to apply for and obtain a State Operating Permit from the Water Pollution Control Program for discharges to waters of the state.

V. <u>Identification of Additional Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) [40 CFR 264.101]</u>

A. On January 3, 1989, the Permittee and EPA entered into an Administrative Order on Consent, Docket No. VII-88-H-0024. The RCRA Facility Investigation (RFI) Work Plan was under development prior to issuance of the order. The final work plan was incorporated into the order and was structured to identify all relevant data that had been collected prior to the order and to identify what additional information, if any, would need to be obtained. In March 1989, the U.S. EPA conducted a RCRA Facility Assessment (RFA) to identify and gather information on releases and potential releases from SWMUs and AOCs at the facility. The RFA identified the following 16 SWMUs and 5 AOCs:

SWMU 1:	Sanitary Landfill
SWMU 2:	Chemical Landfill
SWMU 3:	Sludge Drying Beds
SWMU 4:	Sludge Trench 1
SWMU 5:	Sludge Trench 2
SWMU 6:	Sludge Trench 3
SWMU 7:	Sludge Trench A
SWMU 8:	Sludge Trench C
SWMU 9:	Sludge Trench D
SWMU 10:	Sludge Trench E
SWMU 11:	Chemical Processing Center
SWMU 12:	Old Gelation Basin
SWMU 13:	New Gelation Basin
SWMU 14:	Stormwater Retention Pond
SWMU 15:	Shelton's Pond (Wastewater Treatment Pond)
SWMU 16:	Methane Gas Collection System
AOC 1:	Seep 1
AOC 2:	Seep 2
AOC 3:	Seep 3
AOC 4:	Ravine Bordering Southeast Corner of Facility
AOC 5:	Access Road Soils

The RFA stated that because the Permittee had chosen to treat all SWMUs as one unit, and had completed a RCRA closure addressing the site as one unit (collectively called the Capped Landfill), further characterization of individual SWMUs was not necessary at that time. This determination was based upon information available for those SWMUs, and specified that in the event any additional information became available in the future to indicate that the SWMU or groundwater conditions previously identified during the RFA underestimated the amount of contamination present, additional evaluation may be required.

B. Prior to conducting the RCRA Facility Investigation (RFI), the following interim measures were implemented at the Capped Landfill:

- installation of a multicomponent cap;
- management of leachate and consolidation fluid collection system;
- installation of a groundwater interceptor trench;
- installation of an active gas extraction system;

- acquisition of adjacent property to the south formerly owned by Mr. Carl Shelton; and
- acquisition of adjacent property to the west formerly owned by Mr. Luther McCoy.

The multicomponent cap was placed over the following SWMUs in accordance with the Revised Closure Plan for the facility:

SWMU 1:	Sanitary Landfill
SWMU 2:	Chemical Landfill
SWMU 4:	Sludge Trench 1
SWMU 5:	Sludge Trench 2
SWMU 6:	Sludge Trench 3
SWMU 7:	Sludge Trench A
SWMU 8:	Sludge Trench C
SWMU 9:	Sludge Trench D
SWMU 10:	Sludge Trench E
SWMU 11:	Chemical Processing Center
SWMU 12:	Old Gelation Basin
SWMU 13:	New Gelation Basin
SWMU 15:	Shelton's Pond (wastewater treatment center)

The leachate and consolidation fluid collection system currently is operated in three areas of the facility:

* SWMUs 4 and 5 (LM-1, LM-2 and LM-3)
* SWMU 2 (LM-4)
* SWMU 9

Additionally, SWMUs 12 and 13 are equipped with consolidation fluid collection systems, but they have not yielded fluid since 1987.

C. Based upon EPA approval of the RFI and Corrective Measures Study (CMS) Work Plan (approved February 11, 1992) and CMS Report (approved November 1, 1995), it has been determined that the interim

measures that have been implemented at the facility to date will suffice as the Final Remedy, and will be protective of human health and the environment.

The Permittee shall notify the Department prior to any planned future construction, excavation, or maintenance and repair activities to be conducted at the Capped Landfill. Future construction, excavation activities, or land use changes may necessitate further evaluation of site conditions at the Capped Landfill. In situations where advance notice is not feasible (i.e., utility service or repair) notice should occur as soon as practical.

In the event any new information becomes available indicating human health and the environment may be adversely impacted by releases at the facility, the Permittee may be required to revise the risk assessment contained in the approved RFI to assess the need for further corrective action(s) at the Capped Landfill and/or any newly-identified SWMUs or any release(s) from previously-identified SWMUS/AOCs, including off-site release(s), as specified in Special Permit Condition VI. and VII. The Department will notify the Permittee in writing of its determination that the risk assessment in the approved RFI requires revision and specify a due date for submittal of the revised risk assessment. The risk assessment will be reviewed in accordance with Special Permit Condition XIX., Review and Approval Procedures.

VI. <u>Notification Requirements for, and Assessment of, Newly-Identified SWMUs and AOCs</u>

A. The Permittee shall notify the Department and EPA in writing of any SWMU(s) or AOC(s) identified subsequent to the issuance of this Permit no later than 15 days after discovery.

B. The Department may require a SWMU/AOC Assessment Work Plan for conducting an investigation of any newly-identified SWMU(s) or AOC(s). Within 60 days of receipt of the Department's written determination that a SWMU/AOC Assessment Work Plan is required, the Permittee shall submit a SWMU/AOC Assessment Work Plan, which shall include a discussion of past waste management practices at the unit, as well as a sampling and analysis program for groundwater, land surface and

subsurface strata, surface water, and/or air, as necessary, to determine whether a release of hazardous waste, including hazardous constituents, from such unit(s) has occurred, or is occurring. The sampling and analysis program shall yield representative samples and shall include monitoring parameters sufficient to assess the release of hazardous waste and/or hazardous constituents from the newly-identified SWMU(s)/AOC(s) to the environment. The SWMU/AOC Assessment Work Plan shall specify any data to be collected to provide for a complete SWMU/AOC Assessment Report, as specified below, and shall contain an implementation schedule which is predicated on Departmental approval of the work plan.

C. The SWMU/AOC Assessment Work Plan will be reviewed in accordance with Special Permit Condition XIX., Review and Approval Procedures. The Permittee shall implement the approved plan in accordance with the schedule contained in the plan.

D. The Permittee shall submit a SWMU/AOC Assessment Report to the Department and EPA according to the schedule specified in the approved SWMU/AOC Assessment Work Plan. The SWMU/AOC Assessment Report shall present and discuss the information obtained from implementation of the approved SWMU/AOC Assessment Work Plan. At a minimum, the SWMU/AOC Assessment Report shall provide the following information for each newly-identified SWMU/AOC to the extent that such information is available:

1. The location of the newly-identified SWMU/AOC in relation to any other SWMUs/AOCs;

2. The type and function of the unit;

3. The general dimensions, capacities, and structural description of the unit;

4. The period during which the unit was operated;

5. The physical and chemical properties of all wastes that have been or are being managed at the SWMU/AOC, to the extent available;

6. The results of any sampling and analysis conducted;

7. Past and present operating practices;

8. Previous uses of the area occupied by the SWMU/AOC;

9. Amounts of waste handled; and

10. Surface water drainage areas and patterns near the SWMU(s)/AOC(s).

E. The SWMU/AOC Assessment Report will be reviewed in accordance with Special Permit Condition XIX., Review and Approval Procedures. Based on the findings of this report, the Department will determine the need for further investigations, including stabilization, a RCRA Facility Investigation (RFI), and/or a Corrective Measures Study (CMS), at specific unit(s) identified in the SWMU/AOC Assessment Report.

F. If the Department determines that additional investigations are needed, the Department may require the Permittee to prepare and submit for approval a work plan which includes a schedule for such investigations. This work plan for additional investigations will be reviewed in accordance with Special Permit Condition XIX., Review and Approval Procedures. The Permittee shall implement the approved plan in accordance with the schedule contained in the plan.

VII. <u>Notification Requirements for, and Assessment of, Newly-Identified Releases from Previously-Identified SWMUs and AOCs</u>

A. The Permittee shall notify the Department and EPA, in writing, of any newly-identified release(s) of hazardous waste, including hazardous constituents, from previously-identified SWMUs and AOCs discovered during the course of groundwater monitoring, field investigation, environmental auditing, or other activities undertaken after issuance of this Permit, no later than 15 days after discovery.

B. The Department may require a Newly-Identified Release Work Plan for conducting an investigation of the newly-identified release(s). Within 60

days of receipt of the Department's written determination that a Newly-Identified Release Work Plan is required, the Permittee shall submit a Newly-Identified Release Work Plan, which shall include a discussion of the waste/chemical management practices related to the release; a sampling and analysis program for groundwater, land surface and subsurface strata, surface water or air, as necessary to determine whether the release poses a threat to human health or the environment; and a proposed schedule for implementation and completion of the Newly-Identified Release Work Plan. The sampling and analysis program shall yield representative samples and shall include monitoring parameters sufficient to assess the release of hazardous waste and/or hazardous constituents to the environment. The Newly-Identified Release Work Plan shall specify any data to be collected to provide for a complete Newly-Identified Release Report, as specified below, and shall contain an implementation schedule which is predicated on Departmental approval of the work plan.

C. The Newly-Identified Release Work Plan will be reviewed in accordance with Special Permit Condition XIX., Review and Approval Procedures. The Permittee shall implement the approved plan in accordance with the schedule contained in the plan.

D. The Permittee shall submit a Newly-Identified Release Report to the Department and EPA according to the schedule specified in the approved Newly-Identified Release Work Plan. The Newly-Identified Release Report shall present and discuss the information obtained during implementation of the approved Newly-Identified Release Work Plan. At a minimum, the report shall provide the following information for each newly-identified release to the extent that such information is available:

1. The location of the newly-identified release in relation to any other SWMU(s)/AOC(s);

2. The general dimensions of the release;

3. The period during which the release is suspected to have occurred;

4. The physical and chemical properties of all wastes that comprise the release;

5. The results of any sampling and analysis conducted;

6. Past and present operating practices near and at the location of the release;

7. Previous uses of the area(s) at and in the vicinity of the location of the release;

8. Types and amounts of waste handled at and near the location of the release; and

9. Surface water drainage areas and patterns at and near the location of the release.

E. The Newly-Identified Release Report will be reviewed in accordance with Special Permit Condition XIX., Review and Approval Procedures. Based on the findings of the report and any other available information, the Department will determine the need for further investigation, including stabilization, an RFI, and/or a CMS.

VIII. Interim/Stabilization Measures (ISMs)

A. If the Permittee becomes aware of a situation that may require ISMs to protect human health and the environment, the Permittee shall notify the Department and EPA within 24 hours of the time the Permittee becomes aware or should have become aware of the situation.

B. If, during the course of any activities initiated under this Permit, the Permittee or the Department determines that a release or potential release of hazardous waste, including hazardous constituents, poses a threat to human health or the environment, the Department may require ISMs to slow or stop the further spread of contamination until final corrective action measures can be implemented. The Permittee may prepare, within ten (10) calendar days of notification, a plan, or the Department may determine, the specific action(s) that shall be taken to implement ISMs and the schedule for implementing the ISM requirements. If the Department makes the determination, the Department will inform the Permittee of its decisions regarding the action(s) in writing.

C. If, at any time, the Permittee determines that the ISM program is not effectively limiting or stopping the further spread of contamination, the Permittee shall notify the Department and EPA in writing no later than ten days after such a determination is made. The Department may require that the ISM program be revised to make it effective in limiting or stopping the spread of contamination, or that final corrective action measures are required to remediate the contaminated media.

D. In cases where releases present minimal exposure concerns and/or the remedial solution is straightforward, the Permittee may propose ISMs for review and approval by the Department. These ISMs shall be consistent with and may supplement and/or satisfy the requirements for a final remedy(s) in specific areas.

IX. RCRA Facility Investigation (RFI) Work Plan

A. An original RFI Work Plan, entitled Corrective Action Program Work Plan dated September 1988, was incorporated into the Administrative Order on Consent, Docket Number VII-88-H-0024. The goal of the original RFI Work Plan was to identify relevant existing information and additional data needed to evaluate and select the best alternative(s) for corrective action. The work plan stated that the following activities would be conducted during the investigation:

- Further evaluation of migration pathways that have allowed contaminants to move off site to the southwest, south and southeast;

- Definition of the contaminant plume between monitoring wells GM-10 and P-13F;

- Assessment of the potential contamination in units below the Hushpuckney Shale unit; and

- Assessment of the effects of well construction materials on analytical data.

The original RFI Work Plan was approved by EPA and incorporated by reference in the Final Administrative Order on Consent issued on January 3, 1989.

B. If the Department determines that further investigations are needed for newly-identified SWMUs/AOCs and/or newly-identified releases from previously-identified SWMUs/AOCs pursuant to Special Permit Conditions VI.E. or VII.E., the Permittee shall be notified of this determination in writing. The Department may require the Permittee to prepare and submit an RFI Work Plan for such investigations. The RFI Work Plan shall be submitted within 60 days of the Department's written determination that an RFI Work Plan is necessary. The RFI Work Plan shall contain provisions which are designed to meet the following objectives:

1. Full characterization of the nature, vertical and horizontal extent, and rate of migration of releases of hazardous waste and/or hazardous constituents from a newly-identified SWMU/AOC or groups of SWMUs/AOCs, or newly-identified release(s) from previously-identified SWMUs/AOCs at the facility and the actual or potential receptors of such releases; and

2. Collection of any other pertinent data which may be utilized to substantiate future corrective action decisions.

C. The content of the RFI Work Plan shall be appropriate for site-specific conditions and shall be consistent with and address all applicable investigation elements described in the EPA guidance document entitled, RCRA Facility Investigation Guidance; EPA 530/SW-89-031 (May 1989). At a minimum, the RFI Work Plan shall detail all proposed activities and procedures to be conducted at the facility, a description of current conditions, the schedule for implementing and completing such investigations, and for submission of reports (including the final RFI Report), the qualifications of personnel performing or directing the investigations, including contractor personnel, and the overall management of the RFI.

D. The RFI Work Plan shall include a Quality Assurance Project Plan (QAPP). The QAPP shall present the policies, organization, objectives,

functional activities, and specific quality assurance and quality control activities designed to achieve the data quality goals of the RFI. It shall include the RFI objectives, sampling procedures, analytical methods, field and laboratory quality control samples, chain-of-custody procedures and data review, validation, and reporting procedures.

E. The Permittee shall prepare and maintain a health and safety plan during the project that assures the RFI activities are conducted in a manner that is protective of human health and the environment.

F. Due to the complexity of defining the extent of contamination, the Department may require the Permittee to use a phased approach, which requires the submittal of supplemental RFI Work Plans.

G. The RFI Work Plan(s) will be reviewed in accordance with Special Permit Condition XIX., Review and Approval Procedures. The Permittee shall initiate implementation of the plan(s) within 60 days of receipt of Departmental approval and shall complete implementation in accordance with the schedules contained in the plan(s).

X. <u>RCRA Facility Investigation (RFI) Report</u>

A. Pursuant to the requirements of Task VI. of the Administrative Order on Consent, Docket No. VII-88-H-0024, RFI field activities were completed and an RFI Report was prepared by the Permittee for the entire facility. The goal of the RFI was to incorporate all applicable information obtained in past investigations in order to define the nature and extent of site contamination and characterize the facility. The RFI Report was approved by EPA on February 11, 1992. The investigation showed that contaminants were present at five on-site locations:

* Volatile Organic Compounds (VOCs) at Well P-1L;

* VOCs and/or Silvex in the southeastern and south-central portion of the facility including Wells P-3, P-4, P-20AF, P-18W; Groundwater seeps to the north and east of the waste management units which discharge to the surface from the base of the Winterset and/or Bethany Falls Limestone;

* Silvex in groundwater at former Well GM-10 and at replacement Well P-23K; and

* VOCs in groundwater at domestic Well WCOY and in surface water at Surface Water Monitoring Point SCOY west of the site on the former McCoy property.

The RFI Report also identified five off-site surface water and groundwater monitoring points where low concentrations of contaminants were detected suggesting potential migration from the facility and/or from the newly acquired properties to other off-site areas:

* Silvex at S-1 and S-2 which monitor surface water moving off-site in stream valleys north-northeast of the facility;

* Low levels of VOCs in groundwater at the domestic Well WCON and Spring WKIN southwest of the facility; and

* 1,1,1-Trichloroethane at S-5 west of the site.

B. The RFI Report identified various candidate corrective action measures to address site-specific Areas of Potential Concern (AOPC) WKIN, WCON, WCOY, SCOY, and groundwater seeps identified along the north and east of the waste disposal area (SS-1 through SS-9). It was determined that the following corrective action alternatives were to be evaluated during the Corrective Measures Study:

* No Action;
* Institutional Controls;
* Static Containment Barriers; and
* Dynamic Containment Barriers.

C. If the Department determines that further investigations are needed for newly-identified SWMUs/AOCs and/or releases from previously-identified SWMUs/AOCs pursuant to Special Permit Conditions VI.E. or VII.E., the Permittee shall submit a RFI Report to the Department and EPA in accordance with the schedule contained in the approved RFI Work Plan required by Special Permit Condition IX.C. The RFI Report shall present all information gathered under the approved RFI Work Plan along with a

brief facility description and map showing the property boundary and all SWMUs/AOCs. The information presented in the RFI Report shall be presented in a form that is consistent with Section 5 of the most recent version of the EPA publication entitled, RCRA Facility Investigation Guidance; EPA 530/SW-89-031 (May 1989).

D. The RFI Report shall provide an interpretation of the RFI information gathered, supported with documentation, to enable the Department to determine whether additional stabilization and/or a Corrective Measures Study (CMS) may be necessary. The RFI Report shall describe the procedures, methods, and results of all investigations of SWMUs/AOCs and associated releases, including as appropriate, but not limited to, the following:

1. Characterization of the nature, concentration(s), horizontal and vertical extent, and direction/rate of movement of releases from SWMUs/AOCs at the facility;

2. Characterization of the environmental setting of the facility, including:

   a. Hydrogeological conditions;

   b. Climatological conditions;

   c. Soil and bedrock characteristics;

   d. Surface water and sediment quality; and

   e. Air quality and meteorological conditions.

3. Characterization of SWMUs/AOCs from which releases have been or may be occurring, including unit and waste characteristics;

4. Descriptions of human and environmental receptors and associated risks to the receptors which are, may have been, or, based on site-specific circumstances, could be exposed to release(s) from SWMUs/AOCs;

5. Assessment of potential risks to the human and environmental receptors (e.g., Baseline Risk Assessment) exposed to release(s) from SWMUs/AOCs;

6. Extrapolations of future contaminant movement including description of contaminant rate and transport mechanisms and pathways for human and environmental exposure;

7. Laboratory, bench-scale, pilot-scale, and/or tests or studies to determine the feasibility or effectiveness of treatment technologies or other technologies that may be appropriate in implementing remedies at the facility;

8. Statistical analyses to aid in the interpretation of data; and

9. Results of any stabilization measures previously implemented.

E. The RFI Report will be reviewed in accordance with Special Permit Condition XIX., Review and Approval Procedures. After review of the RFI Report, if the Department determines that the objectives of the RFI have not been met, the Department may require additional investigation. Upon approval of the RFI Report by the Department, the Department will advise the Permittee as to the next step in the corrective action process which may include submittal of a CMS Work Plan pursuant to Special Permit Condition XI.

XI. <u>Corrective Measures Study (CMS) Work Plan</u>

A. If the Department determines that a release(s) of hazardous waste and/or hazardous constituents from newly identified SWMUs/AOCs and/or releases from previously-identified SWMUs/AOCs pursuant to Special Permit Conditions VI.E., VII.E., or long-term groundwater monitoring results, indicate a threat to human health or the environment, the Department may require the Permittee to prepare and submit a CMS Work Plan and will notify the Permittee in writing of this decision. This notice will identify the hazardous waste and/or hazardous constituent(s) of concern and may specify remedial alternatives to be evaluated by the Permittee during the CMS.

B. The Department may require the Permittee to identify and evaluate, as part of the CMS, one or more specific potential remedies for removal, containment, and treatment of hazardous waste, including hazardous constituents in contaminated media, based on the objectives established for the corrective action. These remedies may include a specific technology or combination of technologies that, in the Department's judgment, may be capable of achieving standards for protection of human health and the environment.

C. The Permittee shall submit a CMS Work Plan to the Department and EPA within 90 days of receipt of a written determination by the Department that a CMS is required. The CMS Work Plan shall be consistent with guidance contained in the EPA document entitled: RCRA Corrective Action Plan (Final), May 1994, OSWER Directive 9902.3-2A. At a minimum, the CMS Work Plan shall provide the following information:

1. A description of the general approach to investigating and evaluating potential remedies;

2. A definition of the specific objectives of the study;

3. A description of the remedies which will be studied;

4. A description of those potential remedies which were preliminarily considered, but were dropped from further consideration, including the rationale for elimination;

5. The specific plans for evaluating remedies to ensure compliance with remedy standards;

6. The schedules for conducting the study and submitting a CMS Report;

7. The proposed format for the presentation of information; and

8. Laboratory, bench-scale, pilot-scale, and/or tests or studies to determine the feasibility or effectiveness of treatment technologies or other technologies that may be appropriate in implementing remedies at the facility.

D. The Department will review the CMS Work Plan in accordance with Special Permit Condition XIX., Review and Approval Procedures. The Permittee shall implement the approved plan in accordance with the schedule contained in the plan.

XII. Corrective Measures Study (CMS) Report

A. Pursuant to the requirements of Task VI of the Administrative Order on Consent, Docket No. VII-88-H-0024, the Permittee prepared and submitted to the Department and EPA a draft CMS Report dated April 1992. The second draft of the CMS Report was submitted to EPA on October 28, 1992. The final CMS Report was submitted in October 1995 and was approved by EPA on November 1, 1995. The CMS Report established corrective action objectives and presented corrective measure alternatives for contaminated groundwater at the facility which has the potential to adversely impact human health and/or the environment. Interim measures that were implemented prior to the submittal of the CMS Report are detailed in Special Permit Condition V.B.

B. If the Department determines that a CMS Work Plan is necessary to address a release(s) of hazardous waste and/or hazardous constituents from newly-identified SWMUs/AOCs and/or releases from previously-identified SWMUs/AOCs pursuant to Special Permit Conditions VI.E., VII.E., or to address long-term monitoring results, the Permittee shall submit a CMS Report to the Department and EPA according to the schedule contained in the approved CMS Work Plan. The CMS Report shall present all information gathered under the approved CMS Work Plan and shall be consistent with guidance contained in the EPA document entitled, RCRA Corrective Action Plan (Final), May 1994, OSWER Directive 9902.3-2A. The CMS Report shall summarize the results of the investigations for each remedy studied and of any bench-scale or pilot tests conducted. The CMS Report shall include, but not be limited to, the following information:

1. Evaluation of performance, reliability, ease of implementation, and potential impacts of each remedy studied, including safety impacts, cross media impacts, and control of exposure to any residual contamination;

2. Assessment of the effectiveness of each remedy in achieving adequate control of sources and cleanup of the hazardous waste or hazardous constituents released from the SWMU(s)/AOC(s);

3. Assessment of the time required to begin and complete each remedy;

4. Estimation of the costs of implementing each remedy;

5. A recommended remedy and rationale for selection; and

6. Assessment of institutional requirements, such as state or local Permit requirements, or other environmental or public health requirements which may substantially affect implementation of the remedy.

C. The CMS Final Report shall contain adequate information to support the Department in the remedy approval decision-making process.

The CMS Final Report will be reviewed in accordance with Special Permit Condition XIX., Review and Approval Procedures. The Department will approve any additional final remedy other than that required pursuant to Special Permit Condition XIX.

XIII. Final Remedy Approval

Following approval of the CMS Report to address newly-identified SWMUs/AOCs or releases from previously-identified SWMUs/AOCs, the Department will prepare a Statement of Basis (SB) summarizing the corrective measures alternatives that were evaluated, including justification for the final remedy proposed by the Permittee.

Following preparation of the SB by the Department, a Permit modification will be initiated pursuant to 40 CFR 270.41 or 270.42(c) as applicable, to implement the final remedy. Upon completion of the public participation activities associated with the permit modification to implement the proposed additional final remedy, the Department will approve a final remedy that will: 1) be protective of human health and the environment; 2) control and/or eliminate the source(s) of contaminants so as to reduce or eliminate, to the

maximum extent practicable, further contaminant releases, exposures or migration that might pose a threat to human health and the environment; and 3) meet all applicable federal, state, and local laws and regulations.

The final remedy at the facility consists of the following:

- A multicomponent cap and leachate collection system;
- Two groundwater interceptor trenches;
- An active gas collection and destruction system;
- Maintaining facility security, including fencing, on-site supervision, and acquisition of off-site property; and
- Institutional controls, including deed and groundwater use restrictions.

XIV. Deed Notation and Restriction Requirements

A. Within 60 calendar days of the effective date of this Permit, the Permittee shall submit to the Department for approval, two figures illustrating the boundaries for which levels of contamination in the subsurface soils and groundwater exceed background concentrations. One figure shall illustrate soil contamination in relation to the capped landfill. The other figure shall illustrate the groundwater contamination. The figures shall be to scale and indicate the horizontal boundaries of soil and groundwater contamination with respect to key landmarks, including the boundaries of the capped landfill.

B. Within 60 calendar days of the effective date of this Permit, the Permittee shall submit to the Department for approval, a restrictive notice that will be filed with the local zoning authority, or the authority with jurisdiction over local land use, a record of the types and locations of hazardous wastes and/or hazardous constituents remaining above background concentrations in the subsurface soils and groundwater. The notice shall restrict the disturbance of the capped landfill and any other areas in which soils are contaminated above background levels outside of the capped landfill. The groundwater restriction shall prohibit the use of and exposure to the contaminated groundwater; any artificial penetration of the groundwater-bearing unit(s) containing contaminants which could result in cross-contamination of clean groundwater-bearing units unless such penetration is necessary for corrective action purposes and has been approved in advance by the Department; installation of any new

groundwater wells on the Property, except those used for investigation and/or remediation purposes; and use of groundwater for drinking or other domestic and non-domestic purposes.

C. Within 30 calendar days of the Department's approval of the restrictive notices described in Special Permit Condition XIV.A. and B. above, the Permittee shall:

1. Record, in accordance with state law, a restriction in the chain-of-title to the facility property or on some other instrument which is normally examined during title search, that will in perpetuity notify any potential purchaser of the property that:

a. The land has been used to manage hazardous waste and/or hazardous constituents; and

b. The record of the types and locations of hazardous wastes and/or hazardous constituents remaining above background levels in the subsurface soils and groundwater has been filed with the local zoning authority, or the authority with jurisdiction over local land use.

D. Within 15 calendar days of recording the notices, the Permittee shall provide a notarized statement certifying that the notation and/or restriction specified in Paragraph C.1. of this section has been recorded, including a copy of the document in which the notation has been placed, to the Department.

XV. <u>Construction Completion Certification</u>

Within 120 calendar days of the effective date of this Permit, the Permittee shall submit to the Department and EPA, by certified mail, a written certification stating that the final remedy has been constructed in accordance with the approved CMS, all interim measures conducted following CMS approval, and this Permit. The certification shall be signed by the Permittee and an independent professional engineer licensed in the state of Missouri.

XVI. Cost Estimate and Financial Assurance for Corrective Action

A. Within 60 days of the effective date of this Permit, the Permittee shall submit, for the Department's approval, the cost estimate for corrective action. The cost estimate shall be incorporated into the post-closure cost estimate required by Special Permit Condition II.E.

B. Within 60 days after the Department's approval of the post-closure/ corrective action cost estimate, the Permittee shall submit the updated financial assurance. The updated financial assurance shall be consistent with Special Permit Condition II.F.

XVII. Semi-Annual Progress Reports

A. The Permittee shall submit to the Department and EPA signed Semi-Annual Progress Reports summarizing the corrective action activities specified below. This information is in addition to that required in the Semi-Annual Groundwater Corrective Action Reports. These Progress Reports shall be combined with the Semi-Annual Groundwater Corrective Action Reports required by Special Permit Condition III.F.

The Semi-Annual Progress Reports shall continue to be submitted until such time as the Permittee's corrective action activities are complete. The Semi-Annual Progress Reports shall include the following information for the time period covered by the report:

1. A description of the work completed;

2. Summaries of all findings, including summaries of laboratory data;

3. Summaries of all problems or potential problems encountered during the reporting period and actions taken to rectify problems;

4. Projected work for the next reporting period; and

5. Any instances of noncompliance with the corrective action requirements of this Permit not required to be reported elsewhere in this Permit.

B. Copies of other reports (e.g., inspection reports), information, or data shall be made available to the Department and EPA upon request.

XVIII. Supplemental Data

All raw data, such as laboratory reports, drilling logs, bench-scale or pilot-scale data, and other supporting information gathered or generated during activities undertaken pursuant to this Permit shall be maintained by the Permittee during the term of this Permit, including the term of any reissued Permits.

XIX. Review and Approval Procedures

Following submission of any plan or report pertaining to corrective action activities (excluding the Semi-Annual Groundwater Corrective Action and Progress Reports), the Department will review and either approve or disapprove the plan or report in writing.

If the Department does not approve the plan or report, the Department will notify the Permittee in writing of the plan's or report's deficiencies and specify a due date for submittal of a revised plan or report.

If the Department does not approve the revised plan or report, the Department may modify the plan or report and notify the Permittee of the modifications. The plan or report as modified by the Department shall be the approved plan or report.

If the Permittee disagrees with any Department-initiated plan or report modifications, and a mutually acceptable resolution of such modifications can not be informally reached, any appeal of the Department-initiated modifications shall be filed in accordance with Section 260.400, RSMo, and 10 CSR 25-8.

XX. Submittal of Required Information

A. The Permittee shall submit three copies of all reports, documents, or plans/specifications required under the terms of this Permit to:

Chief, Permits Section
Missouri Department of Natural Resources
Hazardous Waste Program
1738 E. Elm Street (Lower Level)
Jefferson City, MO 65101

B. The Permittee shall submit two copies of all reports, documents, or plans/specifications required under the terms of this Permit to:

Chief, RCRA Corrective Action and Permits Branch
U.S. Environmental Protection Agency Region VII
Air, RCRA and Toxics Division
901 N. 5th Street
Kansas City, KS 66101

FACILITY SUBMISSION SUMMARY

Table III. Summary of Planned Corrective Action, Groundwater Monitoring, and Surface Water Monitoring Submittal Requirements Pursuant to this Permit.

SUBMITTAL REQUIREMENTS	DUE DATE	PERMIT CONDITION
Revise and resubmit the groundwater SAP	Within 60 calendar days of the effective date of this Permit.	Special Permit Condition III.D.6.
Semi-Annual Corrective Action Progress Reports and Groundwater Corrective Action Reports	By March 1 and September 1 of each calendar year.	Special Permit Condition III.F. and XVII.A.
Surface water monitoring program incorporated into revised groundwater SAP	Within 60 calendar days of the effective date of this Permit.	Special Permit Condition IV.A.
Corrective Action Cost Estimate	Within 60 days of the effective date of this Permit.	Special Permit Condition XVI.A.
Corrective Action Financial Assurance	Within 60 days of the Department's approval of the corrective action cost estimate.	Special Permit Condition XVI.B.
Deed Notation and Restriction Requirements	Within 15, 30, and 60 days of the effective date of this Permit.	Special Permit Condition XIV.
Construction Completion Certification	Within 120 days of the effective date of this Permit.	Special Permit Condition XV.

Table IV. Summary of Contingent Corrective Action Submittal Requirements Pursuant to this Permit.

CONTINGENT REQUIREMENTS	DUE DATE	SPECIAL PERMIT CONDITION
Written notification of newly-identified SWMU(s) and AOC(s).	No later than 15 days after discovery.	VI.A.
SWMU/AOC Assessment Work Plan	Within 60 days after receipt of Department's written determination.	VI.B.
SWMU/AOC Assessment Report	In accordance with the schedule in the approved SWMU/AOC Assessment Work Plan.	VI.D.
Written notification of newly-identified releases from previously-identified SWMUs and AOCs.	No later than 15 days after discovery.	VII.A.
Newly-Identified Release Work Plan	Within 60 days after receipt of Department's written determination.	VII.B.
Newly-Identified Release Report	In accordance with the schedule in the approved Newly-Identified Release Work Plan.	VII.D.

CONTINGENT REQUIREMENTS	DUE DATE	SPECIAL PERMIT CONDITION
Stabilization Notification	Within 24 hours of discovery of need for stabilization.	VIII.
RFI Work Plan	Within 60 days after receipt of Department's written determination.	IX.B.
RFI Report	In accordance with the schedule in the approved RFI Work Plan.	X.C.
CMS Work Plan	Within 90 days after receipt of Department's written determination.	XI.C.
CMS Report	In accordance with the schedule in the approved CMS Work Plan.	XII.B.