

REPORT

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Remedial Action Plan for a Limited Residential Closure

**Windiate Park
Flint, Michigan**

February 1996



O'BRIEN & GERE
ENGINEERS, INC.

Report

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1. Introduction

This Report is the final Remedial Action Plan (RAP) for the Windiate Park (Park) property located in Flint, Michigan. This RAP is one of two RAPs that will address the environmental conditions in the Windiate Park/Dixieland Subdivision. This RAP addresses the property within the limits of the Park. A RAP for residential areas outside the Park is under development.

The remedial program was performed in three phases: the Remedial Investigation (RI), the Feasibility Study (FS), and the Remedial Action Plan (RAP). The RI served as the mechanism to collect data to characterize site conditions, identify the nature and extent of environmental impact, including Substances of Potential Concern (SOPCs) and assess risk to human health. In addition to the risk assessment prepared as part of the Remedial Investigation/Feasibility Study (RI/FS) Report, a health survey and a blood lead level survey were performed by the Michigan Department of Public Health and the Genesee County Health Department for local residents. A copy of the health survey is included as Appendix A and the summaries of the blood lead data are included as Appendix B. The results of these surveys report geometric mean blood lead levels below the reference level of 10 $\mu\text{g}/\text{dl}$ and no direct link between health problems and the SOPCs in Windiate Park. The FS served as the mechanism for the development, screening, and detailed evaluation of remedial action alternatives.

This RAP serves to present and document the final remedy proposed to be implemented for a "Limited Residential (with recreational deed restrictions)" closure upon Michigan Department of Environmental Quality (MDEQ) approval.

1.1. General

This RAP identifies the final remedy to address the environmental conditions at the Park. The focus of the remedy is on the fill material within the limits of the Park which may contain benzo(a)anthracene, benzo(a)pyrene, lead, and arsenic above the Generic Residential Direct Contact Values and Site Specific Background Value for arsenic.

This RAP was completed based on the findings of the RI, which included a human health risk assessment and FS conducted for the Park property as well as discussions with and presentations to the MDEQ. Results of a blood lead level survey and a health survey for local residents were also reviewed in the RI/FS Report. The RI/FS Report was submitted to the MDEQ.

This RAP was prepared in accordance with Section 20120a of the 1995 amendments to Part 201 of the Natural Resources and Environmental Protection Act, "NREPA" 1994 PA 451 administered by the MDEQ.

1.2. Description of Remedial Action Plan

The remedial action for the Park consists of the following elements:

- An interim remedial measure (IRM) consisting of a soil cover over the Park has been previously implemented. Placement of topsoil and sod, which will complete the IRM, will be completed in the spring of 1996. This IRM is consistent with and has been incorporated into the final recommended remedial action;
- Implementation of deed restrictions at the property; and
- Performance of routine maintenance activities associated with the existing soil cover implemented as an IRM.

2. Site Specifics

2.1. Site Description

Windiate Park is owned by the City of Flint. It is bordered by Milton Drive to the northwest, residential properties to the west, south and east and by Pengelly Road to the north. The Park is located within Section 29 and 30 of Township 7 North, Range 7 East in the City of Flint, Genesee County, Michigan. A Site Location Map is shown on Figure 1.

The Park is approximately 7.5 acres in size, is covered by grass vegetation and is utilized for recreational purposes. Former structures within the Park included a baseball field with a fenced backstop in the southern area of the Park and various children's playground equipment in the northern area of the Park. Bordering the Park are residential properties which are not considered to be part of the Park. A Site Plan of the Park area and adjacent residential properties is shown on Figure 2.

The surface topography of the Park, prior to placement of an IRM soil cover by General Motors Corporation (GM) and the City of Flint in 1995-1996 included generally flat low lying areas with increasing elevation towards the residential dwellings in the southern, southwestern and northeastern sections. In general, the Park is low in relation to the surrounding adjacent properties. The elevation of the Park has increased due to the installation of the IRM soil cover; however, the general topography has remained similar. Topsoil and sod will be placed in the Park as part of the soil cover.

Access to the Park is obtained at Lowell Boulevard to the south of the Park and directly from Milton Drive and Pengelly Road to the north.

2.2. Site History

Based on the review of historical aerial photographs, the Park has always been open, vacant space. One house existed adjacent to the Park in the 1920s and the Park appeared to have consisted of low lying wetland areas. The location of this house was in the vicinity of the current 428 Shelly Lane residence. Intermittent construction of additional houses occurred during the 1930s and 1940s along the west side of Windiate Park on Milton adjacent to Shelly Lane and north along Milton. Construction of houses adjacent to the Park began in the early 1950's starting on the southwest side (4317 Milton Drive location) and proceeding around the perimeter of the Park. The Park property was developed as a park in approximately 1954 according to records at the City of Flint offices.

In the late 1940's and early 1950's, fill materials (ostensibly from a number of sources) were deposited in the Park. Following the filling, the Park consisted of low lying areas which were subject to frequent flooding. Flooding of the Park area continued during heavy rain events until a new storm sewer (referred to as the Schram Drain on Figure 2) was installed by the Genesee County Drain Commission in 1990.

Following the results of the RI activities, a soil cover (between 1 ft to 5 ft thick) was installed over the surface of the Park in 1995-1996 as part of an IRM. This soil cover was installed based on agreement with the MDEQ and in association with the City of Flint.

2.3. Nature and Extent of Fill Material and Related Substances

The RI/FS Report details the investigatory activities implemented to generate the data for this section.

The fill material, which was vertically and horizontally assessed during the RI, extends to a depth of approximately 13 ft below grade (fbg), prior to the installation of the soil cover, with an average thickness of 4 ft. Fill material extends outside the boundary of the Park to the south and west. Figure 3 identifies the horizontal extent and Figure 4 identifies the vertical extent of fill material.

Subsurface concentrations of volatile organic compounds (VOCs) in the fill material are below Generic Residential Direct Contact Values. Ground water and soil vapor testing indicated there were no impacts from VOCs. Concentrations of lead, arsenic, and semi-volatile organic compounds (SVOCs) (benzo(a)anthracene and benzo(a) pyrene) above Generic Residential Direct Contact Values and Site Specific Background Values (arsenic only) were detected in subsurface fill materials at several locations. However, ground water sampling in the Park has not detected substances above the Generic Residential Health Based Criteria.

2.4. Property Zoning

The Park is in an area of Flint that is zoned for single family residential. This zoning designation allows for and includes areas such as the Park that are used and designated for recreational purposes. In accordance with Section 20120a (6) a property for which a RAP is proposed must have zoning that is consistent with the categorical criteria (i.e., limited residential with recreational deed restrictions) being proposed. Deed restrictions will be implemented as outlined in Section 4 for continued use of the property as a "Park".

2.5. Future Use

The City of Flint is currently preparing plans for the enhancement of the Park which are consistent with the intended future recreational use of the Park. The local residents are providing input regarding the proposed Park enhancement program.

Park enhancements considered include the installation of walking paths, basketball courts, picnic areas, child play areas and trees/shrubs. These future enhancements will be consistent with the soil cover program and will function in a manner which will not adversely affect maintenance of the integrity of the soil cover.

3. Remedial Action

3.1. General

The remedial action for the Park consists of the following elements:

- An interim remedial measure (IRM) consisting of a soil cover over the Park has been previously implemented. Placement of topsoil and sod, which will complete the IRM, will be completed in the spring of 1996. This IRM is consistent with and has been incorporated into the final recommended remedial action.
- Implementation of deed restrictions at the property; and
- Performance of routine maintenance activities associated with the existing soil cover implemented as an IRM.

The objective of this RAP is to identify the final remedy to be implemented at the Park to achieve a "limited residential" closure of this property with deed restrictions for recreational use in accordance with Section 20120a of Part 201 of NREPA. The remedy selected was based on the detailed analysis of remedial alternatives presented in the FS.

This section describes the construction of the soil cover IRM and compliance with the MDEQ criteria for closure as a "limited residential" site. Section 4 of this RAP outlines the proposed deed restrictions and Section 5 describes the maintenance activities to be implemented in the future.

3.2. Changes to the RAP

If significant changes to site conditions are discovered (or unanticipated conditions arise which would result in exposure to the underlying fill material), this RAP will be modified to address these conditions. Modifications to this RAP will be submitted to the MDEQ for approval prior to implementation. Additionally, proposed changes to this RAP will be outlined and submitted to the MDEQ prior to implementation.

3.3. Soil Cover Construction Activities

The soil cover was installed as an IRM to allow unrestricted use of the Park while a final remedy was being prepared. The soil cover prevents recreational users from potential exposure to substances in the fill material. A conceptual design of the soil cover was submitted to the MDEQ for their review. The correspondence from the MDEQ agreeing to the concept of the soil cover IRM is included as Appendix C. A minimum of 12 inches of soil cover and topsoil was placed in areas where surface soil samples (prior to placement of the soil cover) were below Generic Residential Direct Contact Values. A minimum of 24 inches of soil was placed in areas of the Park where surface soil samples identified lead concentrations exceeding the Generic Residential Direct Contact Value for that substance. Figure 5 identifies the approximate design thickness of the soil cover across the Park. To allow for proper drainage to the catch basins connected to the Schram Drain in the Park, some areas received over 4 ft of soil cover.

The materials used in the construction of the soil cover were obtained from an off-site borrow area. The soil cover material is characterized as a silty sand and the topsoil is characterized as an organic, fertile, and granular soil. To confirm that soil from the off-site source was not impacted, samples were collected and submitted to an analytical laboratory for analysis. One sample of the topsoil and one sample of the silty sand were analyzed for the waste characterization parameters specified in 40 CFR 261.20 through 261.24 and total Michigan "10" metals, since these substances are naturally occurring. Four additional samples of the topsoil were analyzed for Michigan "10" metals as these substances are naturally

occurring elements. Based on concurrence from the MDEQ as noted in the November 3, 1995 correspondence, the topsoil and silty sand materials were utilized at the Park. The laboratory analytical data sheets are included as Appendix D. The MDEQ correspondence letter is included as Appendix E.

During installation of the soil cover, elevations were taken along a 50 ft grid to document compliance with the design parameters. The materials were placed in maximum 12 inch lifts, then compacted to achieve the design density (85% to 90% of the Standard Proctor Compaction as determined by ASTM standards). The compaction was field tested in accordance with ASTM standards. The existing ground water monitoring wells, catch basins, and manholes in the Park were raised to match the final elevation of the soil cover.

After the 1996 spring thaw, the topsoil will be graded to meet the design final grades. Sod will then be placed over the topsoil to obtain adequate vegetative cover. Drawings identifying the final elevation of the soil cover will be prepared following completion and copies will be submitted to the City of Flint and the MDEQ.

3.4. Attainment of Closure Criteria

Based on numerous investigations in the Park described in detail in the RI/FS Report, benzo(a)anthracene, benzo(a)pyrene, lead, and arsenic were detected in the material underlying the soil cover. Ground water investigations conducted at the Park demonstrated that the fill material has not impacted the ground water. No substances were detected in the ground water at concentrations exceeding Generic Residential Health Based Drinking Water Criteria.

In accordance with Section 20120a of Part 201 of PA 451, to obtain closure of a site the substance levels remaining in the soil must be protective considering migration and exposure pathways pertinent to the site. In general, the potential migration and exposure pathways include; leaching of substances from soil to ground water, migration of substances in soil to surface water, inhalation of substances, direct contact with substances and ingestion of substances.

The following paragraphs discuss in detail how these closure criteria are attained.

3.4.1. Leaching of Substances to Ground Water

Ground water investigations (discussed in Sections 5.4 and 6.3 of the RI/FS Report) demonstrated that although the fill material has been in place for 40 to 50 years under shallow water table conditions, no substances were detected in the ground water at concentrations exceeding Generic Residential Health Based Drinking Water Criteria. Based on these investigations, it is evident that substances in the material underlying the soil cover have not leached to ground water and therefore it is unlikely they will leach to ground water in significant concentrations in the future. Therefore, this migration pathway is not a concern for the Park.

3.4.2. Migration of Substances to Surface Water

Since surface water does not exist at the Park, the potential for migration to surface water does not exist. The potential for substances to enter the Schram Drain via precipitation runoff does not exist due to the presence of the soil cover, which eliminates the migration pathway to surface water. Infiltration of ground water into the Schram Drain may occur as outlined in Section 5.9 of the RI/FS Report; however, ground water analytical data is below the Generic Residential Ground Water/Surface Water Interface Values. Therefore, this migration pathway is not a concern for the Park.

3.4.3. Inhalation of Substances

As identified in Section 8 of the RI/FS Report, the soil cover and absence of VOCs in soil vapor support the conclusion that the air exposure pathway is classified as incomplete (no physical means by which humans may be exposed to SOPCs). The RI/FS Report concluded that there is no significant risk to human health via the air exposure pathway.

3.4.4. Ingestion and Direct Contact

Although benzo(a)anthracene, benzo(a)pyrene, arsenic, and lead, are present in the fill material at concentrations exceeding Generic Residential Direct Contact Values or the Site Specific Background Value (arsenic only), the presence of the soil cover eliminates the potential for ingestion and direct contact, thereby eliminating this exposure pathway.

3.4.5. Summary of Closure Criteria Attainment

Based on these analyses, the closure criteria are achieved with the presence of the soil cover. Additionally, the implementation of deed restrictions at the Park and the performance of maintenance on the soil cover are incorporated. These measures prevent uncontrolled excavation activities and provide for reparation of potential damages to the soil cover.

4. Deed Restrictions

4.1. Land Use Restrictions

A functional feature of the final remedial action for the Park is the implementation of land use restrictions. In accordance with Rule 299.5719, the land use restrictions will be detailed in a restrictive covenant recorded by the City of Flint and approved by MDEQ that will include:

- Restrictions on site activities which may potentially affect the integrity of the soil cover or interfere with maintenance activities.
- A requirement to provide notice to the MDEQ of the intent to convey property, such as; conveyance of title, easement or other;
- Permission for the MDEQ to access the Park and to inspect records;
- Descriptions of applicable land use or resource criteria use restrictions, including:
 - the prohibition of uncontrolled excavation or other activities which may potentially damage the soil cover; and
 - the notification of the MDEQ prior to performing sampling and analysis of impacted materials in the event transportation and/or disposal is performed.
- Notice that the property will be restricted to recreational use.

The deed restrictions will be implemented indefinitely. Modifications to the deed restrictions will be submitted to the MDEQ for approval.

4.2. Agreement Between Involved Parties for RAP Implementation

Windiate Park is currently owned by the City of Flint. Implementation of this RAP will be in accordance with the agreement between GM and the City of Flint included as Appendix F. Pursuant to this agreement and particularly paragraph 5, the City of Flint will enter into a restrictive covenant which will be recorded with the Register of Deeds for Genesee County. The City of Flint will provide continued financial responsibility for future maintenance activities.

The Genesee County Drain Commission controls an easement for the Schram Drain that crosses the Park. General Motors Corporation and the City of Flint have an access agreement with the County Drain Commission for potential future repairs of the Schram Drain. This agreement is included as Appendix G.

Other potentially responsible parties or involved entities may be identified in the future. It is anticipated that other involved entities will enter into similar agreements with GM and the City of Flint. The MDEQ will be notified if this occurs in a manner which affects the RAP.

5. Maintenance Plan

The soil cover will be preserved with the performance of maintenance activities in accordance with Rule 517. Maintenance activities at the Park will be performed by the City of Flint for the purposes of maintaining the appearance of the Park and the soil cover. Maintenance activities will initially include quarterly inspections for the first 3 years after installation of the cover. Inspections will be performed annually thereafter unless conditions indicate a more frequent rate is necessary. The inspections will be performed to observe the soil cover for evidence of erosion, settlement, subsidence, burrowing animals, bare patches, or other damage to the soil cover. Repairs to the soil cover could include replacement or addition of topsoil or vegetation. The equipment and materials that may be required for these maintenance activities include a manual compactor, seeder, topsoil, fertilizer, and grass seed or sod.

Regular maintenance activities also include vegetation care such as mowing, hedging, and fertilizing. These maintenance activities will be implemented at least twice a year to maintain the aesthetic quality of the Park. Monitoring inspections will include checklists to be completed by the City of Flint inspector. An example checklist is included as Appendix H.

Maintenance activities will be conducted by personnel from the City of Flint Parks and Recreation Department. The City of Flint office responsible for maintenance administrative activities is the Deputy City Administrator. Current Deputy Administrator to contact for information is:

Mr. Hans Kuhlmann
Deputy City Administrator
City of Flint
120 East Fifth Street
Flint, MI 48502
(810) 766-7135

Repairs that are beyond the capability of the City of Flint will be subcontracted to a qualified contractor.

6. Schedule of Implementation

The remedial action for the Park is currently underway with the installation of the soil cover. The soil cover was installed between October 1995 and December 1995. Top soil and sod placement will be completed in April 1996. Following completion, the construction contractor will water the sod to promote adequate growth.

At the completion of the soil cover installation in April 1996 the following inspection schedule will be implemented by the City of Flint:

Table 6-1. Inspection Schedule

1996-1997	1997-1998	> 1998
August 1	August 1	August 1
November 1	November 1	
February 1	February 1	
May 1	May 1	

Inspections after the year 1999 will be performed on an annual level, or more frequently if conditions indicate a more frequent rate is necessary. Routine landscape care will be performed regularly during the spring, summer, and fall months.

Copies of the completed checklists and repair documentation will be submitted to the MDEQ annually or more frequently, if necessary.

7. Summary of the Remedial Action Plan

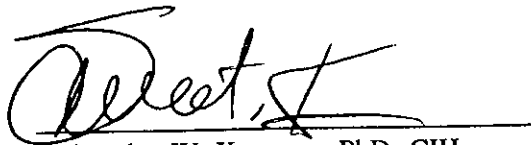
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- Implementation of deed restrictions at the property; and
- Performance of routine maintenance activities associated with the existing soil cover implemented as an IRM.

The implementation of these elements will serve as a final remedy for Windiate Park. In addition to addressing the environmental conditions, this remedy enhances the Park and makes it more attractive for use by the residents in the community. With the performance of routine maintenance on the soil cover, the Park will maintain its attractiveness in the future.

Respectfully submitted,

O'BRIEN & GERE ENGINEERS, INC.



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