

**CITY OF ROYAL OAK  
BROWNFIELD REDEVELOPMENT  
AUTHORITY**

**BROWNFIELD PLAN FOR:**

**3380 GREENFIELD ROAD  
ROYAL OAK, MICHIGAN**

**August 2009**

**City of Royal Oak Brownfield  
Redevelopment Authority (ROBRA)**

Contact: Mr. Timothy E. Thwing  
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Prepared with the assistance of:

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Approved by the Brownfield Redevelopment Authority on: \_\_\_\_\_

Approved by the governing body of the local jurisdiction on: \_\_\_\_\_

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## **I. INTRODUCTION AND PURPOSE**

The City of Royal Oak Brownfield Redevelopment Authority (Authority; ROBRA) is authorized to exercise its powers within the municipal limits of the City of Royal Oak. This Brownfield Plan applies to the subject property located at 3380 Greenfield Road, which is within the boundaries of the City of Royal, Oakland County, Michigan. The subject property is the site of a proposed commercial building redevelopment.

The purpose of this Plan, to be implemented by the Authority, is to satisfy the requirements for a Brownfield Plan as specified in Act No. 381 of the Public Acts of 1996, as amended, M.C.L. § 125.2651 *et. seq.*, as amended, which is known as the “Brownfield Redevelopment Financing Act.” Tax increment financing through ROBRA will be used to assist Royal 7 Properties, LLC (i.e., the Business Entity and subject property owner) in performing eligible activities needed to prepare the brownfield subject property for redevelopment.

## **II. GENERAL DEFINITIONS AS USED IN THIS PLAN**

All terms used in this Brownfield Plan are defined as provided in the following statutes, as appropriate:

*The Brownfield Redevelopment Financing Act*, 1996 Mich. Pub. Acts. 381, M.C.L. § 125.2651 *et seq.*, as amended.

*Part 201 of the Natural Resources and Environmental Protection Act*, 1994 Michigan Public Act 451, as amended.

All references in section headers are for The Brownfield Redevelopment Financing Act, 1996, Michigan Public Acts 381, M.C.L. § 125.2651 *et seq.*, as amended.

## **III. ELIGIBLE PROPERTIES WITHIN THE BROWNFIELD ZONE**

### **SUBJECT PROPERTY**

The subject property is located in the City of Royal Oak at 3380 Greenfield Road. The subject property consists of one (1) parcel containing approximately 0.39 acres and is occupied by a 1,917 square foot automotive service garage located in the southern portion of the property. The current subject building was constructed in 1953 and contains office areas, retail storage areas, shop areas, and bathrooms. Asphalt paved parking areas are located to the west and south of the subject building. The building is currently occupied by an operating automotive service garage (i.e., Ernie Fischer’s).

Historical records reviewed for the subject property extended back to approximately 1940. Data failure occurred prior to that date, and from 1941 to 1948. However, PME did not identify any significant data gaps during the completion of a Phase I Environmental Site Assessment (ESA) (reported dated June 11, 2008). From 1940 to 1952, the subject property consisted of vacant land. Land use records indicate that the first developed use of the subject property occurred in 1953, with the construction of the majority of the subject building. An addition was constructed

to the eastern portion of the building in 1980. The subject property operated as a gasoline dispensing station and service garage from at least 1953 until 1998. Gasoline dispensing operations ceased in 1998, however, the subject property has continued to operate as an automotive service garage until the present.

The subject property is located within a commercial and residential area of Royal Oak and is currently zoned for “multiple Family” use. Nearby Greenfield and 13 Mile Roads are commercial thoroughfares, with residential neighborhoods and commercial retail and restaurant properties located in close proximity to the subject property.

Adjoining properties consist of the Judson Center that adjoins the subject property to the north (beyond 13 Mile Road), a Car Quest auto parts store to the east, and a vacant parking lot to the south. A Valvoline Instant Oil Change and Citgo gasoline service station are located to the northwest and west of the subject property, respectively (beyond Greenfield Road).

### **IDENTIFICATION OF THE PROPERTY AS A “FACILITY”**

Analytical results from PME’s October 2008 Baseline Environmental Assessment (BEA) identified concentrations of contaminants in soil and/or groundwater that exceed applicable MDEQ Part 213 Tier 1 Residential and/or Commercial Drinking Water Protection (DWP), Drinking Water (DW), Groundwater Surface Water Interface Protection (GSIP), and/or Groundwater Surface Water Interface (GSI) Cleanup Criteria. **Therefore, the subject property is a facility, according to Part 201 of P.A. 451, as amended, and the rules promulgated there under.** A Category “N” Baseline Environmental Assessment (BEA) dated October 10, 2008, documenting the “facility” status is provided in Appendix A. Current plans envision redevelopment of the subject property into a commercial building to be utilized as a 7-Eleven convenience store. Successful redevelopment is currently hindered by the presence of hazardous substances and environmental impacts at the subject property.

### **PROJECT DESCRIPTION**

Royal 7 Properties, LLC has selected the subject property for redevelopment because of its placement at the intersection of two well traveled roadways that are conducive for the operation of a profitable retail convenience store. In addition, the medium density of the area and existence of commercial businesses and residential housing represents a significant local customer base for the convenience store operation. It is anticipated that seven (7) to ten (10) new full-time jobs will be created at this location with an average hourly salary of \$9/hour.

Royal 7 Properties, LLC intends to use brownfield redevelopment tax increment financing to reimburse the cost of eligible environmental activities needed to prepare the property for safe redevelopment and reuse.

#### **A. Description of Costs to Be Paid for With Tax Increment Revenues**

*Cost Summary.* The following summary lists potential costs based on site characterization investigation results. This Plan includes a summary of estimated Eligible Activities. If further

site activities determine that these estimates must be modified, a Brownfield Plan amendment (if necessary) will be prepared for review and approval by ROBRA to finalize the tax increment component of this Plan.

Tax increment revenues will be used to reimburse Royal 7 Properties, LLC, for Eligible Activities necessary to (a) evaluate the nature and extent of contamination or other hazardous substances present at unacceptable levels in soil and/or groundwater on the subject property, (b) identify and remove and/or remediate, if necessary, some or all of the soils and/or groundwater determined to contain hazardous substances in unacceptable concentrations or which are not suitable for the construction of buildings thereon, (c) implement due care activities required by law, and (d) implement other activities permitted under the Brownfield Redevelopment Financing Act.

The activities would be implemented as follows:

- a. Preparation of Phase I Environmental Site Assessment (ESA), Baseline Environmental Assessment (BEA), and Due Care Plan at a cost of approximately \$20,000.
- b. Preparation of Work Plans and Brownfield Plan and associated activities (e.g. meetings with ROBRA, etc.) at a cost of approximately \$10,000.
- c. Complete demolition of existing building, exterior parking lot, and roadside signage to facilitate site redevelopment at a cost of approximately \$9,000.
- d. A contingency of \$5,850 (approximately 15% of estimated project costs) is established to address unanticipated environmental and/or other conditions that may be discovered through the implementation of site activities.

All activities are intended to be “Eligible Activities” under the Brownfield Redevelopment Financing Act. The total estimated cost of Eligible Activities subject to repayment or reimbursement from tax increment revenues is approximately \$39,000, with a potential \$5,850 contingency, resulting in an approximate total cost of \$44,850.

Royal 7 Properties, LLC also seeks to limit financing costs to less than \$12,500 with project financing for the eight (8) years that taxes are captured to reimburse Eligible Activities.

In addition to the Eligible Activities and interest described above, this Plan includes administrative fees for the ROBRA at \$1,000/year and capture of two (2) years of taxes for the local Revolving Loan Fund.

## **B. Estimate of Captured Taxable Value and Tax Increment Revenues**

Incremental taxes on real property included in the redevelopment project will be captured under this Brownfield Plan to reimburse eligible activity expenses. The taxable value of the real property was \$130,040 for the current tax year; no personal property is associated with the site.

The estimated market value of the completed development is \$850,000 at completion of the development estimated in January 2010. This assumes a one-year phase-in for completion of the redevelopment, which has been incorporated into the tax impact and cash flow assumptions for this plan. An annual increase in taxable value of 3% has been used for calculation of future tax increments in this plan. The estimated captured taxable value and tax increment revenues for the eligible property for each year of the plan are presented in Appendix C.

The tax increment and capture year data presented in Appendix C are estimates based on currently available information. It is the intent of this Plan to provide for capture of all eligible tax increments in whatever amounts and in whatever years they become available until all project costs described in this plan are paid.

Estimates Tax Increment Revenue Captured by the Authority: Over the life of the Plan the maximum tax increment captured by the Authority will be as follows:

City of Royal Oak Brownfield Redevelopment Authority (ROBRA)	
Administrative Fees (10 years):	\$10,000
Revolving Loan Fund (5 years):	\$8,738

**C. Method of Financing and Description of Advances by the Municipality**

Redevelopment activities at the property will be initially funded by Royal 7 Properties, LLC, the property owner. Costs for eligible activities funded by Royal 7 Properties, LLC will be repaid under the Michigan brownfield redevelopment financing program (Michigan Act 381 of 1996, as amended) with incremental taxes generated by future development of the property. No advances will be made by the ROBRA or the City of Royal Oak for this project.

**D. Maximum Amount of Note or Bonded Indebtedness**

No note or bonded indebtedness will be incurred by any local unit of government for this project.

**E. Duration of Brownfield Plan**

Incremental tax capture is expected to begin in 2010 and continue for up to eight (8) years. The ROBRA will capture an additional two (2) years for a total duration of ten (10) years. The Brownfield Plan will remain in effect for that time period. Extension of the Brownfield Plan will be at the discretion of the ROBRA, upon a request for extension from Royal 7 Properties, LLC.

**F. Estimated Impact of Tax Increment Financing on Revenues of Taxing Jurisdictions**

Tax increment revenues generated by the redevelopment will be captured by the ROBRA. The impact of the BRA tax capture on local taxing authorities is presented in Appendix C.

**G. Legal Description, Property Map and Personal Property**

The legal description of the property included in this plan is attached in Appendix D. A map of the property with current site features is included in Appendix E.

Personal property is not included at part of the eligible property and tax increment capture.

**H. Estimates of Residents and Displacement of Families**

No persons reside at property and no families or individuals will be displaced as result of this development. No occupied residences are involved in the development. Therefore, a demographic survey and information regarding housing in the community are not applicable and are not needed for this Plan.

**I. Plan for Relocation of Displaced Persons**

No persons will be displaced as a result of this development. Therefore, a plan for relocation of displaced persons is not applicable and is not needed for this plan.

**J. Provisions for Relocation Costs**

No persons will be displaced as a result of this development and no relocation costs will be incurred. Therefore, provision for relocation costs is not applicable and is not needed for this Plan.

**K. Strategy for Compliance with Michigan's Relocation Assistance Law**

No persons will be displaced as result of this development. Therefore, no relocation assistance strategy is needed for this plan.

No persons will be displaced as a result of this development, and therefore, no relocation costs will be incurred.

**L. Description of Proposed Use of Local Site Remediation Revolving Fund**

Taxes will captured from this project for the Local Site Remediation Revolving Loan Fund during the two (2) years following the complete capture of taxes for reimbursement of Eligible Activities described in Section III (A) above. These funds will be used for investigation and remediation on other Brownfield sites located within the Authority.

No funds from the Local Site Remediation Revolving Fund shall be used to finance the costs of Eligible Activities on the eligible property under this Plan.

**M. Other Material that the Authority or Governing Body Considers Pertinent**

The total estimated cost of Eligible Activities and interest incurred by Royal 7 Properties, LLC to be reimbursed from tax increment revenue under this Plan is \$56,864. The actual amount of tax increment revenue utilized for the purpose of reimbursing the cost of Eligible Activities and interest shall not exceed the amount of \$56,864 without this Plan being amended by ROBRA.

Royal 7 Properties, LLC and ROBRA shall enter into a Reimbursement Agreement containing additional terms and conditions related to the project described in this Plan. In accordance with this Plan and the Reimbursement Agreement the Authority will repay the amount advanced by Royal 7 Properties, LLC for Eligible Activities and interest solely from the tax increment revenues realized from the Property in accordance with the terms of the Reimbursement Agreement between Royal 7 Properties, LLC and ROBRA.

# Appendix A

October 10, 2008

District Supervisor  
Michigan Department of Environmental Quality  
Southeast District Office  
27700 Donald Court  
Warren, Michigan 48092



**RE: Category-N Baseline Environmental Assessment for the Automotive Service Garage  
Located at 3380 Greenfield Road in Royal Oak, Michigan  
PM Environmental, Inc. Project No. 02-3159-1**

Dear District Supervisor:

Enclosed are two (2) copies of the above-referenced document prepared in accordance with the March 11, 1999 Instructions for Preparing and Disclosing Baseline Environmental Assessment, and the Part 201 Rules, by PM Environmental, Inc.

**THIS CATEGORY-S BEA WAS PERFORMED FOR THE EXCLUSIVE USE OF ROYAL 7 PROPERTIES, LLC WHO MAY RELY ON THE REPORT'S CONTENTS.**

If you have any questions regarding the information in this report, please contact us at (800) 485-0090.

Sincerely,

**PM ENVIRONMENTAL, INC.**

A handwritten signature in black ink, appearing to read 'B-Chmielewski'.

Brian Chmielewski  
Project Geologist

A handwritten signature in black ink, appearing to read 'Steve Price'.

Steve Price  
Vice President of Due Diligence

Enclosure

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**PM ENVIRONMENTAL, INC. PROJECT NO. 02-3159-1**  
**BASELINE ENVIRONMENTAL ASSESSMENT**

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***CATEGORY N BASELINE ENVIRONMENTAL  
ASSESSMENT CONDUCTED PURSUANT TO  
SECTION 20126(1)(c) OF 1994 PA 451, PART 201, AS  
AMENDED, AND THE RULES PROMULGATED  
THEREUNDER***

**Location:**

*Automotive Service Garage  
3380 Greenfield Road  
Royal Oak, Michigan*

**Prepared For:**

*Royal 7 Properties, LLC  
47759 Walden  
Macomb, Michigan 48044*

***CATEGORY N BASELINE ENVIRONMENTAL  
ASSESSMENT CONDUCTED PURSUANT TO SECTION  
20126(1)(C) OF 1994 PA 451, PART 201 AS AMENDED,  
AND THE RULES PROMULGATED THEREUNDER FOR  
THE AUTOMOTIVE SERVICE GARAGE (PARCEL ID  
NUMBER 25-07-101-001) LOCATED AT 3380  
GREENFIELD ROAD IN ROYAL OAK, MICHIGAN***

***October 10, 2008***

**Prepared By:**

*PM Environmental, Inc.*

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## **APPENDICES**

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- Appendix E: Laboratory Analytical Results
- Appendix F: Soil Boring Logs

## **1.0 IDENTIFICATION OF AUTHOR AND DATE BEA WAS CONDUCTED AND DATE BEA WAS COMPLETED**

This Category-N Baseline Environmental Assessment (BEA) was conducted on October 6, 2008, (i.e., within 45 days of purchase) by Mr. Brian Chmielewski, Project Geologist, and reviewed by Mr. Steve Price, Vice President of Due Diligence, PM Environmental, Inc. (PME), 3340 Ranger Road in Lansing, Michigan. Professional resumes for the environmental professionals involved are included in Appendix A. This Category-N BEA was completed on October 10, 2008 (i.e., within 60 days of purchase).

## **2.0 INTRODUCTION**

PME has completed a Category-N BEA for the automotive service garage (Parcel ID # 25-07-101-001) located at 3380 Greenfield Road in Royal Oak, Michigan.

The subject property covers 0.39 acres and is occupied by a 1,917 square foot automotive service garage located in the southeastern portion of the property. The majority of the current subject property building was originally constructed in 1953, with an addition to the eastern portion of the building in 1980. The current building is divided into a lobby area, a service garage, storage areas, and a bathroom. Asphalt paved driveways and parking areas are located to the north and west of the subject property building. Current operations consist of typical automotive service operations (i.e., oil changes, automotive fluid replacement, etc.).

Standard and other historical sources were able to document that the subject property operated as a gasoline dispensing station and service garage from at least 1953 until 1998. Gasoline dispensing operations ceased in 1998, however, the subject property has continued to operate as an automotive service garage until the present.

### **2.1 Previous Site Investigations**

PME reviewed the following reports pertaining to previous environmental investigation completed at the subject property:

- Underground Storage Tank Removal Site Assessment, August 16, 1990, ATEC Environmental Consultants;

Refer to Appendix D for a copy of the previous site investigations.

### **2.2: Summary of Previous Investigations**

The subject property is a closed LUST site with two (2) releases reported (confirmed release numbers C-1440-90 and C-0213-97). The first release was reported in July 1990, when evidence of contamination was encountered after the removal of a 1,000-gallon fuel oil UST. The second release was identified on April 7, 1997, during the removal of a 1,000-gallon used oil UST from south of the building. Tier I Residential Closure Reports were completed for each of the releases. Both reports

were approved by the MDEQ without an audit.

Site assessment activities have consisted of the advancement of soil borings, the installation of permanent monitoring and observation wells, the removal of product lines, and the removal of former USTs.

Approximately 64 cubic yards of impacted soil were removed from the former fuel oil UST basin. Analytical results from verification of soil remediation (VSR) soil samples collected from the former fuel oil UST basin documented concentrations of benzene, toluene, ethylbenzene, and xylenes, collectively referred to as BTEX, above MDEQ Part 213 Residential Drinking Water Protection (DWP) Risk Based Screening Levels (RBSLs) in all of the VSR floor and sidewall samples collected from the excavation. In addition, concentrations of benzene were identified above MDEQ Part 213 Residential/Commercial I Soil Volatilization to Indoor Air Inhalation (SVII) RBSLs in the eastern and western sidewall samples. However, all concentrations were below the applicable MDEQ Part 213 Commercial III SVII RBSLs.

Analytical results from the used oil UST basin documented concentrations of gasoline range volatile organic compounds (VOCs) above MDEQ Part 213 DWP RBSLs in VSR samples. No groundwater samples were collected from either excavation.

Geology was identified as fine to medium sand to a depth of 4.0 feet bgs, underlain by silty clay to a depth of 8.0 feet bgs, the maximum depth explored. Groundwater was encountered approximately 4.5 to 5.0 feet bgs, however, no groundwater flow direction was determined

PME previously completed a Phase I ESA dated June 11, 2008. The following REC's were identified within the Phase I ESA:

- The subject property is identified as a closed LUST site with two (2) releases reported. PME identified the following deficiencies associated with the previous site investigation activities completed on the subject property from 1990 until 1998 that constitute a REC: (1) Concentrations of gasoline range volatile organic compounds (VOCs) were identified above MDEQ Part 213 Drinking Water Protection (DWP) Risk Based Screening Levels (RBSLs) in excavations of the former fuel oil UST and former used oil UST. In addition, concentrations of benzene were identified above MDEQ Part 213 Residential/Commercial I Soil Volatilization to Indoor Air Inhalation (SVII) RBSLs in sidewall soil samples collected from the eastern and western sidewalls of the former fuel oil UST basin. Based on the unrestricted nature of the closures at the subject property, the property has not been adequately restricted to prevent unacceptable exposure based on these concentrations; (2) PME has not identified any documentation that any sampling was completed during the removal of the former gasoline USTs, dispensers and product lines in 1998, and only limited sampling was completed on the northern portion of the property; therefore, the potential exists for contamination to be present in these potential source areas.
- Historical interior waste streams associated with the former service garage operations from 1953 until the present would have consisted of general hazardous substances and/or petroleum

products, including but not limited to used motor oils, transmission fluids, antifreeze, and mineral spirits. This time period preceded major environmental regulations and current waste management and disposal procedures. The historical waste management practices associated with the former service operations are unknown and may be a source of subsurface contamination. Samples previously collected from the subject property have not been analyzed for chlorinated solvents.

- PME observed two (2) floor drains in the service bays. One (1) drain is located in the easternmost service bay, while the second floor drain is located between the two (2) western service bays. The drains reportedly discharge into the municipal sewer system. PME observed significant staining in the vicinity of both drains and historical waste management practices associated with the floor drains are unknown; therefore, the potential exists for subsurface impact due to the unknown integrity of the floor drains.
- A solvent based parts washer was observed in the northeastern portion of the building. Parts washers involve the usage of solvents, including mineral spirits. The potential exists for spills and/or leaks to have occurred in the area of the parts washer during usage and/or maintenance activities.
- During the site reconnaissance, PME observed one (1) 300-gallon used oil UST on an asphalt paved area to the southeast of the subject building. PME observed staining in the vicinity of this AST. Based on the evidence of staining in the vicinity of the AST, the potential exists for contamination to have penetrated the subsurface.
- During the site reconnaissance, PME observed three (3) in-ground hydraulic hoists inside the service bays. The current systems were likely installed during initial construction of the building in 1953 and the addition in 1980. The in-ground hoists likely have underground reservoirs for hydraulic fluids, which can contain PCBs. The potential exists that a release occurred from the current hydraulic hoist systems.

No adjoining and/or nearby RECs were identified.

### **2.3 Current Site Investigations**

On September 3 and September 4, 2008, PME completed a Phase II ESA that consisted of advancing ten (10) soil borings and installing five (5) temporary monitoring wells (SB/TMW-1, SB/TMW-2, SB-3, SB-4, SB/TMW-5, SB-6, SB/TMW-7, SB-8, SB/TMW-9 and SB-10) to investigate the RECs identified in the June 11, 2008 Phase I ESA completed by PME. Soil and groundwater samples were collected for laboratory analysis based on a change in lithology, elevated photo ionization detector (PID) or from the likely source depth. Soil and groundwater samples were submitted for laboratory analysis of VOCs, PNAs, PCBs, cadmium, chromium, lead and glycols, or some combination thereof. The soil boring locations are depicted on Figure 3. Soil boring logs are included in Appendix A.

Analytical results from PME's September 2008 Phase II ESA identified concentrations of

contaminants in soil and groundwater above applicable MDEQ Part 213 Tier 1 RBSLs; therefore, **the subject property is a facility, according to Part 201 of P.A. 451, as amended, and the rules promulgated thereunder.** Please refer to Section 4.5 for soil and groundwater analytical results.

The purpose of this BEA is to describe the condition of the subject property at the time of transfer and establish a basis to distinguish existing contamination from any new release in accordance with Michigan Administrative Code R 299 5901-5919. There will be no use, storage, handling, or management at any time of hazardous substances on the subject property by Royal 7 Properties, LLC in quantities greater than typical residential or office quantities.

Primary environmental concerns at the subject property are related to the historical operations. **There will be no significant hazardous substance use at the property and this stipulated condition is the basis for being able to distinguish existing contamination from a new release.** A Category-N BEA is sufficient to meet the needs of the proposed future subject property use.

### **3.0 PROPERTY DESCRIPTION & INTENDED HAZARDOUS SUBSTANCE USE**

#### **3.1 Property Description**

As stated in Section 2.0, the subject property covers 0.39 acres and is occupied by a 1,917 square foot automotive service garage located in the southern portion of the property. The majority of the current subject property building was originally constructed in 1953, with an addition to the eastern portion of the building in 1980. The current building is divided into a lobby area, a service garage, storage areas, and a bathroom. Asphalt paved driveways and parking areas are located to the north and west of the subject property building. Current operations consist of typical automotive service operations (i.e., oil changes, automotive fluid replacement, etc.).

A site vicinity diagram is presented in Figure 1. A scaled site diagram depicting the subject property and adjoining properties is presented in Figure 2. A copy of the legal description supplied from City of Royal Oak is included as Appendix C. Color photographs of the subject property taken by PME are included within Appendix D.

#### **3.2 Intended Hazardous Substance Use**

PME understands that no hazardous substances are proposed to be used or stored at the subject property in quantities greater than typical residential or office quantities by Royal 7 Properties, LLC. **There will be no significant hazardous substance use at the property and this stipulated condition is the basis for being able to distinguish existing contamination from a new release.**

#### 4.0 KNOWN CONTAMINATION

##### 4.1 Soil and Groundwater Sampling and QA/QC Procedures

On September 3 and September 4, 2008, PME completed a Phase II ESA that consisted of advancing ten (10) soil borings and installing five (5) temporary monitoring wells (SB/TMW-1, SB/TMW-2, SB-3, SB-4, SB/TMW-5, SB-6, SB/TMW-7, SB-8, SB/TMW-9 and SB-10) to investigate the RECs identified in the June 11, 2005 Phase I ESA completed by PME. Soil and groundwater samples were collected for laboratory analysis based on a change in lithology, elevated photo ionization detector (PID) or from the likely source depth. Soil and groundwater samples were submitted for laboratory analysis of VOCs, PNAs, PCBs, cadmium, chromium and lead, or some combination thereof. The soil boring locations are depicted on Figure 3. Soil boring logs are included in Appendix A. The soil boring/temporary monitoring well logs are presented within Appendix F. The selections of soil boring/temporary monitoring well locations (Figure 3) was based on the RECs identified in the Phase I ESA, and are as follows:

##### Description of Soil Boring Locations

Location (Total Depth)	Sample Depth (feet bgs)	Analysis	Objectives	Soil and/or Groundwater Sample Selection (justification)	
SB/TMW-1 (15.0)	2.5-3.5	VOCs, PNAs and lead	Assess the former gasoline dispenser locations	<b>Soil:</b> Above the zone of saturation <b>Groundwater:</b> Sampled	
SB/TMW-2 (16.0)	3.0-4.0			Assess the former UST basin	<b>Soil:</b> Sand/clay interface <b>Groundwater:</b> Not encountered
SB-3 (15.0)					<b>Soil:</b> Vertical delineation <b>Groundwater:</b> Sampled
SB-4 (14.0)	2.5-3.5		Assess the former fuel oil UST.	<b>Soil:</b> Highest PID reading (347 ppm) <b>Groundwater:</b> Not encountered	
SB/TMW-5 (16.0)	11.5-12.5			<b>Soil:</b> Vertical delineation <b>Groundwater:</b> Not encountered	
SB-6 (15.0)	8.0-9.0	BTEX, TMBs and PNAs	Assess former service operations, hoists and staining observed during the Phase I ESA walkover.	<b>Soil:</b> Highest PID reading (23 ppm) <b>Groundwater:</b> Sampled	
	11.0-12.0			<b>Soil:</b> Highest PID reading (60 ppm) <b>Groundwater:</b> Not encountered	
SB/TMW-7 (13.0)	4.0-5.0	VOCs, PNAs, PCBs, cadmium, chromium, lead and glycols	Assess former waste oil UST and current AST	<b>Soil:</b> Highest PID reading (6.0 ppm) <b>Groundwater:</b> Sampled	
SB-8 (13.0)	8.0-9.0			<b>Soil:</b> Highest PID reading (7.6 ppm) <b>Groundwater:</b> Not encountered	
SB/TMW-9 (10.0)	6.0-7.0	VOCs, PNAs, PCBs, cadmium, chromium and lead	Assess former waste oil UST and current AST	<b>Soil:</b> Highest PID reading (6.0 ppm) <b>Groundwater:</b> Sampled	
SB-10 (15.0)	3.0-4.0			<b>Soil:</b> Highest PID reading (7.6 ppm) <b>Groundwater:</b> Not encountered	

Soils collected from one-foot sample intervals were screened using a PID to determine if VOCs were present. Soil from specific depths was placed in plastic bags, sealed, and allowed to volatilize. The headspace within each bag was then monitored with the PID. The PID is able to detect trace levels of organic compounds in the air space within the plastic bag. The PID utilizes a 10.2 electron volts (eV) lamp. Therefore, the PID can only detect organic vapors with ionization potential less than or equal to 10.2 eV. Soil samples were collected from the soil borings based upon the highest PID reading, visual/olfactory evidence, a change in geology, surficial soil, and/or directly above saturated soil.

During drilling operations, the drilling equipment was cleaned to minimize the possibility of cross contamination. These procedures included cleaning equipment with a phosphate free solution and rinsing with tap, deionized, or distilled water after each sample collection. Drilling and sampling equipment was cleaned in this manner or with a high-temperature pressure washer, prior to field activities.

Soil samples for VOC analysis were preserved with methanol, in accordance with EPA method 5035, and then placed in appropriately labeled containers with Teflon lined lids and/or sanitized glass jars, placed in a cooler maintained at approximately six degrees Celsius, and transported under chain of custody procedures for laboratory analysis within applicable holding times.

Temporary monitoring wells were installed in the soil borings to collect groundwater samples for chemical analysis. New well assemblies were used for the temporary wells, consisting of a 5-foot long, one-inch diameter, 0.010-inch slot, schedule 40, PVC screen and a 1-inch diameter PVC casing was lowered into each borehole. After the screen for the well was set to the desired depth, natural sands were allowed to collapse around the well screen. The wells were developed using either a new disposable 0.9-inch diameter bailer or peristaltic pump equipped with new, chemically inert, 3/8-inch diameter polyethylene and silicon tubing. Well development was performed by purging until clear, turbid free groundwater was observed coming from the well. Well depth, well materials, and screened interval are documented on the well construction diagrams presented in Appendix F.

Groundwater samples from temporary monitoring wells were collected using low-flow sampling methods and protocols in general accordance with the October 22, 2004 MDEQ *Operational Memorandum No. 2 Sampling and Analysis, Attachment 5 Collection of Samples for Comparison to Generic Criteria*. The wells were sampled using a peristaltic pump equipped with new, chemically inert, 3/8-inch diameter polyethylene and silicon tubing. Wells of sufficient yield were purged at low levels from the well screen area, the groundwater levels were monitored (2-inch diameter wells only) to verify minimal drawdown, and the physical parameters of temperature, pH, dissolved oxygen, specific conductivity, and turbidity were monitored for stabilization prior to sampling. After sampling was completed, purge water that was contained separately was returned to the well.

Upon completion of the investigation, the soil borings were abandoned by placing the soil cuttings back into the borehole, filling the void with bentonite chips, hydrating the chips, resurfacing and returning the area to its pre-drilling condition.

## **4.2 Geology**

The description of the subsurface conditions provided below was derived from onsite observations of soil samples and cuttings collected from the ten soil borings that were installed by PME in September 2008.

In general, fine-grained sand was encountered up to a depth of approximately 5.0 feet bgs, underlain by stiff clay to 16.0 feet bgs, the maximum depth explored. Refer to Appendix F for copies of the soil boring logs for all borings advanced at the subject property by PME.

## **4.3 Hydrogeology**

Groundwater was encountered at approximately 4.0 feet bgs in five (5) of PME's ten (10) soil borings. Based upon the discontinuous nature of the groundwater encountered during PME's site investigation, the groundwater present likely does not meet the definition of potable groundwater as defined in the February 2007 MDEQ Operational Memorandum No. 4: Site Characterization and Remediation Verification – Attachment 10, Peer Review.

Review of MDEQ Wellhead Protection Program documents indicates the subject property is not located within a wellhead protection zone.

## **4.4 Chemical Analysis**

A total of 11 soil samples and five (5) groundwater samples were collected from the subject property and submitted to Merit Laboratories, Inc. East Lansing, Michigan, for chemical analysis. Samples were submitted for analysis of full scan VOCs, PNAs, PCBs, cadmium, chromium, lead and glycols, or some combination thereof. The compounds analyzed and EPA methods are summarized in the analytical report included as Appendix E.

## **4.5 Analytical Results**

The analytical results for the soil and groundwater samples collected by PME in September 2008 were compared with the State of Michigan Generic Cleanup Criteria (GCC) and Screening Levels as stated in Attachment 1 to MDEQ Operational Memorandum Number 1 "Part 201 Cleanup Criteria and Part 213 Risk-Based Screening Levels," January 23, 2006, using the Tier 1 Residential/Commercial/Industrial RBSLs.

The soil and groundwater analytical data is summarized in Table 1 through Table 6 and Figure 3 and Figure-4. CAS numbers and the known contaminant concentrations for each target analyte are compared to the Part 213 Tier 1 RBSLs in the above referenced tables.

The analytical results are summarized in the table below:

Location (Total Depth)	Sample Depth (feet bgs)	Analysis	Objectives	Soil Exceedance (Residential Part 213 RBSLs)	Groundwater Exceedances (Residential Part 213 RBSLs)
SB/TMW-1 (15.0)	2.5-3.5	VOCs, PNAs and lead	Assess the former gasoline dispenser locations	None	None
SB/TMW-2 (16.0)	3.0-4.0				
SB-3 (15.0)					
SB-4 (14.0)	2.5-3.5				
SB/TMW-5 (16.0)	11.5-12.5		Assess the former UST basin		DW (lead)
SB-6 (15.0)	8.0-9.0	BTEX, TMBs and PNAs	Assess the fuel oil UST.	DWP and/or GSIP (VOCs)	None
	11.0-12.0				
SB/TMW-7 (13.0)	4.0-5.0	VOCs, PNAs, PCBs, cadmium, chromium, lead and glycols	Assess former service operations, hoists and staining	None	DW and/or GSI (VOCs and/or lead and chromium)
SB-8 (13.0)	8.0-9.0			DWP (VOCs)	None
SB/TMW-9 (10.0)	6.0-7.0	VOCs, PNAs, PCBs, cadmium, chromium and lead	Assess former waste oil UST and current AST	None	DW and/or GSI (chromium and/or lead)
SB-10 (15.0)	3.0-4.0			DWP (VOCs)	None

A location where a hazardous substance is present in excess of the concentrations which satisfy the requirements of subsection 20120a(1)(a) or (17) is a facility pursuant to Part 201. Section 20120a(1)(1) requirements are the Cleanup Criteria for unrestricted residential usage. Soil and/or groundwater contaminant concentrations identified on the subject property indicate exceedance of the MDEQ Part 213 Residential/Commercial/Industrial DWP, DW, GSIP and/or GSI RBSLs. **Therefore the subject property is considered a facility under Part 201 of P.A 451, as amended, and the rules promulgated thereunder.** Analytical results for the soil and groundwater samples collected from the subject property by PME are included within Appendix E of this report.

#### 4.6 Abandoned Containers

Hazardous materials and/or petroleum products and their associated containers (i.e., ASTs and 55-gallon drums) will be removed before or within 45-days of Royal 7 Properties, LLC purchasing the subject property.

## **5.0 LIKELIHOOD OF OTHER CONTAMINATION**

PME's Phase II ESA assessed the most likely areas of impact based upon the RECs identified at the subject property. Given the history of the subject property, the potential exists for contamination to exist in soil and/or groundwater in areas of the subject property that were not assessed by PME.

### **5.1 Surrounding Areas with Potential to Impact Subject property**

During PME's Phase I ESA and site investigations, PME performed limited visual observations of the surrounding properties (Figure 2) in an attempt to identify areas of potential environmental risk to the subject property resulting from the former offsite usage/activities. Observations of surrounding properties were limited to accessible public areas and areas that could be readily observed from the subject property. The properties adjoining the property are used for mixed commercial purposes. Based on review of the Phase I ESA, and soil/groundwater analytical results of PME investigation, the adjoining properties do not appear to have impacted the subject property.

## **6.0 ALTERNATIVE APPROACHES**

Not applicable.

## **7.0 CONCLUSIONS**

The subject property covers 0.39 acres and is occupied by a 1,917 square foot automotive service garage located in the southeastern portion of the property. The majority of the current subject property building was originally constructed in 1953, with an addition to the eastern portion of the building in 1980. The current building is divided into a lobby area, a service garage, storage areas, and a bathroom. Asphalt paved driveways and parking areas are located to the north and west of the subject property building. Current operations consist of typical automotive service operations (i.e., oil changes, automotive fluid replacement, etc.).

Analytical results from PME's September 2008 Phase II ESA identified concentrations of contaminants in soil and/or groundwater above applicable MDEQ Part 213 Tier 1 Residential and/or Commercial DWP, DW, GSIP and/or GSI RBSLs. **Therefore, the subject property is a facility, according to Part 201 of P.A. 451, as amended, and the rules promulgated thereunder.**

PME understands that no hazardous substances are proposed to be used or stored at the subject property in quantities greater than typical residential or office quantities. **There will be no significant hazardous substance use at the property and this stipulated condition is the basis for being able to distinguish existing contamination from a new release.**

## **8.0 REFERENCES**

MDEQ *Operational Memorandum No. 1 "Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels,"* Revised December 10, 2004;

**MDEQ Operational Memorandum No. 4, Site characterization and Remediation Verification – Attachment 10, (Peer Review Draft) Groundwater Not in an Aquifer**, dated February 2007;

**MDEQ Operational Memorandum No. 2 “Sampling and Analysis,”** October 22, 2004, Effective February 1, 2005;

**MDEQ Instructions for Preparing and Disclosing Baseline Environmental Assessments and Section 7a Compliance Analyses**, Effective March 11, 1999;

**Phase I Environmental Site Assessment** for the Automotive Service Garage located at 3380 in Royal Oak, Michigan, prepared by PME, dated June 11, 2008.

## **9.0 ATTACHMENTS**

Copies of the following report or information that were used as the basis of this assessment are attached:

### **TABLES**

1. MDEQ Part 213 Tier 1 RBSLs for Soils: VOCs
2. MDEQ Part 213 Tier 1 RBSLs for Soils: PNAs
3. MDEQ Part 213 Tier 1 RBSLs for Soils: Metals, PCBs and Glycols
4. MDEQ Part 213 Tier 1 RBSLs for Groundwater: VOCs
5. MDEQ Part 213 Tier 1 RBSLs for Groundwater: PNAs
6. MDEQ Part 213 Tier 1 RBSLs for Groundwater: Metals, PCBs and Glycols

### **FIGURES**

5. Site Vicinity Map
6. Generalized Diagram of the Subject Property and Adjoining Properties
7. Soil Boring and Temporary Monitoring Well Locations with Soil Analytical Results
8. Soil Boring and Temporary Monitoring Well Locations with Groundwater Analytical Results

### **APPENDICES**

- Appendix A: Professional Resumes
- Appendix B: Previous Site Investigations
- Appendix C: Assessing Records
- Appendix D: Color Photographs
- Appendix E: Laboratory Analytical Results
- Appendix F: Soil Boring Logs

*Category-N Baseline Environmental Assessment for the Automotive Service Garage  
Located at 3380 Greenfield Road in Royal Oak, Michigan  
PM Environmental, Inc. Project No. 02-3159-1; October 10, 2008*

This report has been reviewed for its completeness and accuracy. Please feel free to contact our office at 248-336-9988 to discuss this report.

**REPORT PREPARED BY:**  
PM Environmental, Inc.



Brian Chmielewski  
Project Geologist

**REPORT REVIEWED BY:**  
PM Environmental, Inc.



Steve Price  
Vice President of Due Diligence

# Tables

**TABLE 1  
TIER 1 RBSL COMPARISON FOR SOILS  
VOLATILE ORGANIC COMPOUNDS  
3380 GREENFIELD ROAD IN ROYAL OAK, MICHIGAN  
PME PROJECT #02-3159-1**

VOLATILE ORGANIC COMPOUNDS (µg/Kg)			Benzene	n-Butylbenzene	sec-Butylbenzene	1,2-Dichloroethane	Ethylbenzene	Ethylene dibromide (EDB) (1,2-Dibromoethane)	Isopropyl benzene	Methyl-tert-butyl ether (MTBE)	n-Propylbenzene	Toluene	1,2,3-Trimethylbenzene*	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Xylenes	Other VOCs	
Chemical Abstract Service Number (CAS#)			71432	104518	135988	107062	100414	106934	98828	1634044	103651	108883	526738	95636	108678	1330207	Various	
Sample ID	Sample Date	Sample Depth (bgs)																
SB-1	09/03/2008	2.5-3.5	<50	<50	<50	<50	<50	<20	<300	<200	<100	<100	<100	<100	<100	<150	ND	
SB-2	09/04/2008	3.0-4.0	<50	<50	<50	<50	<50	<20	<300	<200	<100	<100	<100	<100	<100	<150	ND	
SB-3	09/03/2008	3.0-4.0	<50	<50	<50	<50	<50	<20	<300	<200	<100	<100	<100	<100	<100	<150	ND	
SB-4	09/03/2008	2.5-3.5	<60	<60	<60	<60	<60	<20	<300	<200	<100	<100	<100	<100	<100	<160	ND	
SB-5	09/03/2008	11.5-12.5	<60	<60	<60	<60	<60	<20	<300	<200	<100	<100	<100	<100	<100	<160	ND	
SB-6	09/03/2008	8.0-9.0	<600	NA	NA	NA	<b>1,600</b>	NA	4,000	NA	<b>12,000</b>	<600	<b>2,000</b>	<1,000	<1,000	<1600	ND	
SB-6	09/03/2008	11.0-12.0	<50	NA	NA	NA	<50	NA	<200	NA	<100	<50	<100	<100	<100	<150	ND	
SB-7	09/03/2008	4.0-5.0	<60	<60	<60	<60	<60	<20	<300	<200	<100	<100	<100	<100	<100	<160	ND	
SB-8	09/03/2008	8.0-9.0	100	650	200	<60	130	<20	500	<200	<b>1,900</b>	<100	<100	<100	<100	<160	ND	
SB-9	09/04/2008	6.0-7.0	<60	<60	<60	<60	<60	<20	<300	<200	<100	<100	<100	<100	<100	<160	ND	
SB-10	09/04/2008	3.0-4.0	<b>120</b>	230	110	<60	90	<30	500	<300	1,400	<100	<100	<100	<100	<160	ND	
MDEQ-RRD Operational Memorandum No. 1: Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels (RBSLs), January 23, 2006 Attachment 1: Soil Tables 2 and 3 Residential, Commercial, and Industrial Part 201 Generic Cleanup Criteria and Screening Levels; Part 213 Tier 1 RBSLs																		
<b>Residential/Commercial I (µg/Kg)</b>																		
Statewide Default Background Levels	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Drinking Water Protection (DWP) RBSL	100	1,600	1,600	100	1,500	20 (M)	91,000	800	1,600	16,000	1,800	2,100	1,800	5,600	Various			
Groundwater Surface Water Interface Protection (GSIP) RBSL	4,000 (X)	NA	ID	7,200 (X)	360	20 (M)	ID	15,000 (X)	NA	2,800	570	570	1,100	700	Various			
GSIP Human Drinking Water RBSL	240	NA	NA	120	NA	NA	NA	2,000	NA	NA	NA	NA	NA	NA	Various			
Groundwater Contact Protection (GCP) RBSL	2.2E+5	1.2E+5	88,000	3.8E+5	1.4E+5 (C)	500	3.9E+5 (C)	5.9E+6 (C)	3.0E+5	2.5E+5 (C)	94,000 (C)	1.1E+5 (C)	94,000 (C)	1.5E+5 (C)	Various			
Soil Volatilization to Indoor Air Inhalation (SVII) RBSL	1,600	ID	ID	2,100	87,000	670	3.9E+5 (C)	5.9E+6 (C)	ID	2.5E+5 (C)	94,000 (C)	1.1E+5 (C)	94,000 (C)	1.5E+5 (C)	Various			
Ambient Air Infinite Source Volatile Soil Inhalation (VSI) RBSL	13,000	ID	ID	6,200	7.2E+5	1,700	1.7E+6	2.5E+7	ID	2.8E+6	1.6E+7	2.1E+7	1.6E+7	4.6E+7	Various			
Ambient Air Finite VSI RBSL for 5 Meter Source Thickness	34,000	ID	ID	11,000	1.0E+6	1,700	1.7E+6	3.9E+7	ID	5.1E+6	3.8E+8	5.0E+8	3.8E+8	6.1E+7	Various			
Ambient Air Finite VSI RBSL for 2 Meter Source Thickness	79,000	ID	ID	26,000	2.2E+6	3,300	2.8E+6	8.7E+7	ID	1.2E+7	3.8E+8	5.0E+8	3.8E+8	1.3E+8	Various			
Ambient Air Particulate Soil Inhalation (PSI) RBSL	3.8E+8	ID	ID	1.2E+8	1.0E+10	1.4E+7	5.8E+9	2.0E+11	1.3E+9	2.7E+10	8.2E+10	8.2E+10	8.2E+10	2.9E+11	Various			
Direct Contact (DC) RBSL	1.8E+5	2.5E+6	2.5E+6	91,000	1.4E+5 (C)	92	3.9E+5 (C)	1.5E+6	2.5E+6	2.5E+5 (C)	94,000 (C)	1.1E+5 (C)	94,000 (C)	1.5E+5 (C)	Various			
Soil Saturation Concentration Screening Levels (Csat)	4.0E+5	1.0E+7	1.0E+7	1.2E+6	1.4E+5	8.9E+5	3.9E+5	5.9E+6	1.0E+7	2.5E+5	94,000	1.1E+5	94,000	1.5E+5	Various			
<b>Industrial/Commercial II, III, IV (µg/Kg)</b>																		
Industrial And Commercial Drinking Water Protection (DWP) RBSL	100	4,600	4,600	100	1,500	20 (M)	2.6E+5	800	4,600	16,000	1,800	2,100	1,800	5,600	Various			
Soil Volatilization to Indoor Air Inhalation (SVII) RBSL	8,400	ID	ID	11,000	1.4E+5 (C)	3,600	3.9E+5 (C)	5.9E+6 (C)	ID	2.5E+5 (C)	94,000 (C)	1.1E+5 (C)	94,000 (C)	1.5E+5 (C)	Various			
Ambient Air Infinite Source Volatile Soil Inhalation (VSI) RBSL	45,000	ID	ID	21,000	2.4E+6	5,800	2.0E+6	3.0E+7	ID	3.3E+6	1.9E+7	2.5E+7	1.9E+7	5.4E+7	Various			
Ambient Air Finite VSI RBSL for 5 Meter Source Thickness	99,000	ID	ID	33,000	3.1E+6	5,800	2.0E+6	4.1E+7	ID	3.6E+7	4.6E+8	6.0E+8	4.6E+8	6.5E+7	Various			
Ambient Air Finite VSI RBSL for 2 Meter Source Thickness	2.3E+5	ID	ID	74,000	6.5E+6	9,800	3.0E+6	8.9E+7	ID	3.6E+7	4.6E+8	6.0E+8	4.6E+8	1.3E+8	Various			
Ambient Air Particulate Soil Inhalation (PSI) RBSL	4.7E+8	ID	ID	1.5E+8	1.3E+10	1.8E+7	2.6E+9	8.8E+10	5.9E+8	1.2E+10	3.6E+10	3.6E+10	3.6E+10	1.3E+11	Various			
Direct Contact (DC) RBSL - Industrial and Commercial II	4.0E+5 (C)	8.0E+6	8.0E+6	4.2E+5	1.4E+5 (C)	430	3.9E+5 (C)	5.9E+6 (C)	8.0E+6	2.5E+5 (C)	94,000 (C)	1.1E+5 (C)	94,000 (C)	1.5E+5 (C)	Various			
DC RBSL - Commercial III	4.0E+5 (C)	1.0E+7 (C)	1.0E+7 (C)	5.9E+5	1.4E+5 (C)	600	3.9E+5 (C)	5.9E+6 (C)	1.0E+7 (C)	2.5E+5 (C)	94,000 (C)	1.1E+5 (C)	94,000 (C)	1.5E+5 (C)	Various			
DC RBSL - Commercial IV	4.0E+5 (C)	9.4E+6	9.4E+6	4.9E+5	1.4E+5 (C)	500	3.9E+5 (C)	5.9E+6 (C)	9.4E+6	2.5E+5 (C)	94,000 (C)	1.1E+5 (C)	94,000 (C)	1.5E+5 (C)	Various			

  Applicable Criteria Exceeded  
**BOLD** Value Exceeds Applicable Criteria  
 ND Not detected at levels above the laboratory Method Detection Limit (MDL) or Minimum Quantitative Level (MQL)  
 bgs Below Grade Surface (feet)  
 NL Not Listed  
 \* 1,2,3-Trimethylbenzene RBSLs based on the more restrictive of 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene per MDEQ guidance.

**TABLE 2  
TIER 1 RBSL COMPARISON FOR SOILS  
POLYNUCLEAR AROMATIC COMPOUNDS  
3380 GREENFIELD ROAD IN ROYAL OAK, MICHIGAN  
PME PROJECT #02-3159-1**

POLYNUCLEAR AROMATIC COMPOUNDS (µg/Kg)			Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	2-Methylnaphthalene		
Chemical Abstract Service Number (CAS#)			83329	208968	120127	56553	50328	205992	207089	191242	218019	53703	206440	86737	193395	91203	85018	129000	91576		
Sample ID	Sample Date	Sample Depth (bgs)																			
SB-1	09/03/2008	2.5-3.5	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	
SB-2	09/04/2008	3.0-4.0	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	
SB-3	09/03/2008	3.0-4.0	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	
SB-4	09/03/2008	2.5-3.5	<400	<400	<400	500	400	500	400	<400	600	<400	1,600	<400	<400	<400	700	1,200	<400	<400	
SB-5	09/03/2008	11.5-12.5	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	
SB-6	09/03/2008	8.0-9.0	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	800	<300	<300	600	600	
SB-6	09/03/2008	11.0-12.0	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	
SB-7	09/03/2008	4.0-5.0	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	
SB-8	09/03/2008	8.0-9.0	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	400	<300	<300	500	500	
SB-9	09/04/2008	6.0-7.0	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	
SB-10	09/04/2008	3.0-4.0	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	
<b>MDEQ-RRD Operational Memorandum No. 1: Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels (RBSLs), January 23, 2006</b>																					
<b>Attachment 1: Soil Tables 2 and 3 Residential, Commercial, and Industrial Part 201 Generic Cleanup Criteria and Screening Levels; Part 213 Tier 1 RBSLs</b>																					
<b>Residential/Commercial I (µg/Kg)</b>																					
<b>Statewide Default Background Levels</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
<b>Drinking Water Protection (DWP) RBSL</b>	3.0E+5	5.900	41,000	NLL	NLL	NLL	NLL	NLL	NLL	NLL	NLL	7.3E+5	3.9E+5	NLL	35,000	56,000	4.8E+5	57,000	57,000	57,000	
<b>Groundwater Surface Water Interface Protection (GSIP) RBSL</b>	4,400	ID	ID	NLL	NLL	NLL	NLL	NLL	NLL	NLL	NLL	5,500	5,300	NLL	870	5,300	ID	ID	ID	ID	
<b>GSIP Human Drinking Water RBSL</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
<b>Groundwater Contact Protection (GCP) RBSL</b>	9.7E+5	4.4E+5	41,000	NLL	NLL	NLL	NLL	NLL	NLL	NLL	NLL	7.3E+5	8.9E+5	NLL	2.1E+6	1.1E+6	4.8E+5	5.5E+6	5.5E+6	5.5E+6	
<b>Soil Volatilization to Indoor Air Inhalation (SVII) RBSL</b>	1.9E+8	1.6E+6	1.0E+9 (D)	NLV	NLV	ID	NLV	NLV	ID	NLV	1.0E+9 (D)	5.8E+8	NLV	2.5E+5	2.8E+6	1.0E+9 (D)	ID	ID	ID	ID	
<b>Ambient Air Infinite Source Volatile Soil Inhalation (VSI) RBSL</b>	8.1E+7	2.2E+6	1.4E+9	NLV	NLV	ID	NLV	NLV	ID	NLV	7.4E+8	1.3E+8	NLV	3.0E+5	1.6E+5	6.5E+8	ID	ID	ID	ID	
<b>Ambient Air Finite VSI RBSL for 5 Meter Source Thickness</b>	8.1E+7	2.2E+6	1.4E+9	NLV	NLV	ID	NLV	NLV	ID	NLV	7.4E+8	1.3E+8	NLV	3.0E+5	1.6E+5	6.5E+8	ID	ID	ID	ID	
<b>Ambient Air Finite VSI RBSL for 2 Meter Source Thickness</b>	8.1E+7	2.2E+6	1.4E+9	NLV	NLV	ID	NLV	NLV	ID	NLV	7.4E+8	1.3E+8	NLV	3.0E+5	1.6E+5	6.5E+8	ID	ID	ID	ID	
<b>Ambient Air Particulate Soil Inhalation (PSI) RBSL</b>	1.4E+10	2.3E+9	6.7E+10	ID	1.5E+6	ID	ID	8.0E+8	ID	ID	9.3E+9	9.3E+9	ID	2.0E+8	6.7E+6	6.7E+9	ID	ID	ID	ID	
<b>Direct Contact (DC) RBSL</b>	4.1E+7	1.6E+6	2.3E+8	20,000	2,000	20,000	2.0E+5	2.5E+6	2.0E+6	2,000	4.6E+7	2.7E+7	20,000	1.6E+7	1.6E+6	2.9E+7	8.1E+6	8.1E+6	8.1E+6	8.1E+6	
<b>Soil Saturation Concentration Screening Levels (C<sub>sat</sub>)</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
<b>Industrial/Commercial II, III, IV (µg/Kg)</b>																					
<b>Industrial And Commercial Drinking Water Protection (DWP) RBSL</b>	8.8E+5	17,000	41,000	NLL	NLL	NLL	NLL	NLL	NLL	NLL	7.3E+5	8.9E+5	NLL	1.0E+5	1.6E+5	4.8E+5	1.7E+5	1.7E+5	1.7E+5	1.7E+5	
<b>Soil Volatilization to Indoor Air Inhalation (SVII) RBSL</b>	3.5E+8	3.0E+6	1.0E+9 (D)	NLV	NLV	ID	NLV	NLV	ID	NLV	1.0E+9 (D)	1.0E+9 (D)	NLV	4.7E+5	5.1E+6	1.0E+9 (D)	ID	ID	ID	ID	
<b>Ambient Air Infinite Source Volatile Soil Inhalation (VSI) RBSL</b>	9.7E+7	2.7E+6	1.6E+9	NLV	NLV	ID	NLV	NLV	ID	NLV	8.9E+8	1.5E+8	NLV	3.5E+5	1.9E+5	7.8E+8	ID	ID	ID	ID	
<b>Ambient Air Finite VSI RBSL for 5 Meter Source Thickness</b>	9.7E+7	2.7E+6	1.6E+9	NLV	NLV	ID	NLV	NLV	ID	NLV	8.9E+8	1.5E+8	NLV	3.5E+5	1.9E+5	7.8E+8	ID	ID	ID	ID	
<b>Ambient Air Finite VSI RBSL for 2 Meter Source Thickness</b>	9.7E+7	2.7E+6	1.6E+9	NLV	NLV	ID	NLV	NLV	ID	NLV	8.9E+8	1.5E+8	NLV	3.5E+5	1.9E+5	7.8E+8	ID	ID	ID	ID	
<b>Ambient Air Particulate Soil Inhalation (PSI) RBSL</b>	6.2E+9	1.0E+9	2.9E+10	ID	1.9E+6	ID	ID	3.5E+8	ID	ID	4.1E+9	4.1E+9	ID	8.8E+7	2.9E+6	2.9E+9	ID	ID	ID	ID	
<b>Direct Contact (DC) RBSL - Industrial and Commercial II</b>	1.3E+8	5.2E+6	7.3E+8	80,000	8,000	80,000	8.0E+5	7.0E+6	8.0E+6	8,000	1.3E+8	8.7E+7	80,000	5.2E+7	5.2E+6	8.4E+7	2.6E+7	2.6E+7	2.6E+7	2.6E+7	
<b>DC RBSL - Commercial III</b>	1.8E+8	7.2E+6	1.0E+9	1.6E+5	16,000	1.6E+5	1.6E+6	1.4E+7	1.6E+7	16,000	2.4E+8	1.2E+8	1.6E+5	7.2E+7	7.2E+6	1.5E+8	3.7E+7	3.7E+7	3.7E+7	3.7E+7	
<b>DC RBSL - Commercial IV</b>	1.5E+8	6.1E+6	8.6E+8	1.1E+5	11,000	1.1E+5	1.1E+6	9.5E+6	1.1E+7	11,000	1.7E+8	1.0E+8	1.1E+5	6.1E+7	6.1E+6	1.1E+8	3.1E+7	3.1E+7	3.1E+7	3.1E+7	

Applicable Criteria Exceeded  
**BOLD** Value Exceeds Applicable Criteria  
 bgs Below Grade Surface (feet)

**TABLE 3**  
**TIER 1 RBSL COMPARISON FOR SOILS**  
**POLYCHLORINATED BIPHENYLS, METALS (Cadmium, Chromium, and Lead) AND GLYCOLS**  
**3380 GREENFIELD ROAD IN ROYAL OAK, MICHIGAN**  
**PME PROJECT #02-3159-1**

Polychlorinated Biphenyls (PCBs), Metals (Cadmium, Chromium, & Lead) and Glycols  (µg/Kg)			Polychlorinated Biphenyls	Cadmium	Chromium	Lead	Glycols
Chemical Abstract Service Number (CAS#)			1336363	7440439	16065831	7439921	Various
Sample ID	Sample Date	Sample Depth (bgs)	PCBs	Metals			
SB-1	09/03/2008	2.5-3.5	NA	NA	NA	1,740	NA
SB-2	09/04/2008	3.0-4.0	NA	NA	NA	1,770	NA
SB-3	09/03/2008	3.0-4.0	NA	NA	NA	1,560	NA
SB-4	09/03/2008	2.5-3.5	NA	NA	NA	23,000	NA
SB-5	09/03/2008	11.5-12.5	NA	NA	NA	5,740	NA
SB-6	09/03/2008	8.0-9.0	NA	NA	NA	NA	NA
SB-6	09/03/2008	11.0-12.0	NA	NA	NA	NA	NA
SB-7	09/03/2008	4.0-5.0	<330	<200	<1,000	4,850	<MDLs
SB-8	09/03/2008	8.0-9.0	<330	<200	4,600	7,060	NA
SB-9	09/04/2008	6.0-7.0	<330	<200	4,100	5,360	NA
SB-10	09/04/2008	3.0-4.0	<330	<200	3,600	6,340	NA
<b>MDEQ-RRD Operational Memorandum No. 1: Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels (RBSLs), January 23, 2006</b> <b>Attachment 1: Soil Tables 2 and 3 Residential, Commercial, and Industrial Part 201 Generic Cleanup Criteria and Screening Levels; Part 213 Tier 1 RBSLs</b>							
<b>Residential/Commercial I (µg/Kg)</b>							
<b>Statewide Default Background Levels</b>			NA	1,200	18,000	21,000	Various
<b>Drinking Water Protection (DWP) RBSL</b>			NLL	6,000	30,000	7.0E+5	Various
<b>Groundwater Surface Water Interface Protection (GSIP) RBSL</b>			NLL	{G,X}	3,300	{G,M,X}	Various
<b>GSIP Human Drinking Water RBSL</b>			NA	{G,X}	{G,X}	{G,X}	Various
<b>Groundwater Contact Protection (GCP) RBSL</b>			NLL	2.3E+8	1.4E+8	ID	Various
<b>Soil Volatilization to Indoor Air Inhalation (SVII) RBSL</b>			3.0E+6	NLV	NLV	NLV	Various
<b>Ambient Air Infinite Source Volatile Soil Inhalation (VSI) RBSL</b>			2.4E+5	NLV	NLV	NLV	Various
<b>Ambient Air Finite VSI RBSL for 5 Meter Source Thickness</b>			7.9E+6	NLV	NLV	NLV	Various
<b>Ambient Air Finite VSI RBSL for 2 Meter Source Thickness</b>			7.9E+6	NLV	NLV	NLV	Various
<b>Ambient Air Particulate Soil Inhalation (PSI) RBSL</b>			5.2E+6	1.7E+6	2.6E+5		Various
<b>Direct Contact (DC) RBSL</b>			{T}	5.5E+5	2.5E+6	4.0E+5	Various
<b>Soil Saturation Concentration Screening Levels (Csat)</b>			NA	NA	NA	NA	Various
<b>Industrial/Commercial II, III, IV (µg/Kg)</b>							
<b>Industrial And Commercial Drinking Water Protection (DWP) RBSL</b>			NLL	6,000	30,000	7.0E+5	Various
<b>Soil Volatilization to Indoor Air Inhalation (SVII) RBSL</b>			1.6E+7	NLV	NLV	NLV	Various
<b>Ambient Air Infinite Source Volatile Soil Inhalation (VSI) RBSL</b>			8.1E+5	NLV	NLV	NLV	Various
<b>Ambient Air Finite VSI RBSL for 5 Meter Source Thickness</b>			2.8E+7	NLV	NLV	NLV	Various
<b>Ambient Air Finite VSI RBSL for 2 Meter Source Thickness</b>			2.8E+7	NLV	NLV	NLV	Various
<b>Ambient Air Particulate Soil Inhalation (PSI) RBSL</b>			6.5E+6	2.2E+6	2.4E+5		Various
<b>Direct Contact (DC) RBSL - Industrial and Commercial II</b>			{T}	2.1E+6	9.2E+6	9.0E+5 (DD)	Various
<b>DC RBSL - Commercial III</b>			{T}	2.1E+6	1.0E+7	4.0E+5	Various
<b>DC RBSL - Commercial IV</b>			{T}	2.1E+6	9.6E+6	4.0E+5	Various

- Applicable Criteria Exceeded
- BOLD** Value Exceeds Applicable Criteria
- bgs Below Grade Surface (feet)
- 1 Maximum of analyzed or calculated total lead value.

**TABLE 5  
TIER 1 RBSL COMPARISON FOR GROUNDWATER  
POLYNUCLEAR AROMATIC COMPOUNDS  
3380 GREENFIELD ROAD IN ROYAL OAK, MICHIGAN  
PME PROJECT #02-3159-1**

POLYNUCLEAR AROMATIC COMPOUNDS (µg/L)			Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	2-Methylnaphthalene	
Chemical Abstract Service Number (CAS#)			83329	208968	120127	56553	50328	205992	207089	191242	218019	53703	206440	86737	193395	91203	85018	129000	91576	
Sample ID	Sample Date	Screen Depth (bgs)																		
TMW-1	09/03/2008	1.5-6.5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
TMW-2	09/04/2008	2.10-7.10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
TMW-5	09/03/2008	1.0-6.0	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
TMW-7	09/03/2008	2.70-7.70	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
TMW-9	09/04/2008	1.0-6.0	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
<b>MDEQ-RRD Operational Memorandum No. 1: Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels (RBSLs), January 23, 2006</b>																				
<b>Attachment 1: Table 1. Groundwater: Residential and Industrial-Commercial, Part 201 Generic Cleanup Criteria and Screening Levels; Part 213 Tier 1 RBSLs</b>																				
<b>Residential/Commercial/Industrial (µg/L)</b>																				
<b>Residential &amp; Commercial I Drinking Water (DW) RBSL</b>	1,300	52	43 (S)	2.1	5.0 (A)	1.5 (S,AA)	1.0 (M)	1.0 (M)	1.6 (S)	2.0 (M)	210 (S)	880	2.0 (M)	520	52	140 (S)	260			
<b>Industrial &amp; Commercial II, III &amp; IV Drinking Water RBSL (Ind/Com DW)</b>	3,800	150	43 (S)	8.5	5.0 (A)	1.5 (S,AA)	1.0 (M)	1.0 (M)	1.6 (S)	2.0 (M)	210 (S)	2,000 (S)	2.0 (M)	1,500	150	140 (S)	750			
<b>Groundwater Surface Water Interface (GSI) RBSL</b>	19	ID	ID	ID	ID	ID	NA	NA	ID	ID	1.6	12	ID	13	2.4	ID	ID			
<b>GSI Final Acute Values (FAV) <sup>1</sup></b>	200	ID	ID	ID	ID	ID	NL	NL	ID	ID	28	220	ID	200	43	ID	ID			
<b>GSI Human Drinking Water RBSL</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
<b>Residential &amp; Commercial I Groundwater Volatilization to Indoor Air Inhalation RBSL (Res GVII)</b>	4,200 (S)	3,900 (S)	43 (S)	NLV	NLV	ID	NLV	NLV	ID	NLV	210 (S)	2,000 (S)	NLV	31,000 (S)	1,000 (S)	140 (S)	ID			
<b>Industrial &amp; Commercial II, III &amp; IV Groundwater Volatilization to Indoor Air Inhalation RBSL (Ind/Com GVII)</b>	4,200 (S)	3,900 (S)	43 (S)	NLV	NLV	ID	NLV	NLV	ID	NLV	210 (S)	2,000 (S)	NLV	31,000 (S)	1,000 (S)	140 (S)	ID			
<b>Groundwater Contact (GC) RBSL</b>	4,200 (S)	3,900 (S)	43 (S)	9.4 (S,AA)	1.0 (M,AA)	1.5 (S,AA)	1.0 (M,AA)	1.0 (M,AA)	1.6 (S,AA)	2.0 (M,AA)	210 (S)	2,000 (S)	2.0 (M,AA)	31,000 (S)	1,000 (S)	140 (S)	25,000 (S)			
<b>Screening Levels (µg/L)</b>																				
<b>Water Solubility</b>	4,240	3,930	43.4	9.4	1.62	1.5	0.8	0.26	1.6	2.49	206	1,980	0.022	31,000	1,000	135	24,600			
<b>Flammability and Explosivity Screening Level</b>	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	NA	ID	ID	ID		
<b>Acute Inhalation Screening Level</b>	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	31,000 (S)	ID	ID	ID		

Applicable Criteria Exceeded  
**BOLD** Value Exceeds Applicable Criteria  
bgs Below Grade Surface (feet)  
<sup>1</sup> Rule 323.1057 of Part 4 Water Quality Standards

**TABLE 6**  
**TIER 1 RBSL COMPARISON FOR GROUNDWATER**  
**POLYCHLORINATED BIPHENYLS, METALS (Cadmium, Chromium, and Lead) AND GLYCOLS**  
**3380 GREENFIELD ROAD IN ROYAL OAK, MICHIGAN**  
**PME PROJECT #02-3159-1**

Polychlorinated Biphenyls (PCBs), Metals (Cadmium, Chromium, & Lead) and Glycols  (µg/L)			Polychlorinated Biphenyls	Cadmium	Chromium	Lead	Glycols
Chemical Abstract Service Number (CAS#)			1336363	7440439	16065831	7439921	Various
Sample ID	Sample Date	Screen Depth (bgs)	PCBs	Metals			
TMW-1	09/03/2008	1.5-6.5	NA	NA	NA	<3	NA
TMW-2	09/04/2008	2.10-7.10	NA	NA	NA	<3	NA
TMW-5	09/03/2008	1.0-6.0	NA	NA	NA	6	NA
TMW-7	09/03/2008	2.70-7.70	<0.1	<0.5	24	6	<MDLs
TMW-9	09/04/2008	1.0-6.0	<0.1	1.2	17	117	NA
<b>MDEQ-RRD Operational Memorandum No. 1</b>							
<b>Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels (RBSLs), January 23, 2006</b>							
<b>Attachment 1: Table 1. Groundwater: Residential and Industrial-Commercial</b>							
<b>Part 201 Generic Cleanup Criteria and Screening Levels; Part 213 Tier 1 RBSLs</b>							
<b>Residential/Commercial/Industrial (µg/L)</b>							
<b>Residential &amp; Commercial I Drinking Water (DW) RBSL</b>			0.5 (A)	5.0 (A)	100 (A)	4.0 (L)	Various
<b>Industrial &amp; Commercial II, III &amp; IV Drinking Water RBSL (Ind/Com DW)</b>			0.5 (A)	5.0 (A)	100 (A)	4.0 (L)	Various
<b>Groundwater Surface Water Interface (GSI) RBSL</b>			0.2 (M)	{G,X}	11	{G,X}	Various
<b>GSI Final Acute Values (FAV) <sup>1</sup></b>			ID	{G}	{G}	{G}	Various
<b>GSI Human Drinking Water RBSL</b>			NA	2.5 {G,X}	120 {G,X}	14 {G,X}	Various
<b>Residential &amp; Commercial I Groundwater Volatilization to Indoor Air Inhalation RBSL (Res GVII)</b>			45 (S)	NLV	NLV	NLV	Various
<b>Industrial &amp; Commercial II, III &amp; IV Groundwater Volatilization to Indoor Air Inhalation RBSL (Ind/Com GVII)</b>			45 (S)	NLV	NLV	NLV	Various
<b>Groundwater Contact (GC) RBSL</b>			3.3 (AA)	1.9E+5	4.6E+5	ID	Various
<b>Screening Levels (µg/L)</b>							
<b>Water Solubility</b>			44.7	NA	NA	NA	Various
<b>Flammability and Explosivity Screening Level</b>			ID	ID	ID	ID	Various
<b>Acute Inhalation Screening Level</b>			ID	ID	ID	ID	Various

Applicable Criteria Exceeded  
**BOLD** Value Exceeds Applicable Criteria  
bgs Below Grade Surface (feet)  
<sup>1</sup> Rule 323.1057 of Part 4 Water Quality Standards

**TABLE 5  
TIER 1 RBSL COMPARISON FOR GROUNDWATER  
POLYNUCLEAR AROMATIC COMPOUNDS  
3380 GREENFIELD ROAD IN ROYAL OAK, MICHIGAN  
PME PROJECT #02-3159-1**

POLYNUCLEAR AROMATIC COMPOUNDS (µg/L)			Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	2-Methylnaphthalene	
Chemical Abstract Service Number (CAS#)			83329	208968	120127	56553	50328	205992	207089	191242	218019	53703	206440	86737	193395	91203	85018	129000	91576	
Sample ID	Sample Date	Screen Depth (bgs)																		
TMW-1	09/03/2008	1.5-6.5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
TMW-2	09/04/2008	2.10-7.10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
TMW-5	09/03/2008	1.0-6.0	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
TMW-7	09/03/2008	2.70-7.70	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
TMW-9	09/04/2008	1.0-6.0	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
MDEQ-RRD Operational Memorandum No. 1: Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels (RBSLs), January 23, 2006 Attachment 1: Table 1. Groundwater: Residential and Industrial-Commercial, Part 201 Generic Cleanup Criteria and Screening Levels; Part 213 Tier 1 RBSLs																				
<b>Residential/Commercial/Industrial (µg/L)</b>																				
Residential & Commercial I Drinking Water (DW) RBSL	1,300	52	43 (S)	2.1	5.0 (A)	1.5 (S,AA)	1.0 (M)	1.0 (M)	1.6 (S)	2.0 (M)	210 (S)	880	2.0 (M)	520	52	140 (S)	260			
Industrial & Commercial II, III & IV Drinking Water RBSL (Ind/Com DW)	3,800	150	43 (S)	8.5	5.0 (A)	1.5 (S,AA)	1.0 (M)	1.0 (M)	1.6 (S)	2.0 (M)	210 (S)	2,000 (S)	2.0 (M)	1,500	150	140 (S)	750			
Groundwater Surface Water Interface (GSI) RBSL	19	ID	ID	ID	ID	ID	NA	NA	ID	ID	1.6	12	ID	13	2.4	ID	ID			
GSI Final Acute Values (FAV) <sup>1</sup>	200	ID	ID	ID	ID	ID	NL	NL	ID	ID	28	220	ID	200	43	ID	ID			
GSI Human Drinking Water RBSL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Residential & Commercial I Groundwater Volatilization to Indoor Air Inhalation RBSL (Res GVII)	4,200 (S)	3,900 (S)	43 (S)	NLV	NLV	ID	NLV	NLV	ID	NLV	210 (S)	2,000 (S)	NLV	31,000 (S)	1,000 (S)	140 (S)	ID			
Industrial & Commercial II, III & IV Groundwater Volatilization to Indoor Air Inhalation RBSL (Ind/Com GVII)	4,200 (S)	3,900 (S)	43 (S)	NLV	NLV	ID	NLV	NLV	ID	NLV	210 (S)	2,000 (S)	NLV	31,000 (S)	1,000 (S)	140 (S)	ID			
Groundwater Contact (GC) RBSL	4,200 (S)	3,900 (S)	43 (S)	9.4 (S,AA)	1.0 (M,AA)	1.5 (S,AA)	1.0 (M,AA)	1.0 (M,AA)	1.6 (S,AA)	2.0 (M,AA)	210 (S)	2,000 (S)	2.0 (M,AA)	31,000 (S)	1,000 (S)	140 (S)	25,000 (S)			
<b>Screening Levels (µg/L)</b>																				
Water Solubility	4,240	3,930	43.4	9.4	1.62	1.5	0.8	0.26	1.6	2.49	206	1,980	0.022	31,000	1,000	135	24,600			
Flammability and Explosivity Screening Level	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	NA	ID	ID	ID		
Acute Inhalation Screening Level	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	ID	31,000 (S)	ID	ID	ID		

Applicable Criteria Exceeded  
**BOLD** Value Exceeds Applicable Criteria  
bgs Below Grade Surface (feet)  
<sup>1</sup> Rule 323.1057 of Part 4 Water Quality Standards

**TABLE 6**  
**TIER 1 RBSL COMPARISON FOR GROUNDWATER**  
**POLYCHLORINATED BIPHENYLS, METALS (Cadmium, Chromium, and Lead) AND GLYCOLS**  
**3380 GREENFIELD ROAD IN ROYAL OAK, MICHIGAN**  
**PME PROJECT #02-3159-1**

Polychlorinated Biphenyls (PCBs), Metals (Cadmium, Chromium, & Lead) and Glycols  (µg/L)			Polychlorinated Biphenyls	Cadmium	Chromium	Lead	Glycols
Chemical Abstract Service Number (CAS#)			1336363	7440439	16065831	7439921	Various
Sample ID	Sample Date	Screen Depth (bgs)	PCBs	Metals			
TMW-1	09/03/2008	1.5-6.5	NA	NA	NA	<3	NA
TMW-2	09/04/2008	2.10-7.10	NA	NA	NA	<3	NA
TMW-5	09/03/2008	1.0-6.0	NA	NA	NA	6	NA
TMW-7	09/03/2008	2.70-7.70	<0.1	<0.5	24	6	<MDLs
TMW-9	09/04/2008	1.0-6.0	<0.1	1.2	17	117	NA
<b>MDEQ-RRD Operational Memorandum No. 1</b>							
<b>Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels (RBSLs), January 23, 2006</b>							
<b>Attachment 1: Table 1. Groundwater: Residential and Industrial-Commercial</b>							
<b>Part 201 Generic Cleanup Criteria and Screening Levels; Part 213 Tier 1 RBSLs</b>							
<b>Residential/Commercial/Industrial (µg/L)</b>							
<b>Residential &amp; Commercial I Drinking Water (DW) RBSL</b>			0.5 (A)	5.0 (A)	100 (A)	4.0 (L)	Various
<b>Industrial &amp; Commercial II, III &amp; IV Drinking Water RBSL (Ind/Com DW)</b>			0.5 (A)	5.0 (A)	100 (A)	4.0 (L)	Various
<b>Groundwater Surface Water Interface (GSI) RBSL</b>			0.2 (M)	{G,X}	11	{G,X}	Various
<b>GSI Final Acute Values (FAV) <sup>1</sup></b>			ID	{G}	{G}	{G}	Various
<b>GSI Human Drinking Water RBSL</b>			NA	2.5 {G,X}	120 {G,X}	14 {G,X}	Various
<b>Residential &amp; Commercial I Groundwater Volatilization to Indoor Air Inhalation RBSL (Res GVII)</b>			45 (S)	NLV	NLV	NLV	Various
<b>Industrial &amp; Commercial II, III &amp; IV Groundwater Volatilization to Indoor Air Inhalation RBSL (Ind/Com GVII)</b>			45 (S)	NLV	NLV	NLV	Various
<b>Groundwater Contact (GC) RBSL</b>			3.3 (AA)	1.9E+5	4.6E+5	ID	Various
<b>Screening Levels (µg/L)</b>							
<b>Water Solubility</b>			44.7	NA	NA	NA	Various
<b>Flammability and Explosivity Screening Level</b>			ID	ID	ID	ID	Various
<b>Acute Inhalation Screening Level</b>			ID	ID	ID	ID	Various

Applicable Criteria Exceeded  
**BOLD** Value Exceeds Applicable Criteria  
 bgs Below Grade Surface (feet)  
<sup>1</sup> Rule 323.1057 of Part 4 Water Quality Standards

## Appendix B

# Appendix C

**APPENDIX C**  
**Estimated Captured Tax Increment Revenues**  
**3380 Greenfield Road, Royal Oak, Oakland County, Michigan**

**Assumptions**

<b>Project Value:</b>	\$850,000
<b>Post-Project Taxable Value (1/2):</b>	\$425,000
<b>Current Taxable Value:</b>	\$130,040
<b>Taxable Value Increase Per Year</b>	3.00%
<b>Estimated Eligible Costs:</b>	\$44,850
<b>Interest Rate:</b>	6.00%

	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	
Taxable Value	\$ 425,000	\$ 437,750	\$ 450,883	\$ 464,409	\$ 478,341	\$ 492,691	\$ 507,472	\$ 522,696	\$ 538,377	\$ 554,529	
Minus Initial Taxable Value	\$ 130,040	\$ 130,040	\$ 130,040	\$ 130,040	\$ 130,040	\$ 130,040	\$ 130,040	\$ 130,040	\$ 130,040	\$ 130,040	
<b>Incremental Taxable Value</b>	<b>\$ 294,960</b>	<b>\$ 307,710</b>	<b>\$ 320,843</b>	<b>\$ 334,369</b>	<b>\$ 348,301</b>	<b>\$ 362,651</b>	<b>\$ 377,432</b>	<b>\$ 392,656</b>	<b>\$ 408,337</b>	<b>\$ 424,489</b>	
<b><u>Taxing Jurisdictions</u></b>	<b><u>Mills</u></b>										
Intermediate School District	3.3690	\$ 994	\$ 1,037	\$ 1,081	\$ 1,126	\$ 1,173	\$ 1,222	\$ 1,272	\$ 1,323	\$ 1,376	\$ 1,430
Community College	1.5844	\$ 467	\$ 488	\$ 508	\$ 530	\$ 552	\$ 575	\$ 598	\$ 622	\$ 647	\$ 673
City Village Township	11.4333	\$ 3,372	\$ 3,518	\$ 3,668	\$ 3,823	\$ 3,982	\$ 4,146	\$ 4,315	\$ 4,489	\$ 4,669	\$ 4,853
OCPTA	0.5900	\$ 174	\$ 182	\$ 189	\$ 197	\$ 205	\$ 214	\$ 223	\$ 232	\$ 241	\$ 250
County Operating	4.1900	\$ 1,236	\$ 1,289	\$ 1,344	\$ 1,401	\$ 1,459	\$ 1,520	\$ 1,581	\$ 1,645	\$ 1,711	\$ 1,779
Total Capturable	21.1667										
Total Available for Capture	\$ 6,243	\$ 6,513	\$ 6,791	\$ 7,077	\$ 7,372	\$ 7,676	\$ 7,989	\$ 8,311	\$ 8,643	\$ 8,985	
<u>Administrative Fee to ROBRA</u>	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	
<u>Reimbursed To Developer</u>	\$ 5,243	\$ 5,513	\$ 5,791	\$ 6,077	\$ 6,372	\$ 6,676	\$ 6,989	\$ 7,311	\$ 6,890	\$ -	
<u>Unreimbursed Costs</u>	\$ 39,607	\$ 36,470	\$ 32,867	\$ 28,761	\$ 24,115	\$ 18,885	\$ 13,030	\$ 6,500	\$ -	\$ -	
<u>Interest Applied</u>	\$ 2,376	\$ 2,188	\$ 1,972	\$ 1,726	\$ 1,447	\$ 1,133	\$ 782	\$ 390	\$ -	\$ -	
<u>Total Remaining</u>	\$ 41,983	\$ 38,658	\$ 34,839	\$ 30,487	\$ 25,562	\$ 20,019	\$ 13,811	\$ 6,890	\$ -	\$ -	
<u>To Revolving Fund</u>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 753	\$ 7,985	

<b>Totals</b>	
Administrative Fee	\$ 10,000
Total Reimbursement	\$ 56,864
Eligible Costs	\$ 44,850
Interest	\$ 12,014
Revolving Fund	\$ 8,738
<b>Total Taxes Captured</b>	<b>\$ 75,602</b>

# Appendix D

## Commercial and Industrial Property Profile

Note: If you use the 'Reload' function of your browser, you will be billed again. You will not be billed for using the 'Back' and 'Forward' buttons. Last updated on 04/06/2008 for City of Royal Oak.

<b>3380 GREENFIELD, ROYAL OAK, MI 48073-6552</b>			
<a href="#">View Photos</a> <a href="#">View Map</a>			
Parcel ID 25-07-101-001	Municipality City of Royal Oak	Owner(s) FISCHER, ERNEST FISCHER, PAULA	
Owner Mailing Address 3380 GREENFIELD, ROYAL OAK, MI 48073-6552			
Property Description T1N, R11E, SEC 7 PRAIRIE LAWN ACRES NO 2 LOT 250 EXC BEG AT NW LOT COR, TH S 20 FT ALG W LOT LINE, TH NELY TO PT ON N LOT LINE DIST E 20 FT, FROM NW LOT COR, TH W 20 FT TO BEG, ALSO ALL OF LOTS 251 TO 255 INCL, ALSO W 19 FT OF LOT 256			
Use 201 BUS IMP (Commercial Business Imp.)	School District 230 Royal Oak City Schls	Neighborhood Code AUB	
Water Indicator Y	Septic Indicator N	Well Indicator N	Sewer Indicator Y
Current Assessed Value \$128,430	Capped Value \$130,950	State Equalized Value \$128,430	
<b>Most Recent Sale Since 1994</b>			
Date 5/16/1999	Amount \$280,000	Liber 20055:785	Grantor #EQUILON ENTERPRISES
		Grantee #E P ENTERPRISES INC	
<b>Next Most Recent Sale</b>			

Date	Amount	Liber	Grantor	Grantee	
	\$0				
Taxable Value \$128,430		Effective Date for Taxes 12/1/2007		Homestead % 0	
2006 Taxes			2007 Taxes		
Summer \$6,139.03	Winter \$310.67	Village	Summer \$6,393.56	Winter \$135.68	Village

Lot Information	Description	Width/Acres	Depth/Acres
	LEVEL		0.39

#### Individual Building Details

Missing, or out of sequence building/section numbers refer to adjustments made to the appraisal for below grade areas, or non-structural areas, please consult the local assessing office for detailed questions about the full appraisal record.

Building/Section 1	  View
--------------------	--

## Commercial and Industrial Property Profile

Note: If you use the 'Reload' function of your browser, you will be billed again. You will not be billed for using the 'Back' and 'Forward' buttons.


Primary Structure for Parcel 25-07-101-001											
Building	Used as	Year Built	Effective Year	Class	Quality	No. of Stories	Height per Story (feet)	Avg Square Feet	Elevators	Sprinklers	Identical Units
1	Garage, Service/Repair	1953	1980	C	Average	1	13	1917	N	N	1
<b>Total Building Square Footage = 1917</b>											

Lump Sum Adjustments		
Description	Square Feet	Units
<b>No Lump Sum Data Available for Building/Section 1</b>		

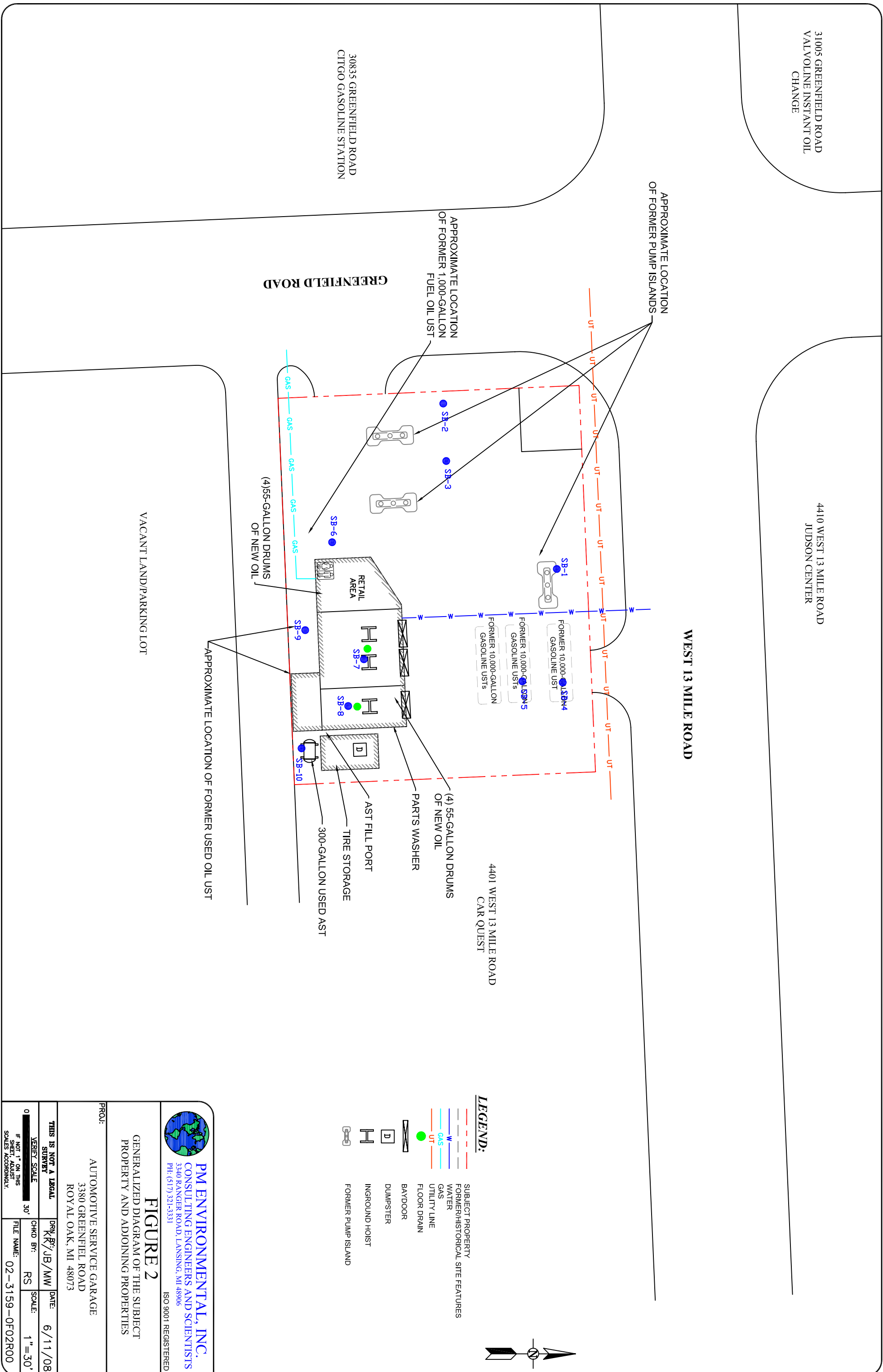
Yard Improvements		
Description	Square Feet	Units
Paving (Asphalt)	15964	0

### Individual Building Details

Missing, or out of sequence building/section numbers refer to adjustments made to the appraisal for below grade areas, or non-structural areas, please consult the local assessing office for detailed questions about the full appraisal record.

# Appendix E



31005 GREENFIELD ROAD  
VALVILINE INSTANT OIL  
CHANGE

4410 WEST 13 MILE ROAD  
JUDSON CENTER

WEST 13 MILE ROAD

4401 WEST 13 MILE ROAD  
CAR QUEST

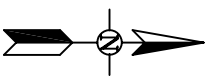
30835 GREENFIELD ROAD  
CITGO GASOLINE STATION

GREENFIELD ROAD

VACANT LAND/PARKING LOT

**LEGEND:**

- SUBJECT PROPERTY
- FORMER/HISTORICAL SITE FEATURES
- WATER
- GAS
- UTILITY LINE
- FLOOR DRAIN
- BAYDOOR
- DUMPSTER
- INGROUND HOIST
- FORMER PUMP ISLAND



**FIGURE 2**

GENERALIZED DIAGRAM OF THE SUBJECT  
PROPERTY AND ADJOINING PROPERTIES

**PM ENVIRONMENTAL, INC.**  
CONSULTING ENGINEERS AND SCIENTISTS  
3340 RANGER ROAD, LANSING, MI 48906  
PH: (317) 521-5331  
ISO 9001 REGISTERED

PROJ:

AUTOMOTIVE SERVICE GARAGE  
3380 GREENFIELD ROAD  
ROYAL OAK, MI 48073

<b>THIS IS NOT A LEGAL SURVEY</b>			
VERIFY SCALE	DRN, BR, JB, MW	DATE:	6/11/08
IF NOT 1" ON THIS SCALE, ACCORDINGLY.	CHKD BY: RS	SCALE:	1" = 30'
FILE NAME:	02-3159-0F02R00		