



**RECORD OF DECISION**

**SITE 0153**

**INDIANAPOLIS, INDIANA**

**U.S. EPA ID NUMBER: INN000510936**

**PREPARED BY:**

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**

**OFFICE OF LAND QUALITY**

**STATE CLEANUP PROGRAM**

**January 4, 2021**



**RECORD OF DECISION  
SITE 0153  
INDIANAPOLIS, INDIANA  
U.S. EPA ID NUMBER: INN000510936**

**DECLARATION**

**Site Name and Location**

Site Name: Site 0153/Riverside Groundwater Contamination Site (“Site 0153” or “Site”)

Site Location: Indianapolis, Marion County, Indiana

United States Environmental Protection Agency (U.S. EPA) ID NUMBER: INN000510936

Indiana Department of Environmental Management (IDEM) Site Number: 0000635

**Statement of Basis and Purpose**

This Record of Decision (ROD) presents the Indiana Department of Environmental Management’s Selected Remedy for Site 0153 in Indianapolis, Marion County, Indiana. The ROD was developed by the Indiana Department of Environmental Management (IDEM) pursuant to IDEM’s authority under the Hazardous Substances Response Trust Fund Chapter of the Indiana Code (IC) 13-25-4, and under 329 Indiana Administrative Code (IAC) 7.1. This final ROD is based on the Administrative Record file for the Site available online at [www.idem.IN.gov/Site0153](http://www.idem.IN.gov/Site0153), in the IDEM Virtual File Cabinet (VFC) available online at <https://vfc.idem.in.gov> (under ‘Land Site ID’ 0000635), or through the public document repository on the 12<sup>th</sup> floor of the Indiana Government Center North, 100 North Senate Avenue, Indianapolis, Indiana.

**Assessment of the Site**

IDEM has determined that the response actions selected in this ROD will ensure the Riverside and White River Municipal Wellfields (Wellfields) will continue to be operated in a manner that protects human health and the environment. IDEM will also continue its efforts under various state remediation programs to address sites within the five (5)-year “time of travel” to the Wellfields to further limit future potential contributions of chlorinated volatile organic compounds (cVOCs) to the Wellfields and ensure the already protective “Selected Remedy” identified below will continue to be protective in the future.

**Description of the Selected Remedy**

The Site consists of an area of marginally impacted groundwater in the vicinity of the Wellfields, located in Indianapolis, Marion County, Indiana. Low levels of cVOCs have been detected in untreated “raw” groundwater samples collected from certain water production wells in the Wellfields. Citizens Water (Citizens) shut down production well WR-3 in September 2016 due to low-level exceedances of the Maximum Contaminant Level (MCL) by trichloroethylene (TCE)



in raw groundwater<sup>1</sup>. As a presumptive interim measure, Citizens engineered and installed an aeration remediation system on production well WR-3 and following aeration testing on the production well, brought WR-3 back into service in April 2020. Importantly, (1) cVOC concentrations in raw groundwater removed by production wells are presently either non-detect or below applicable MCLs, and (2) there has never been any detection of TCE or any other cVOC in treated (“finished”) water produced by Citizens and provided to customers. The finished water produced by Citizens has met, and continues to meet, all applicable MCLs and other requirements of the Safe Drinking Water Act (SDWA).

IDEM has conducted an exhaustive search for Potentially Responsible Parties (PRPs) and potential cVOC source(s) in the Site 0153 area. IDEM has taken the lead to require that these individual sites are investigated and remediated as appropriate to further reduce the risks to the Wellfields. It is important to note, that while an extensive investigation and evaluation of the area has been performed, no specific cVOC source or combination of sources have been identified as the definitive source of the impacts identified in certain production wells. This supports the conclusion reached by many in 2016 that there is no single source or group of sources that are causing impacts detected in the Wellfields, but rather low-level impacts have been caused by a number of individual, disparate sources that were in operation for decades and have contributed to a widely dispersed, low-level, commingled groundwater plume. In order to address the impacts to the Wellfields, IDEM is managing potential individual sources within the 5-year time of groundwater travel to the Wellfields through one of the various state remediation programs (e.g. State Cleanup Program (SCP), Voluntary Remediation Program (VRP), Indiana Finance Authority’s Brownfields Program (Indiana Brownfields), etc.). Individual PRPs have been and will continue to be responsible for conducting their own site investigations and remediation, under IDEM direction and oversight, to address cVOC detections. These actions are expected to reduce future concentrations and duration of cVOC detections in Citizens’ Wellfields. Given that conditions in the Wellfields are currently and historically safe and given that conditions have been improving over the last several years, IDEM will continue to address potential cVOC source areas under the state remediation programs described above, and no additional efforts are needed under the Federal Superfund program.

The Selected Remedy for Site 0153 describes all work necessary to ensure continued protection of the Wellfields and protection of human health and the environment. The concentrations and frequency of detections of cVOCs in the Wellfields have been decreasing for several years. Currently, cVOC concentrations in raw groundwater pumped from Citizens’ production wells are either non-detect or below applicable MCLs and have been for the last four years. The Selected Remedy presented in this ROD provides a plan to ensure continued protection of human health and the environment should cVOC concentrations in raw groundwater in production wells within the Wellfields change in the future.

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<sup>1</sup> Prior to shutting down WR-3, TCE concentrations ranged from 4.43 to 8.18 micrograms per liter (µg/L). The MCL for TCE is 5.0 µg/L. WR-3 was the only production well that had exceeded an MCL.



Considering the declining cVOC concentrations and frequency of detections in the Wellfields, and considering a successful presumptive remedy (aeration equipment) already installed and operating in production well WR-3, IDEM's Selected Remedy consists of the following elements:

- Remove from service any production well where raw groundwater cVOC concentrations exceed an MCL<sup>2</sup> and either:
  - Remain out of service until multiple resampling events<sup>3</sup>, completed on separate occasions, demonstrate that production well results are reliably and consistently below MCLs; or
  - Install treatment (e.g. aeration or similar<sup>4</sup>) to reduce concentrations and complete confirmatory sampling of post-treatment water to ensure results are below MCLs before returning the well to service.
- Continue operation and maintenance of the aeration equipment installed for production well WR-3 (or any other well that requires it) until aeration is no longer necessary, to ensure all raw groundwater in active production wells is below MCLs.
- Continue routine Wellfield quarterly sampling<sup>5</sup> of active production wells for cVOCs until monitoring has demonstrated that raw groundwater is below MCLs.

In addition to the elements of the Selected Remedy detailed above, additional measures that will be undertaken to further ensure protection of human health and the environment (which were described in the Remedial Action Plan or RAP) include the following:

- IDEM will enter into settlements with willing Site 0153 PRPs to create a settlement fund entitled "Site 0153 Monitoring and Future Response Fund (MAFR)." For the first five years, all settlement payments will be dedicated to funding future response actions within Site 0153, including:
  - Monitoring related to protecting Citizens production wells from cVOCs;

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<sup>2</sup> Exceedances of an MCL will be determined through quarterly sampling conducted by Citizens. An MCL exceedance will be determined by calculating a running annual average of all samples taken from an individual production well. If any sample result would cause the running annual average to exceed the MCL, the production well would be considered above the MCL. The MCL exceedance criteria is adapted from 327 Indiana Administrative Code (IAC) 8-2-5.5 (15)(A) and (C).

<sup>3</sup> "Multiple resampling events" means a minimum of two consecutive resampling events resulting in cVOC concentrations below the MCL that result in a reduction in the running annual average to below the MCL. The resampling criteria is adapted from 327 IAC 8-2-5.5 (11)(B)

<sup>4</sup> The FS evaluated currently available remedial technologies and associated criteria for reduction of cVOCs from a production well and concluded that aeration treatment was a reliable, effective technology. Since the Preferred Alternative for treatment of groundwater from production wells is a commitment for the future, remedial options may change over time, and re-evaluation may be warranted based on newly available technologies.

<sup>5</sup> If future quarterly sampling events consistently demonstrate cVOC concentrations in the Wellfields are below MCLs, even before standard mixing and treatment operations, sampling frequency could be reduced.





- Collecting new evidence to determine whether cVOCs released from any PRP's facility threaten or impact any production wells in use within the Wellfields;
  - Funding or installing suitable water treatment equipment to remove cVOCs from water extracted from Citizens' production wells; and
  - If both remediation and treatment are not cost effective, funding the relocation of production wells as necessary to maintain use of the Wellfields or development of a new wellfield.
  - If the MAFR Fund is not needed for these purposes, in years 6 to 10 IDEM may begin spending the fund on IDEM oversight costs, as specified in the Agreed Order.
- IDEM will continue to work closely with the public, community organizations, governmental entities (including the City of Indianapolis and the Marion County Public Health Department (MCPHD)), and other stakeholders to ensure their involvement in both the Selected Remedy and the progress of any discrete PRP site remediation and/or monitoring program within Site 0153.
- IDEM and the MCPHD will continue to ensure that any private wells within Site 0153 meet MCLs including sampling the wells if requested by the property owner.
- IDEM will provide annual reports<sup>6</sup> to the U.S. EPA detailing IDEM's progress in regard to the investigation and remediation of PRP sites within the immediate or surrounding areas of the wellfields, the quality of the drinking water supplied to customers from the Wellfields, and community participation in the Site. In addition, IDEM will continue to maintain and update the website for Site 0153 at: [www.idem.IN.gov/Site0153](http://www.idem.IN.gov/Site0153) until the formal de-proposal of Site 0153 from inclusion on the National Priorities List (NPL) is finalized.
- Citizens will provide IDEM with routine updates regarding quarterly sampling results and annual rolling cVOC averages for operating production wells within the Wellfields. Routine updates will continue for a period of 5 years from the date this ROD is finalized or until IDEM and Citizens agree that updates are no longer necessary (whichever is sooner).

Upon finalization of this ROD, IDEM believes that all necessary items will have been completed and/or in place to support certifying the "Completion of State Response Action" requirement identified under Section IV of the 2017 Memorandum of Agreement (MOA) between IDEM and the U.S. EPA and the formal "de-proposal" of Site 0153 from inclusion on the National Priorities List (NPL). The elements of the Selected Remedy and the additional measures described above are designed to provide protection of risks at the Wellfields, while ensuring the cVOC impacts within the Site continue to decline.

## Statutory Determinations

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<sup>6</sup> In accordance with the Memorandum of Agreement (MOA), once the Site remedial action is successfully completed, it is expected that the U.S. EPA will have no further interest in considering the Site for final listing on the NPL and that the Site will be de-proposed from the NPL. Therefore, annual reports will continue until remedial action has been successfully completed and/or the Site has been de-proposed from the NPL.



IDEM believes that the elements of the Selected Remedy are the most effective way to protect human health and the environment from the risks associated with the Wellfields. The Selected Remedy complies with applicable environmental statutes and regulations, is cost-effective, and utilizes permanent solutions and treatment technologies. Should cVOC concentrations in the Wellfields increase to levels above MCLs, this remedy also contains provisions that satisfy the statutory preference for treatment as a principal element of the remedy (i.e., reduces the toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants as a principal element through treatment). The cVOC concentrations observed in production wells are currently below MCLs (as they have been for the last four years) and the Selected Remedy will ensure the Wellfields can continue to be operated in a manner that protects human health and the environment. In addition to the elements included in the Selected Remedy, IDEM's continuing efforts under State Programs to address sites within the 5-year time of travel to the Wellfields will limit future potential contributions of cVOC to the Wellfields and ensure the already protective Selected Remedy will continue to be protective in the future.

### **ROD Data Certification Checklist**

The following information is included in the Decision Summary section of this ROD. Additional information can be found in the Administrative Record file for this Site.

- Chemicals of concern (COCs) and their respective concentrations (Sections 1.5.4 and 1.5.6 and **Table 1**)
- Baseline risk represented by the COCs (Section 1.7)
- Cleanup levels established for COCs and the basis for these levels (Section 1.8)
- How source materials constituting principal threats are being addressed (Section 1.5.5 and 1.12)
- Current and reasonably expected future land use assumptions and current and potential future beneficial uses of groundwater used in the baseline risk assessment and ROD (Section 1.6)
- Potential land and groundwater use that will be available at the Site as a result of the Selected Remedy (Sections 1.6 and 1.14)
- Estimated costs (Sections 1.9 and **Table 7**)
- Key factors(s) that led to selecting the remedy (Section 1.14)

### **Authorizing Signature**

IDEM's authorizing signature for this ROD is provided below.

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Bruno L. Pigott, Commissioner  
Indiana Department of Environmental Management

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Date



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**ABBREVIATIONS & ACRONYMS**

1,1,1-TCA	1,1,1-Trichloroethane
ARAR	Applicable or Relevant and Appropriate Requirements
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cis-1,2-DCE	cis-1,2-Dichloroethene
Citizens	Citizens Water
COC	Chemical of Concern
COPCs	Constituents of Potential Concern
CSM	Conceptual Site Model
cVOC	Chlorinated Volatile Organic Compound
DNAPL	Dense Non-aqueous Phase Liquid
FS	Feasibility Study
ft. bg.	Feet Below Grade
GAC	Granular Activated Carbon
gpm	Gallons Per Minute
HHERA	Human Health and Ecological Risk Assessment
HRS	Hazard Ranking System
IAC	Indiana Administrative Code
IDEM	Indiana Department of Environmental Management
IDNR	Indiana Department of Natural Resources
MAFR	Site 0153 Monitoring and Future Response Fund
MCL	Maximum Contaminant Level
MCPHD	Marion County Public Health Department
µg/L	Microgram per liter
MOA	Memorandum of Agreement
NAPL	Non-aqueous Phase Liquid
NCP	National Contingency Plan
NFA	No Further Action
NOL	Notice of Liability
NPL	National Priorities List
O&M	Operations and Maintenance
PA Report	Preliminary Assessment Report
PCE	Perchloroethylene and Tetrachloroethene
PRP	Potentially Responsible Party
RAO	Remedial Action Objective
RAP	Remedial Action Plan
RCRA	Resource Conservation and Recovery Act
RFI	Request for Information
RI	Remedial Investigation
RSL	Regional Screening Level
SARA	Superfund Amendments and Reauthorization Act of 1986
SCP	State Cleanup Program
SDWA	Safe Drinking Water Act
SI Report	Site Inspection Report
Site 0153 or Site	The Site 0153/Riverside Groundwater Contamination Site



State Program	IDEM Remediation Program
TBC	To Be Considered
TCE	Trichloroethylene
U.S. EPA	United States Environmental Protection Agency
UV	Ultraviolet Light
VC	Vinyl chloride
VFC	Virtual File Cabinet
VOC	Volatile Organic Compound
VRP	Voluntary Remediation Program
Wellfields	Riverside and White River Wellfields
WHPA	Wellhead Protection Area
WHPP	Wellhead Protection Plan



**RECORD OF DECISION  
SITE 0153  
INDIANAPOLIS, INDIANA  
U.S. EPA ID NUMBER: INN000510936**

**1.0 DECISION SUMMARY**

**1.1 Site Name, Location, and Brief Description**

The Site 0153/Riverside Groundwater Contamination Site (United States Environmental Protection Agency (U.S. EPA) ID# INN000510936) is located in Indianapolis, Marion County, Indiana and consists of an area of marginally impacted groundwater in the vicinity of the Riverside and White River Municipal Wellfields (Wellfields). A Vicinity Map for Site 0153 is provided as **Figure 1**. The Wellfields are operated by Citizens Water (Citizens) which operates the public drinking water supply utility for the City of Indianapolis. Low levels of chlorinated volatile organic compounds (cVOCs) have been detected in untreated “raw” groundwater samples collected from certain water production wells in the Wellfields. As part of its drinking water operations, Citizens mixes groundwater from the Wellfields with surface water from the Indianapolis Central Canal. The mixed water is then treated and filtered creating the “finished water” distributed to the public. The finished drinking water provided to customers by Citizens has met and continues to meet all requirements of the Safe Drinking Water Act (SDWA).

The cVOCs have migrated to the Wellfields from off-Site source(s) within the Site 0153 area. The Wellfields are located in an urban mixed-use area of the city where dozens of historic industrial facilities, which potentially used cVOCs, operated over the course of several decades. In order to address the impacts to the Wellfields, the Indiana Department of Environmental Management (IDEM) is managing potential individual sources within Site 0153 through one of the various state remediation programs. IDEM initially identified 89 potential sources of cVOC impacts within the 5-year time of groundwater travel to the Wellfields; however, a definitive source(s) of cVOCs impacting the Wellfields has not been identified to-date. It is likely that a number of individual sources have contributed to a commingled groundwater plume which led to the low-level cVOC impacts detected in certain production wells in the Wellfields. Individual Potentially Responsible Parties (PRPs) have been and will be responsible for conducting their own site investigations and remediation, under directive and oversight from the IDEM, to address their cVOC impact contributions to the two Wellfields. Individual PRPs will also be responsible for addressing any other site-specific associated risks, such as vapor intrusion exposure, separately from Site 0153.

Citizens has continued to monitor cVOC levels in its production wells, while IDEM has actively pursued identifying PRPs within Site 0153, narrowed the list of PRPs, and provided oversight to PRPs currently managed within a remediation program at the IDEM. Concentrations of cVOCs in the Wellfields have been declining over the last several years. Currently, and since 2016, cVOC concentrations in the raw groundwater within the Wellfields are and have been below





applicable U.S. EPA Maximum Contaminant Levels (MCLs). Historic (approximately 2004 through current) raw groundwater sample analytical results from individual production wells are summarized in **Table 1**. Declining cVOC concentrations observed in the Wellfields support the conclusion that PRP investigation/remediation efforts conducted under State Programs to date are already showing a beneficial reduction of cVOC contributions to raw groundwater. **Table 2** includes cVOC time series graphs of results from testing wells in the Wellfields. These graphs also demonstrate that cVOC concentrations continue to decline.

Additionally, IDEM completed a Remedial Investigation (RI), Human Health and Ecological Risk Assessment (HHERA), and Feasibility Study (FS). The RI characterized Site conditions, summarized PRP investigations and investigations within the Wellfields, evaluated the fate and transport and nature and extent of cVOCs affecting the Wellfields, and summarized risk to human health and the environment. The HHERA concluded there is no reasonable potential for adverse effects to human health or the environment associated with the operation of the Wellfield or the water supplied by Citizens. The FS evaluated available remedial technologies to address impacts to the Wellfields in the future, if necessary. These reports, and other documents, are contained in the Administrative Record file for this Site and were made available for public comment from November 10 through December 11, 2020. In addition, a public meeting was held on November 18, 2020 to review the findings of the RI, HHERA, and FS with interested public parties. Due to COVID-19 restrictions, the public meeting used a virtual format to avoid in-person contact.

Utilizing the information and data gathered during the RI, HHERA, and FS, IDEM has developed this ROD to present the Selected Remedy for Site 0153. The scope and role of the Selected Remedy focuses on protecting the Wellfields to ensure the continued supply of safe drinking water from the Wellfields. In addition, IDEM is managing investigation and remediation efforts for PRPs and potential sources within the area of Site 0153 individually under State Programs

Pursuant to the “Memorandum of Agreement” (MOA) executed in 2017 between IDEM and the U.S. EPA, the RI, FS, HHERA, Remedial Action Plan (RAP), this ROD, and other work at the Site has been conducted by IDEM under a non-Superfund-financed State-lead enforcement basis. Future response actions will be conducted on State-lead enforcement basis under the authority of the Hazardous Substances Response Trust Fund Chapter at Indiana Code (IC) 13-25-4 and under 329 Indiana Administrative Code (IAC) 7.1, among other state-law authorities.



## 1.2 Site History and Enforcement Activities

### 1.2.1 U.S. EPA proposes Site 0153 for the National Priorities List (NPL)

Citizens routinely samples its finished water for over 300 constituents. Finished drinking water provided to customers by Citizens has met and continues to meet all requirements of the SDWA. Finished water sample analytical results for samples collected by Citizens from approximately 2016 to the present are summarized in **Table 3**.

In addition, Citizens has routinely collected and analyzed raw groundwater samples from individual production wells. In 2013, Citizens notified IDEM that low levels of cVOCs had been detected in the raw groundwater at certain water production wells located within the Wellfields. Following this notification, IDEM commenced investigation activities. As part of the Superfund site assessment process and under a Cooperative Agreement with the U.S. EPA, IDEM prepared a Preliminary Assessment Report (PA Report), dated November 1, 2013 and a Site Inspection Report (SI Report), dated October 23, 2014. Copies of the PA Report and the SI Report are available in the IDEM Virtual File Cabinet (VFC) as Document #83049936 and #83049940, respectively. Using data collected during the SI, a Hazard Ranking System (HRS) documentation record was submitted to U.S. EPA determining that the Site qualified for inclusion on the Superfund National Priorities List (NPL). In April 2016, U.S. EPA published a Proposed Rule in the Federal Register, proposing to include Site 0153 on the U.S. EPA's NPL. Proposed inclusion of Site 0153 on the NPL was based on the presence of low-level detections of certain cVOCs in the raw groundwater in some of Citizens' production wells and the high number of potential receptors (*i.e.*, Citizens' customers). A variety of potential sources of the detected cVOCs were identified within the 5-year time of travel for the Wellfields and are currently under investigation and/or remediation in a State Program.

### 1.2.2 Public comments favor the State Cleanup Program

Following publication of the proposed rule, and in response to public and local government concerns, IDEM determined it would be in the best interests of the public, local citizens, the State, and the City of Indianapolis to address Site 0153 at the state level in IDEM's State Cleanup Program (SCP) rather than via the Federal Superfund process. During 2016, IDEM officials, the Governor's Office, the Mayor's office, Citizens, and members of the general public requested in letters, meetings, and formal comments on U.S. EPA's proposed rule that U.S. EPA should not list the Site on the NPL, and instead allow IDEM to manage the investigation and remedial actions of Site 0153 pursuant to a state-lead "Alternative Plan." In an August 2016 letter, IDEM's former Commissioner, Carol Comer, formally withdrew support for and rescinded IDEM's August 2015 request to include Site 0153 on the NPL.



This IDEM withdrawal was based on many factors including additional historic Wellfield data not previously available to U.S. EPA leading up to the proposed rule. The additional data was made available by Citizens and identified that cVOC concentrations in the raw groundwater of the Wellfields were actually decreasing. Furthermore, with the exception of one production well (WR-3), all cVOC concentrations in raw groundwater were below MCLs. IDEM's withdrawal request also identified that many of the surrounding sites potentially contributing impacts to the Wellfields were already in an IDEM remediation program, making a Superfund designation redundant and unnecessary. Many of the sites had already completed remediation or were on track to do so, which contributed to the decreasing concentrations observed in the Wellfields. IDEM noted that withdrawing Site 0153 from inclusion on the NPL did not eliminate the need to address the cVOC impacts but doing so through the IDEM SCP was potentially more timely and more effective than working through the more formal Superfund process. To that end, the Alternative Plan was proposed by IDEM and Citizens to protect human health and the environment. The Alternative Plan, which outlined a plan for addressing Wellfield impacts, was included as an exhibit to the August 2016 IDEM withdrawal letter and to the Memorandum of Agreement (MOA). The Alternative Plan is described in more detail below.

### *1.2.3 U.S. EPA and IDEM negotiates an MOA for a state-lead cleanup*

After receipt of public comments opposed to listing the Site on the NPL, U.S. EPA and IDEM began discussions in October 2016 to identify the criteria that IDEM would need to satisfy in order for U.S. EPA to consider allowing IDEM to manage Site 0153 in lieu of U.S. EPA. These discussions resulted in the execution of the Site 0153 MOA on June 8, 2017. The MOA specifies the expectations and obligations of each agency regarding Site 0153 and memorializes the agreements necessary to ensure that the response actions undertaken at Site 0153 achieve a "Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)-protective cleanup".

The MOA includes programmatic expectations including implementation requirements, procedural requirements, community participation requirements, and completion of state response action requirements. The MOA also included the Alternative Plan for addressing impacts at Site 0153. As a part of the Alternative Plan, IDEM and Citizens committed to the following response actions to address detections of cVOCs in the Wellfields and ensure protection of human health and the environment:

- IDEM would conduct a comprehensive search for PRPs to identify the potential sources of cVOC impacts identified in the Wellfields.
- IDEM would oversee investigations of the potential sources of cVOC impacts and manage identified sources through one of the various remediation programs at IDEM (e.g., SCP, Voluntary Remediation Program (VRP), Indiana Finance Authority's



Brownfields Program (Indiana Brownfields), etc.) to address their contributions to the Wellfields.

- Citizens would remove the only production well above an MCL, WR-3, from service, install aeration equipment to reduce cVOCs, and complete confirmatory sampling of post-treatment water before returning the well to service.
- Citizens would complete the same response action (removal from service, installation of aeration equipment, and completion of confirmatory sampling prior to returning the well to service) if any other production wells exceeded an MCL in the future.
- Citizens would increase the frequency of sampling its production wells for volatile organic compounds (VOCs) from semi-annually to quarterly, and would develop and implement a revised Groundwater Monitoring Plan to monitor concentrations in the Wellfields, provide a plan to address potential detections, and ensure continued safety of the drinking water.

Following execution of the MOA, IDEM prepared three separate reports for the Site: the RI, the HHERA, and the FS. These reports, and other documents, are contained in the Administrative Record file for this Site.

#### *1.2.4 IDEM's remedial investigation*

Following execution of the MOA in 2017, IDEM has conducted an exhaustive search for PRPs and potential cVOC sources in the Site 0153 area. IDEM has taken the lead to require that these individual sites are investigated and remediated as appropriate to further reduce the risks to the Wellfields. It is important to note, that while an extensive investigation and evaluation of the area has been performed, no specific cVOC source or combination of sources has been identified as the definitive source of the impacts identified in certain production wells. This supports the conclusion reached by many in 2016 that there is no single source or group of sources that are causing impacts detected in the Wellfields, but rather these low-level impacts have been caused by a large number of individual and disparate sources that were in operation for decades and that have contributed to a widely dispersed, low-level, commingled groundwater plume.

IDEM has undertaken several measures to address these low-level impacts from these disparate sources in several ways. IDEM is managing individual releases through one of the various State remediation programs (e.g. SCP, VRP, Indiana Brownfields, etc.). As part of these State remediation programs, PRPs are responsible for conducting their own site investigations and remediation, under direction and oversight from IDEM, to address their potential cVOC impact contributions to the Wellfields. PRPs will also be responsible for addressing any other site-specific associated risks, such as vapor intrusion exposure, separately from Site 0153.



In addition, IDEM completed and has implemented a Community Involvement Plan, including holding several public information meetings in various neighborhoods within Site 0153, and scheduling bi-monthly stakeholder meetings with the City of Indianapolis, Citizens, and the Marion County Public Health Department (MCPHD) to coordinate responses to public concerns. As detailed in the MOA, seven private wells have been identified within the Site 0153 investigation area. The MCPHD has investigated wells where owners granted access and kept records of well locations. No cVOCs were detected in private wells sampled by MCPHD. The MCPHD will address private well issues, if any, and attempt to conduct sampling as needed in the future.

IDEM also continues to support all stakeholders to ensure proposed developments in the area of Site 0153 continue while assuring any potential contamination that may be encountered is addressed responsibly. To facilitate development in the area, a number of production wells within the Riverside Wellfield have been removed from service and abandoned. Due to the loss of production capacity associated with these abandonments, Citizens may need to install additional production wells in the future to meet the needs of the community. These developments have created and will continue to create on-going changes to the composition and hydraulic dynamics of the Wellfields. Throughout development in the area of Site 0153 and the potential subsequent changes to the composition of the Wellfields, Citizens will continue its commitment to providing safe drinking water to the City of Indianapolis.

#### *1.2.5 Citizens Water's commitment to safe drinking water*

Citizens has also completed substantial efforts since the Alternative Plan was submitted in 2016. First and foremost, finished drinking water provided by Citizens to customers has always remained safe for consumption. All historic and current finished drinking water provided by Citizens meets all SDWA MCLs prior to distribution. As identified in the Alternative Plan, Citizens developed and implemented a Groundwater Monitoring Plan with an increased sampling of production wells from semi-annually to quarterly to monitor cVOC concentrations in the Wellfields.

Citizens has always sampled treated finished drinking water to ensure results are below MCLs prior to distribution. IDEM and Citizens participated in a split-sampling event of active production wells in both Wellfields in February and March 2018. Both IDEM and Citizens results of the split-sampling event confirmed that all cVOC concentrations were below MCLs.

As required by the Alternative Plan, Citizens shut down production well WR-3 in September 2016 due to low-level MCL exceedances of trichloroethylene (TCE) in raw



groundwater<sup>7</sup>. As a presumptive interim measure, Citizens engineered and installed an aeration system for production well WR-3 beginning in September 2019. Aeration system construction was completed in late January 2020. Citizens conducted aeration testing on production well WR-3 from February through April 2020 and production well WR-3 is now back in service. Currently all raw water generated from production well WR-3, even before it is aerated, is below MCLs, providing further evidence that cVOC concentrations in the Wellfields continue to decline. Nevertheless, Citizens continues to treat the production well WR-3 water, providing an extra margin of safety.

### 1.2.6 *The Water in the Wellfields Remains Safe*

Multiple lines of evidence support the primary conclusion in the RI that raw groundwater drawn from Citizens' production wells in the Wellfields is safe for use and consumption:

- In 2016, Citizens demonstrated to IDEM's and U.S. EPA's satisfaction that levels of cVOCs in raw groundwater drawn from Citizens' production wells in the Wellfields were declining, both in terms of the frequency of wells having cVOCs detected as well as actual concentrations detected.
- Declining concentrations have continued over the last four years:
  - Production well WR-3 was the only well in 2016 with concentrations slightly above MCLs.
  - Citizens tested the raw water in production well WR-3 on multiple occasions in 2020 as part of the aeration installation process. All raw water concentrations prior to aeration were either non-detect or below the MCLs, providing direct evidence of ongoing concentration declines.
  - **Table 2** includes cVOC time series graphs of results from testing wells in the Wellfields. These graphs also demonstrate the concentrations continue to decline.
  - No active production well has exceeded an MCL since production well WR-3 was taken out of service in 2016.
- Citizens' operations at the Wellfields further ensures safety of water supplied to the public:
  - Citizens' commitment as part of the Selected Remedy that it will only use raw water from production wells that are already below MCLs, will ensure MCLs can never be exceeded in finished water.
  - Groundwater from the discrete wells in the Wellfields is mixed together and is then mixed with surface water prior to being sent to Citizens' White River Treatment facility for treatment. Surface water makes up approximately 90% and groundwater 10% of the water sent to be treated.

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<sup>7</sup> Prior to shutting down WR-3, TCE concentrations ranged from 4.43 to 8.18 micrograms per liter (µg/L). The MCL for TCE is 5.0 µg/L. WR-3 was the only production well that had exceeded an MCL.





- This surface water/groundwater mix is then treated and tested routinely before being sent to Citizens' customers.
- These combinations of agreed-upon measures ensure that the water delivered to the public will always meet MCLs and be safe for consumption. In fact, data from water treated at the White River Treatment facility confirms that cVOCs have been non-detect in finished water.

### 1.3 Community Participation

IDEM completed and implemented a Community Involvement Plan, including holding several public information meetings in various neighborhoods within Site 0153 and scheduling bi-monthly stakeholder meetings with the City of Indianapolis, Citizens, and the MCPHD to coordinate responses to public concerns. IDEM has also established a public document repository on the 12th Floor of Indiana Government Center North, 100 North Senate Avenue, Indianapolis and maintains a website and interactive map for Site 0153 at:

[www.idem.IN.gov/Site0153](http://www.idem.IN.gov/Site0153). Public documents are also available in the IDEM VFC at: <https://vfc.idem.in.gov>, under 'Land Site ID' 0000635.

The RI Report, HHERA, and FS were made available to the public on November 9, 2020. These reports can be found in the Administrative Record file for the Site or online at:

[www.idem.IN.gov/Site0153](http://www.idem.IN.gov/Site0153). A public comment period for the RI, HHERA, and FS was held from November 10, 2020 to December 11, 2020. In addition, a public meeting was held on November 18, 2020 to review the findings of the RI, HHERA, and FS with interested public parties. Due to COVID-19 restrictions, the public meeting used a virtual format to avoid in-person contact.

IDEM received written comments via IDEM's Site 0153 website and via electronic mail. In total comments were received from two (2) different individuals or organizations, including concerned citizens and environmental organizations. A copy of the comments received are available in the Administrative Record file for the Site. IDEM reviewed all comments submitted during the public comment periods and the public meetings. Based upon review of the written and oral comments received during the public comment periods and public meetings for the RI, HHERA, and FS, IDEM determined no significant changes to the remedy, originally identified in the RAP, were necessary or appropriate.

As detailed in the MOA, seven private wells have been identified within the Site 0153 investigation area. The MCPHD has investigated wells where owners granted access and kept records of well locations. All wells that MCPHD was granted access by the owner to sample were found to be non-detect for cVOCs. The MCPHD will address private well issues, if any, and attempt to conduct sampling, as needed, in the future.



IDEM also continues to support all stakeholders to ensure proposed developments in the area of Site 0153 continue while assuring any potential contamination that may be encountered is addressed responsibly. To facilitate development in the area, a number of production wells within the Riverside Wellfield have been removed from service and abandoned. Due to the loss of production capacity associated with these abandonments, Citizens may need to install additional production wells in the future to meet the needs of the community. These developments have created and will continue to create on-going changes to the composition and hydraulic dynamics of the Wellfields. Throughout development in the area of Site 0153 and the potential subsequent changes to the composition of the Wellfields, Citizens will continue its commitment to providing safe drinking water to the City of Indianapolis.

#### **1.4 Scope and Role of Response Action**

The scope and role of the Selected Remedy focuses on protecting the Wellfield to ensure safe drinking water. This focus is most effectively and reliably achieved by providing provisions for continued monitoring and establishing production well head treatment options, if needed in the future, for raw groundwater exhibiting cVOC concentrations greater than MCLs. Additional measures that have been provided in the RAP include provisions for funding for potential future response actions and community participation and outreach. The Selected Remedy for Site 0153 involves all work necessary to prevent cVOC-impacted groundwater captured by the Wellfields from adversely affecting human health and the environment. The Selected Remedy involves using engineering controls, such as aeration treatment or removal of wells from service, to prevent impacted groundwater above MCLs from entering the Citizens mixing and treatment plant.

In the meantime, IDEM will continue to work with and pursue PRPs under State Programs to investigate and remediate the various discrete and disparate sources of cVOC impacts within the 5-year time of travel of the Wellfields. IDEM's continued efforts under State Programs will ensure the cVOC impacts within the Site continue to diminish while the Selected Remedy provides protection of risks at the Wellfields and groundwater production wells now and into the future.

#### **1.5 Site Characteristics**

##### *1.5.1 Overview of the Site*

Site 0153 consists of an area of marginally impacted groundwater in the vicinity of the Wellfields. In addition to the Wellfields, Site 0153 contains a mix of residential, commercial, industrial, and recreational properties. Major water bodies within the 5-year time of groundwater travel to the Wellfields include the White River, Fall Creek, and the Indianapolis Water Company Canal.





The Wellfields are located in an urban mixed-use area of the city where dozens of historic industrial facilities, potentially using cVOCs, operated over the course of several decades. Low-level cVOCs impacts have migrated to the Wellfields from source(s) within the area of Site 0153. The one-year and 5-year time of travel boundaries for the Wellfields are depicted on **Figure 1** and **Figure 2**. The cVOCs have been detected in both the sand and gravel, and limestone bedrock aquifers of the Riverside Wellfield and in the sand and gravel aquifer of the White River Wellfield<sup>8</sup>.

As noted in the RI report, IDEM has actively pursued the identification of PRPs, narrowed the list of PRPs, and provided oversight to PRPs currently managed within a state remediation program. The IDEM PRP search included the following efforts:

- Conducted records review for every commercial/industrial property located within the Wellfields' 5-year time of groundwater travel to the Wellfields. This review identified over 3,900 properties, most of which had no environmental issues (*i.e.*, no history of a documented release, cVOC usage, or cVOC related waste generation).
- Submitted Request for Information (RFI) letters to all properties that warranted further investigation that were not already enrolled in an IDEM remediation program. To date, IDEM has sent approximately 140 RFI letters to current/historic owners and operators of a total of 104 properties.
- Utilized RFI response information to determine next steps for each PRP, including (if warranted) submittal of a Notice of Liability (NOL) letter to trigger liability of the recipients. The NOL requires each PRP to confirm the potential for release or spill of chemicals, and requires completion of an investigation and cleanup, if necessary.
- Results of IDEM's review are included on **Figure 2**.

To date, IDEM has sent 25 NOL letters, including letters sent to sites that were already enrolled in an IDEM remediation program prior to the identification of Site 0153. Of the 25 facilities that received NOLs, 17 facilities are actively investigating contamination and 8 have received a No Further Action (NFA) or similar closure letter. Multiple facilities in the records investigation area were already enrolled in an IDEM remediation program. Facilities with known releases in the records investigation area were also evaluated to determine their likely contribution to impacts migrating to the Wellfields. To further refine its approach to identified PRPs, IDEM created a focused area of interest and developed a priority ranking/classification system that included the following distinctions:

- High Priority - sites with significant contamination (or suspected of having significant contamination) in close proximity to the Wellfields.

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<sup>8</sup> The White River Wellfield does not have any production wells installed within the limestone bedrock aquifer.



- Medium Priority - sites with significant contamination (or suspected of having significant contamination) within Site 0153 but located farther from any production wells than high priority facilities.
- Low Priority – sites in which investigation results have identified limited or less significant contamination or no apparent contamination.

All of the high- and medium-priority PRPs are currently enrolled in one of the state remediation programs and are at various stages in the investigation and remediation process. If warranted, low-priority sites will continue to be managed within one of the state remediation programs and are at various stages of investigation/remediation.

As discussed above, IDEM is managing characterization and cleanup of individual potential sources within the area of Site 0153 under State Programs. Currently, PRP investigations to define the nature and extent of cVOC impacts in the vicinity of the Wellfields are on-going; thus, both the future concentration and the time over which the production wells will experience continued cVOC input contributions are unknown. However, cVOC concentrations in the raw groundwater of the Wellfields have been declining. Since production well WR-3 was removed from service in 2016, the cVOC concentrations in the raw groundwater from production wells within the Wellfields are below the applicable U.S. EPA MCLs, even before Citizens' standard mixing of groundwater and surface water and treatment at the White River Treatment Facility. See **Table 1** for historic (approx. 2004 – through current) production well analytical results.

Although not all investigation and remediation of discrete PRP sites are complete, IDEM believes that adequate information is available to rely on for decision making purposes as it pertains to the overall protection of the Wellfields and safety of drinking water supply. IDEM will continue to pursue PRPs, as necessary and appropriate, to limit future potential cVOC contributions to Wellfields. Citizens will continue to monitor groundwater, remove production wells above an MCL from service, and install treatment (*e.g.*, aeration or similar), as needed, prior to returning to service. As always, Citizens will continue to ensure that finished drinking water complies with all SDWA requirements prior to distribution. For more detailed information refer to the RI Report in the Administrative Record file or online at [www.idem.IN.gov/Site0153](http://www.idem.IN.gov/Site0153).

### 1.5.2 *Geology*

The unconsolidated soils of the White River basin are composed of fine-grained deposits of the Trafalgar formation, which were deposited during multiple glacial advances during the Pleistocene Epoch. Glacial sediments, including sand and gravel from each of the advances, filled pre-glacial stream valleys and created buried bedrock valleys. The northern half of the White River basin is covered by thick ground moraine (loamy tills interbedded with layers of stratified sand and gravel), while the outwash that was



transported south filled in many of the large stream valleys (Fenelon, 1994). In the vicinity of the Wellfields, the estimated thickness of the unconsolidated deposits is approximately 75 to 95 feet. and consists of fine-grained glacial till (silt and clay) with interbedded layers of sand and gravel. Two distinct sand and gravel layers are found in the vicinity of the Wellfields. The Upper Sand and Gravel unit begins at approximately 10 feet below grade (ft. bg.) and extends to approximately 45 ft. bg. The Lower Sand and Gravel unit begins at approximately 55 ft. bg. and extends to bedrock (75-95 ft. bg.). In most areas, a clay layer separates the upper and lower sand and gravel zones.

In collaboration with Citizens, IDEM reviewed water supply well records for the Wellfields in order to investigate geological conditions beneath the Wellfields. The records indicate the subsurface geology to be generally comprised of either clay/gravelly clay to depths of approximately 2 to 12 ft. bg. or sand/gravel to depths of approximately 21 to 42 ft. bg.<sup>9</sup>. The clay/gravelly clay layer transitions into variations of sand, gravel, and gravelly sand which extends to depths of approximately 38 to 47 ft. bg.<sup>10</sup>. A second clay/gravelly clay layer is present at depths of 39 to 68 ft. bg. and continues to depths of approximately 43 to 70 ft. bg. The deeper clay layer is again underlain by variations of sand, gravel, and gravelly sand to bedrock or termination of boring, ranging between 59 and 103 ft. bg. Bedrock is noted at depths ranging from 70 to 103 ft. bg. and is described as limestone/carbonate rock.

According to the Bedrock Geologic Map of Indiana (Gray, Ault, & Keller, 1987), the bedrock in Marion County is located between two regional structural features (Cincinnati Arch to the northeast and Illinois Basin to the southwest). Bedrock in the area dips slightly to the southwest and consists primarily of Devonian-age limestone and dolomite of the Muscatatuck Group. The Muscatatuck Group can be up to 250 ft. thick but is approximately 50 to 60 ft. thick in the vicinity of Site 0153.

In addition, local geologic cross-sections were prepared for the general area surrounding the Wellfields. These figures were adapted from cross sectional maps provided in the Indianapolis Water Company Wellhead Protection Plan (WHPP). The locations of local geologic cross sections are provided on **Figure 3A** and local geologic cross sections are provided as **Figures 3B (A-A')**, **3C (B-B')**, and **3D (C-C')**.

### 1.5.3 Hydrogeology

#### *Unconsolidated Aquifers*

Four distinct unconsolidated aquifer systems and subsystems are present within the Site investigation area. The New Castle/Tipton Till Aquifer System, the New Castle/Tipton

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<sup>9</sup> A gravelly clay layer was encountered within the sand/gravel unit from 22 to 25 ft. bg. at two well locations.

<sup>10</sup> This sand, gravel, and gravelly sand layer extends to bedrock or boring termination at two well locations.



Till Aquifer Subsystem, the New Castle/Tipton Till Complex Aquifer System, and the White River and Tributaries Outwash Aquifer System. The Wellfields lie within the White River and Tributaries Outwash Aquifer System (Indiana Department of Natural Resources (IDNR), 2011).

In the Wellfields, an Upper Sand and Gravel unit and a Lower Sand and Gravel Unit have been identified. The upper unit begins at approximately 10 ft. bg. and extends to approximately 45 ft. bg. The lower unit begins at approximately 55 ft. bg. and extends to bedrock (75-95 ft. bg.). In most areas, a clay layer separates the upper and lower units and acts as a barrier to minimize the migration of groundwater from the upper unit to the lower unit. Eight production wells within the Wellfields withdraw groundwater from the Lower Sand and Gravel Unit.

According to the *Potentiometric Surface Map of the Unconsolidated Aquifers of Marion County, Indiana* (Indiana Department of Natural Resources, 2012), the regional groundwater flow is towards the White River, with flow on the western side of the county to the east/southeast and flow on the eastern side of the county to the west/southwest. In the area surrounding the Wellfields groundwater flow is generally radial toward the production wells operating in the Wellfields. Depending on the time of year and the volume of water being extracted by the Wellfields, water for the Wellfields may be drawn from both the White River and Fall Creek, creating localized losing reaches for both streams.

### *Bedrock Aquifers*

Three distinct bedrock aquifer systems are present within Marion County. The Borden Group Aquifer System, the New Albany Shale Aquifer System, and the Silurian and Devonian Carbonates Aquifer System. The Wellfields lie within the Silurian and Devonian aquifer which is comprised of limestone and dolostone of the Muscatatuck Group and similar underlying Silurian carbonates. Capable of supporting the needs of domestic and high-capacity users, yields from the carbonate aquifer range from 10 to 1,200 gallons per minute (gpm) with static water levels ranging from flowing surface outcrops to 227 ft. below surface. Wells in this aquifer system penetrate up to 400 ft. into the carbonate bedrock with depths ranging from 30 to 485 ft. Typically overlain by thick clay deposits, this system is at low risk to contamination from surface sources. However, in areas where the system is overlain by unconsolidated deposits composed of primarily sand and gravel outwash materials, risk to contamination is considered high (IDNR, 2011). Ten production wells within the Riverside Wellfield<sup>11</sup> withdraw groundwater from the bedrock aquifer.

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<sup>11</sup> The White River Wellfield does not have any production wells installed within the limestone bedrock aquifer.



According to the Potentiometric Surface Map of the Consolidated Aquifers of Marion County, Indiana (IDNR, 2012), the regional groundwater flow is towards the White River, with flow on the western side of the county to the east/southeast and flow on the eastern side of the county to the west/southwest. A more southerly flow is generally observed in the vicinity of the Wellfields.

#### *1.5.4 Types of Contamination and the Affected Media*

Low-level cVOC impacts detected in Citizens' production wells have migrated to the Wellfields from source(s) within the area of Site 0153. The Wellfields, which are the focus of this ROD, are located in an urban mixed-use area of the city where dozens of historic industrial facilities, which potentially used cVOCs, operated over the course of several decades. Although the definitive source(s) of the low-level cVOC impacts detected in Citizens' production wells is (are) unknown, it is suspected the original release or releases consisted of tetrachloroethene (PCE) and/or trichloroethylene (TCE), which are chlorinated solvents commonly used in dry-cleaning, industrial, and manufacturing activities. Impacted media from potential sources within the area of Site 0153 will be addressed (if necessary) through individual site investigations conducted by PRPs. These PRP investigations will be conducted as part of State Investigation/Remediation Programs under the direction of IDEM.

#### *1.5.5 Known or Suspected Sources of Contamination*

The low-level impacts to groundwater observed in the Wellfield production wells have migrated to the production wells from source(s) outside the Wellfields. During the RI, IDEM conducted an extensive search to identify PRPs, enrolled several new sites into state remediation programs, narrowed the list of PRPs, and provided oversight to PRPs currently managed within a remediation program at IDEM. To-date, a definitive source(s) of the cVOCs impacting the Wellfields has not been identified. It is anticipated that a number of individual sources are contributing to a diffuse commingled plume. Individual PRPs have been and will be responsible for conducting their own site investigations<sup>12</sup> and remediation, under directive from IDEM, to address their potential cVOC impact contributions to the Wellfields, as well as any other associated risks (*e.g.*, vapor intrusion exposure).

During the RI, IDEM provided individual site summaries for the priority PRP sites located within a "focused area of interest". The location of priority sites in the focused area of

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<sup>12</sup> The level, degree, and need for investigation of different mediums at individual sites will vary from site to site based on individual site conditions. Investigations at individual PRP sites may include (but not necessarily be limited to): source identification, surface and subsurface soils, groundwater, impacts to private wells, soil gas and potential vapor intrusions, surface water, sediment, and ecological impacts. All investigations conducted by PRPs have been and will continue to be conducted under the oversight of IDEM.



interest are depicted on **Figure 4**. Information regarding the investigation/remediation status of the priority sites identified in the focused area of interest is provided in **Table 4**. Individual site summaries can be found in the RI and full results of investigations conducted by PRPs can be found on the IDEM's VFC. While the magnitude and location of sources are unknown, removal of potential cVOC sources at individual sites is expected to reduce future concentrations and the time over which production wells will experience continued cVOCs inputs. Since all priority properties are enrolled in an IDEM remediation program with investigation and remediation currently ongoing under State Programs, no additional efforts are needed under the Federal Superfund process.

#### 1.5.6 *Groundwater and Drinking Water Investigations*

Citizens has routinely collected and analyzed raw groundwater samples from individual production wells and finished drinking water samples, prior to distribution to customers. On February 20, 2013, IDEM staff received notice from Citizens that cVOCs were being detected in the groundwater samples collected from production wells prior to treatment at the Riverside Municipal Wellfield. Since this notification, Citizens has regularly provided the finished water and raw groundwater sample results to IDEM for review. Citizens has a long history of sampling both the finished water and the raw groundwater from individual production wells. In order to more closely monitor the identified cVOC impacts in the Wellfields, Citizens increased its sampling frequency for both the finished water and the raw groundwater from individual production wells from semi-annually to quarterly, beginning in 2017.

Historic (approximately 2004 through current) raw groundwater sample analytical results from individual production wells are summarized in **Table 1**. In addition, **Table 2** provides cVOC Concentration vs. Time graphs, comparing raw groundwater sampling analytical results from production wells to the respective MCL. Well names beginning with "RS" indicate a production well located in the Riverside Municipal Wellfield and well names beginning with a "WR" indicate a production well located in the White River Municipal Wellfield. Finished water sample results for samples collected by Citizens indicate no chemicals of concern (COCs) have been detected in the finished water (*i.e.*, drinking water provided to customers). Finished water sample analytical results (2016 through current) are summarized in **Table 3**.

As a presumptive interim measure, Citizens engineered and installed an aeration remediation system for production well WR-3 beginning in September 2019. Aeration system construction was completed in late January 2020. Citizens conducted aeration testing on production well WR-3 from February through April 2020 and production well WR-3 is now back in service. Currently, all raw groundwater generated from production well WR-3, even before it is aerated, is below MCLs, providing further evidence that cVOC concentrations in the Wellfields continue to decline. Pre- and post-aeration





groundwater results are summarized in **Table 5**. As part of the Selected Remedy, Citizens has committed to taking any production well where raw groundwater exceeds an MCL out of service and only return it to service once the raw groundwater meets, or is treated until it meets, the MCL. Exceedances of an MCL will be determined through quarterly sampling conducted by Citizens. An MCL exceedance will be determined by calculating a running annual average of all samples taken from an individual production well. If any sample result would cause the running annual average to exceed the MCL, the production well would be considered above the MCL. The MCL exceedance criteria is adapted from 327 IAC 8-2-5.5 (15)(A) and (C).

#### *1.5.7 Conceptual Site Model and Potential Routes of Migration*

Given that the definitive source(s) of the cVOCs has not been identified for Site 0153, and impacts observed in the production wells have not originated within the Wellfields, groundwater transport of cVOCs from sources(s) within the area of Site 0153 into the Wellfields is the only credible mechanism capable of producing the observed conditions in the production wells. A Conceptual Site Model (CSM) was developed for Site 0153 to provide information on how groundwater and cVOC impacts could move from surrounding areas to the production wells. The CSM also illustrates how the hydrological cycle interacts with the local geology to allow cVOC impacts to interact with exposure pathways (soil, groundwater, and vapor intrusion). Finally, the CSM presents how the completed exposure pathways will be controlled through either an IDEM remediation program or through the Selected Remedy, for the production wells at the Wellfields. The CSM for the Site is depicted graphically on **Figure 5**.

#### *1.5.8 Modeling Methods and Results*

The hydrogeology of areas surrounding Site 0153 has been heavily studied due to the presence of the Wellfields. Wittman Hydro Planning Associates, Inc. (Wittman) prepared a Capture Zone Delineation report (Wittman, 2000) to delineate the time-of-travel capture zones for the Wellfields. Wellhead Protection Areas (WHPAs) are defined in 327 IAC 8-4.1-1(27) as being the surface and subsurface area which contributes water to a community public water supply system production well or wellfield and through which contaminants are likely to move through and reach the well within a specified period of time. This area is delineated by fixed radius or by mathematical (hydrogeological mapping, analytical, semi analytical, or numerical flow/solute transport) methods. Wittman delineated capture zones with a range of alternate models using the groundwater flow models MODFLOW and GFLOW.

The purpose of delineating the capture zones of the wellfield was to determine the source areas of the water flowing to the wells. The water pumped from high capacity wells comes from at least one of the following sources:

- Induced recharge from adjacent surface water features;



- Vertical leakage from another aquifer;
- Local recharge; or,
- Regional flow (Wittman, 2000).

In most cases the water flowing into a pumping center near a stream is made up of a mix of these sources (Wittman, 2000).

During the study, Wittman obtained regional and local hydrogeologic information utilizing prior modeling studies by Smith (1983) and Meyer et al. (1975) and others. The information from these prior studies and references was used to calibrate the Wittman groundwater flow models. During the modeling process different scenarios were evaluated using various possible hydraulic parameters of the aquifer, recharge rates, and hydraulic resistances of the streams in the region. Once all of the scenarios were evaluated and capture zones for the wellfields were determined for each scenario, the final WHPA was delineated by drawing a line which enclosed all of the capture zones for all the modeled runs. This procedure ensured that uncertainties in the capture zones introduced by data uncertainty were accounted for in the regulatory process. In effect, the perimeter of the WHPA is defined by the more conservative scenarios.

The Capture Zone Delineation report (Wittman, 2000) helped define the current one-year and 5-year time of travel boundaries for the WHPA. The one-year and 5-year time of travel boundaries are depicted on **Figure 1** and **Figure 2**.

## 1.6 Current and Potential Future Land and Water Use

Land use within the boundaries of the Site is currently a mix of residential, commercial, industrial, and recreational properties. Despite proposed developments in the area of Site 0153, on the whole, land use at the Site is anticipated to remain unchanged for the foreseeable future.

The Wellfields and the White River Treatment Plant are located within the Site. To facilitate development in the area, a number of production wells within the Riverside Wellfield have been removed from service and abandoned. Due to the loss of production capacity associated with these abandonments, Citizens may need to install additional production wells in the future to meet the needs of the community. These developments have created and will continue to create on-going changes to the composition and hydraulic dynamics of the Wellfields. Throughout development in the area of Site 0153 and the potential subsequent changes to the composition of the Wellfields, Citizens will continue its commitment to providing safe drinking water to the City of Indianapolis.

Currently, cVOC concentrations in the raw groundwater within the Wellfields are all below the applicable U.S. EPA MCLs and have been for the last four years. Since the Selected Remedy will ensure the Wellfields can continue to be operated in a manner that protects human health





and the environment. In addition to the elements included in the Selected Remedy, IDEM's continuing efforts under State Programs to address sites within the 5-year time of travel to the Wellfields will limit future potential contributions of cVOCs to the Wellfields and ensure the already protective Selected Remedy will continue to be protective in the future.

### 1.7 Summary of Site Risks

IDEM, as required by the MOA, has worked diligently to determine the potential risks associated with Site 0153 and the Wellfields. As detailed in prior sections of the ROD, IDEM has identified numerous PRPs and potential source(s) within 0153 and is managing the investigation/remediation efforts under State Programs. Although not all investigation and remediation of discrete PRP sites are complete, IDEM believes that adequate information is available to rely on for decision making purposes as it pertains to the overall protection of the Wellfields and safety of drinking water supply. IDEM will continue to pursue PRPs, as necessary and appropriate, to limit future potential cVOC contributions to Wellfields. Citizens will continue to monitor groundwater, remove production wells above an MCL from service, and install treatment (e.g., aeration or similar), as needed, prior to returning to service. As always, Citizens will continue to ensure that finished drinking water complies with all SDWA requirements prior to distribution.

As part of the Site 0153 process, IDEM conducted a HHHERA to determine the overall risk associated with the Wellfield. IDEM prepared the HHHERA to provide a qualitative assessment and, where appropriate, quantitative analyses, in a conservative manner, of the potential for adverse health effects from exposure to constituents in environmental media associated with the Wellfields. The HHHERA is designed to provide a sound basis for current and future risk management decisions. The purpose of the HHHERA is to characterize, assess, and summarize risks to human health and the environment associated with the groundwater produced from the Wellfields. To that end, the HHHERA focused on the Wellfields and did not focus on individual PRP sites in the immediate or surrounding area. Risk Assessment at individual sites within Site 0153 boundaries, if required, will be conducted separately under IDEM remediation programs.

*Key components and conclusions identified in the HHHERA include the following:*

- Current and historic finished drinking water results are below MCLs, so further risk evaluation of finished drinking water is not warranted or necessary.
- Site 0153 was proposed for the NPL based on groundwater detections of cVOCs in production wells. All evidence developed to date supports the conclusion that these detections are associated with disparate historic releases from off-Site properties in the surrounding area.
  - The HHHERA focuses on cVOCs associated with chlorinated solvents traditionally utilized in dry cleaning, industrial, and manufacturing activities including PCE,



TCE, and 1,1,1-trichloroethane (1,1,1-TCA), as well as the respective degradation by-products.

- Constituents of Potential Concern (COPCs) for risk assessment purposes were developed using production well analytical results collected from the Wellfields since 2004.
  - This data set provided 486 data points from the Riverside Wellfield and 150 data points from the White River Wellfield for consideration.
  - COPCs utilized in the HHERA include: TCE, cis-1,2-dichloroethene (cis-1,2-DCE), and vinyl chloride.
- An exposure assessment was completed to determine potential exposure pathways, potential future receptors that could be exposed to Wellfield COPCs, and potential exposure routes. The HHERA focused on the public water supply and calculated risk based on the following:
  - Residential (Adult and Child) receptors, and
  - Potential dermal and ingestion exposure routes.
- Operating data, including standard mixing of groundwater and surface water prior to treatment, from 2004 to 2019 were incorporated into the risk calculation to provide accuracy.
- The U.S. EPA Regional Screening Level (RSL) calculator was utilized to determine both carcinogenic risk and non-carcinogenic hazard index for COPCs in the combined, blended Wellfield/Surface Water output.
- HHERA Risk Characterization identified results well within U.S. EPA-acceptable levels (*i.e.*, no unacceptable risks). Results of the HHERA include:
  - Total calculated Carcinogenic Risk of  $4.22 \times 10^{-6}$ . U.S. EPA considers theoretical excess lifetime cancer risks in the range of  $1 \times 10^{-6}$  to  $1 \times 10^{-4}$  to be acceptable under CERCLA. Additionally, the MOA identified the target risk criteria for Site 0153 to be at or below  $1 \times 10^{-5}$  (which the calculated value,  $4.22 \times 10^{-6}$ , falls below).
  - Total calculated Non-Carcinogenic Hazard Index of 0.0250. U.S. EPA considers any Hazard Index of  $<1.0$  acceptable under CERCLA.

As indicated by the results of the HHERA, it is apparent that Citizens can and has safely operated the Wellfields in a manner that protects human health and the environment even though all PRP investigations and remediation efforts are not complete. There are no active production wells in the Wellfields with raw groundwater cVOC concentrations above MCLs. Declining cVOC concentrations observed in the Wellfields support the conclusion that PRP investigation/remediation efforts conducted to date are already showing a beneficial reduction of cVOC contributions to raw groundwater. Furthermore, IDEM can rely on Citizens' operations, and under their Drinking Water permit with IDEM, to ensure that water supply remains safe for public use.

The cVOC concentrations in the raw groundwater within the Wellfields are currently below the applicable U.S. EPA MCLs and the HHERA determined there are no unacceptable risks. The response action selected in the ROD was developed to ensure continued protection of human



health and the environment should future cVOC raw groundwater concentrations in the Wellfields change.

### 1.8 Remedial Action Objectives

As part of the FS, Remedial Action Objectives (RAOs) have been developed for the groundwater being extracted from the Wellfields. Currently, all production well raw groundwater is below applicable MCLs. Since the focus for the Site is to continue to provide a safe source of drinking water from the production wells for public consumption, the following RAOs have been developed to accomplish this goal:

- Prevent commercial/industrial worker direct contact scenarios and inhalation exposure to groundwater produced from the production wells within the Wellfields with cVOC concentrations in excess of state or federal standards.
- Treat the groundwater (if needed) produced from production wells within the Wellfields containing cVOC concentrations in excess of a MCL to remove cVOCs to concentrations that are protective of human health prior to mixing with surface water, subsequent treatment, and distribution for public consumption.
- Provide a long-term monitoring and response action plan capable of continuing to provide a constant supply of safe drinking water for the public.

Additional information regarding the RAOs established for the Wellfields is provided in the FS. Federal MCLs have been selected as the remediation goals for the cVOC treatment of groundwater from the production wells in the Wellfields. The selection of Federal MCLs as the remediation goals for cVOC treatment of groundwater from production wells in the Wellfields, the elements provided in the Selected Remedy, and the additional elements provided in the RAP were developed to ensure the above-mentioned RAOs for the Wellfields are met.

### 1.9 Description of Alternatives

As part of the FS, IDEM analyzed potential remedial alternatives for addressing low-level cVOC impacts in the Wellfields. Specifically, the FS focused on treating the groundwater at the extraction point in the Wellfields (*i.e.*, at production wells that contain cVOC concentrations above the MCL in the raw water). A presumptive remedy approach based upon the EPA's 1996 document entitled *Presumptive Response Strategy and Ex Situ Treatment Technologies for Contaminated Ground Water at CERCLA Sites, Final Guidance* (U.S. EPA, 1996) was utilized to develop remedial alternatives for the Wellfields that have been shown to successfully treat cVOCs. The following remedial alternatives were evaluated for treatment of cVOC constituents in the raw groundwater produced from the production wells within the Wellfields:

- No Action
- Aeration
- Carbon Absorption
- Ozonation



- Advanced Oxidation
- Anaerobic Biological Reactor

The “No Action” alternative was evaluated for the Wellfields to establish a baseline for comparison to other remedial alternatives. All remedial alternatives except Anaerobic Biological Reactor passed the initial screening process. A detailed analysis of remedial alternatives is provided in the following sections. Further description of the remedial alternatives can be found in the FS, available in the Administrative Record file or online at [www.idem.IN.gov/Site0153](http://www.idem.IN.gov/Site0153).

### 1.10 Summary of Comparative Analysis of Alternatives

The U.S. EPA (U.S. EPA, 1988) and the National Contingency Plan (NCP) require that each treatment alternative be evaluated against nine evaluation criteria. The purpose of this evaluation is to promote consistent identification of the relative advantages and disadvantages of each alternative, thereby guiding selection of remedies offering the most effective and efficient means of achieving site cleanup goals. The nine criteria are categorized into three groups including threshold criteria, balancing criteria, and modifying criteria. Threshold criteria are requirements that must be met by an individual alternative for it to be eligible for selection. Balancing and modifying criteria are used to compare and ultimately choose the most appropriate alternative. The nine criteria are provided below, and a table comparing the alternatives against these criteria is provided as **Table 6**.

Criteria Group	Number of Criteria in Group	Criteria Description
Threshold Criteria	2	Protection of human health and the environment
		Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)
Balancing Criteria	5	Long-term effectiveness and permanence
		Reduction in toxicity, mobility, or volume
		Short-term effectiveness
		Implementability
		Cost
Modifying Criteria	2	State acceptance
		Community acceptance

As identified in **Table 6**, a scoring system was developed and assigned to the nine criteria discussed above, to select the recommended alternative for the Wellfields. Note that the No Action alternative was not scored since it did not pass the threshold criterion as required by the U.S. EPA (U.S. EPA, 1988) for acceptance.

The nine criteria, excluding cost, were scored as either high, medium, or low depending upon how the alternative meets the individual criterion:

- A high ranking meets the requirements of the criterion and was scored as three points.



- A medium ranking generally meets the criterion requirements, but with some exceptions and was scored as two points.
- A low score did not meet the criterion requirements for various reasons and was scored as one point.

A detailed evaluation of the alternatives compared against the criteria discussed above can be found below and is included in the FS, available in the Administrative Record file or online at [www.idem.IN.gov/Site0153](http://www.idem.IN.gov/Site0153).

### **1.11 Detailed Evaluation of Remediation Alternatives**

Alternatives were evaluated based upon the threshold, balancing, and modifying criteria discussed above. Currently all raw production well groundwater is below applicable MCLs, however alternatives were evaluated using the theoretical scenario that a cVOC concentration increased above an MCL. Based on the results of the detailed evaluation of the Remediation Alternatives, aeration is the recommended remedial alternative that could be utilized if verified concentrations in a production well exceed any MCL, to treat potential future cVOC impacts in the Wellfields.

Aeration is also a common-sense, “presumptive remedy” that has already been implemented at this Site and has been shown to be effective. Citizens proactively installed aeration at production well WR-3 prior to development of the FS. Results of the pre- and post-aeration raw groundwater indicates this presumptive remedy successfully reduces cVOC concentrations at the production well even before being mixed with other groundwater/surface water prior to treatment and distribution. There are currently no active production wells in the Wellfields with raw groundwater cVOC concentrations above MCLs.

Additional information regarding the specifics of the remedial alternatives reviewed and the evaluation criteria employed by IDEM can be referenced in the FS available in the Administrative Record file or online at [www.idem.IN.gov/Site0153](http://www.idem.IN.gov/Site0153).

### **1.12 Principal Threat Wastes**

The NCP establishes an expectation that treatment will be used to address the principal threats posed by a site wherever practicable (NCP at 40 Code of Federal Regulations (CFR) § 300.430(a)(1)(iii)(A)). In general, principal threat wastes are those source materials considered to be highly toxic or highly mobile which generally cannot be contained in a reliable manner or would present a significant risk to human health or the environment should exposure occur. Conversely, non-principal threat wastes are those source materials that generally can be reliably contained and that would present only a low risk in the event of exposure. Source materials are materials that include or contain hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to groundwater, surface water, or as a source for direct exposure.



Principal threat wastes have not been identified at the Site. Despite an extensive search conducted by IDEM, a definitive source(s) of cVOCs impacting the Wellfields has not been identified to-date. While the magnitude and location of definitive sources are unknown, removal of potential cVOC sources at individual sites is expected to reduce future concentrations and the time over which production wells will experience continued cVOCs inputs. Although the raw groundwater (if it increases above an MCL) from production wells poses a risk, it is not considered a “principal threat waste” as defined by U.S. EPA guidance, since contaminated groundwater is not considered to be a source material (U.S. EPA, 1991).

## 1.13 Preferred Alternative

### 1.13.1 *Summary of the Rationale for the Preferred Alternative*

Aeration is the Preferred Alternative for treatment of cVOCs in raw groundwater produced from the Wellfields, should treatment become necessary in the future. As noted in **Table 6**, aeration passes the threshold criteria for acceptance, and scored high for long-term effectiveness and implementability, and medium for reduction in toxicity, mobility, or volume, and short-term effectiveness. Aeration is also a common-sense, “presumptive remedy” that has already been implemented at this Site as an interim measure and shown to be effective at achieving the RAOs. It is also the most cost-effective active remediation alternative.

### 1.13.2 *Summary of the Estimated Aeration Alternative Costs*

**Table 7** summarizes the costs associated with the Aeration alternative. The estimated present-worth costs of the Aeration alternative is \$1,894,000. The Aeration alternative equipment and operating costing is based on actual costs for the aeration system installed on production well WR-3. The removal efficiency for production well WR3 is currently 50-60%. The operations and maintenance (O&M) costs for the Aeration alternative assumes the system will be routinely washed and the packing will be replaced with new material, as needed. Electricity costs to operate the aeration blower for the system were also accounted for.

## 1.14 Description of Selected Remedy

Currently, cVOC concentrations in the raw groundwater removed by production wells within the Wellfields are either non-detect or all below applicable U.S. EPA MCLs. The Selected Remedy presented in this ROD was developed to ensure protection of human health and the environment by requiring the raw groundwater cVOC concentrations in all production wells to be below the applicable MCLs. Should raw groundwater cVOC concentrations in a production well change in the future, the Selected Remedy presented in this ROD requires removal of the production from service and either: demonstrating the production well results are reliably and





consistently below MCLs; or installing treatment to ensure cVOCs concentrations are reduced to levels below MCLs. As detailed in the RAP, IDEM's ongoing pursuit of PRPs, as necessary and appropriate, will further limit future potential cVOC contributions to Wellfields. Considering the declining cVOC concentrations in the Wellfields, a successful presumptive remedy already installed and operating in production well WR-3, and a recommended treatment alternative should production well cVOCs exceed an MCL in the future, IDEM's Selected Remedy includes the following elements:

- Remove from service any production well where raw groundwater cVOC concentrations exceed an MCL<sup>13</sup> and either:
  - Remain out of service until multiple resampling events<sup>14</sup>, completed on separate occasions, demonstrate that production well results are reliably and consistently below MCLs; or
  - Install treatment (e.g. aeration or similar<sup>15</sup>) to reduce concentrations and complete confirmatory sampling of post-treatment water to ensure results are below MCLs before returning the well to service.
- Continue operation and maintenance of the aeration equipment installed for production well WR-3 (or any other well that requires it) until aeration is no longer necessary, to ensure all raw groundwater in active production wells is below MCLs.
- Continue routine Wellfield quarterly sampling<sup>16</sup> of active production wells for cVOCs until monitoring has demonstrated that raw groundwater is below MCLs.

In addition to the elements of the Selected Remedy detailed above, additional measures that will be undertaken to further ensure protection of human health and the environment (which were described in the RAP) include the following:

- IDEM will enter into settlements with willing Site 0153 PRPs to create a settlement fund entitled "Site 0153 Monitoring and Future Response Fund (MAFR)." For the first five years, all settlement payments will be dedicated to funding future response actions within Site 0153, including:
  - Monitoring related to protecting Citizens production wells from cVOCs;

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<sup>13</sup> Exceedances of an MCL will be determined through quarterly sampling conducted by Citizens. An MCL exceedance will be determined by calculating a running annual average of all samples taken from an individual production well. If any sample result would cause the running annual average to exceed the MCL, the production well would be considered above the MCL. The MCL exceedance criteria is adapted from 327 Indiana Administrative Code (IAC) 8-2-5.5 (15)(A) and (C).

<sup>14</sup> "Multiple resampling events" means a minimum of two consecutive resampling events resulting in cVOC concentrations below the MCL that result in a reduction in the running annual average to below the MCL. The resampling criteria is adapted from 327 IAC 8-2-5.5 (11)(B)

<sup>15</sup> The FS evaluated currently available remedial technologies and associated criteria for reduction of cVOCs from a production well and concluded that aeration treatment was a reliable, effective technology. Since the Preferred Alternative for treatment of groundwater from production wells is a commitment for the future, remedial options may change over time, and re-evaluation may be warranted based on newly available technologies.

<sup>16</sup> If future quarterly sampling events consistently demonstrate cVOC concentrations in the Wellfields are below MCLs, even before standard mixing and treatment operations, sampling frequency could be reduced.



- Collecting new evidence to determine whether cVOCs released from any PRP's facility threaten or impact any production wells in use within the Wellfields;
- Funding or installing suitable water treatment equipment to remove cVOCs from water extracted from Citizens' production wells; and
- If both remediation and treatment are not cost effective, funding the relocation of production wells as necessary to maintain use of the Wellfields or development of a new wellfield
- If the MAFR Fund is not needed for these purposes, in years 6 to 10 IDEM may begin spending the fund on IDEM oversight costs.
- IDEM will continue to work closely with the public, community organizations, governmental entities (including the City of Indianapolis and the Marion County Public Health Department (MCPHD)), and other stakeholders to ensure their involvement in both the Selected Remedy and the progress of any discrete PRP site remediation and/or monitoring program within Site 0153.
- IDEM and the MCPHD will continue to ensure that any private wells within Site 0153 meet MCLs including sampling the wells if requested by the property owner.
- IDEM will continue to provide annual reports<sup>17</sup> to the U.S. EPA, as required by the MOA. In addition, IDEM will continue to maintain and update the website for Site 0153 at: [www.idem.IN.gov/Site0153](http://www.idem.IN.gov/Site0153) until the formal de-proposal of Site 0153 from inclusion on the NPL is finalized.
- Citizens will provide IDEM with routine updates regarding quarterly sampling results and annual rolling cVOC averages for operating production wells within the Wellfields. Routine updates will continue for a period of 5 years from the date this ROD is finalized or until IDEM and Citizens agree that updates are no longer necessary (whichever is sooner).

The elements of the Selected Remedy and the additional measures provided in the RAP are designed to provide protection of risks at the Wellfields, while ensuring the cVOC impacts within the Site continue to decline. IDEM believes that the elements of the Selected Remedy are the most effective way to protect human health and the environment from potential risks at the Wellfields, would comply with Federal and State environmental statutes and regulations, would be cost-effective, and would utilize permanent solutions and alternative treatment technologies to the maximum extent practicable.

#### *1.14.1 Expected Outcomes of the Selected Remedy*

Currently, cVOC concentrations in the raw groundwater within the Wellfields are all below the applicable U.S. EPA MCLs and have been for the last four years. Citizens can

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<sup>17</sup> In accordance with the Memorandum of Agreement (MOA), once the Site remedial action is successfully completed, it is expected that the U.S. EPA will have no further interest in considering the Site for final listing on the NPL and that the Site will be de-proposed from the NPL. Therefore, annual reports will continue until remedial action has been successfully completed and/or the Site has been de-proposed from the NPL.





and has safely operated the Wellfields in a manner that protects human health and the environment. Finished water analytical results are presented in **Table 3**. Since the Selected Remedy includes elements to prevent cVOC-impacted groundwater captured by the Wellfields from entering the Citizens mixing and pre-treatment plant prior to mixing, treatment, and distribution, the Selected Remedy will allow for unlimited use of the groundwater in the Wellfields, providing a long-term solution capable of continuing to provide a constant supply of safe drinking water to the public. Furthermore, IDEM can rely on Citizens' operations, and under their Drinking Water permit with IDEM, to ensure that water supply remains safe for public use.

Additional measures that have been provided in the RAP include provisions for funding for potential future response actions and community participation and outreach. IDEM will continue to work with and pursue PRPs under State Programs to investigate and remediate the various discrete and disparate sources of cVOC impacts within the 5-year time of travel of the Wellfields. IDEM's continued efforts under State Programs will ensure the cVOC impacts within the Site continue to diminish while the Selected Remedy provides protection of risks at the Wellfields and groundwater production wells now and into the future.

### **1.15 Statutory Determinations**

IDEM selected remedies that are protective of human health and the environment, comply with ARARs (unless a statutory waiver is justified; not applicable here), are cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Currently, cVOC concentrations in the raw groundwater removed by production wells within the Wellfields are all below the applicable U.S. EPA MCLs. The Preferred Alternative selected and presented in this ROD was developed to ensure protection of human health and the environment from risks at the Wellfields should future cVOC raw groundwater concentrations in the Wellfields change. The following sections discuss how the Selected Remedy and Preferred Alternative, aeration (should treatment become necessary in the future), meets statutory requirements. These actions are consistent with IDEM's authority under IC 13-25-4 and 329 IAC 7.1-8-1.



### *1.15.1 Protection of Human Health and the Environment*

Currently, cVOC concentrations in the raw groundwater removed by production wells within the Wellfields are all below the applicable U.S. EPA MCLs. The Selected Remedy provides protection to human health and the environment from risks associated with the Wellfields by continued operation and maintenance of the aeration equipment on production well WR-3, continued monitoring of cVOC concentrations within the Wellfields, and a plan to remove from service any production well where raw groundwater cVOC concentration exceeds an MCL in the future. This would prevent raw groundwater exceeding an MCL from entering the Citizens mixing and pre-treatment plant, which would prevent exposure. Should treatment of the raw production well groundwater become necessary in the future, the Aeration alternative provides protection for human health by reduction of cVOCs in raw production well groundwater to concentrations below MCLs. This will prevent impacted groundwater above MCLs from entering the Citizens mixing and pre-treatment plant prior to mixing, treatment, and distribution. Which will prevent exposure to the cVOC impacted groundwater.

### *1.15.2 Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)*

The Aeration alternative will comply with the chemical-specific, action-specific, and location-specific ARARs. **Table 8** lists the final chemical-specific ARARs for the Wellfields. **Table 9** lists the final action-specific ARARs identified for the Wellfields. Final location-specific ARARs for the Wellfields are provided in **Table 10**.

### *1.15.3 Cost-Effectiveness*

In IDEM's judgement, the Selected Remedy is cost-effective and represents a reasonable value for the money to be spent. The estimated present-worth costs of the Aeration alternative is \$1,894,000. The Aeration alternative is the least expensive active remediation alternative and has already been proven to be effective at the Site. **Table 7** identifies the present-worth cost estimate for the Aeration alternative (along with the other evaluated alternatives).

### *1.15.4 Utilization of Permanent Solutions and Alternative Treatment (or Resource Recovery) Technologies to the Maximum Extent Practicable*

The selected Aeration alternative represents the maximum extent to which permanent solutions and treatment technologies can be used in a cost-effective manner for Site 0153, should treatment become necessary in the future. A definitive source(s) of cVOCs impacting the Wellfields has not been identified to-date. Since potential sources are being addressed through an IDEM remediation program, no additional efforts are needed under the Federal Superfund process. Therefore, a remedy that is focused on treatment of the



groundwater produced from Wellfields has been determined to represent the maximum extent to which permanent solutions and treatment technologies can be used in a cost-effective manner.

If treatment is needed in the future, treatment of the water using aeration has been proven to be protective of human health and complies with ARARs. IDEM has determined that aeration provides the best balance of trade-offs in terms of long-term effectiveness and permanence; reduction in toxicity, mobility, or volume through treatment; short term effectiveness; implementability; and cost; while also considering the statutory preference for treatment as a principal element and considering state and community acceptance.

#### *1.15.5 Preference for Treatment as a Principal Element*

The Selected Remedy includes elements that satisfy the statutory preference for remedies that employ treatment as a principal element (should cVOC concentrations exceed an MCL in the future). Currently, cVOC concentrations in the raw groundwater removed by production wells within the Wellfields are all below the applicable U.S. EPA MCLs and have been for the last four years. The remedial action selected and presented in this ROD was developed to ensure protection of human health and the environment should future cVOC raw groundwater concentrations in the Wellfields change. Treatment by aeration addresses the principal threat posed by groundwater produced from the Wellfields through the use of a proven treatment technology.

#### *1.15.6 Five-Year Review Requirements*

Although the Selected Remedy includes an element for treatment of production well water via aeration should cVOC concentrations increase above an MCL in the future; cVOC concentrations in the Wellfields have been declining both in terms of the frequency of wells having cVOC detected as well as actual concentrations detected. CVOC concentrations are currently below MCLs (as they have been for the last four years) and the Selected Remedy will ensure the Wellfields can continue to be operated in a manner that protects human health and the environment. In addition to the elements included in the Selected Remedy, IDEM's continuing efforts under State Programs to address sites within the 5-year time of travel to the Wellfields will limit future potential contributions of cVOCs to the Wellfields and ensure the already protective Selected Remedy will continue to be protective in the future.

Citizens will provide IDEM with routine updates regarding quarterly sampling results for operating production wells in the Wellfields. Routine updates will continue for a period of 5 years or until IDEM and Citizens agree that updates are no longer necessary (whichever is sooner). IDEM will provide annual reports to the U.S. EPA detailing IDEM's progress in regard to the investigation and remediation of PRP sites in the immediate or



surrounding areas, the quality of the drinking water supplied to customers from the Wellfields, and community participation in the Site. In addition, IDEM will continue to maintain and update the website for Site 0153 at: [www.idem.IN.gov/Site0153](http://www.idem.IN.gov/Site0153) until the formal de-proposal of Site 0153 from inclusion on the NPL is finalized.

### **1.16 Documentation of Significant Changes from Preferred Alternative of Proposed Plan**

This ROD documents and discusses the reasons for any significant changes made to the Selected Remedy. Changes described in this section must be limited to those that could have been reasonably anticipated by the public from the time the RI, HHERA, FS, and RAP were released for public comment to the time the Selected Remedy is finalized. Based upon review of the written and oral comments submitted during the public comment periods and the public meetings, IDEM determined no significant changes to the remedy, as originally outlined in the RAP, were necessary or appropriate.

## **2.0 RESPONSIVENESS SUMMARY**

### **2.1 Stakeholder Issues and Lead Agency Response**

This Responsiveness Summary has been prepared in accordance with the CERCLA of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) and NCP at 40 CFR § 300.430(f).

The RI, HHERA, and FS were made available to the public on November 9, 2020. These reports can be found in the Administrative Record file for the Site or online at:

[www.idem.IN.gov/Site0153](http://www.idem.IN.gov/Site0153). A public comment period was held from November 10, 2020 to December 11, 2020. In addition, a public meeting was held on November 18, 2020. Due to COVID-19 restrictions, the public meeting used a virtual format to avoid in-person contact.

The RAP and ROD were made available to the public on January 13, 2021 and can be found in the Administrative Record file for the Site or online at: [www.idem.IN.gov/Site0153](http://www.idem.IN.gov/Site0153).

Concurrently, the RAP and ROD were submitted to the U.S. EPA for review. A public comment period was held from January 13, 2021 – February 11, 2021. In addition, a public meeting will be held during the public comment period.

Written comments on the RAP and ROD can be submitted to IDEM via the Site 0153 website electronic mail portal or by mail. A copy of the comments received will be made available in the Administrative Record file for the Site. IDEM will review all comments submitted during the public comment period and will address/consider changes to the RAP and ROD as appropriate.



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## **FIGURES**

- Figure 1: Site 0153 Vicinity Map**
- Figure 2: Site 0153 Time of Travel Map**
- Figure 3A: Local Cross Section Location Map**
- Figure 3B: Local Cross Section A-A'**
- Figure 3C: Local Cross Section B-B'**
- Figure 3D: Local Cross Section C-C'**
- Figure 4: Site 0153 Focused Area of Interest Sites**
- Figure 5: Site 0153 Conceptual Site Model**



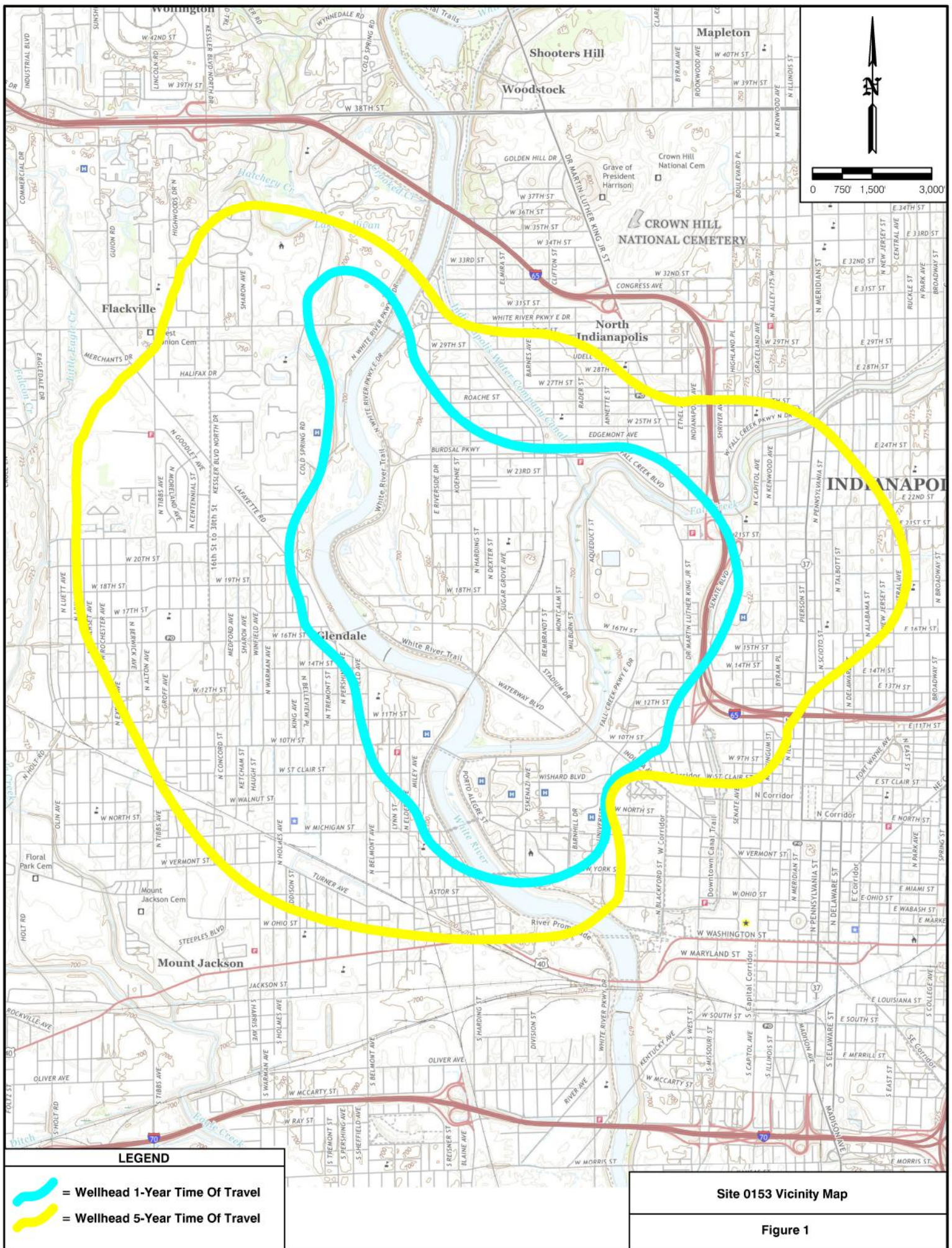
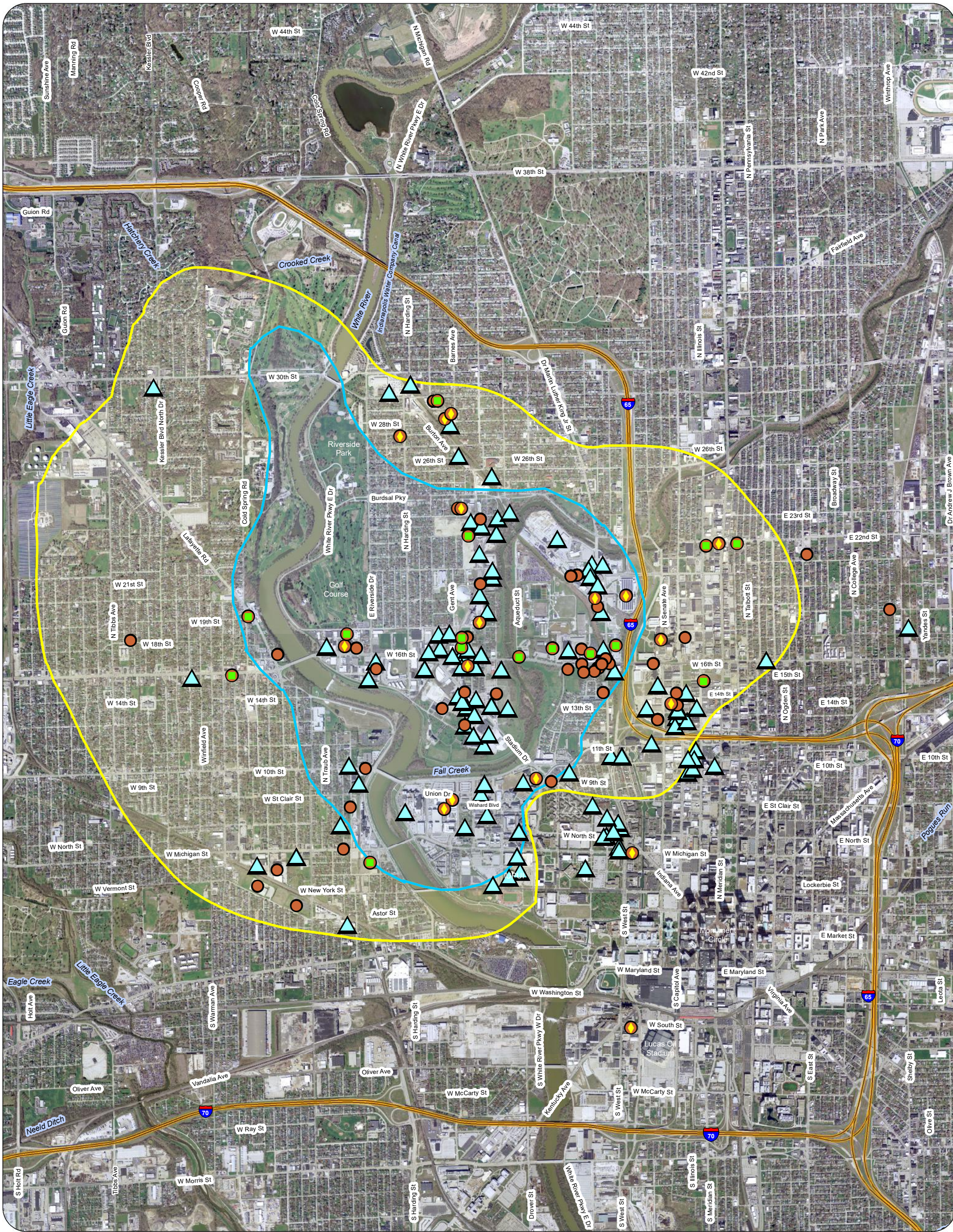




Figure 2 - Site 0153 Time of Travel Map








**Non Orthophotography Data**  
State of Indiana Geographic Information Office Library

**Orthophotography**  
Obtained from 2016 Indiana Map Framework Data  
([www.indianamap.org](http://www.indianamap.org))

**Map Projection:** UTM Zone 16 N  
**Map Datum:** NAD83

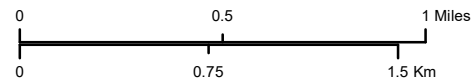
This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

-  Documented Chlorinated Solvent Management or Release  
39 Sites at this status
-  Information Request Sent  
18 Sites at this status
-  Notice of Liability Sent  
17 Sites at this status
-  Documented Contributor to Well Field Impact  
No sites at this status
-  No Further Evaluation for Well Field Impact  
90 Site at this status
-  Wellhead 1 Year Delineation
-  Wellhead 5 Year Delineation

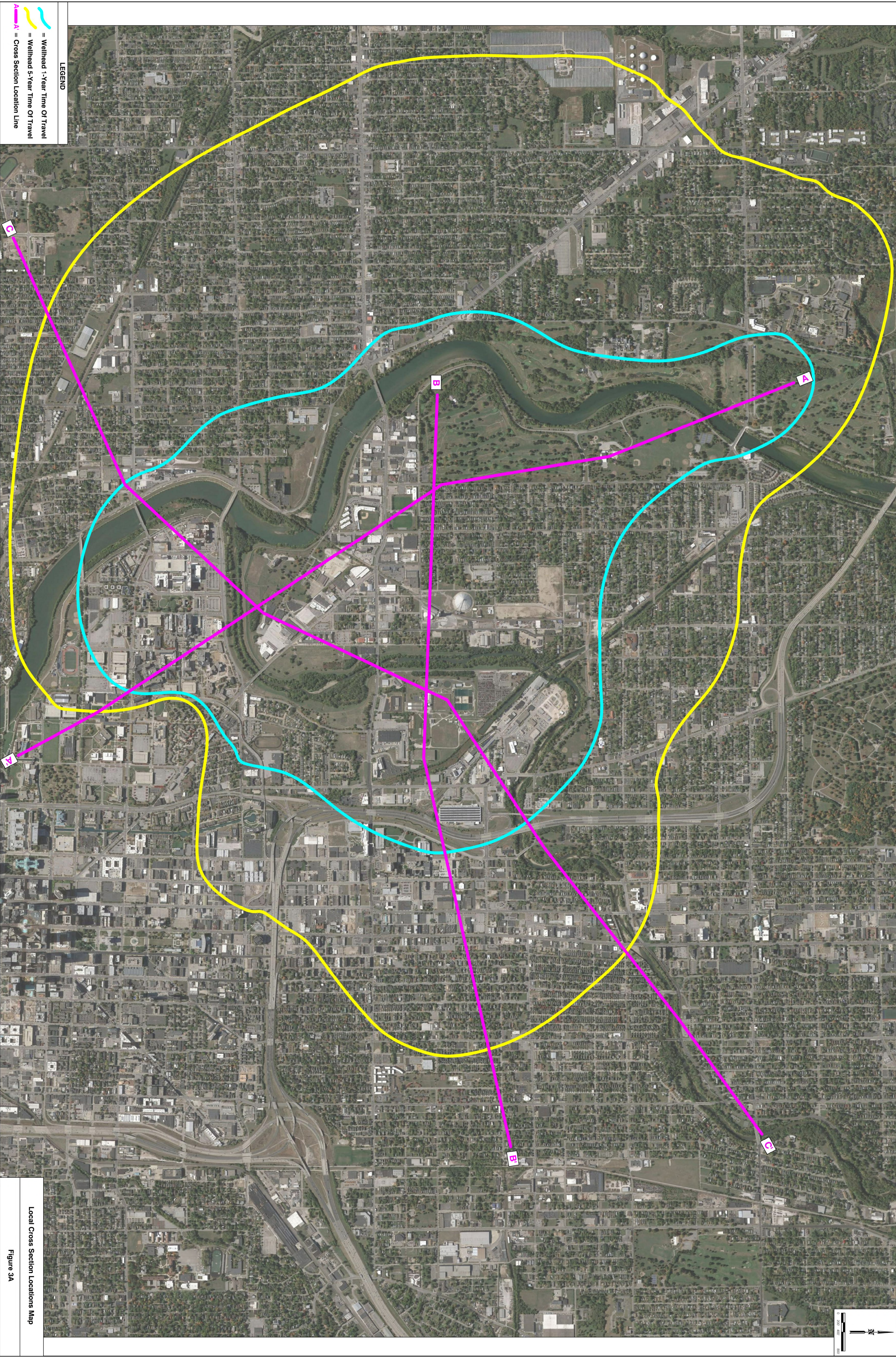


July 7, 2020

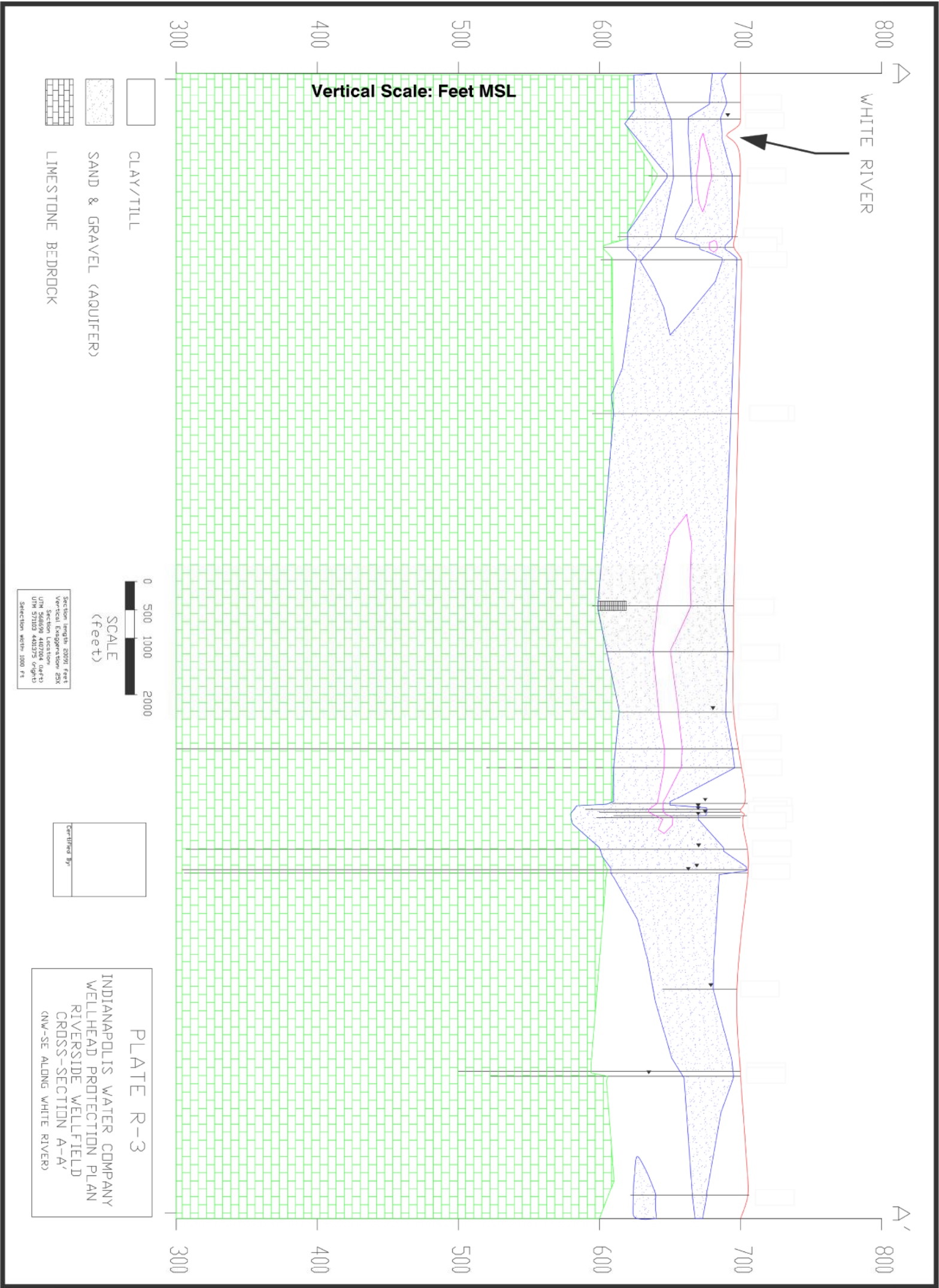
Diane Osborn, LPG, GISP  
Indiana Department of Environmental Management  
Office of Land Quality - Engineering & GIS Services







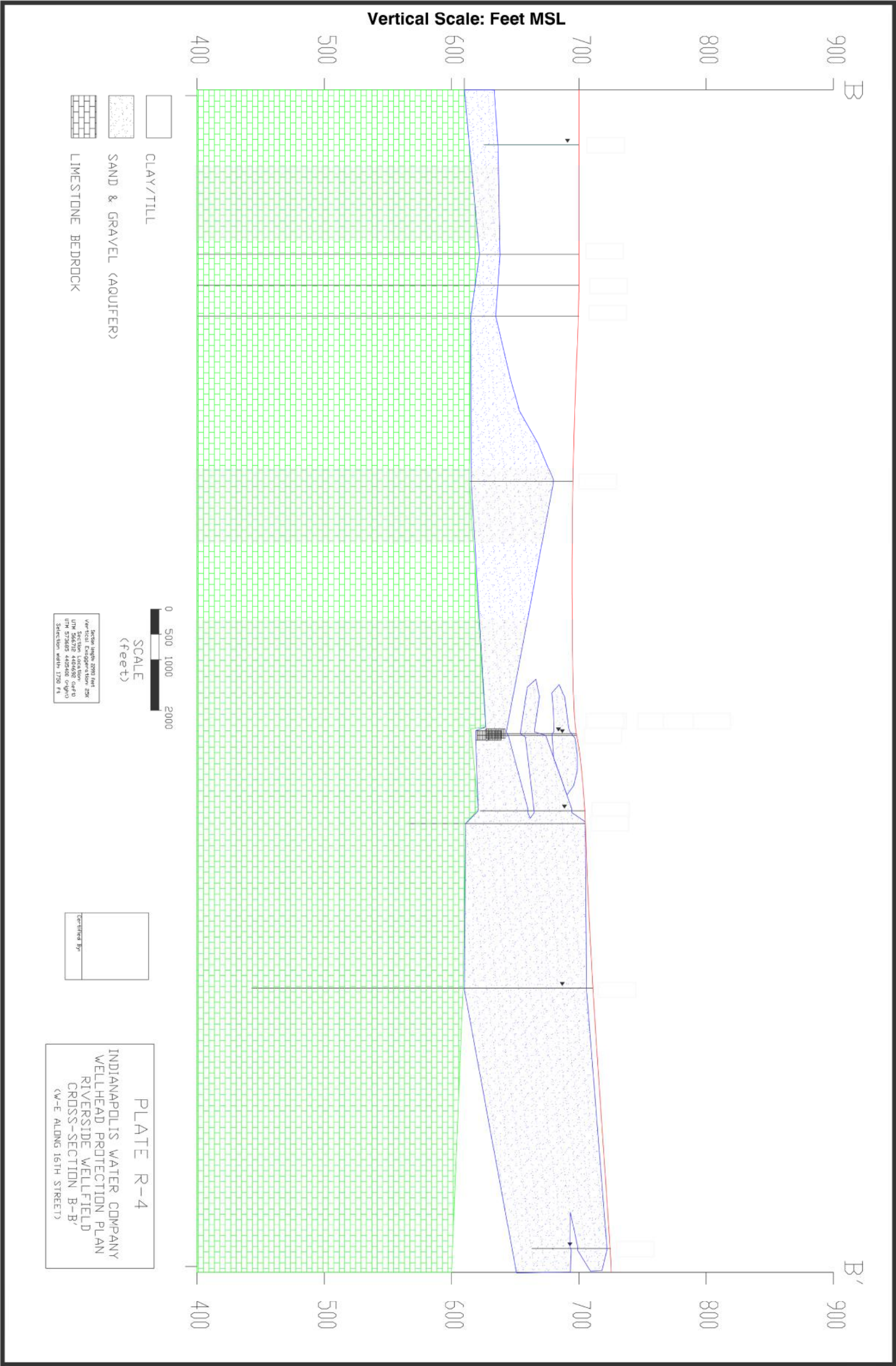




NOTE: Figure adapted from the Indianapolis Water Company Wellhead Protection Plan

Local Cross Section A - A'

Figure 3B

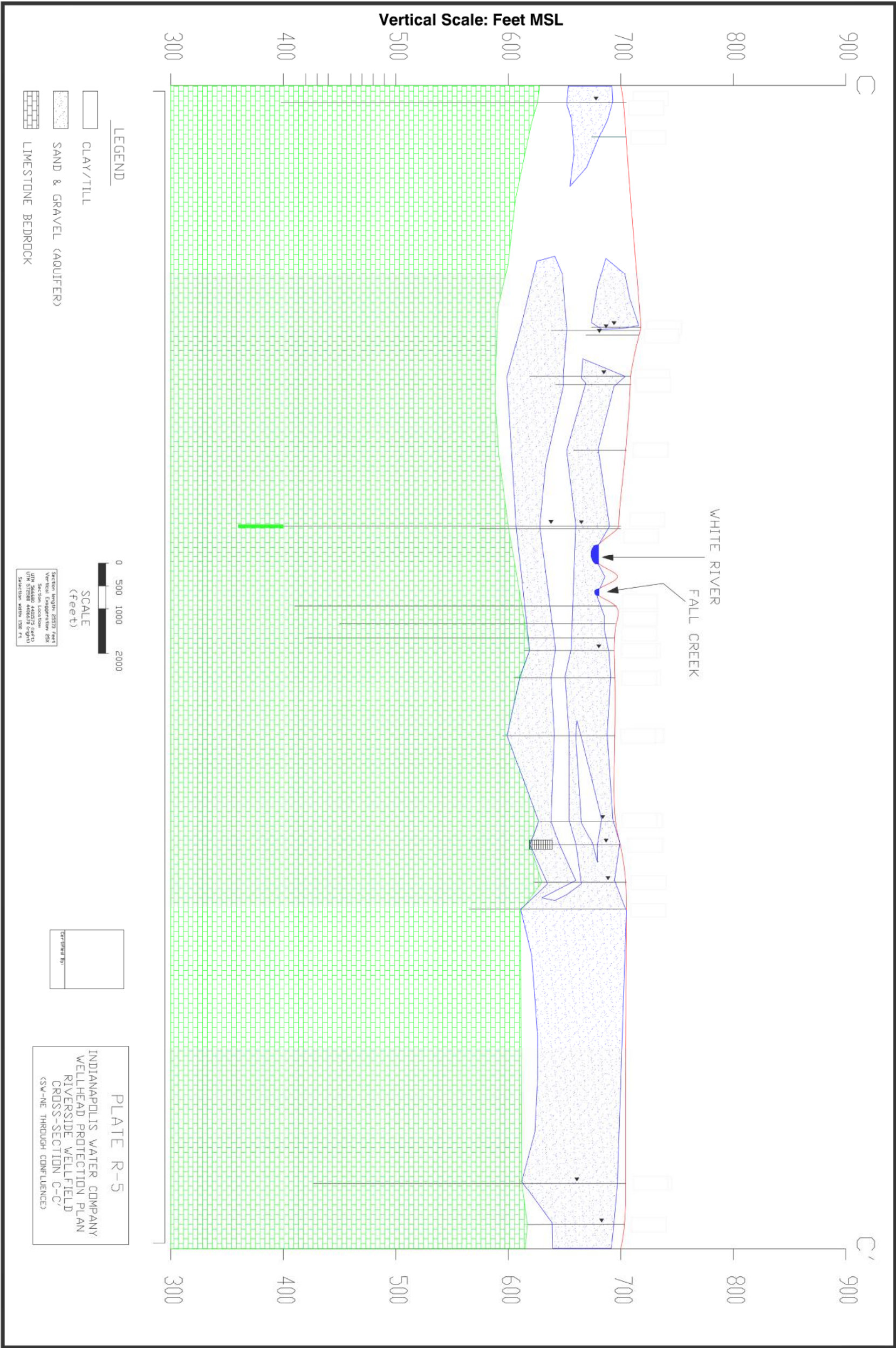


NOTE: Figure adapted from the Indianapolis Water Company Wellhead Protection Plan

Local Cross Section B - B'

Figure 3C





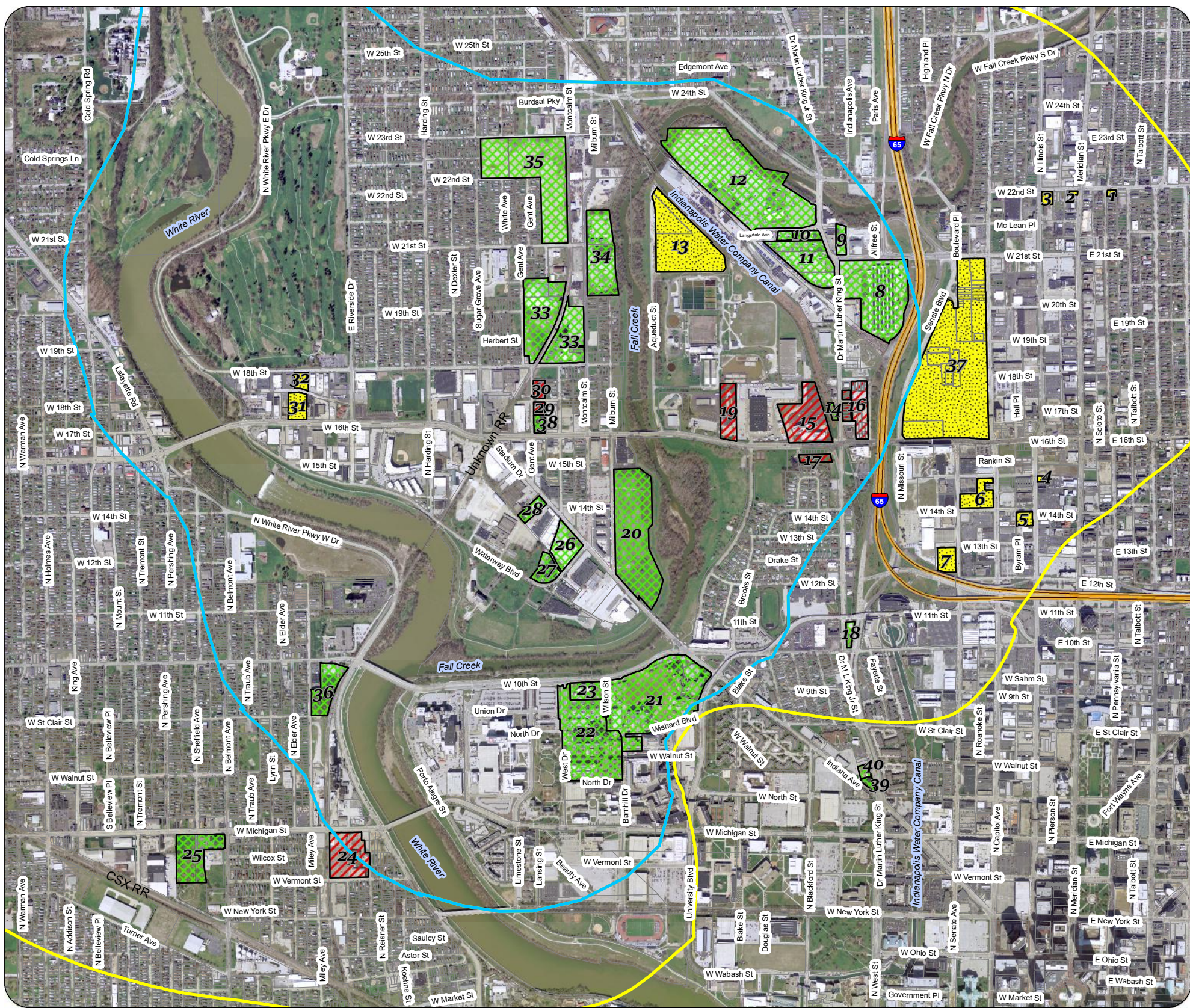
NOTE: Figure adapted from the Indianapolis Water Company Wellhead Protection Plan

Local Cross Section C - C'

Figure 3D



Figure 4 - Site 0153  
Focused Area of Interest Sites



Map Label ID	Priority Level	Agency Interest	Program	Site Number	Facility Name	Priority Determination
1	Medium	16751	SCP	0000650	Penn 60 Minute Cleaners	Undelineated high contamination far distance
2	Medium	17902	SCP	0000835	Sparkle Cleaners	Pending investigation results, risk based on proximity
3	Medium	15994	SCP	0000658	Near North Development Corporation	Undelineated moderate contaminants; known bedrock well
4	Medium	26562	SCP	0000298	Karstadt-Reed Cleaners	Commingle plume side gradient
5	Medium	23287	VRP	6090502	Michaels / Fame Laundry	Commingle plume side gradient
6	Medium	28328	VRP	6070101	Shuron	Commingle plume side gradient
7	Medium	17331	VRP	6160804	Former Stewart Manufacturing	Commingle plume side gradient
8	Low	11493	SCP	200110517	Peerless Pump / Sterling Fluid Manufacturing	Based on sampling
9	Low	11491	SCP	0000623	Bodycote Thermal Processing	Based on sampling
10	Low	16164	SCP	0000789	Former Hittle Machine and Tool	Based on sampling
11	Low	18302	BFP	4191108	Stuart Moving and Storage/M & A Property Management	Based on sampling
12	Low	17605	VRP	6050204	Citizens Gas and Coke Langsdale	Based on sampling
13	Medium	107558	SCP	0000858	Parts Landlord LLC	Based on sampling
14	Low	24792	SCP	0000772	Pennymans Inc	Based on sampling
15	High	23770	SCP	0000787	Former Parker property NW (Hagg Trucking Company, Inc.)	Undelineated based on 2004 Phase II data and proximity
16	High	20923	SCP	0000707	Former Ashjian Brothers Rug Cleaners	Undelineated based on 2019 monitoring data and proximity
17	High	22740	SCP	0000788	Former Parker Property SW/Truck and Bus	Undelineated based on 2011 monitoring data and proximity
18	Low	126398	SCP	0000804	IU Parcel 1011 MLK St	Based on sampling
19	High	17874	SCP	0000753	McBroom Electric	Undelineated based on 2019 sampling and proximity
20	Low	126398	SCP	0000804	Indiana University (IU Block Trucking)	Based on sampling
21	Low	126398	SCP	0000804	IU Parcel Wishard Hospital Parcel	Based on sampling
22	Low	126398	SCP	0000804	IU Parcel Riley Hospital Parcel	Based on sampling
23	Low	126398	SCP	0000804	IU Parcel Regenstein Institute	Based on sampling
24	High	109813	SCP	0000455	Goodwill Industries	Based on 2019 contaminant concentrations and proximity
25	Low	22624	SCP	4980013	Shell Bulk Facility (F)	Based on 2019 sampling data
26	Low	126398	SCP	0000804	IU Parcel 1320 Stadium Dr	Based on 2002 sampling data
27	Low	126398	SCP	0000804	IU Parcel 1200 Waterway Blvd	Based on 2002 sampling data
28	Low	126398	SCP	0000804	IU Parcel Mid Continent Food Tech	Based on sampling data
29	High	16468	SCP	200412100	Component Machine	Based on proximity; moderate contamination
30	High	117788	SCP	0000744	Boyle Racing Headquarters	Based on proximity; moderate contamination
31	Medium	126398	SCP	0000804	IU Parcel Kiger Riefer	Unknown source side gradient
32	Medium	16545	SCP	200404159	Flexdar Inc.	Side gradient
33	Low	16021	SCP	0000963	Central Soya / Bunge North America	Based on sampling
34	Low	19994	VRP	6030103	Rumpke Indianapolis TS	Screen out CNTS 2010
35	Low	15891	SCP	0000770	Former Carrier-Bryant Facility	Based on sampling data
36	Low	116180	BFP	4190209	Annex on 10th/American Wire, Rope & Sling	Based on sampling data
37	Medium	20404	SCP	0000804	Clarian Health Partners Methodist Hospital	Pending investigation results, risk based on Ashjian known up-gradient contamination
38	Low	22076	SCP	0000676	Disc Graphics Inc	No soil source found during Component Machine investigation
39	Low	120034	SCP	0000734	Madame Walker Urban Life Center / Former Raymond Baird Cleaners	Based on sampling data
40	Low	119860	SCP	0000724	Former Willis Mortuary	Based on sampling data

**Non Orthophotography Data**  
State of Indiana Geographic Information Office Library  
Priority Determination supplied by OLQ Geological Services  
**Orthophotography**  
Obtained from 2016 Indiana Map Framework Data  
([www.indianamap.org](http://www.indianamap.org))  
**Map Projection:** UTM Zone 16 N  
**Map Datum:** NAD83

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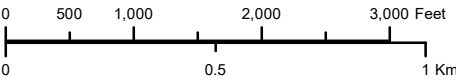
- Priority Level Low
- Priority Level Medium
- Priority Level High
- Parcel Boundary
- Wellhead 1 Year Delineation
- Wellhead 5 Year Delineation

Number correlates to the Map Label ID found in the Table



December 30, 2020

Diane Osborn, LPG, GISP  
Indiana Department of Environmental Management  
Office of Land Quality - Engineering & GIS Services

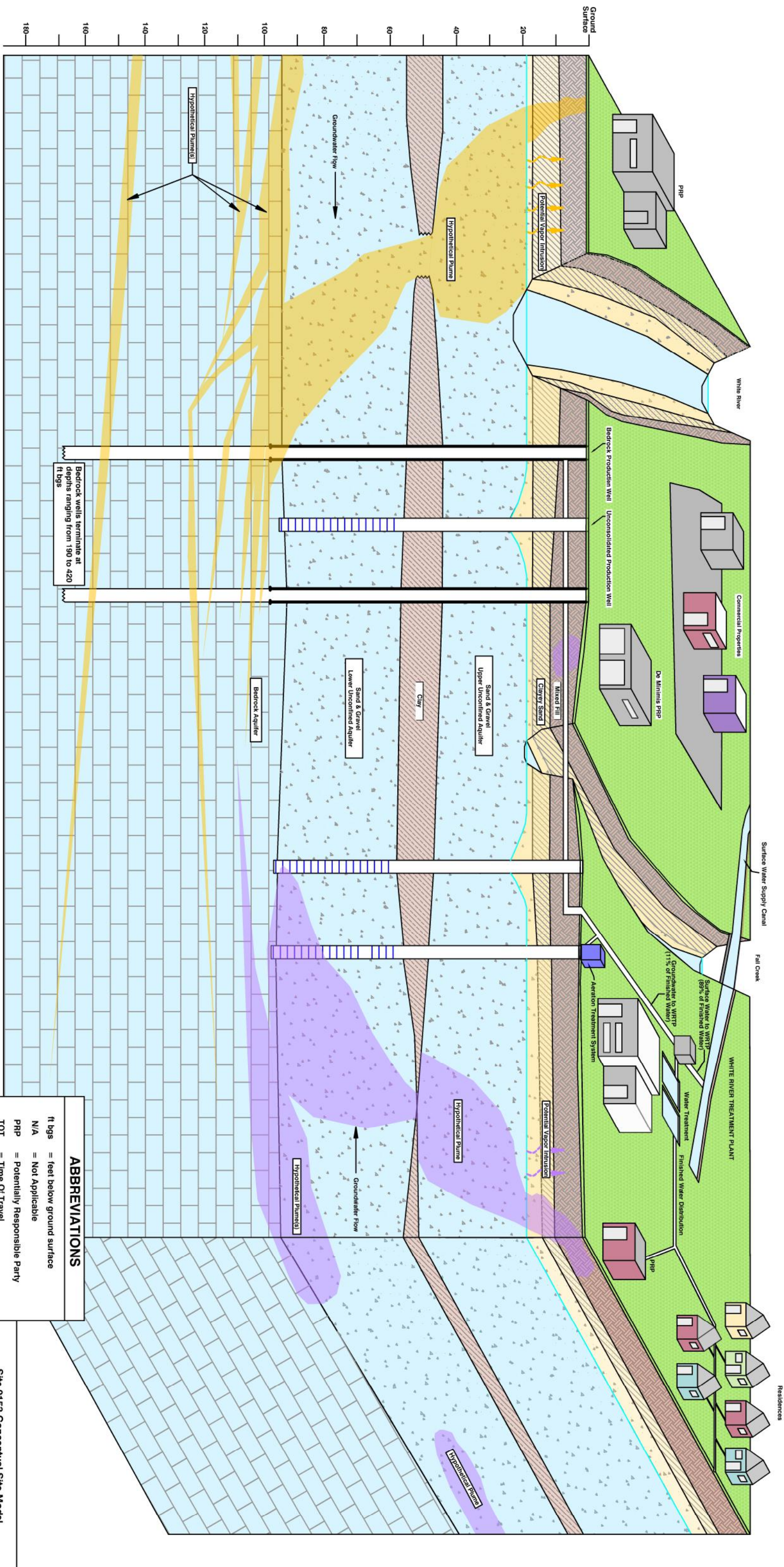




PROPERTIES WITHIN 5-YEAR TOT				WHITE RIVER				RIVERSIDE PRODUCTION WELLS				PROPERTIES WITHIN 5-YEAR TOT				WHITE RIVER PRODUCTION WELLS				PROPERTIES WITHIN 5-YEAR TOT			
Media	Complete Exposure Pathway?	Controls?	IDEM Remediation Program	Media	Complete Exposure Pathway?	Controls?	IDEM Remediation Program	Media	Complete Exposure Pathway?	Controls?	IDEM Remediation Program	Media	Complete Exposure Pathway?	Controls?	IDEM Remediation Program	Media	Complete Exposure Pathway?	Controls?	IDEM Remediation Program	Media	Complete Exposure Pathway?	Controls?	IDEM Remediation Program
Soil	Controlled			Surface Water	Controlled			Soil	N/A			Soil	Controlled			Soil	Controlled			Soil	Controlled		
Groundwater	Controlled			Sediment	Controlled			Groundwater	Controlled			Groundwater	Controlled			Groundwater	Controlled			Groundwater	Controlled		
Vapor Intrusion	Controlled							Vapor Intrusion	N/A			Vapor Intrusion	Controlled			Vapor Intrusion	N/A			Vapor Intrusion	Controlled		
									Site 0153 Alternative Plan				Site 0153 Alternative Plan, including aeration				N/A				N/A		

SOUTHWEST

NORTHEAST



ABBREVIATIONS

- ft bgs = feet below ground surface
- N/A = Not Applicable
- PRP = Potentially Responsible Party
- TOT = Time Of Travel
- WRTP = White River Treatment Plant


Site 0153 Conceptual Site Model



## **TABLES**

<b>Table 1:</b>	<b>Riverside and White River Production Wells Analytical Results</b>
<b>Table 2:</b>	<b>cVOC Time Series Concentration Graphs</b>
<b>Table 3:</b>	<b>Riverside and White River Finished Water Analytical Results</b>
<b>Table 4:</b>	<b>Focused Area of Interest Sites Status</b>
<b>Table 5:</b>	<b>WR-3 Pre- and Post- Aeration cVOC Analytical Results</b>
<b>Table 6:</b>	<b>Alternatives Comparative Evaluation</b>
<b>Table 7:</b>	<b>Cost Estimates of Alternatives</b>
<b>Table 8:</b>	<b>Chemical-Specific ARARs and TBCs</b>
<b>Table 9:</b>	<b>Action-Specific ARARs and TBCs</b>
<b>Table 10:</b>	<b>Location-Specific ARARs and TBCs</b>

**TABLE 1**  
**RIVERSIDE AND WHITE RIVER PRODUCTION WATER cVOC ANALYTICAL RESULTS**

		Chlorinated Volatile Organic Compounds (cVOCs)								
		Tetrachloroethene	Trichloroethene	1,1,1-Trichloroethane	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,1-Dichloroethene	1,1-Dichloroethane	Vinyl Chloride	Chloroethane
USEPA Maximum Contaminant Level		5	5	200	70	100	7	NE	2	NE
Sample ID	Date Collected	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
RS7	07/22/2005	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/25/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/20/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/18/2006	<0.50	<0.50	<0.50	0.67	<0.50	<0.50	<0.50	<0.50	<0.50
	10/25/2006	<0.50	<0.50	<0.50	0.55	<0.50	<0.50	<0.50	<0.50	<0.50
	02/02/2007	<0.50	<0.50	<0.50	2.23	<0.50	<0.50	<0.50	<0.50	<0.50
	04/25/2007	<0.50	<0.50	<0.50	1.74	<0.50	<0.50	<0.50	<0.50	<0.50
	10/03/2007	<0.50	0.52	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/09/2008	<0.50	<0.50	<0.50	3.20	<0.50	<0.50	<0.50	<0.50	<0.50
	04/15/2008	<0.50	<0.50	<0.50	3.40	<0.50	<0.50	<0.50	<0.50	<0.50
	07/23/2008	<0.50	<0.50	<0.50	3.92	<0.50	<0.50	<0.50	<0.50	<0.50
	10/22/2008	<0.50	<0.50	<0.50	4.00	<0.50	<0.50	<0.50	<0.50	<0.50
	03/25/2009	<0.50	<0.50	<0.50	6.01	<0.50	<0.50	<0.50	0.55	<0.50
	12/02/2009	<0.50	<0.50	<0.50	1.83	<0.50	<0.50	<0.50	<0.50	<0.50
	03/03/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/25/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/08/2012	<0.50	<0.50	<0.50	0.96	<0.50	<0.50	<0.50	<0.50	<0.50
	11/28/2012	<0.50	<0.50	<0.50	1.43	<0.50	<0.50	<0.50	<0.50	<0.50
	02/20/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/25/2013	<0.50	<0.50	<0.50	1.00	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	05/20/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/22/2015	<0.50	<0.50	<0.50	0.55	<0.50	<0.50	<0.50	<0.50	<0.50
	10/12/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/02/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/14/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/29/2017	<0.50	<0.50	<0.50	0.57	<0.50	<0.50	<0.50	<0.50	<0.50
	11/21/2017	<0.50	<0.50	<0.50	0.70	<0.50	<0.50	<0.50	<0.50	<0.50
	02/27/2018	<0.50	<0.50	<0.50	0.71	<0.50	<0.50	<0.50	<0.50	<0.50
	06/06/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/05/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/15/2019	<0.50	<0.50	<0.50	1.13	<0.50	<0.50	<0.50	<0.50	<0.50
	04/29/2019	<0.50	<0.50	<0.50	0.30 J	<0.50	<0.50	<0.50	<0.50	<0.50
	08/27/2019	<0.50	<0.50	<0.50	1.00	<0.50	<0.50	<0.50	<0.50	<0.50
	10/16/2019	<0.50	<0.50	<0.50	1.78	<0.50	<0.50	<0.50	<0.50	<0.50
	01/16/2020	<0.50	<0.50	<0.50	1.95	<0.50	<0.50	<0.50	<0.50	<0.50

**Abbreviations & Notes**

BRL = Below Laboratory Reporting Limits

J = Result is estimated between the MDL and reporting limit.

MDL = Method Detection Limit

NDP = No Data Provided


USEPA = United States Environmental Protection Agency

All results and MCLs are reported in micrograms per liter (µg/L).

The following notes summarize the symbol and color of MCL exceedances:

^ = At or Above USEPA Maximum Contaminant Level (MCL)

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		Tetrachloroethene	Trichloroethene	1,1,1-Trichloroethane	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,1-Dichloroethene	1,1-Dichloroethane	Vinyl Chloride	Chloroethane
USEPA Maximum Contaminant Level		5	5	200	70	100	7	NE	2	NE
Sample ID	Date Collected	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
RS8	07/22/2005	<0.50	<0.50	<0.50	1.72	<0.50	<0.50	<0.50	<0.50	<0.50
	01/25/2006	<0.50	<0.50	<0.50	5.17	<0.50	<0.50	<0.50	1.52	<0.50
	04/20/2006	<0.50	<0.50	<0.50	6.30	<0.50	<0.50	<0.50	1.56	<0.50
	07/18/2006	<0.50	<0.50	<0.50	5.01	<0.50	<0.50	<0.50	0.57	<0.50
	10/25/2006	<0.50	<0.50	<0.50	7.79	<0.50	<0.50	<0.50	1.28	<0.50
	02/02/2007	<0.50	<0.50	<0.50	9.44	<0.50	<0.50	<0.50	1.61	<0.50
	04/25/2007	<0.50	<0.50	<0.50	8.21	<0.50	<0.50	<0.50	1.02	<0.50
	10/03/2007	<0.50	<0.50	<0.50	9.03	<0.50	<0.50	<0.50	1.35	<0.50
	07/24/2008	<0.50	<0.50	<0.50	7.24	<0.50	<0.50	<0.50	0.61	<0.50
	10/22/2008	<0.50	<0.50	<0.50	10.4	<0.50	<0.50	<0.50	1.10	<0.50
	03/25/2009	<0.50	<0.50	<0.50	6.97	<0.50	<0.50	<0.50	0.83	<0.50
	12/02/2009	<0.50	<0.50	<0.50	4.48	<0.50	<0.50	<0.50	1.13	<0.50
	03/03/2010	<0.50	<0.50	<0.50	4.92	<0.50	<0.50	<0.50	0.99	<0.50
	08/25/2010	<0.50	<0.50	<0.50	3.64	<0.50	<0.50	<0.50	<0.50	<0.50
	03/17/2011	<0.50	<0.50	<0.50	2.52	<0.50	<0.50	<0.50	<0.50	<0.50
	03/08/2012	<0.50	<0.50	<0.50	6.39	<0.50	<0.50	<0.50	<0.50	<0.50
	11/28/2012	<0.50	<0.50	<0.50	5.86	<0.50	<0.50	<0.50	0.56	<0.50
	02/19/2013	<0.50	<0.50	<0.50	6.38	<0.50	<0.50	<0.50	<0.50	<0.50
	11/25/2013	<0.50	<0.50	<0.50	7.06	<0.50	<0.50	<0.50	0.56	<0.50
	05/20/2014	<0.50	<0.50	<0.50	5.79	<0.50	<0.50	<0.50	<0.50	<0.50
	09/18/2014	<0.50	<0.50	<0.50	3.02	<0.50	<0.50	<0.50	<0.50	<0.50
	10/22/2015	<0.50	<0.50	<0.50	6.69	<0.50	<0.50	<0.50	<0.50	<0.50
	03/15/2016	<0.50	<0.50	<0.50	3.09	<0.50	<0.50	<0.50	<0.50	<0.50
	10/12/2016	<0.50	<0.50	<0.50	5.30	<0.50	<0.50	<0.50	<0.50	<0.50
	03/02/2017	<0.50	<0.50	<0.50	5.87	<0.50	<0.50	<0.50	<0.50	<0.50
	06/14/2017	<0.50	<0.50	<0.50	3.58	<0.50	<0.50	<0.50	<0.50	<0.50
	09/19/2017	<0.50	<0.50	<0.50	2.56	<0.50	<0.50	<0.50	<0.50	<0.50
	11/21/2017	<0.50	<0.50	<0.50	2.03	<0.50	<0.50	<0.50	<0.50	<0.50
	03/20/2018	<0.50	<0.50	<0.50	4.12	<0.50	<0.50	<0.50	<0.50	<0.50
	06/06/2018	<0.50	<0.50	<0.50	4.83	<0.50	<0.50	<0.50	<0.50	<0.50
	09/05/2018	<0.50	<0.50	<0.50	4.28	<0.50	<0.50	<0.50	<0.50	<0.50
	10/15/2018	<0.50	<0.50	<0.50	2.57	<0.50	<0.50	<0.50	<0.50	<0.50
	01/15/2019	<0.50	<0.50	<0.50	4.85	<0.50	<0.50	<0.50	<0.50	<0.50
	04/29/2019	<0.50	<0.50	<0.50	4.35	<0.50	<0.50	<0.50	<0.50	<0.50
	08/27/2019	<0.50	<0.50	<0.50	4.84	<0.50	<0.50	<0.50	<0.50	<0.50
	10/16/2019	<0.50	<0.50	<0.50	4.59	<0.50	<0.50	<0.50	<0.50	<0.50
	01/16/2020	0.08 J	0.08 J	<0.50	4.66	<0.50	<0.50	<0.50	<0.50	<0.50

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**TABLE 1**  
**RIVERSIDE AND WHITE RIVER PRODUCTION WATER cVOC ANALYTICAL RESULTS**

		Chlorinated Volatile Organic Compounds (cVOCs)								
		Tetrachloroethene	Trichloroethene	1,1,1-Trichloroethane	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,1-Dichloroethene	1,1-Dichloroethane	Vinyl Chloride	Chloroethane
USEPA Maximum Contaminant Level		5	5	200	70	100	7	NE	2	NE
Sample ID	Date Collected	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
RS9	07/22/2005	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/25/2006	<0.50	<0.50	<0.50	<b>0.80</b>	<0.50	<0.50	<0.50	<0.50	<0.50
	04/20/2006	<0.50	<0.50	<0.50	<b>0.92</b>	<0.50	<0.50	<0.50	<0.50	<0.50
	07/18/2006	<0.50	<0.50	<0.50	<b>0.56</b>	<0.50	<0.50	<0.50	<0.50	<0.50
	10/25/2006	<0.50	<0.50	<0.50	<b>1.07</b>	<0.50	<0.50	<0.50	<0.50	<0.50
	02/02/2007	<0.50	<0.50	<0.50	<b>1.51</b>	<0.50	<0.50	<0.50	<b>0.51</b>	<0.50
	04/25/2007	<0.50	<0.50	<0.50	<b>0.91</b>	<0.50	<0.50	<0.50	<0.50	<0.50
	10/03/2007	<0.50	<0.50	<0.50	<b>1.73</b>	<0.50	<0.50	<0.50	<b>0.56</b>	<0.50
	01/09/2008	<0.50	<0.50	<0.50	<b>2.86</b>	<0.50	<0.50	<0.50	<b>0.52</b>	<0.50
	04/15/2008	<0.50	<0.50	<0.50	<b>2.26</b>	<0.50	<0.50	<0.50	<0.50	<0.50
	07/23/2008	<0.50	<0.50	<0.50	<b>2.14</b>	<0.50	<0.50	<0.50	<0.50	<0.50
	10/22/2008	<0.50	<0.50	<0.50	<b>2.07</b>	<0.50	<0.50	<0.50	<0.50	<0.50
	03/25/2009	<0.50	<0.50	<0.50	<b>2.82</b>	<0.50	<0.50	<0.50	<b>0.58</b>	<0.50
	10/20/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/02/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/03/2010	<0.50	<0.50	<0.50	<b>0.63</b>	<0.50	<0.50	<0.50	<0.50	<0.50
	03/17/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/08/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/28/2012	<0.50	<0.50	<0.50	<b>0.65</b>	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2013	<0.50	<0.50	<0.50	<b>0.84</b>	<0.50	<0.50	<0.50	<0.50	<0.50
	11/25/2013	<0.50	<0.50	<0.50	<b>1.13</b>	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2014	<0.50	<0.50	<0.50	<b>0.68</b>	<0.50	<0.50	<0.50	<0.50	<0.50
	05/20/2014	<0.50	<0.50	<0.50	<b>0.52</b>	<0.50	<0.50	<0.50	<0.50	<0.50
	09/18/2014	<0.50	<0.50	<0.50	<b>1.18</b>	<0.50	<0.50	<0.50	<0.50	<0.50
	10/22/2015	<0.50	<0.50	<0.50	<b>0.68</b>	<0.50	<0.50	<0.50	<0.50	<0.50
	03/15/2016	<0.50	<0.50	<0.50	<b>1.14</b>	<0.50	<0.50	<0.50	<0.50	<0.50
	10/12/2016	<0.50	<0.50	<0.50	<b>0.85</b>	<0.50	<0.50	<0.50	<0.50	<0.50
	03/01/2017	<0.50	<0.50	<0.50	<b>0.67</b>	<0.50	<0.50	<0.50	<0.50	<0.50
	06/14/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/29/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/21/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/20/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/06/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/05/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/15/2018	<0.50	<0.50	<0.50	<b>0.57</b>	<0.50	<0.50	<0.50	<0.50	<0.50
	01/16/2019	<0.50	<0.50	<0.50	<b>0.97</b>	<0.50	<0.50	<0.50	<0.50	<0.50
	04/29/2019	<0.50	<0.50	<0.50	<b>0.30 J</b>	<0.50	<0.50	<0.50	<0.50	<0.50
	08/27/2019	<0.50	<0.50	<0.50	<b>0.59</b>	<0.50	<0.50	<0.50	<0.50	<0.50
	10/16/2019	<0.50	<0.50	<0.50	<b>2.42</b>	<0.50	<0.50	<0.50	<0.50	<0.50
	01/16/2020	<0.50	<0.50	<0.50	<b>2.53</b>	<0.50	<0.50	<0.50	<0.50	<0.50

**Abbreviations & Notes**

BRL = Below Laboratory Reporting Limits

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All results and MCLs are reported in micrograms per liter (µg/L).

The following notes summarize the symbol and color of MCL exceedances:

**^ = At or Above USEPA Maximum Contaminant Level (MCL)**

**TABLE 1**  
**RIVERSIDE AND WHITE RIVER PRODUCTION WATER cVOC ANALYTICAL RESULTS**

		Chlorinated Volatile Organic Compounds (cVOCs)								
		Tetrachloroethene	Trichloroethene	1,1,1-Trichloroethane	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,1-Dichloroethene	1,1-Dichloroethane	Vinyl Chloride	Chloroethane
USEPA Maximum Contaminant Level		5	5	200	70	100	7	NE	2	NE
Sample ID	Date Collected	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
RS17	10/19/2005	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/25/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/20/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/18/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/25/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/01/2007	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/25/2007	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/03/2007	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/09/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/15/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/23/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/22/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/25/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/02/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/03/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/25/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/17/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/08/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/28/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/20/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/25/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/18/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/10/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/22/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/15/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/12/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/01/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/14/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/21/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/20/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/06/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/05/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/15/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/29/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/26/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/16/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/16/2020	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

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**TABLE 1**  
**RIVERSIDE AND WHITE RIVER PRODUCTION WATER cVOC ANALYTICAL RESULTS**

		Chlorinated Volatile Organic Compounds (cVOCs)								
		Tetrachloroethene	Trichloroethene	1,1,1-Trichloroethane	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,1-Dichloroethene	1,1-Dichloroethane	Vinyl Chloride	Chloroethane
USEPA Maximum Contaminant Level		5	5	200	70	100	7	NE	2	NE
Sample ID	Date Collected	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
RS18	07/22/2005	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/09/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/20/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/18/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/25/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/01/2007	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/25/2007	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/03/2007	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/25/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/17/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/08/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/28/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/20/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/25/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	05/20/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/18/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/10/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/21/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/15/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/12/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/01/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/14/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/29/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/21/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/20/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/06/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/05/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/15/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/15/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/29/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/26/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/16/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/16/2020	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

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**TABLE 1**  
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		Chlorinated Volatile Organic Compounds (cVOCs)								
		Tetrachloroethene	Trichloroethene	1,1,1-Trichloroethane	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,1-Dichloroethene	1,1-Dichloroethane	Vinyl Chloride	Chloroethane
USEPA Maximum Contaminant Level		5	5	200	70	100	7	NE	2	NE
Sample ID	Date Collected	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
RS19	04/20/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/18/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/03/2007	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/09/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/15/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/25/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/02/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/03/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/25/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/08/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/28/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/20/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	05/20/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/18/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/10/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/23/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/15/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/12/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/01/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/14/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/29/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/21/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/28/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/06/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/05/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/16/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/29/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/26/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/16/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/16/2020	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

**Abbreviations & Notes**

BRL = Below Laboratory Reporting Limits

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All results and MCLs are reported in micrograms per liter (µg/L).

The following notes summarize the symbol and color of MCL exceedances:

▲ = At or Above USEPA Maximum Contaminant Level (MCL)

**TABLE 1**  
**RIVERSIDE AND WHITE RIVER PRODUCTION WATER cVOC ANALYTICAL RESULTS**

		Chlorinated Volatile Organic Compounds (cVOCs)								
		Tetrachloroethene	Trichloroethene	1,1,1-Trichloroethane	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,1-Dichloroethene	1,1-Dichloroethane	Vinyl Chloride	Chloroethane
USEPA Maximum Contaminant Level		5	5	200	70	100	7	NE	2	NE
Sample ID	Date Collected	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
RS22	02/19/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	05/20/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/17/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/11/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/21/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/15/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/12/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/01/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/14/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/29/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/27/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/28/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/06/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/05/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/12/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/16/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/29/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/26/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/16/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/16/2020	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

**Abbreviations & Notes**

BRL = Below Laboratory Reporting Limits

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All results and MCLs are reported in micrograms per liter (µg/L).

The following notes summarize the symbol and color of MCL exceedances:

<sup>A</sup> = At or Above USEPA Maximum Contaminant Level (MCL)

**TABLE 1**  
**RIVERSIDE AND WHITE RIVER PRODUCTION WATER cVOC ANALYTICAL RESULTS**

		Chlorinated Volatile Organic Compounds (cVOCs)								
		Tetrachloroethene	Trichloroethene	1,1,1-Trichloroethane	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,1-Dichloroethene	1,1-Dichloroethane	Vinyl Chloride	Chloroethane
USEPA Maximum Contaminant Level		5	5	200	70	100	7	NE	2	NE
Sample ID	Date Collected	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
RS26	07/22/2005	<0.50	<0.50	<0.50	0.58	<0.50	<0.50	<0.50	<0.50	<0.50
	01/25/2006	<0.50	<0.50	<0.50	0.55	<0.50	<0.50	<0.50	<0.50	<0.50
	04/20/2006	<0.50	<0.50	<0.50	0.63	<0.50	<0.50	<0.50	<0.50	<0.50
	07/18/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/25/2006	<0.50	<0.50	<0.50	0.62	<0.50	<0.50	<0.50	<0.50	<0.50
	02/02/2007	<0.50	<0.50	<0.50	1.18	<0.50	<0.50	<0.50	<0.50	<0.50
	04/25/2007	<0.50	<0.50	<0.50	0.54	<0.50	<0.50	<0.50	<0.50	<0.50
	10/03/2007	<0.50	<0.50	<0.50	1.35	<0.50	<0.50	<0.50	<0.50	<0.50
	04/15/2008	<0.50	<0.50	<0.50	1.14	<0.50	<0.50	<0.50	<0.50	<0.50
	07/23/2008	<0.50	<0.50	<0.50	0.96	<0.50	<0.50	<0.50	<0.50	<0.50
	10/22/2008	<0.50	<0.50	<0.50	1.67	<0.50	<0.50	<0.50	<0.50	<0.50
	03/25/2009	<0.50	<0.50	<0.50	1.06	<0.50	<0.50	<0.50	<0.50	<0.50
	12/02/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/03/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/26/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2013	<0.50	<0.50	<0.50	1.43	<0.50	<0.50	<0.50	<0.50	<0.50
	11/25/2013	<0.50	<0.50	<0.50	1.26	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2014	<0.50	<0.50	<0.50	1.01	<0.50	<0.50	<0.50	<0.50	<0.50
	05/20/2014	<0.50	<0.50	<0.50	0.65	<0.50	<0.50	<0.50	<0.50	<0.50
	09/18/2014	<0.50	<0.50	<0.50	2.47	<0.50	<0.50	<0.50	<0.50	<0.50
	03/10/2015	<0.50	<0.50	<0.50	2.26	<0.50	<0.50	<0.50	<0.50	<0.50
	10/21/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/15/2016	<0.50	<0.50	<0.50	2.12	<0.50	<0.50	<0.50	<0.50	<0.50
	10/12/2016	<0.50	<0.50	<0.50	0.60	<0.50	<0.50	<0.50	<0.50	<0.50
	03/01/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/14/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/29/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/27/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/20/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/06/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/05/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/16/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/16/2019	<0.50	<0.50	<0.50	0.36 J	<0.50	<0.50	<0.50	<0.50	<0.50
	04/29/2019	<0.50	<0.50	<0.50	0.16 J	<0.50	<0.50	<0.50	<0.50	<0.50

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The following notes summarize the symbol and color of MCL exceedances:

▲ = At or Above USEPA Maximum Contaminant Level (MCL)

**TABLE 1**  
**RIVERSIDE AND WHITE RIVER PRODUCTION WATER cVOC ANALYTICAL RESULTS**

		Chlorinated Volatile Organic Compounds (cVOCs)								
		Tetrachloroethene	Trichloroethene	1,1,1-Trichloroethane	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,1-Dichloroethene	1,1-Dichloroethane	Vinyl Chloride	Chloroethane
USEPA Maximum Contaminant Level		5	5	200	70	100	7	NE	2	NE
Sample ID	Date Collected	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
RS29 (Renamed RS29R in January 2020)	04/06/2004	<0.50	<0.50	NDP	14.2	<0.50	<0.50	<0.50	2.25 ^	<0.50
	07/22/2005	<0.50	<0.50	<0.50	11.7	<0.50	<0.50	<0.50	1.47	<0.50
	01/25/2006	<0.50	<0.50	<0.50	18.4	0.54	<0.50	<0.50	3.07 ^	<0.50
	04/20/2006	<0.50	<0.50	<0.50	13.9	<0.50	<0.50	<0.50	1.81	<0.50
	07/18/2006	<0.50	<0.50	<0.50	13.1	<0.50	<0.50	<0.50	1.31	<0.50
	10/25/2006	<0.50	<0.50	<0.50	12.3	<0.50	<0.50	<0.50	1.34	<0.50
	02/02/2007	<0.50	<0.50	<0.50	13.7	<0.50	<0.50	<0.50	1.32	<0.50
	04/25/2007	<0.50	<0.50	<0.50	10.8	<0.50	<0.50	<0.50	<0.50	<0.50
	01/09/2008	<0.50	<0.50	<0.50	13.5	<0.50	<0.50	<0.50	1.23	<0.50
	03/03/2010	<0.50	<0.50	<0.50	15.1	<0.50	<0.50	<0.50	1.63	<0.50
	08/25/2010	<0.50	<0.50	<0.50	10.5	<0.50	<0.50	<0.50	0.91	<0.50
	03/17/2011	<0.50	<0.50	<0.50	12.2	<0.50	<0.50	<0.50	1.10	<0.50
	03/08/2012	<0.50	<0.50	<0.50	16.6	<0.50	<0.50	<0.50	1.02	<0.50
	11/28/2012	<0.50	<0.50	<0.50	15.4	<0.50	<0.50	<0.50	1.17	<0.50
	02/19/2013	<0.50	<0.50	<0.50	16.1	<0.50	<0.50	<0.50	0.57	<0.50
	11/25/2013	<0.50	<0.50	<0.50	15.7	<0.50	<0.50	<0.50	1.09	<0.50
	05/20/2014	<0.50	<0.50	<0.50	15.3	<0.50	<0.50	<0.50	0.67	<0.50
	09/19/2014	<0.50	<0.50	<0.50	10.8	<0.50	<0.50	<0.50	<0.50	<0.50
	03/10/2015	<0.50	<0.50	<0.50	9.91	<0.50	<0.50	<0.50	<0.50	<0.50
	10/22/2015	<0.50	<0.50	<0.50	12.2	<0.50	<0.50	<0.50	<0.50	<0.50
	03/15/2016	<0.50	<0.50	<0.50	9.05	<0.50	<0.50	<0.50	<0.50	<0.50
	10/12/2016	<0.50	<0.50	<0.50	10.6	<0.50	<0.50	<0.50	<0.50	<0.50
	03/01/2017	<0.50	<0.50	<0.50	10.3	<0.50	<0.50	<0.50	<0.50	<0.50
	06/14/2017	<0.50	<0.50	<0.50	9.29	<0.50	<0.50	<0.50	<0.50	<0.50
	08/29/2017	<0.50	<0.50	<0.50	10.5	<0.50	<0.50	<0.50	<0.50	<0.50
	11/21/2017	<0.50	<0.50	<0.50	9.58	<0.50	<0.50	<0.50	<0.50	<0.50
	03/20/2018	<0.50	<0.50	<0.50	8.55	<0.50	<0.50	<0.50	<0.50	<0.50
	06/06/2018	<0.50	<0.50	<0.50	9.54	<0.50	<0.50	<0.50	<0.50	<0.50
	09/05/2018	<0.50	<0.50	<0.50	9.14	<0.50	<0.50	<0.50	<0.50	<0.50
	10/15/2018	<0.50	<0.50	<0.50	10.8	<0.50	<0.50	<0.50	<0.50	<0.50
	01/16/2019	<0.50	<0.50	<0.50	6.59	<0.50	<0.50	<0.50	0.19 J	<0.50
	04/29/2019	<0.50	<0.50	<0.50	6.76	<0.50	<0.50	<0.50	<0.50	<0.50
	08/27/2019	<0.50	<0.50	<0.50	6.54	<0.50	<0.50	<0.50	<0.50	<0.50
	02/20/2020	0.32 J	0.08 J	<0.50	8.62	<0.50	<0.50	<0.50	<0.50	<0.50
	03/04/2020	0.31 J	0.11 J	<0.50	7.93	<0.50	<0.50	<0.50	<0.50	<0.50
RS30	09/18/2018	<0.50	<0.50	<0.50	2.81	<0.50	<0.50	<0.50	<0.50	<0.50
	01/17/2019	<0.50	<0.50	<0.50	1.55	<0.50	<0.50	<0.50	<0.50	<0.50

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^ = At or Above USEPA Maximum Contaminant Level (MCL)

**TABLE 1**  
**RIVERSIDE AND WHITE RIVER PRODUCTION WATER cVOC ANALYTICAL RESULTS**

		Chlorinated Volatile Organic Compounds (cVOCs)								
		Tetrachloroethene	Trichloroethene	1,1,1-Trichloroethane	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,1-Dichloroethene	1,1-Dichloroethane	Vinyl Chloride	Chloroethane
USEPA Maximum Contaminant Level		5	5	200	70	100	7	NE	2	NE
Sample ID	Date Collected	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
RSA	12/17/2004	<0.50	<0.50	NDP	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/22/2004	<0.50	<0.50	NDP	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/28/2005	<0.50	<0.50	NDP	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/22/2005	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/21/2005	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/19/2005	<0.50	<0.50	NDP	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/25/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/20/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/25/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/01/2007	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/03/2007	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/09/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/15/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/24/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/17/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/17/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/08/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/28/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/25/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	05/20/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/17/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/21/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/22/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/15/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/12/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/01/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/14/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/29/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/27/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/27/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/06/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/05/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/16/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/15/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/29/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/26/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/16/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/16/2020	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

**Abbreviations & Notes**

BRL = Below Laboratory Reporting Limits

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The following notes summarize the symbol and color of MCL exceedances:

▲ = At or Above USEPA Maximum Contaminant Level (MCL)

**TABLE 1**  
**RIVERSIDE AND WHITE RIVER PRODUCTION WATER cVOC ANALYTICAL RESULTS**

		Chlorinated Volatile Organic Compounds (cVOCs)								
		Tetrachloroethene	Trichloroethene	1,1,1-Trichloroethane	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,1-Dichloroethene	1,1-Dichloroethane	Vinyl Chloride	Chloroethane
USEPA Maximum Contaminant Level		5	5	200	70	100	7	NE	2	NE
Sample ID	Date Collected	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
RSB	12/22/2004	<0.50	<0.50	NDP	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/27/2005	<0.50	<0.50	NDP	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/22/2005	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/22/2005	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/19/2005	<0.50	<0.50	NDP	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/25/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/01/2007	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/25/2007	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/03/2007	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/09/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/15/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/23/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/22/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/25/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/02/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/03/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/26/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/17/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/08/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/28/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/25/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	05/20/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/18/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/10/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/22/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/15/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/12/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/01/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/14/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/29/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/27/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/27/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/06/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/05/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/15/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/15/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/30/2019	<0.50	0.41 J	<0.50	0.55	<0.50	<0.50	<0.50	<0.50	<0.50
	04/29/2019	<0.50	0.25 J	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/26/2019	<0.50	0.25 J	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/16/2019	<0.50	0.29 J	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/16/2020	<0.50	0.37 J	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

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▲ = At or Above USEPA Maximum Contaminant Level (MCL)

**TABLE 1**  
**RIVERSIDE AND WHITE RIVER PRODUCTION WATER cVOC ANALYTICAL RESULTS**

		Chlorinated Volatile Organic Compounds (cVOCs)								
		Tetrachloroethene	Trichloroethene	1,1,1-Trichloroethane	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,1-Dichloroethene	1,1-Dichloroethane	Vinyl Chloride	Chloroethane
USEPA Maximum Contaminant Level		5	5	200	70	100	7	NE	2	NE
Sample ID	Date Collected	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
RSC	07/22/2005	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/25/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/20/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/19/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/25/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/02/2007	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/25/2007	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/03/2007	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/09/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/15/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/23/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/22/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/27/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/03/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/04/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/25/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/18/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/09/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/28/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/25/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	05/20/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/18/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/10/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/22/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/15/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/12/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/01/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/14/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/29/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/27/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/27/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/06/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

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**TABLE 1**  
**RIVERSIDE AND WHITE RIVER PRODUCTION WATER cVOC ANALYTICAL RESULTS**

		Chlorinated Volatile Organic Compounds (cVOCs)								
		Tetrachloroethene	Trichloroethene	1,1,1-Trichloroethane	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,1-Dichloroethene	1,1-Dichloroethane	Vinyl Chloride	Chloroethane
USEPA Maximum Contaminant Level		5	5	200	70	100	7	NE	2	NE
Sample ID	Date Collected	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
RSD	10/19/2005	<0.50	<0.50	NDP	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/27/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/18/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/25/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/02/2007	<0.50	<0.50	<0.50	0.57	<0.50	<0.50	<0.50	<0.50	<0.50
	04/25/2007	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/03/2007	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/09/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/22/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/25/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/02/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/03/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/26/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/17/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/08/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/29/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/20/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/25/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	05/21/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/10/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/22/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/15/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/13/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/02/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/29/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/28/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/20/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/06/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/05/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/12/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/15/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/27/2019	<0.50	<0.50	<0.50	0.23 J	<0.50	<0.50	<0.50	<0.50	<0.50
	10/16/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/16/2020	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

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^ = At or Above USEPA Maximum Contaminant Level (MCL)

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		Chlorinated Volatile Organic Compounds (cVOCs)								
		Tetrachloroethene	Trichloroethene	1,1,1-Trichloroethane	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,1-Dichloroethene	1,1-Dichloroethane	Vinyl Chloride	Chloroethane
USEPA Maximum Contaminant Level		5	5	200	70	100	7	NE	2	NE
Sample ID	Date Collected	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
WR7	04/06/2004	<0.50	0.52	NDP	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/21/2005	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/25/2006	<0.50	0.54	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/19/2006	<0.50	0.55	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/25/2006	<0.50	0.62	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/31/2007	<0.50	0.52	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/25/2007	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/03/2007	<0.50	0.52	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/09/2008	<0.50	0.53	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/15/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/23/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/22/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/25/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/02/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/03/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/25/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/17/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/28/2012	<0.50	0.61	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/25/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	05/21/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/17/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/10/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/21/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/14/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/13/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/01/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/14/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/29/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/22/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/27/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/06/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/22/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/12/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/15/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/29/2019	<0.50	0.20 J	<0.50	0.21 J	<0.50	<0.50	<0.50	<0.50	<0.50
	08/26/2019	<0.50	0.14 J	<0.50	0.26 J	<0.50	<0.50	<0.50	<0.50	<0.50
	10/15/2019	<0.50	0.22 J	<0.50	0.31 J	<0.50	<0.50	<0.50	<0.50	<0.50
	01/16/2020	<0.50	0.24 J	<0.50	0.29 J	<0.50	<0.50	<0.50	<0.50	<0.50

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All results and MCLs are reported in micrograms per liter (µg/L).

The following notes summarize the symbol and color of MCL exceedances:

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**TABLE 1**  
**RIVERSIDE AND WHITE RIVER PRODUCTION WATER cVOC ANALYTICAL RESULTS**

		Chlorinated Volatile Organic Compounds (cVOCs)								
		Tetrachloroethene	Trichloroethene	1,1,1-Trichloroethane	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,1-Dichloroethene	1,1-Dichloroethane	Vinyl Chloride	Chloroethane
USEPA Maximum Contaminant Level		5	5	200	70	100	7	NE	2	NE
Sample ID	Date Collected	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
WR8	07/21/2005	<0.50	<0.50	<0.50	0.95	<0.50	<0.50	<0.50	<0.50	<0.50
	01/25/2006	<0.50	<0.50	<0.50	1.09	<0.50	<0.50	0.57	<0.50	<0.50
	04/19/2006	<0.50	0.52	<0.50	0.90	<0.50	<0.50	<0.50	<0.50	<0.50
	07/18/2006	<0.50	0.73	<0.50	1.12	<0.50	<0.50	0.51	<0.50	<0.50
	10/25/2006	<0.50	1.76	<0.50	0.91	<0.50	<0.50	<0.50	<0.50	<0.50
	01/31/2007	<0.50	0.58	<0.50	1.02	<0.50	<0.50	<0.50	<0.50	<0.50
	04/25/2007	<0.50	0.84	<0.50	1.05	<0.50	<0.50	0.51	<0.50	<0.50
	10/03/2007	<0.50	1.09	<0.50	0.96	<0.50	<0.50	<0.50	<0.50	<0.50
	01/09/2008	<0.50	0.81	<0.50	0.94	<0.50	<0.50	<0.50	<0.50	<0.50
	04/15/2008	<0.50	0.84	<0.50	0.97	<0.50	<0.50	<0.50	<0.50	<0.50
	07/23/2008	<0.50	1.02	<0.50	0.93	<0.50	<0.50	<0.50	<0.50	<0.50
	10/22/2008	<0.50	1.69	<0.50	0.91	<0.50	<0.50	<0.50	<0.50	<0.50
	12/02/2009	<0.50	1.87	<0.50	0.67	<0.50	<0.50	<0.50	<0.50	<0.50
	03/03/2010	<0.50	<0.50	<0.50	0.81	<0.50	<0.50	<0.50	<0.50	<0.50
	08/25/2010	<0.50	0.66	<0.50	0.91	<0.50	<0.50	<0.50	<0.50	<0.50
	03/17/2011	<0.50	<0.50	<0.50	0.81	<0.50	<0.50	<0.50	<0.50	<0.50
	11/28/2012	<0.50	0.60	<0.50	0.92	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2013	<0.50	<0.50	<0.50	0.94	<0.50	<0.50	<0.50	<0.50	<0.50
	11/25/2013	<0.50	0.57	<0.50	1.07	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2014	<0.50	0.65	<0.50	1.14	<0.50	<0.50	0.54	<0.50	<0.50
	05/21/2014	<0.50	0.64	<0.50	1.02	<0.50	<0.50	<0.50	<0.50	<0.50
	09/17/2014	<0.50	<0.50	<0.50	0.94	<0.50	<0.50	<0.50	<0.50	<0.50
	03/10/2015	<0.50	0.55	<0.50	1.13	<0.50	<0.50	<0.50	<0.50	<0.50
	10/21/2015	<0.50	0.64	<0.50	1.14	<0.50	<0.50	<0.50	<0.50	<0.50
	03/14/2016	<0.50	0.67	<0.50	1.00	<0.50	<0.50	<0.50	<0.50	<0.50
	10/12/2016	<0.50	0.81	<0.50	0.90	<0.50	<0.50	<0.50	<0.50	<0.50
	03/01/2017	<0.50	0.71	<0.50	0.92	<0.50	<0.50	<0.50	<0.50	<0.50
	06/14/2017	<0.50	0.63	<0.50	1.17	<0.50	<0.50	<0.50	<0.50	<0.50
	08/29/2017	<0.50	0.81	<0.50	1.01	<0.50	<0.50	<0.50	<0.50	<0.50
	11/22/2017	<0.50	0.87	<0.50	0.65	<0.50	<0.50	<0.50	<0.50	<0.50
	03/20/2018	<0.50	0.53	<0.50	0.93	<0.50	<0.50	<0.50	<0.50	<0.50
	06/06/2018	<0.50	0.65	<0.50	1.27	<0.50	<0.50	<0.50	<0.50	<0.50
	08/22/2018	<0.50	0.50	<0.50	1.00	<0.50	<0.50	<0.50	<0.50	<0.50
	10/12/2018	<0.50	0.70	<0.50	1.10	<0.50	<0.50	<0.50	<0.50	<0.50
	01/15/2019	<0.50	0.64	<0.50	1.36	<0.50	<0.50	0.47 J	<0.50	<0.50
	04/29/2019	<0.50	0.44 J	<0.50	1.19	<0.50	<0.50	0.36 J	<0.50	<0.50
	08/26/2019	<0.50	0.47 J	<0.50	1.13	<0.50	<0.50	0.40 J	<0.50	<0.50
	10/15/2019	<0.50	0.59	<0.50	1.35	<0.50	<0.50	0.42 J	<0.50	<0.50
	01/16/2020	<0.50	0.53	<0.50	1.20	<0.50	<0.50	0.36 J	<0.50	<0.50

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The following notes summarize the symbol and color of MCL exceedances:

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**TABLE 1**  
**RIVERSIDE AND WHITE RIVER PRODUCTION WATER cVOC ANALYTICAL RESULTS**

		Chlorinated Volatile Organic Compounds (cVOCs)								
		Tetrachloroethene	Trichloroethene	1,1,1-Trichloroethane	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,1-Dichloroethene	1,1-Dichloroethane	Vinyl Chloride	Chloroethane
USEPA Maximum Contaminant Level		5	5	200	70	100	7	NE	2	NE
Sample ID	Date Collected	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
WR9	07/21/2005	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/25/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/19/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/18/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/25/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/31/2007	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/25/2007	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/03/2007	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/09/2008	<0.50	6.12 ^	6.54	<0.50	<0.50	<0.50	2.46	<0.50	<0.50
	04/15/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/23/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/22/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/25/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/02/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.51	<0.50	<0.50
	03/03/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/25/2010	<0.50	<0.50	<0.50	1.28	<0.50	<0.50	<0.50	<0.50	<0.50
	03/17/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/09/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/28/2012	<0.50	0.52	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/25/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.52	<0.50	<0.50
	05/21/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/17/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/10/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/21/2015	<0.50	2.87	1.87	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/14/2016	<0.50	0.70	0.62	<0.50	<0.50	<0.50	0.55	<0.50	<0.50
	10/12/2016	<0.50	1.20	0.84	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/01/2017	<0.50	0.60	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/14/2017	<0.50	0.54	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/29/2017	<0.50	0.68	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/22/2017	<0.50	0.91	0.57	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/20/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/06/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/22/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/12/2018	<0.50	0.55	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/15/2019	<0.50	0.32 J	0.21 J	<0.50	<0.50	<0.50	0.42 J	<0.50	<0.50
	04/29/2019	<0.50	0.22 J	<0.50	<0.50	<0.50	<0.50	0.33 J	<0.50	<0.50
	08/26/2019	<0.50	0.19 J	0.23 J	0.19 J	<0.50	<0.50	0.34 J	<0.50	<0.50
	10/15/2019	<0.50	0.19 J	<0.50	0.19 J	<0.50	<0.50	0.38 J	<0.50	<0.50
	01/16/2020	<0.50	0.22 J	0.14 J	<0.50	<0.50	<0.50	0.33 J	<0.50	<0.50

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		Chlorinated Volatile Organic Compounds (cVOCs)								
		Tetrachloroethene	Trichloroethene	1,1,1-Trichloroethane	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,1-Dichloroethene	1,1-Dichloroethane	Vinyl Chloride	Chloroethane
USEPA Maximum Contaminant Level		5	5	200	70	100	7	NE	2	NE
Sample ID	Date Collected	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
The following wells have been abandoned or taken out of service over the course of monitoring. Data presented is for reference only.										
WR3 (Out of Service - June 2016)	04/07/2004	<0.50	6.95 ^	NDP	1.74	<0.50	<0.50	0.90	<0.50	<0.50
	01/26/2005	<0.50	6.78 ^	NDP	1.60	<0.50	<0.50	0.87	<0.50	<0.50
	04/21/2005	<0.50	7.20 ^	1.26	1.68	<0.50	<0.50	0.84	<0.50	<0.50
	07/21/2005	<0.50	7.57 ^	1.31	1.87	<0.50	<0.50	0.92	<0.50	<0.50
	10/19/2005	<0.50	6.65 ^	1.29	1.57	<0.50	<0.50	0.83	<0.50	<0.50
	01/25/2006	<0.50	8.18 ^	1.27	1.81	<0.50	<0.50	0.95	<0.50	<0.50
	04/19/2006	<0.50	7.69 ^	1.23	1.63	<0.50	<0.50	0.88	<0.50	<0.50
	10/25/2006	<0.50	5.64 ^	0.94	1.30	<0.50	<0.50	0.74	<0.50	<0.50
	01/31/2007	<0.50	6.92 ^	1.26	1.42	<0.50	<0.50	0.83	<0.50	<0.50
	04/25/2007	<0.50	5.37 ^	0.91	1.40	<0.50	<0.50	0.82	<0.50	<0.50
	07/23/2008	<0.50	4.67 ^	<0.50	1.69	<0.50	<0.50	0.66	<0.50	<0.50
	10/22/2008	<0.50	5.27 ^	0.55	1.95	<0.50	<0.50	0.79	<0.50	<0.50
	12/02/2009	<0.50	4.43 ^	0.58	1.43	<0.50	<0.50	0.60	<0.50	<0.50
	03/03/2010	<0.50	5.55 ^	0.75	1.63	<0.50	<0.50	0.72	<0.50	<0.50
	08/25/2010	<0.50	5.60 ^	0.83	1.59	<0.50	<0.50	0.78	<0.50	<0.50
	03/17/2011	<0.50	6.09 ^	0.83	1.32	<0.50	<0.50	0.63	<0.50	<0.50
	11/28/2012	<0.50	6.54 ^	0.88	1.59	<0.50	<0.50	0.82	<0.50	<0.50
	02/19/2013	<0.50	6.12 ^	0.71	1.70	<0.50	<0.50	0.79	<0.50	<0.50
	11/25/2013	<0.50	5.33 ^	0.84	1.69	<0.50	<0.50	0.69	<0.50	<0.50
	02/19/2014	<0.50	6.36 ^	0.96	1.63	<0.50	<0.50	0.76	<0.50	<0.50
	05/21/2014	<0.50	6.11 ^	0.72	2.01	<0.50	<0.50	0.79	<0.50	<0.50
	09/17/2014	<0.50	5.24 ^	0.61	1.67	<0.50	<0.50	0.61	<0.50	<0.50
WR6 (Out of Service - 2007) (Abandoned)	03/10/2015	<0.50	5.68 ^	0.76	1.72	<0.50	<0.50	0.66	<0.50	<0.50
	10/21/2015	<0.50	5.44 ^	0.62	1.70	<0.50	<0.50	<0.50	<0.50	<0.50
	03/14/2016	<0.50	5.55 ^	0.70	1.67	<0.50	<0.50	0.68	<0.50	<0.50
	04/06/2004	<0.50	12.7 ^	NDP	1.26	<0.50	<0.50	1.84	<0.50	<0.50
	01/26/2005	<0.50	12.4 ^	NDP	1.22	<0.50	<0.50	1.43	<0.50	<0.50
	04/21/2005	<0.50	13.3 ^	9.99	1.26	<0.50	<0.50	1.44	<0.50	<0.50
	07/21/2005	<0.50	15.9 ^	11.5	1.39	<0.50	<0.50	1.67	<0.50	<0.50
	10/19/2005	<0.50	15.6 ^	NDP	1.42	<0.50	<0.50	1.59	<0.50	<0.50
	01/25/2006	<0.50	18.9 ^	12.1	1.44	<0.50	<0.50	1.61	<0.50	<0.50
	04/19/2006	<0.50	19.2 ^	12.3	1.25	<0.50	<0.50	1.42	<0.50	<0.50
	10/25/2006	<0.50	18.3 ^	12.0	1.11	<0.50	<0.50	1.26	<0.50	<0.50

**Abbreviations & Notes**

BRL = Below Laboratory Reporting Limits

J = Result is estimated between the MDL and reporting limit.

MDL = Method Detection Limit

NDP = No Data Provided


USEPA = United States Environmental Protection Agency

All results and MCLs are reported in micrograms per liter (µg/L).

The following notes summarize the symbol and color of MCL exceedances:

^ = At or Above USEPA Maximum Contaminant Level (MCL)

**TABLE 1**  
**RIVERSIDE AND WHITE RIVER PRODUCTION WATER cVOC ANALYTICAL RESULTS**

		Chlorinated Volatile Organic Compounds (cVOCs)								
		Tetrachloroethene	Trichloroethene	1,1,1-Trichloroethane	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,1-Dichloroethene	1,1-Dichloroethane	Vinyl Chloride	Chloroethane
USEPA Maximum Contaminant Level		5	5	200	70	100	7	NE	2	NE
Sample ID	Date Collected	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
<b>RS2</b> (Out of Service - March 2015) (Abandoned)	07/22/2005	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/25/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/20/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/18/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/25/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/02/2007	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/25/2007	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/03/2007	<0.50	<0.50	<0.50	<b>3.25</b>	<0.50	<0.50	<0.50	<b>0.51</b>	<0.50
	04/15/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/23/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/23/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/25/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/02/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/03/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/25/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/17/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/08/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/28/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/25/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
<b>RS27</b> (Out of Service - March 2014) (Abandoned)	05/20/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	09/17/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/10/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/22/2005	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/25/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/20/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/18/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/25/2006	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/02/2007	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/25/2007	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/03/2007	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/09/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/15/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/23/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/22/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/25/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/02/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/03/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/25/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	03/08/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/28/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
<b>RS28</b> (Out of Service - 1989) (Abandoned)	09/18/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

**Abbreviations & Notes**

BRL = Below Laboratory Reporting Limits

J = Result is estimated between the MDL and reporting limit.

MDL = Method Detection Limit

NDP = No Data Provided

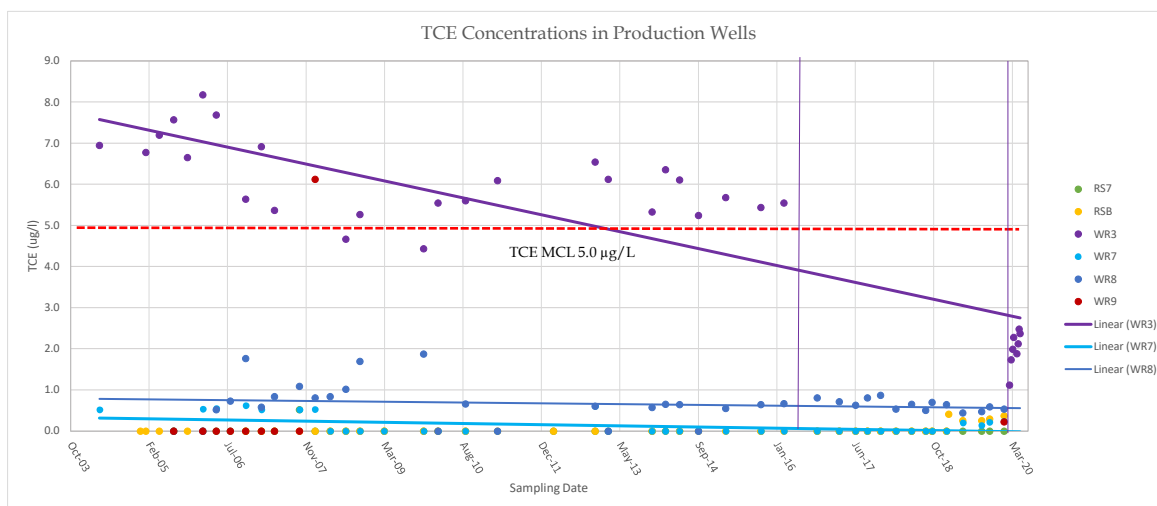
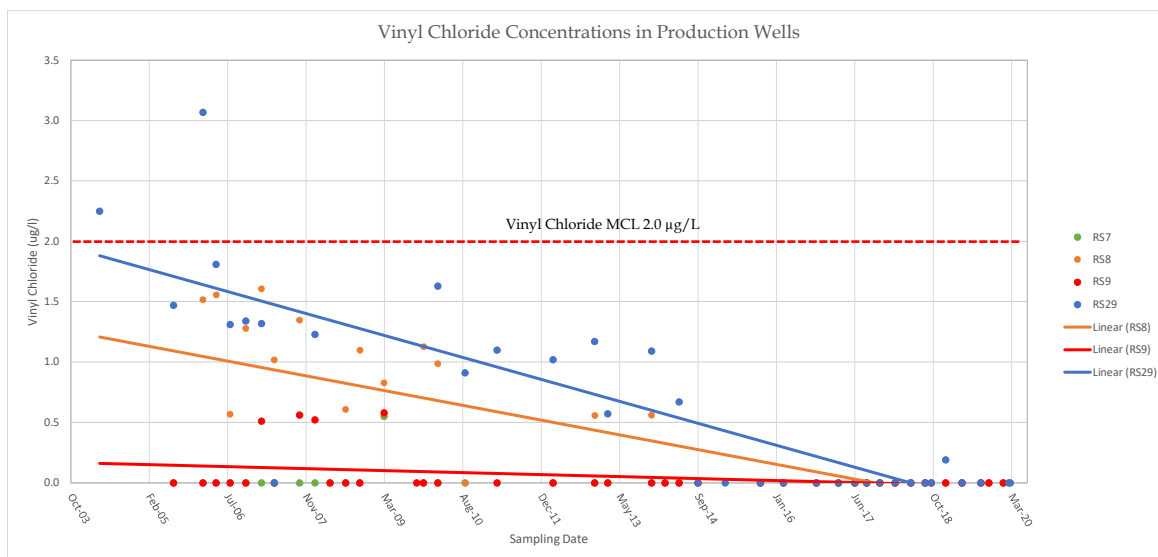
USEPA = United States Environmental Protection Agency

All results and MCLs are reported in micrograms per liter (µg/L).

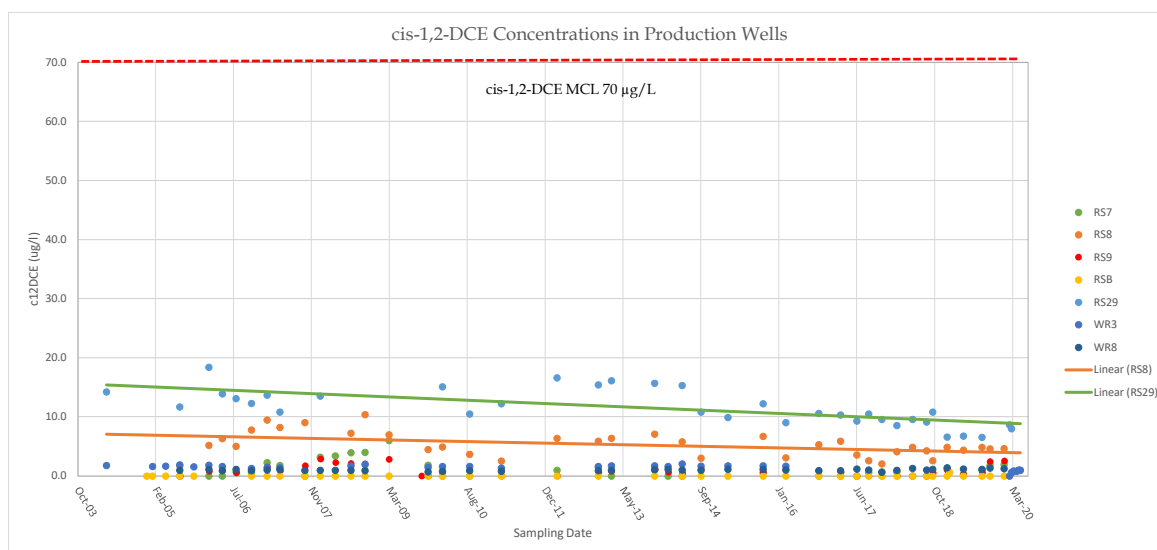
The following notes summarize the symbol and color of MCL exceedances:

**^** = At or Above USEPA Maximum Contaminant Level (MCL)

TABLE 2  
cVOC CONCENTRATIONS VS. TIME



Note: WR3 was taken offline in March 2016. Aeration treatment was installed on WR-3 in January 2020 and testing of post aeration water was completed between February and April 2020. WR-3 is currently back in service. The vertical lines denote when WR-3 was taken out of service, and when confirmatory sampling commenced, respectively.



Note:

For each compound, wells that are historically non-detect are not presented.




TABLE 2  
cVOC CONCENTRATIONS VS. TIME



TABLE 3

**RIVERSIDE AND WHITE RIVER  
FINISHED WATER cVOC ANALYTICAL RESULTS**

		Tetrachloroethene	Trichloroethene	1,1,1-Trichloroethane	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,1-Dichloroethene	1,1-Dichloroethane	Vinyl Chloride	Chloroethane
USEPA Maximum Contaminant Level		5	5	200	70	100	7	NE	2	NE
Sample ID	Date Collected	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
WHITE RIVER PLANT (WR PD)	02/08/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	05/11/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/09/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/07/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/08/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/16/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/15/2017	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/27/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	05/16/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/15/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/12/2018	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/11/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	05/15/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/12/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/11/2019	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/12/2020	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

**Abbreviations & Notes**

cVOC = Chlorinated Volatile Organic Compound

USEPA = United States Environmental Protection Agency

PD = Pump Discharge

NE = Not Established

NDP = No Data Provided

BRL = Below Laboratory Reporting Limits

All results and Screening Levels are reported in micrograms per liter (µg/L).

The following notes summarize the symbol and color of screening level exceedances:

^ = At or Above USEPA Maximum Contaminant Level (MCL)

Table 4


Site 0153 Focused Area of Interest Site Status

Figure 6 Map Label ID	Priority Level	Agency Interest	Program	Site Number	Facility Name	Address	Soil Investigation		Groundwater Investigation			Vapor Intrusion Investigation		Investigation Status	Remediation	Priority Determination
							Samples Collected	cVOCs Detected	Samples Collected	cVOCs Detected On-Site	cVOCs Detected Off-Site	Samples Collected On-Site	Samples Collected Off-Site			
1	Medium	16751	SCP	0000650	Penn 60 Minute Cleaners	2175 N Pennsylvania Street	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Ongoing	Stage has not been reached	Undelineated high contamination far distance
2	Medium	17902	SCP	0000835	Sparkle Cleaners	2198 N Meridian Street	No	NI	No	NI	NI	No	No	Has not started	Stage has not been reached	Uninvestigated data gap risk based on proximity
3	Medium	15994	SCP	0000658	Near North Development Corporation	2179 N Illinois Street	Yes	Yes	Yes	Yes	Yes	No	No	Ongoing	Stage has not been reached	Undelineated moderate contaminants; known bedrock well
4	Medium	26562	SCP	000000298	Karstadt-Reed Cleaners	1449 N Illinois Street	Yes	Yes	Yes	Yes	Yes	No	Yes	Ongoing	Ongoing	Commingled plume side gradient
5	Medium	23287	VRP	6090502	Michaelis / Fame Laundry	1352 N Illinois Street	Yes	Yes	Yes	Yes	Yes	Yes	No	Complete	Complete - CNTS issued	Commingled plume side gradient
6	Medium	28328	VRP	6070101	Shuron	1402 N Capital Avenue	Yes	Yes	Yes	Yes	Yes	Yes	No	Ongoing	Ongoing	Commingled plume side gradient
7	Medium	17331	VRP	6160804	Former Stewart Manufacturing	1280 N Senate Avenue	Yes	Yes	Yes	Yes	Yes	No	Yes	Ongoing	Ongoing	Commingled plume side gradient
8	Low	11493	SCP	200110517	Peerless Pump / Sterling Fluid Manufacturing	2005 Dr MLK Jr Street	Yes	No	Yes	No	No	No	No	Complete	No active remediation necessary	Based on sampling
9	Low	11491	SCP	0000623	Industrial Heat Treating & Metallurgical Co. Inc. / Bodycote Thermal Processing	500 W 21st Street and 2131 Dr MLK Jr Street	Yes	Yes	Yes	Yes	NI	Yes	No	Ongoing	Stage has not been reached	Based on sampling
10	Low	16164	SCP	0000789	Former Hittle Machine and Tool	2122 Dr MLK Jr Street	Yes	Yes	Yes	Yes	NI	Yes	No	Complete	No active remediation necessary	Based on sampling
11	Low	18302	BFP	4191108	Stuart Moving and Storage/ M & A Property Management	2058 Dr. MLK Jr. Street	Yes	Yes	Yes	Yes	NI	Yes	No	Complete	No active remediation necessary	Based on sampling
12	Low	17605	VRP	6050204	Citizens Gas and Coke Langsdale	2150 Dr. MLK Jr. Street	Yes	Yes - limited	Yes	No	No	Yes	Yes	Complete	Complete	Based on sampling
13	Medium	107558	SCP	0000858	Parts Landlord LLC	940 W 16th Street	Yes	No	Yes	Yes	NI	No	No	Ongoing	Stage has not been reached	Based on sampling
14	Low	24792	SCP	0000772	Pennyma's Inc	1704 Dr. MLK Jr. Street	Yes	Yes	Yes	Yes	NI	No	No	Ongoing	Stage has not been reached	Based on sampling
15	High	23770	SCP	0000787	Former Parker property NW (Hagg Trucking Company, Inc.)	550 W 16th Street & Dr. MLK Jr. Street	Yes	Yes	Yes	Yes	Yes	No	No	Ongoing	Stage has not been reached	Undelineated based on 2004 Phase II data and proximity
16	High	20923	SCP	0000707	Former Ashjian Brothers Rug Cleaners	450 W 16th Place	Yes	Yes	Yes	Yes	NI	Yes	Yes	Ongoing	Stage has not been reached	Undelineated based on 2019 monitoring data and proximity
17	High	22740	SCP	0000788	Former Parker Property SW / Truck and Bus	1520 Dr. MLK Jr Street	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Ongoing	Stage has not been reached	Undelineated based on 2011 monitoring data and proximity
18	Low	126398	SCP	0000804	IU Parcel 1011 MLK St	1011 Dr. MLK Jr Street	Yes	Yes	Yes	Yes	NI	Yes	No	Complete	Remedy required but not implemented yet	Based on sampling
19	High	17874	SCP	0000753	McBroom Electric	800 W 16th Street	Yes	Yes	Yes	Yes	NI	No	No	Ongoing	Stage has not been reached	Undelineated based on 2019 sampling and proximity
20	Low	126398	SCP	0000804	Indiana University (IU Block Trucking)	1311 Milburn Street	Yes	No	Yes	No	NI	No	No	Complete	No active remediation necessary	Based on sampling
21	Low	126398	SCP	0000804	IU Parcel Wishard Hospital Parcel	1001 W 10th Street	Yes	Yes	No	NI	NI	Yes	No	Complete	Institutional Control/OM&M Plan	Based on sampling
22	Low	126398	SCP	0000804	IU Parcel Riley Hospital Parcel	705 Riley Hospital Drive	Yes	Yes	Yes	No	NI	Yes	No	Complete	No active remediation necessary	Based on sampling
23	Low	126398	SCP	0000804	IU Parcel Regenstreif Institute	1101 W 10th Street	Yes	Yes	No	NI	NI	Yes	No	Complete	Institutional Control/OM&M Plan	Based on sampling
24	High	109813	SCP	0000455	Goodwill Industries	1635 W Michigan Street	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Ongoing	Stage has not been reached	Based on 2019 contaminant concentrations and proximity
25	Low	22624	SCP	4980013	Shell Bulk Facility (F)	2121 W Michigan Street	Yes	Yes	Yes	Yes	Yes	No	No	Complete	Complete - CNTS issued	Based on 2019 sampling data
26	Low	126398	SCP	0000804	IU Parcel 1302 Stadium Dr	1302 Stadium Drive	Yes	No	Yes	Yes	NI	No	No	Complete	Institutional Control	Based on 2002 sampling data
27	Low	126398	SCP	0000804	IU Parcel 1200 Waterway Blvd	1200 Waterway Boulevard	Yes	Yes	Yes	Yes	NI	No	No	Complete	Institutional Control	Based on 2002 sampling data
28	Low	126398	SCP	0000804	IU Parcel Mid Continent Food Tech	1430 Indiana Avenue	Yes	Yes	Yes	Yes	NI	No	No	Complete	Remedy required but not implemented yet	Based on sampling data
29	High	16468	SCP	200412100	Component Machine	1631 Gent Avenue	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Ongoing	Ongoing	Based on proximity; moderate contamination
30	High	117788	SCP	0000744	Boyle Racing Headquarters	1701 Gent Avenue	Yes	Yes	Yes	Yes	NI	No	No	Ongoing	Monitoring	Based on proximity; moderate contamination
31	Medium	126398	SCP	0000804	IU Parcel Kiger Riefer	1830 W 16th Street	Yes	Yes	Yes	Yes	NI	Yes	No	Ongoing	Stage has not been reached	Unknown source side gradient
32	Medium	16545	SCP	200404159	Flexdar Inc.	1825 W 18th Street	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Ongoing	Ongoing	Side gradient
33	Low	16021	SCP	0000963	Central Sova / Bunge North America	1160 W 18th Street	Yes	No	Yes	No	No	No	No	Complete	No active remediation necessary	Based on sampling
34	Low	19994	VRP	6030103	Rumpke Indianapolis TS	2069-2235 Montcalm Street	Yes	Yes	Yes	Yes	NI	Yes	No	Complete	Institutional Control	Screen out CNTS 2010
35	Low	15891	SCP	0000770	Former Carrier-Bryant Facility	1100 W 21st Street and 1133 Bursdal Parkway	Yes	Yes	Yes	Yes	Yes	No	No	Pending	Stage has not been reached	Based on sampling data
36	Low	116180	BFP	4190209	Annex on 10th/ American Wire, Rope & Sling	1717 W 10th Street	Yes	No	Yes	No	NI	No	No	Complete	No active remediation necessary	Based on sampling data
37	Medium	20404	SCP	0000804	Clarian Health Partners Methodist Hospital	1701 N Senate Avenue	Yes- Limited	No	Yes - Limited	No	NI	No	No	Ongoing	Stage has not been reached	Uninvestigated data gap based on Ashjian known up-gradient contamination
38	Low	22076	SCP	0000676	Disc Graphics Inc	1160 W 16th Street	Yes	Yes	Yes	Yes	NI	Yes	No	Complete	No active remediation necessary	No soil source found during Component Machine investigation
39	Low	120034	SCP	0000734	Madame Walker Urban Life Center / Former Raymond Baird Cleaners	617-625 Indiana Avenue	Yes	No	Yes	No	NI	No	No	Complete	No active remediation necessary	Based on sampling data
40	Low	119860	SCP	0000724	Former Willis Mortuary	632 Dr. MLK Jr. Street	Yes	No	Yes	No	NI	No	No	Complete	No active remediation necessary	Based on sampling data

Notes:  
 SCP = State Cleanup Program; VRP - Voluntary Remediation Program; BFP - Brownfields Program  
 NA = Not Applicable; NI - Not Investigated  
 cVOCs = Chlorinated volatile organic compounds ; COC = Certificate of Completion; CNTS = Covenant Not to Sue

**TABLE 5**  
**WR3 cVOC ANALYTICAL RESULTS**  
**PRE- AND POST-AERATION PRODUCTION WATER**

August Mack Project No.:  
JU0082.380

			Chlorinated Volatile Organic Compounds (cVOCs)								
			Tetrachloroethene	Trichloroethene	1,1,1-Trichloroethane	cis-1,2-Dichloroethene	trans-1,2-Dichloroethane	1,1-Dichloroethene	1,1-Dichloroethane	Vinyl Chloride	Chloroethane
USEPA Maximum Contaminant Level			5	5	200	70	100	7	NE	2	NE
Sample Location	Date Collected	Sample ID	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
WR3	02/11/2020	Pre	<0.079	2.35	0.28 J	<0.177	<0.11	<0.092	<0.129	<0.165	<0.226
	02/20/2020	Pre	<0.079	2.25	0.23 J	0.19 J	<0.11	<0.092	<0.129	<0.165	<0.226
		Post	<0.079	1.12	<0.11	<0.177	<0.11	<0.092	<0.129	<0.165	<0.226
	03/02/2020	Pre	<0.079	3.36	0.47 J	0.77	<0.11	<0.092	0.18 J	<0.165	<0.226
		Post	<0.079	1.73	0.26 J	0.55	<0.11	<0.092	<0.129	<0.165	<0.226
	03/11/2020	Pre	<0.079	3.75	0.38 J	0.99	<0.11	<0.092	0.26 J	<0.165	<0.226
		Post	<0.079	1.99	0.18 J	0.70	<0.11	<0.092	0.13 J	<0.165	<0.226
	03/17/2020	Pre	<0.079	4.01	0.40 J	1.19	<0.11	<0.092	0.32 J	<0.165	<0.226
		Post	<0.079	2.28	0.19 J	0.85	<0.11	<0.092	0.18 J	<0.165	<0.226
	04/07/2020	Pre	<0.079	3.40	0.42 J	1.02	<0.11	<0.092	0.34 J	<0.165	<0.226
		Post	<0.079	1.88	0.21 J	0.81	<0.11	<0.092	0.23 J	<0.165	<0.226
	04/15/2020	Pre	<0.079	3.89	0.42 J	1.32	<0.11	<0.092	0.38 J	<0.165	<0.226
		Post	<0.079	2.12	0.22 J	0.98	<0.11	<0.092	0.25 J	<0.165	<0.226
	04/22/2020	Pre	<0.079	4.10	0.43 J	1.47	<0.11	<0.092	0.43 J	<0.165	<0.226
		Post	<0.079	2.48	0.23 J	1.00	<0.11	<0.092	0.26 J	<0.165	<0.226
	04/28/2020	Pre	<0.079	3.91	0.43 J	1.24	<0.11	<0.092	0.38 J	<0.165	<0.226
		Post	<0.079	2.37	0.24 J	0.95	<0.11	<0.092	0.25 J	<0.165	<0.226

**Abbreviations & Notes**

MDL = Method Detection Limit

J = Result is detected between the MDL and reporting limit.

USEPA = United States Environmental Protection Agency

Pre = Results are from samples taken prior to aeration treatment.

Post = Results are from samples taken following aeration treatment.

The following notes summarize the symbol and color of screening level exceedances:

<sup>A</sup> = At or Above USEPA Maximum Contaminant Level (MCL)

All results and MCLs are reported in micrograms per liter (µg/L).

Non-detect results are reported to the MDL.

**Table 6**  
**Alternatives Comparative Evaluation**

Criterion	Baseline	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	No Action	Aeration	Carbon Adsorption	Ozonation	Advanced Oxidation
<b>Evaluation Criteria<sup>1</sup> with Assigned Scoring</b>					
Protection of Human Health and Environment	Fail	Pass	Pass	Pass	Pass
Compliance with ARARs/TBCs	Fail	Pass	Pass	Pass	Pass
Long-Term Effectiveness	Low	High – 3 pts	Medium – 2 pts	Medium – 2 pts	High – 3 pts
Reduction in Toxicity, Mobility, or Volume	None	Medium – 2 pts	Medium – 2 pts	High – 3 pts	High – 3 pts
Short-Term Effectiveness	Low	Medium – 2 pts	High – 3 pts	Medium – 2 pts	Low – 1 pt
Implementability	High	High – 3 pts	Medium – 2 pts	Low – 1 pts	Low – 1 pt
Community Acceptance	Low	Medium – 2 pts	Medium – 2 pts	Medium – 2 pts	Medium – 2 pts
<b>Score Total</b>	<b>NA</b>	<b>12</b>	<b>11</b>	<b>10</b>	<b>10</b>
<b>Estimated Costs<sup>2</sup></b>					
Design	\$0	\$50,000	\$50,000	\$75,000	\$85,000
Capital Costs	\$0	\$880,000	\$815,000	\$791,000	\$1,012,000
O&M (30 Years)	\$0	\$964,000	\$3,198,000	1,320,000	\$6,300,000
<b>Total</b>	<b>\$0</b>	<b>\$1,894,000</b>	<b>\$4,063,000</b>	<b>\$2,186,000</b>	<b>\$7,397,000</b>
<b>Cost Rank (Low to High)</b>	1st	2nd	4th	3rd	5th

Notes: <sup>1</sup> = Refer to Section 4.3 of the Feasibility Study for details of the evaluation.

<sup>2</sup> = Refer to **Table E-1** in **Appendix E** of the Feasibility Study for costing details.

ARARs = Applicable or Relevant and Appropriate Requirements; TBCs= to be considered.

NA – Not scored since it failed one or more threshold criterion.

**Table 7**  
**Cost Estimates of Alternatives**

<b>Activity</b>	<b>Baseline No Action</b>	<b>Alternative 1 Aeration</b>	<b>Alternative 2 Carbon Adsorption</b>	<b>Alternative 3 Ozonation</b>	<b>Alternative 4 Advanced Oxidation</b>
<b>Design/Treatability Testing/Post- Installation Testing<sup>1</sup></b>	\$0	\$50,000	\$50,000	\$75,000	\$85,000
<b>Capital Cost</b>					
Equipment		\$650,000	\$600,000	\$570,000	\$740,000
Installation (30% of Equipment Cost)		\$195,000	\$180,000	\$171,000	\$222,000
Building Upgrades		\$25,000	\$25,000	\$25,000	\$25,000
Compressor	\$0	--	--	\$10,000	--
Hydrogen Peroxide Tank		--	--	--	\$10,000
Electrical Service Installation		\$10,000	\$10,000	\$15,000	\$15,000
<b>Subtotal</b>		<b>\$880,000</b>	<b>\$815,000</b>	<b>\$791,000</b>	<b>\$1,012,000</b>
<b>Operation &amp; Maintenance<sup>2</sup> (30 years)</b>					
Electricity <sup>3</sup> Cost		\$454,000	\$198,000	\$1,200,000	\$3,900,000
Media <sup>4</sup> Wash with Labor		\$360,000	--	--	--
Media <sup>4</sup> Replacement with Labor	\$0	\$150,000	\$3,000,000		
Ozone Replacement Parts with Labor		--	--	\$120,000	--
Lamp Replacement with Labor		--	--	--	\$450,000
Hydrogen Peroxide (35%)		--	--	--	\$1,950,000
<b>Subtotal</b>		<b>\$964,000</b>	<b>\$3,198,000</b>	<b>\$1,320,000</b>	<b>\$6,300,000</b>
<b>Total</b>	<b>\$0</b>	<b>\$1,894,000</b>	<b>\$4,063,000</b>	<b>\$2,186,000</b>	<b>\$7,397,000</b>

Notes: <sup>1</sup> = Design, Treatability Testing, and Post Installation Testing costs based upon experience with these system types.

<sup>2</sup> = Operation and maintenance cost based upon costing provided by vendors or Citizens for the aeration system multiplied by 30 years.

<sup>3</sup> = Electricity costs are based upon electrical usage provided by vendors for specific equipment components.

<sup>4</sup> = Media for the aeration alternative is the packing material. Media for the carbon adsorption alternative is activated carbon.

**Table 8 Chemical-Specific ARARs and TBCs**

<b>Source</b>	<b>Standard, Requirement, Criterion, Limitation</b>	<b>Description of Standard</b>	<b>ARARs or TBC</b>	<b>Comments</b>
Safe Drinking Water Act, National Primary Drinking Water Standards	40 CFR, Part 141.61	MCLs for public water systems	Applicable	The NCP defines MCLs as relevant and appropriate for groundwater determined to be a current or potential source of drinking water.
Safe Drinking Water Act, Maximum Contaminant Level Goals (MCLGs)	40 CFR, Part 141.50	Potable water quality goals	TBC	MCLGs that have non-zero values are relevant and appropriate for groundwater to be a current or potential source of drinking water. Maximum contaminant goals are non-enforceable health goals.
U.S. EPA Health-Based Guidelines for Air, Drinking Water, and Soil (Regional Screening Levels)	Tables at <a href="https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables">https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables</a> . United States Environmental Protection Agency, Regional Screening Levels for Chemical Contaminants at Superfund Sites (February 20, 2020)	Human health risk-based screening levels for contaminants in soil and groundwater under different land use scenarios	TBC	Possible screening and/or cleanup goals to use in absence of MCLs values for specific contaminants based on a target cancer risk (TR) of $1 \times 10^{-6}$ . U.S. EPA in the MOA agreed a $1 \times 10^{-5}$ TR was acceptable.



**Table 9 Action-Specific ARARs and TBCs**

<b>Source</b>	<b>Standard, Requirement, Criterion, Limitation</b>	<b>Description of Standard</b>	<b>ARARs or TBC</b>	<b>Comments</b>
Safe Drinking Water Act, National Primary Drinking Water Standards	40 CFR, Part 141.61	Treatment for public water systems	Applicable	Defines treatment standards for current and potential sources of drinking water.
Occupational Safety and Health Administration (OSHA)	29 CFR 1910	Requires 40-hour HAZWOPER training and annual 8-hour refreshers for site workers	Applicable	For installation and operation and maintenance activities.
Clean Air Act (CAA)	40 CFR 50-80	The CAA regulates air emissions of substances that may harm public health.	Applicable	During operation of all air emission treatment options.
RCRA Subtitle C Hazardous Waste Identification and Generator Requirements	40 CFR 261	A solid waste is a hazardous waste if it exhibits any characteristics of ignitability, corrosivity, reactivity or toxicity.	Applicable	Disposal of waste materials related to treatment.
CERCLA Off-Site Rule	CERCLA Section 121(d)(3)	Applies to off-Site disposal of hazardous substances	TBC	Disposal of waste materials related to treatment.

**Table 10 Location-Specific ARARs and TBCs**

<b>Source</b>	<b>Standard, Requirement, Criterion, Limitation</b>	<b>Description of Standard</b>	<b>ARARs or TBC</b>	<b>Comments</b>
Endangered Species Act and Fish and Wildlife Coordination Act	16 CFR Part 661 and 16 U.S.C. 1531	Actions must be taken to conserve critical habitat in areas where there are endangered or threatened species.	Potentially Applicable	Potential ETR species in the area.
Executive Order 11988 – Floodplain Management	40 CFR Part 6, Subpart A; 40 CFR 6.302	Activities taking place within floodplains must be performed to avoid adverse impacts and preserve beneficial values.	Potentially Applicable	Pertinent to activities that may occur within the floodplain. A portion of the RSWF production wells are located in the floodplain.
Resource Conservation and Recovery Act (RCRA) Regulations – Location Standards	40 CFR Part 264.18	Regulates the design, construction, operation, and maintenance of hazardous waste management facilities within the 100-year floodplain.	Potentially Applicable	Applicable for on-site treatment, storage, or disposal of hazardous waste.