

# Corrective Action Plan 35003

**Town Pump #1**

**445 West Idaho Street**

**Kalispell, MT 59901**

**Facility ID# 15-08709, Release# 2567, WP ID# 35003**

**Prepared for:**

**Paul Townsend**

**Town Pump, Inc.**

**PO Box 6000**

**Butte, MT 59702**

**Prepared by:**

**West Central Environmental Consultants, Inc.**

**1030 South Ave. W.**

**Missoula, MT 59801**

**April 10, 2025**

**WCEC Project No. 23-15418-70**

# WCEC

West Central Environmental Consultants, Inc.

Nationwide Services

[www.wcec.com](http://www.wcec.com)

Environmental



Emergency Response



Industrial Services

# TABLE OF CONTENTS

<b>1.0</b>	<b>Introduction .....</b>	<b>1</b>
1.1	Site Location.....	1
1.2	Geologic/ Hydrogeologic Setting .....	1
<b>2.0</b>	<b>Site History .....</b>	<b>2</b>
<b>3.0</b>	<b>Scope of Work .....</b>	<b>3</b>
3.1	Required Scope of Work .....	3
<b>4.0</b>	<b>Petrofix Injection .....</b>	<b>4</b>
4.1	In-Situ Remediation Injection Overview .....	4
4.2	PetroFix™ Injection Eastern Tank Basin .....	4
4.3	PetroFix™ Injection (MW 2 Area).....	5
4.4	Pre Injection Groundwater Monitoring .....	5
4.5	Conformation Borings .....	6
4.6	Monitoring Well Abandonment & Installation .....	6
4.7	Soil & Water Disposal and Surface Cleaning.....	7
<b>5.0</b>	<b>Groundwater Monitoring .....</b>	<b>9</b>
5.1	Groundwater Monitoring & Sampling .....	9
<b>6.0</b>	<b>Report Preparation .....</b>	<b>10</b>
6.1	Interim Data Submittal.....	10
6.2	Data Validation.....	10
6.3	Remedial Injection Report .....	10
6.4	Groundwater Monitoring Report.....	10
<b>7.0</b>	<b>Timeline and Costs.....</b>	<b>12</b>
7.1	Planned Workflow & Cost Explanations.....	12

## List of Figures

- Figure 1: Site Location Maps
- Figure 2: Site Details Map
- Figure 3: PetroFix™ Injection Map

**Appendix A – Estimated Cost Spreadsheet In-Situ Remediation Injection Work Plan 35003**

**Appendix B – Montana PTRCB Groundwater Unit Cost Work Sheet**

**Appendix C - Regenesi Price Quotation, 41386 - CrS79261 - Town Pump Kalispell No. 1 -MT**

## **1.0 Introduction**

West Central Environmental Consultants (WCEC) created this corrective action plan for Town Pump Kalispell #1 (Facility ID# 15-08709, Release# 2567) in response to the Montana DEQ work plan request letter dated January 29, 2025.

### **1.1 Site Location**

Town Pump Kalispell #1 is located at 445 West Idaho Street, Kalispell, MT 59901. The Public Land Survey System (PLSS) description for the site is the NE/4 of the SW/4 of Section 07, T28N, R21W. The approximate geographic coordinates are Latitude 48.20119°, Longitude -114.32219°. Township, range, and section information was obtained using the United States Geological Survey (USGS) Kalispell, Montana 1:24,000 Quadrangle. The site is located within the Flathead Lake Hydrologic Unit.

### **1.2 Geologic/ Hydrogeologic Setting**

The surficial geology of the Flathead Valley is dominated by Quaternary glacial and alluvial deposits. The alluvial deposits are underlain and interbedded with outwash, till, and glacio-lacustrine silts and clays associated with the Pleistocene glaciation. Valley margins in the area consist of thinning layers of alluvium and glacio-lacustrine sediments underlain by Tertiary basin-fill and bedrock comprised of the Belt Supergroup [LaFave et al., 2004].

## **2.0 Site History**

This history of the site has been compiled from reports submitted by PRC Environmental Management (now Tetra Tech, Inc), and Integrated Geosciences, Inc. (IGI), and Olympus Technical Services, Inc. (Olympus).

PRC performed the initial Site investigation field activities in July 1995. Three soil borings and two monitoring wells (MW-1 and MW-2) were installed on the down-gradient side of the facility. This investigation documented gasoline impacts to soil and groundwater at the facility.

In January 1996 PRC installed 5 additional soil borings and completed 4 of these borings as monitoring wells. All six site wells were sampled for gasoline and diesel range constituents following monitoring well installation.

In 1997 the annual tightness test failed to hold pressure on the one gasoline and two diesel USTs at the facility. These tanks and their associated piping were removed. Gasoline and diesel contamination in soils surrounding the UST basin were identified during the UST removal. A remedial excavation of approximately 800 cubic yards of contaminated soil was completed following the UST removal (PCS). Following the completion of the remedial excavation, an SVE system was constructed by placing three horizontal vapor extraction lines and one horizontal dewatering line in the UST basin. Two fiberglass USTs were then installed over the SVE system lines. During this system installation a horizontal monitoring well (MW7) was also installed in the UST basin. This SVE system was operated between 1997 and 2011.

Intermittent groundwater monitoring was conducted between 1997 and 2015. In 2015 Water and Environmental Technologies (WET) completed and application of ORC and Regenox at the site. Regenox was applied down MW7 during this event with the application of ORC being injected south of both the western and easter tank basins. These injection areas were separated by the vehicle fueling islands. This injection did generate a reduction in constituents of concern in the five years following the injection, but impacts to groundwater have remained above regulatory limits.

## **3.0 Scope of Work**

### **3.1 Required Scope of Work**

The Scope of Work requested by the MTDEQ consists of:

- Design and implement an in-situ treatment of petroleum contamination in soil and groundwater.
  - Identify the product that will be used, the area that will be treated (laterally and vertically), the volume of the treatment product that will be applied, application rate, etc.
  - Identify the criteria that will be measured during and after treatment to assess the radius of influence, the completeness of product application, the effectiveness of the product and its application method, etc.
- Collect soil and/or groundwater data needed to assess the effectiveness of the treatment.
  - Identify the method, timing (e.g., pre-, post-treatment), and location of sample collection.
  - Identify the disposal method of soil cuttings (if applicable) and purge water.
- Analyze samples for petroleum constituents as required by the Montana Risk-Based Corrective Action Guidance for Petroleum Releases and other criteria as needed to assess the feasibility and effectiveness of treatment.
- Validate laboratory analytical data using DEQ's Data Validation Summary Form (DVSF) found online under the Guidance dropdown at the Petroleum Tank Cleanup Section (PTCS) webpage.
- Discuss ongoing WP tasks and results with DEQ's project manager; submit written agreed- upon WP modifications as required to complete the WP objectives.
- Prepare and submit a Cleanup Report detailing the results of the in-situ treatment. The Report is expected to include all the content, tables, figures, and appendices outlined in the Report format.
- Use standardized DEQ WP and Report formats found online under the Forms dropdown at the PTCS webpage.
- Submit WP and Reports electronically following the PTCS submittal requirements found under the Guidance dropdown at the PTCS webpage.

## **4.0 Petrofix Injection**

### **4.1 In-Situ Remediation Injection Overview**

The in-situ remedial injection will be conducted in the eastern tank basin and in the immediate vicinity of MW-2 in areas that are not structurally impeded by the pump island and tank basin. These areas are depicted on Figure 3. WCEC selected PetroFix™ as the best product for in-situ remediation based on cost, site limitations, compatibility with underground utilities, application restraints of fine grain soil lithology, and effectiveness in addressing low level groundwater impacts. According to Regenesys, the manufacturer of PetroFix™, this product “has a dual function that quickly removes hydrocarbons from the dissolved phase by absorbing them onto the activated carbon particles while adding electron acceptors to stimulate hydrocarbon biodegradation.” A blend of ammonium sulfate and sodium nitrate will be blended with the PetroFix™, solution to provide electron acceptors and stimulate hydrocarbon biodegradation.

Historic groundwater concentration data was used to calculate the mass of product that would be required to address impacts present in the treatment area. Based on the available site data, a total of 2000 pounds of PetroFix™ was recommended by the manufacture, with 800 pounds of being injected in the area of MW2 and 1,200 pounds injected in the eastern tank basin. In addition to the PetroFix™ 20 pounds of electron acceptor will be blended in the PetroFix™ solution. This product will be mixed with water at a volume of 4.5 gallons per pound of PetroFix™.

WCEC will complete all notifications, coordination, and any permitting required to initiate the in-situ remediation injections at the facility. In addition to project oversight, on-site direction, and professional field services, WCEC will provide the GeoProbe drill and operator to complete installation of the injection borings. WCEC will use a Geoprobe GP800 injection system to complete the injection of PetroFix™. Surface repair of the concrete will be completed by WCEC following the abandonment of each injection point with bentonite to ensure future surface water infiltration is not possible.

### **4.2 PetroFix™ Injection Eastern Tank Basin**

PetroFix™ is water-based suspension of micron-scale activated carbon and bio-stimulating electron acceptors that will be targeted at the groundwater horizons beneath the facility. As described in Section 4.1, a biostimulating electron acceptor will be added to the PetroFix™ suspension at 5 percent by weight to enhance and support the hydrocarbon biodegradation.

Due to the presence of USTs, piping, and electrical control wires it is infeasible to safely inject PetroFix™

using a GeoProbe and direct push injection tips in the eastern UST basin. The existing SVE system includes slotted piping evenly spaced across the UST basin with three lines installed above the groundwater interface and one dewatering line installed below the groundwater interface. It is anticipated that these lines would be effective in treating soil impact inside and adjacent to the UST tank basin that are currently impacting monitoring well MW7. Water will be extracted from the system line that was installed below the groundwater interface during injection down the other three individual SVE lines. This will help distribute petrofix™ across the UST basin and allow for better coverage of the UST basin. Water drawn out of the dewatering line can be monitored to assess the effectiveness of the injection strategy. Assessment of the SVE system lines in the system shed prior to purchasing the Petrofix™ product is required to ensure that this plan can be effectively implemented. Assessment of these lines will include extracting water from the recovery line to ensure that it will be possible to use for that purpose during the planned injection, extracting and injecting air down the SVE lines in an attempt to assess if they are broken or damaged, injecting water down the SVE lines to assess potential back pressure that will be generated during injection, and visual inspection of the lines in the shed to determine required plumbing parts to attach injection pumps to the lines.

#### **4.3 PetroFix™ Injection (MW 2 Area)**

PetroFix™ will be mixed on site as described in section 4.1. Application of the PetroFix™ solution in the area of MW 2 will be completed using direct push injection tips and a Geoprobe GP800 injection pump. WCEC anticipates that 10 injection borings advanced to a depth of 12 feet below ground surface will be necessary to effectively inject the volume of PetroFix™ outlined in the Regenesis application protocol. The slurry will be prepared on site then injected into each location using a pump capable of delivering the product into the surrounding impacted subsurface soils. WCEC anticipates an injection pressure of approximately 60 pounds per square inch (psi) based on subsurface soil lithology. Injection pressures, depths, and rates will be adjusted as necessary based on field conditions. The target injection horizon is anticipated to be 6 to 12 feet below ground surface and consists of varved glacial lakebed sediments. WCEC will complete up to three soil borings during the PetroFix™ injection event to assess the dispersal radius of the PetroFix™ in the area of MW2. Adjustments to the number of injection locations and injection pressure will be made based on the visually observed dispersal present in the assessment borings to ensure that distribution of PetroFix™ covers the planned injection area.

#### **4.4 Pre Injection Groundwater Monitoring**

WCEC will conduct a groundwater monitoring event in conjunction with the assessment of the SVE lines for use during the planned injection. Groundwater samples will be collected from MW2 and MW7 and analyzed for VPH and IBI's (soluble iron, soluble manganese, sulfate, nitrate+nitrite, methane, ammonia, and TDS). This will allow for analysis of the potential to increase the volume of PetroFix EA Blend to match the level of

expected nitrogen depletion in the subsurface at the facility. Depth to water measurements will be collected from all site wells during the event for calculation of groundwater flow direction and gradient. Groundwater quality parameters (pH, DO, conductivity, temperature, salinity, and ORP) will be obtained using a flow through cell attached to a peristaltic pump. Field parameters will be collected from all monitoring wells that are sampled during each event. Groundwater samples will be preserved in accordance with the analytical method, packed on ice and shipped under chain of custody to Energy Laboratories in Helena, Montana.

#### **4.5 Conformation Borings**

WCEC will complete three soil borings during the PetroFix™ injection event to assess the dispersal radius of the PetroFix™. In the event that the PetroFix™ is not present at the expected radial distance (5 feet) from injection borings then the distance between injection boring will be decreased and the total number of injection points will increase. The total volume of PetroFix™ per boring will be adjusted (total volume/ number injection points) if additional borings are needed to apply the PetroFix™ to the subsurface.

#### **4.6 Monitoring Well Abandonment & Installation**

WCEC will install two wells following the completion of the PetroFix™ injection. One well will be installed immediately adjacent to MW2 and an additional well will be installed south of MW7 at the approximate location of the proposed well on Figure 3. The installation of this well following the injection will ensure that PetroFix™ was not injected into the sand pack of the well creating a carbon filter out of the well pack and generating data that is biased low.

WCEC will screen each soil boring to delineate the extent of hydrocarbon impacts at the location of the two new wells. Soil borings will be field screened with a PID and logged using the unified soil classification system. One composite sample from 2 feet to 8 feet below ground surface will be collected for evaluation of risk for direct construction contact RBSLs. One discrete soil sample will be collected at the groundwater interface (6'-8' bgs). Soil samples will be analyzed for VPH and EPH screen. Additional TEH analysis will be requested if the EPH screen exceeds 200 mg/kg. Soil samples will be collected using WCEC standard sampling procedures, and in accordance with the MTDEQ requirements. Soil samples will be packed on ice and submitted under chain of custody to Energy Laboratories Inc. (Energy) in Helena, Montana.

WCEC's licensed well driller will install the wells using a 4.25-inch I.D. hollow stem augers. Borings will be advanced to a total depth of 15 feet below ground surface (bgs). Wells will be completed with 0.010 slot PVC screen from 5 to 15 feet bgs and have solid schedule 40 casing from 0 to 5 feet bgs. The sand pack will be constructed with 10/20 silica sand from the bottom of the boring to 4 inches above the screened interval.



Bentonite chips will be used from the top of sand pack to the bottom of the well monument to create a seal around the section of solid well casing. Monitoring wells will be completed with 8-inch flush mount monuments that are placed in concrete to match the surface grade of the pavement.

Following installation, WCEC personnel will develop the newly installed wells using a downhole 12-volt electric pump capable of purging 3.5 gallons per minute (gpm) at a depth of 20 feet bgs. Approximately 10 well volumes will be purged from each new monitoring well during the development process. A surged block will be used prior to pumping to help set the sandpack. Turbidity will be assessed through the development process. All the purge water generated during the well development process will be disposed of according to the Montana DEQ Disposal of Untreated Purge Water from Monitoring Well's flowchart. The preferred method of purge water disposal will be to apply it to an unpaved surface at the facility to allow it to infiltrate back to the aquifer from which it was removed.

Monitoring well MW2 will be abandoned following the completion of the PetroFix injection. The monitoring well will be abandoned in accordance with ARM 36.21.810 and the Montana Board of Water Well Contractors requirements. If possible, the casing will be completely removed from the ground. The abandoned well will be completely filled with bentonite sealing material to within 6 inches of the ground surface, with any remaining void space filled with concrete to match the current grade of the paved surface. If the casing cannot be completely removed from the ground, it will be cut off at least 3 feet below the ground surface.

Details regarding monitoring well abandonment will be recorded for each well for preparation and submittal of monitoring well abandonment logs. Monitoring well abandonment will be overseen by WCEC's DNRC licensed well driller. All abandonment logs will be submitted to the DNRC within 30 days of well abandonment and abandonment logs will be included as an appendix to the well abandonment report.

#### **4.7 Soil & Water Disposal and Surface Cleaning**

All the purge water generated during the semiannual sampling events will be disposed of according to the Montana DEQ Disposal of Untreated Purge Water from Monitoring Well's flowchart. If purge water cannot be disposed of onsite it will be transported by WCEC to an office location and disposed of through a waste recycler or through application to a drying bed where it can be solidified and disposed of as solid waste at a Class II landfill. A PTRCB Form 8 will be submitted for purge water disposal costs in the event that purge water cannot be surface applied at the facility.

In the event that PetroFix™ surfaces from an injection point the surface will be cleaned with water to minimize the risk of it being spread by vehicle traffic following the injection. Water will be collected from this surface cleaning and containerized for disposal if needed.

**Corrective Action Plan 35003**

Kalispell #1, 445 West Idaho,  
Kalispell, MT

---

Soil cutting from the monitoring well installation and soil borings will be containerized in 55-gallon drums and disposed of at the Republic Services class II landfill in Missoula, MT. Analytical samples of these materials will be submitted to meet disposal requirements of the landfill.

## **5.0 Groundwater Monitoring**

### **5.1 Groundwater Monitoring & Sampling**

Semiannual groundwater monitoring will be conducted for one year following the completion of the PetroFix™ Injection event. The initial sampling event will be conducted approximately 3 months after the injection event. Groundwater samples will be collected from monitoring wells MW1, and the replacement wells for MW2, and MW7. Samples collected during the events will be analyzed for VPH. Depth to water measurements will be collected from all site wells during each monitoring event for calculation of groundwater flow direction and gradient. Well sampling will be conducted using low flow sampling methodologies in accordance with MTDEQ requirements and WCEC SOPs. WCEC will use a peristaltic pump to purge and sample each monitoring well. Groundwater quality parameters (pH, DO, conductivity, temperature, salinity, and ORP) will be obtained using a flow through cell attached to a peristaltic pump. Field parameters will be collected from all monitoring wells that are sampled during each event. Groundwater samples will be preserved in accordance with the analytical method, packed on ice and shipped under chain of custody to Energy Laboratories in Helena, Montana.

Purge water will be properly handled according to the MTDEQ Purge Water Disposal Flowchart. WCEC does not anticipate any of the new wells to contain free product or RCRA listed or characteristic waste. Water will be collected from the shallowest aquifer and based on the current known impacts at the site it is not anticipated that purge water will contain enough petroleum hydrocarbons to result in exceedances of soil screening cleanup levels due to surface application. Based on these anticipated realities, WCEC plans to dispose of purge water on a permeable ground surface at the site. In the event that site conditions are found to not allow the application of purge water to a permeable ground surface WCEC will containerize the purge water and submit a Form 8 for additional costs associated with purge water disposal

## **6.0 Report Preparation**

### **6.1 Injection Assessment Interim Data Submittal**

WCEC will complete an interim data submittal following the assessment of the SVE lines for use in the injection application of PetroFix™. Recommendation for adjustment to the volume of PetroFix™ EA Blend will be made based on the results of the IBI analysis in the IDS report. This IDS will also include groundwater elevation data, groundwater flow direction, groundwater quality field parameters, VPH laboratory data, site maps, potentiometric maps, and a brief discussion of site conditions. A second interim data submittal will be completed after the first groundwater monitoring event completed following the PetroFix™ injection event.

### **6.2 Data Validation**

WCEC will complete the MTDEQ – Waste Management and Remediation Data Validation Summary Form. Data validation is a standardized review process for judging the analytical quality and usefulness of a discrete set of chemical data and is necessary to ensure that data is without bias, has an accuracy greater than the screening levels, and is of a quality that allows for its use in drawing conclusions and making recommendation for additional remedial actions. The completed data validation forms for each sampling event will be included as an appendix to the IDS.

### **6.3 Remedial Injection Report**

WCEC will submit a remedial injection report following the injection event. The report will document the lateral and vertical extent of the area treated with PetroFix™, the total volume of product applied, application rates per injection line and boring, and the volume of water that the remediation products were mixed with. WCEC will include cumulative tables for groundwater elevations, groundwater chemistry, and analytical results. Maps will be provided detailing the site location, potentiometric surface plots for the sampling event, PetroFix™ injection points, PetroFix™ treatment areas, and monitoring well locations. The complete laboratory analytical reports will be included as appendices of the remedial injection report.

### **6.4 Groundwater Monitoring Report**

WCEC will submit a groundwater monitoring report to the MTDEQ within 60 days of receipt of laboratory analytical from the second semiannual event. The report will cover all of the groundwater monitoring events conducted under this work plan. Individual sections of the report will detail the historical remedial actions, description of the site location and geolithology, and a summary of groundwater monitoring events conducted under corrective action plan 35003. WCEC will include cumulative tables for groundwater

**Corrective Action Plan 35003**

Kalispell #1, 445 West Idaho,  
Kalispell, MT

---

elevations, groundwater chemistry, and analytical results. Maps will be provided detailing the site location, potentiometric surface plots for each sampling event, and monitoring well locations. The complete laboratory analytical reports will be included as appendices of the groundwater monitoring report.

## **7.0 Timeline and Costs**

The attached Estimated Cost Spreadsheet – Corrective Action Plan 35003 and PTRCB Groundwater Monitoring Unit Cost Worksheet. These worksheets detail the anticipated costs to complete the scope of work required by the MTDEQ in the work plan request dated January 29, 2025. The scope of work outlined in this work plan is tentatively scheduled to begin during Spring 2025. Work will be initiated following work plan approval by the MTDEQ. It is expected that the final report for the actions covered under this work plan will be completed by the end of 2025.

### **7.1 Planned Workflow & Cost Explanations**

The estimated costs in Appendix A include completion of the injection assessment and monitoring, PetroFix™ injection, and monitoring well installation and abandonment events included in this work plan. WCEC will complete these tasks during 2025 in two separate events as follows:

**Event 1:** Injection assessment and groundwater monitoring event. (Staff scientist & field tech (2 staff, 1 vehicle)

**Events 2:** PetroFix™ Injection, MW installation & abandonment, surveying event (Staff 3 - Staff Scientist, WCEC licensed driller, and Environmental Technician III. Vehicles 3 trucks & trailers – WCEC drill rig, drill rig support truck & trailer, truck & trailer for injection equipment)

**Event 3:** Groundwater monitoring event, low groundwater sampling event October/November 2025. (Staff scientist (1 staff, 1 vehicle)

**Event 4:** Groundwater monitoring event, low groundwater sampling event May/June 2026. (Staff scientist (1 staff, 1 vehicle)

This workflow is outlined in sequential order of tasks outlined in this CAP. The *attached PTRCB Groundwater Monitoring and Sampling Unit Cost Worksheet* (Appendix B) includes groundwater sampling costs with a corresponding cost total for all remedial action outside groundwater monitoring detailed on the *Estimated Cost Spreadsheet for Corrective Action Plan #35003* (Appendix A).

Work plan completion reporting is expected to be completed by the end of December 2026.

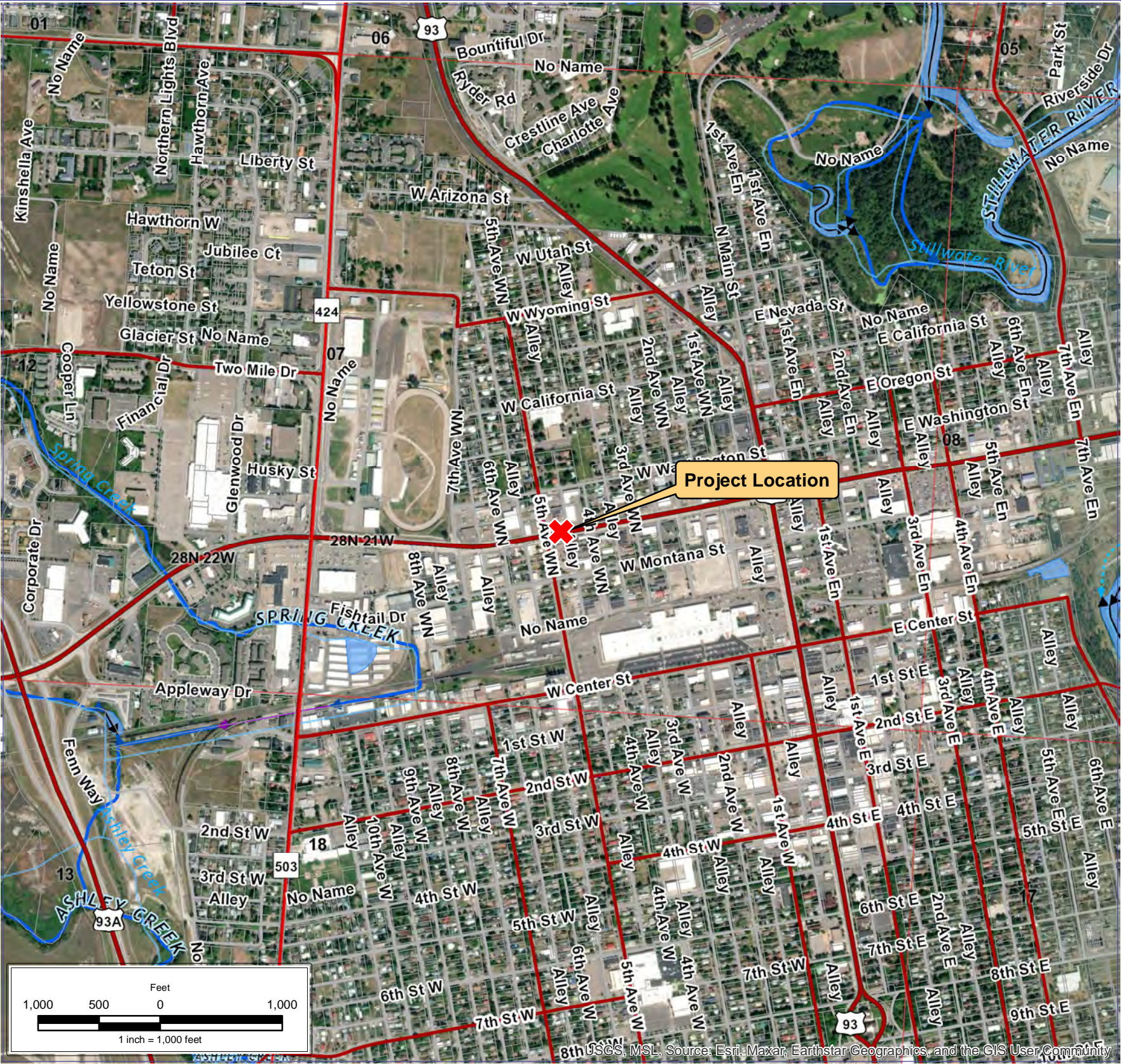
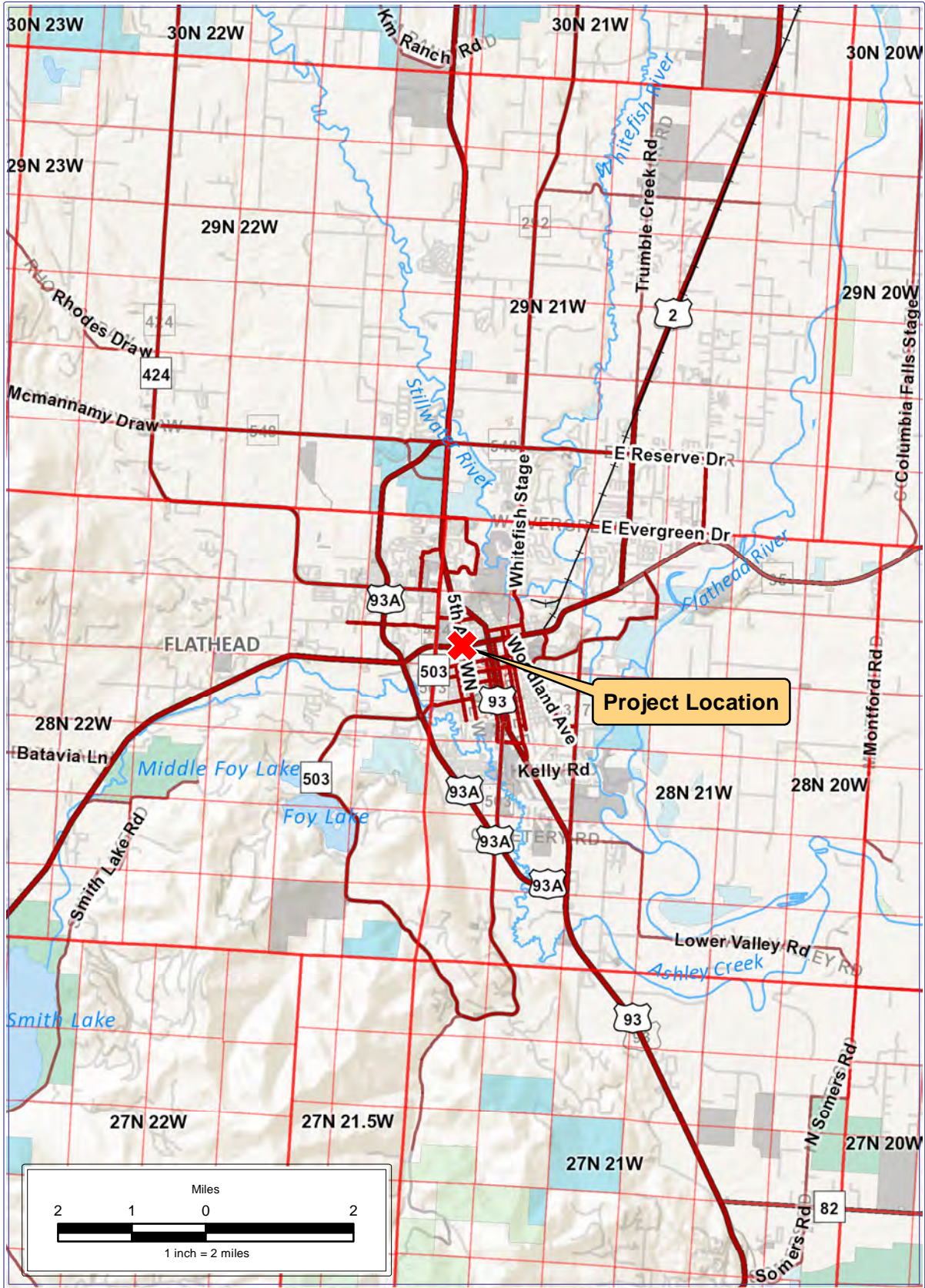
## List of Figures

Figure 1: Site Location Maps

Figure 2: Site Details Map

Figure 3: PetroFix™ Injection Map





✗ Site Location

# Site Location Maps

Town Pump #1  
445 W Idaho St  
Kalispell, MT 59901

DRAWN BY: TCP  
DATE: 11/13/23  
SCALE: 1:12,000



PROJECT NUMBER: 2-15XXX-70      IMAGE SOURCE: ESRI BASEMAPS

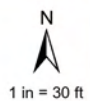
FIGURE 1





## Legend

Monitoring Well



30 15 0 30  
Feet

Town Pump #1  
445 W Idaho St  
Kalispell, MT 59901

## Site Details Map

JOB NO.: 23-15999-70 DATE: 11/13/23 DRAWN BY: TCP IMAGE SOURCE: ESRI

**WCEC**  
ENVIRONMENTAL CONSULTANTS

**FIGURE 2**





Town Pump #1  
445 W Idaho St  
Kalispell, MT 59901

### Petrofix™ Injection Map



FIGURE 3

JOB NO.: 25-15418-70 | DATE: 03/13/2025 | DRAWN BY: NO | IMAGE SOURCE: ESRI



## **Appendix A**

### **Estimated Cost Spreadsheet – Corrective Action Plan 35003**

## **Appendix B**

### **Montana PTRCB Groundwater Unit Cost Work Sheet**

## **Appendix C**

### **Regenesis Price Quotation, 41386 - CrS79261 - Town Pump Kalispell No. 1 -MT**