EllisEnvironmental
a division of thevisiongroup inc.

June 7, 2017

Ms. Kim Shelley, Acting Director
Division of Water Quality
P.O. Box 144870
Salt Lake City, UT 84114-4870

Re: Contaminant Investigation and Corrective Action Plan; Transwest Pick-A-Part, 3586 North 2000 West, Farr West, UT 84404

To Ms. Shelley:

The following is submitted in compliance with R317-6-6.15.D, UAC

Discharger: Transwest Pick-A-Part
Company Contact: Mr. John Roberts
Company Address: 4651 North Digital Drive, Lehi, UT 84043
Telephone Number: 801.738.0200
Project Location: 3586 North 2000 West, Farr West, UT
Technical Contact: Mr. Mark T. Ellis, Ellis Environmental, 801.768.0675

Site History
Transwest Pick-A-Part is located at 3586 North 2000 West, Farr West, Utah; refer to the site maps in Appendix A. The current business operation is Motor Vehicle Parts (used) Merchant Wholesaler, NAICS #423140, considered by SBA[1] to be an environmentally sensitive industry. This location has seen a history of automotive salvage since the 1960's. A crusher for compacting vehicles for recycle was located north of the north building, in a fenced compound. The crusher had not been used for a number of years. The crusher was a hydraulic press, powered with a diesel fired engine. The engine fuel was stored in an aboveground storage tank (AST) on the south side of the crusher. The crusher was removed from the property in early 2017 and the AST was concurrently moved northwest of the crusher pad. The AST was set upon a stand and had secondary containment, but was removed in April 2017.

A bona fide prospective purchaser has made an offer to buy the Transwest Pick-A-Part property. In the course of environmental due diligence, an environmental consultant from Texas called Enercon collected soil and groundwater samples on the Transwest Pick-A-Part property, showing excessive Diesel Range Organics (DRO) in the groundwater down gradient of the crusher AST. Following up on the Enercon report, Ellis Environmental collected additional soil and groundwater samples for

[1] SOP 50 10 5(H), Lender and Development Company Loan Programs, U.S. Small Business Administration, Effective Date 5/1/2015; Appendix 4.

DRO. As a result of the later sampling, the owner of Transwest Pick-A-Part authorized a report of fuel released to waters of the State, sent to the Division of Water Quality on February 27, 2017.

Three phases of soil and groundwater investigation have been conducted. In the first phase, a Contaminant Investigation and Corrective Action Plan was sent to Mr. Walt Baker, Director on April 18, 2017. The report was generated from 6 soil borings (GP1-6, see figure 6, Appendix A), which generated 6 soil and 6 groundwater samples. The samples were analyzed for diesel range organics (DRO). The push probe groundwater data were suspect, so monitor wells were recommended to be installed to verify the groundwater quality.

Phase 2 included 7 soil borings, 6 of which were near the crusher and were developed into monitor wells. Refer to figure 7 in Appendix A. Each soil boring was sampled for DRO, gasoline range organics (GRO), MtBE, benzene, toluene, ethylbenzene, total xylenes & naphthalene, (MBTEXN) at an interval of soil that appeared contaminated or was in a saturated soil layer. Groundwater monitor wells were installed, MW1-6 on April 17 & 19, 2017. Groundwater samples were analyzed for DRO/GRO/MBTEXN from each of the 6 monitor wells. MW3&4 were located in the same cluster as the prior soil borings, GP1-6. Comparing the DRO values for the averages of cluster GP1-6 and MW3&4, the Geoprobe open boring groundwater data are 12 times the value as the DRO sampled in the monitor wells, substantiating the suspicion of the push probe groundwater data. A legitimate area of concern was found to be MW6 on the north side of the lot and cross gradient of the diesel fuel aboveground storage tank (AST). A report of these findings was submitted to Mr. Baker, dated May 15, 2017. This report recommended additional monitor wells to identify an acceptable datum of DRO in MW6 and verify the extent of the DRO plume.

Phase 3 included 3 more soil borings, keying on MW6; see figure 7, Appendix A. MW7,8&9 were emplaced west, east and north of MW6, respectively. MW9 is a down gradient well. The only exceedence of any soil or groundwater standard was found in MW9, with a DRO concentration of 1.02 mg/L, above the Initial Screening Level (ISL) of 1 mg/L. Refer to Figure 9, Appendix A. DRO contamination above the Tier 1 Screening Levels is limited to the area around MW6. This report was sent to Ms. Kim Shelley, Acting Director on June 2, 2017.

R317-6-6.15.D, UAC

1. a. Characterization of pollution description

(1) amount, form, concentration, toxicity, environmental fate and transport, and other significant characteristics of contaminant(s).

The investigated area is 8,100 ft^2, to 4 feet below groundwater of 6 feet (10 feet total depth) or a volume of 81,000 ft^3. The soil in which the groundwater is found in is a silt, clay and some sand. The average porosity of the soil is given at 0.35. Total volume of groundwater investigated is 11,340 ft^3 or 84,823 gallons.

The contaminant is described as diesel fuel, found in the groundwater monitor wells to range from <0.477 to 99.2 mg/L with an average concentration of 13.25 mg/L and standard deviation of 43.75 mg/L (where the non detect value is given “0").

There is no MCL for diesel fuel, but the clean up threshold for diesel fuel used by Department of Environmental Quality, Division of Environmental Response & Remediation (DEQ/DERR) ranges from Initial Screening Level (ISL) of 1 mg/L to Tier 1 Screening Criteria of 10 mg/L. See figure 9 in Appendix A. Concentrations of diesel fuel in excess of 10 mg/L are expected to have either toxic or damaging effects to human health or the environment. Note that aspirated diesel fuel is deadly. No free product diesel fuel was encountered on the site, so aspiration risk is not expected.

Diesel fuel is highly susceptible to biodegradation, especially in soil and/or groundwater with bio-essential nutrients. Sterile soils may also degrade soil through electron stripping by iron, manganese, sulfate and other chemicals. As the fuel travels the groundwater gradient, biological communities and hostile chemicals will degrade the diesel fuel, scavenging for energy or electrons. Unless there is a sufficient source of free product diesel fuel to overwhelm the contaminant, the diesel fuel is expected to degrade as it travels the groundwater gradient. Insufficient data points are available for reliable spatial degradation modeling. However, the plume of DRO from MW6 to 9 declines in concentration from 99.2 to 1.02 mg/L (see figure 9, Appendix A). If this is considered the extent of the plume, the plume degrades to the ISL at MW9 in just over 37.2 feet.

(2) 3 dimensional extent of plume, distribution and chemical make-up of the plume.

The plume of diesel fuel contaminated groundwater has been investigated in an area around MW6, estimated at approximately 1,460 ft^2. The plume is does not appear to be connected directly to either the crusher or the moved AST. The plume seems to originate from a random spill. The plume area is estimated at 34 x 55 feet, with the long axis southeast to northwest. See figure 9, Appendix A.

(3) Migration of plume, known and expected.

The DRO plume appears to radiate from the area around MW6, moving slightly to the northwest. The plume does not reach beyond down gradient MW9.

b. Characterization of the facility

(1) Contaminant mixtures present and media of occurrence.

Soil and groundwater samples indicate the plume is DRO. Soil is not affected for the most part. Groundwater is affected by the DRO.

(2) Hydrogeologic conditions underlying, up and down gradient of the facility.

The geology of this area is generally described[2] as Qa: surficial alluvium and colluvium. The soil type is described as HLA - Harrisville-Leland complex, 0 to 1 percent slopes, see attached. All of this soil and the underlying alluvium and colluvium is covered with up to 2 feet of imported fill, which now includes automobile parts, bolts and pieces of plastic. Groundwater flow to the northwest.

[2] http://geology.utah.gov/apps/intgeomap/index.html#

(3) Surface waters in the area.

The Willard Canal is located west of the Subject Property, approximately 0.27 mile. An unnamed, piped ditch flows through the property and just west of the Crusher Pond, refer to Figure 1.

(4) Climatic and meteorologic conditions

The nearest climate monitoring station to the Transwest Pick-A-Part is the Ogden Sugar Factory, Utah. The record of climatic monitoring spans 1924 through 2009. At this monitoring station, the average maximum temperature is 63.8°F; the average minimum temperature is 38.2°F; Average annual total precipitation is 17.05 inches; average annual total snowfall is 26.5 inches. See attached record in Appendix B. The freeze free season is reported[3] at 140-160 days.

Physical conditions at the site are also described, contributing to the understanding of the climatic conditions. The elevation of the Crusher Pond is shown by GoogleEarth® at 4,258 feet, mean sea level. The local topography slopes to the northwest at an average gradient of 0.1 ft/ft.

(5) Type, location and description of possible sources of pollution

The contamination originates from leakage from wrecked vehicles found on the Transwest Pick-A-Part property. Leakage is also expected in a small quantity from the crusher and its diesel fuel AST. Maps in Appendix A show the location of the crusher and where the AST were formerly located.

(6) Groundwater withdrawals, pumpage rates and usage within 2 mile radius

Groundwater contaminated with DRO is unconfined and is not being pumped. A radius search of ¼ mile from the crusher shows 5 registered water rights (Appendix B). None of these wells is a municipal well or water right.

c. Report of data used and data gaps (reported)

(1) Data packages including quality assurance and quality control reports

The samples were analyzed by American West Analytical Laboratories, a Utah certified[4] analytical laboratory. The samples were analyzed under a standard QA/QC protocol with identified surrogates reported on the forms. Refer to the laboratory reports in Appendix C.

All samples were analyzed within the allowed holding time; 7 days for unfixed samples and 14 days for samples fixed with preservative.

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[3] Ashcroft, Gaylen L. and E. Arlo Richardson, *Freeze Free Season, State of Utah*, Map produced jointly by Utah Agricultural Experiment Station, Utah State University, Logan, Utah 84321 and Department of Commerce, ESSA, Environmental Data Services.

[4] American West Analytical Laboratories is located at 3440 South 700 West, Salt Lake City, Utah. This facility is certified by the Utah Department of Heath under the Safe Drinking Water Act, the Clean Water Act and the Resource Conservation and Recovery Act. Certificate UT000312016-12 expires 5/31/2017. Certificate current at the time of the collected and analyzed samples.

(2) Description of the data used in the report

Soil and groundwater were sampled at this site. The initial target for this investigation was DRO. The target for analytes of the next 2 phases of investigation was expanded to GRO/MBTEXN.

The groundwater DRO that was collected in the first phase of investigation was collected through an open boring of a push probe. The DRO values reported from this phase were significantly higher than what was reported by Enercon in January 2017.

The DRO in groundwater collected from the next 2 phases of investigation was consistent with expectations. These values collected from monitor wells are acceptable as representative samples of the formation. There were no concentrations of GRO/MBTEXN in excess of either ISL or Tier 1 Screening Levels. There were no exceedences of any standards for the soil analyzed in the borings.

(3) Description of data gaps and how the gaps affect the analysis and plans to fill the gaps.

The plume was poorly defined until the monitor wells were installed. The plume can be demonstrated to be around MW6 only. No current data gaps that prevent the execution of the corrective action plan are known.

d. Endangerment assessment and risk evaluation as basis for cleanup standard proposal (R317-6-6.15.F.2, UAC).

There is no Maximum Contaminant Level (MCL) for DRO. DEQ uses standards developed through DERR for petroleum DRO/GRO. These standards include the ISL and the Tier 1 Levels. Generally speaking, the ISL is the stricter of the 2 standards and is used for any contamination that is found off the property of discharge, within 30 feet of property lines or buried utilities or is within 500 feet of a water well. None of these conditions exist with the plume identified at MW6.

-The plume is contained on the property of discharge; MW6 lies 50 feet east of the west and closest property line. The next nearest property line is to the east, 340 feet distant.

-The nearest building is the north Transwest Pick-A-Part building, more than 200 feet to the south of MW6.

- The plume lies more than 70 feet from the Tesoro gas line; the distance from MW8 to the Tesoro gas line is 40 feet and MW8 does not exceed any standard.

- The buried water line is believed to be at least 40 feet west of MW6.

- The nearest water right (35-1459) lies on the adjoining north property, another vehicle salvage yard. That water right lies about 640 feet north of MW6.

None of the criteria that mandate ISL as the clean up standard exist. Another criterion that is not listed as crucial to ISL, but which is a consideration is the current and future use of the property. Transwest Pick-A-Part is a vehicle salvage yard. The bona fide prospective purchaser is in the same business. The contaminated area has been used for vehicle salvage since sometime between 1963 and 1966. It appears that the property will continue in that use for the foreseeable future. The property is used for manufacturing/industrial purposes. The workers are exposed to fuel, oil, lubricants, lead-acid batteries, antifreeze, hydraulic fluid, transmission fluids, etc. This is not a

pristine area and having a clean up to pristine conditions is probably wasted effort.

The property and the adjoining north and south properties are zoned[5] M-1, Manufacturing by City of Farr West. The Interstate 15 corridor adjoins to the east. C-2 commercial properties adjoin to the west.

Soil at the Transwest Pick-A-Part is not contaminated above any current soil standard, either Initial Screening Levels (ISL) or Tier 1 Screening Level (Tier 1). This is an indication of the low level of contamination found at Transwest Pick-A-Part.

DRO is a biologically targeted energy source and does not persist in the soil or groundwater. Cleaning the source area (MW6) to Tier 1 Screening Level initiates remediation that the down gradient biota will complete.

Cleanup will be limited to the groundwater in the area around MW6 and can be accomplished quickly, putting the commerce of property transfer back on track for this property.

It is reasonable and defensible to use the applicable clean up standard of the Tier 1 Screening Level for DRO, 10 mg/L. This standard is protective of human health and the environment. This standard is used daily with petroleum clean up sites in the state that meet the criteria required of Tier 1.

e. Other information required by the Director.

None has been received to date.

2. Proposed Corrective Action Plan

Given the time constraints facing the property owner and the bona fide prospective purchaser, a rapid response method is called for. Consideration had been given to an in-situ bioremediation technology used successfully many times by Ellis Environmental called Subsurface Metabolism Enhancement (SME, pat. 6,464,005). However, the time constraints and small size of the plume do not warrant that method. SME is estimated to take 6 months to clean the DRO to the Tier 1 standard.

Excavation was also considered, but that is only a partial strategy, since the soil is not the clean up target. However, excavation is recommended to open the ground, expose the groundwater and attack the contaminated groundwater with the recommended treatment strategy.

Groundwater contamination has been successfully cleaned of petroleum hydrocarbons with hydrogen peroxide. Hydrogen peroxide is a strong oxidizer that is used in the environmental industry for 2 major modes of action. The degradation of dilute H_2O_2 generates oxygen and may be used for bioremediation systems that demand a quick source of oxygen. The caveat for which H_2O_2

[5] http://farrwestcity.net/docs/planning/genplan/Zoning-Map-July-2011.pdf

is not used extensively in bioremediation systems. H_2O_2 is toxic[6] to microorganisms at fairly low concentrations.

The second mode of action by H_2O_2 in environmental remediation is the reactivity H_2O_2 has on organic chemicals, rapidly breaking them apart and forming free radicals and breaking apart the chemical bonds that form the contaminants. This mode of reactivity works best with Fenton's Reagent, ferrous iron, copper or to a lesser extent, manganese. With the metal reagents, it appears that the contaminant degradation is secondary while the H_2O_2 degrades the metal. A study[7] on several organic compounds as contaminants in soil and peat found that H_2O_2 on its own would degrade up to 93% of DRO, but would not proceed to further degrade DRO without the addition of a catalyst.

Ellis Environmental has used H_2O_2 to successfully degrade small areas of underground contamination, such as monitor wells where petroleum has accumulated in biosparge fields or in open water remediation. H_2O_2(10%) was used to degrade diesel range organics (DRO) in a small pit in Provo, Utah with the resulting degradation from 3.1 to 0.901 mg/L in 5 days. H_2O_2(35%) was used to clear out accumulated petroleum in a monitor well (K5) in the V-1 Oil remediation system at Preston, ID. Ellis Environmental generally avoids the use of H_2O_2 in bioremediation systems, since the H_2O_2 tends to kill off the very microbes that are degrading the contamination in soil and groundwater. For this reason, Ellis Environmental uses H_2O_2 only with small injections for spot removal of troublesome hydrocarbons or in open water.

A surfactant with co-solvent would also be used to scavenge the petroleum hydrocarbons that may hang up in the excavation bank soil. The surfactant/co-solvent is also susceptible to H_2O_2 degradation. The DRO and the surfactant/co-solvent would be destroyed by the H_2O_2 .

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[6] Alt, Eckhart, M.D., et al. *Hydrogen Peroxide for Prevention of Bacterial Growth on Polymer Biomaterials*, The Society of Thoracic Surgeons, 1999, pp. 2123-2128.

[7] Goi, A., M. Trapido and N. Kulik, *Contaminated Soil Remediation with Hydrogen Peroxide Oxidation*, International Journal of Chemical, Molecular, Nuclear, Materials and Metallurgical Engineering, Vol. 3, No. 4, 2009; pp. 209-213.

Sincerely,

Mark T. Ellis

Mark T. Ellis
Environmental Professional

David B. Johnson, P.E., PLS, MBA

Appendices

A Maps and Drawings
B Documents
C Statements of Qualifications

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Appendix A

Maps and Drawings

Utah.gov Services Agencies

Figure 1, Transwest Pick-A-Part. Utilities buried near the Crusher Pond; utilities outside the west fence are not shown

Ellis Environmental

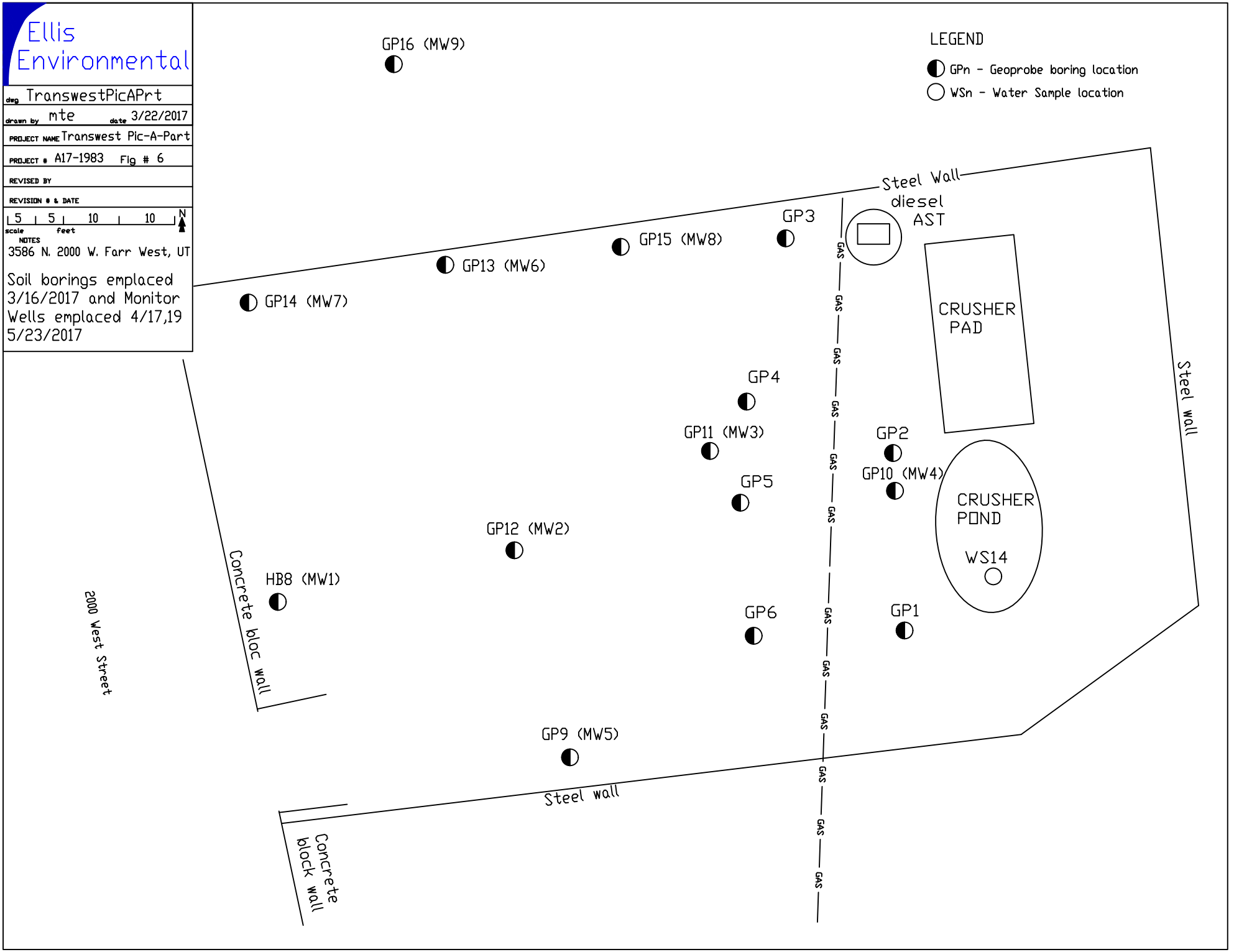
dwg	TranswestPicAPrt
drawn by	mte
date	3/22/2017
PROJECT NAME	Transwest Pic-A-Part
PROJECT #	A17-1983
Fig #	6
REVISED BY	
REVISION # & DATE	

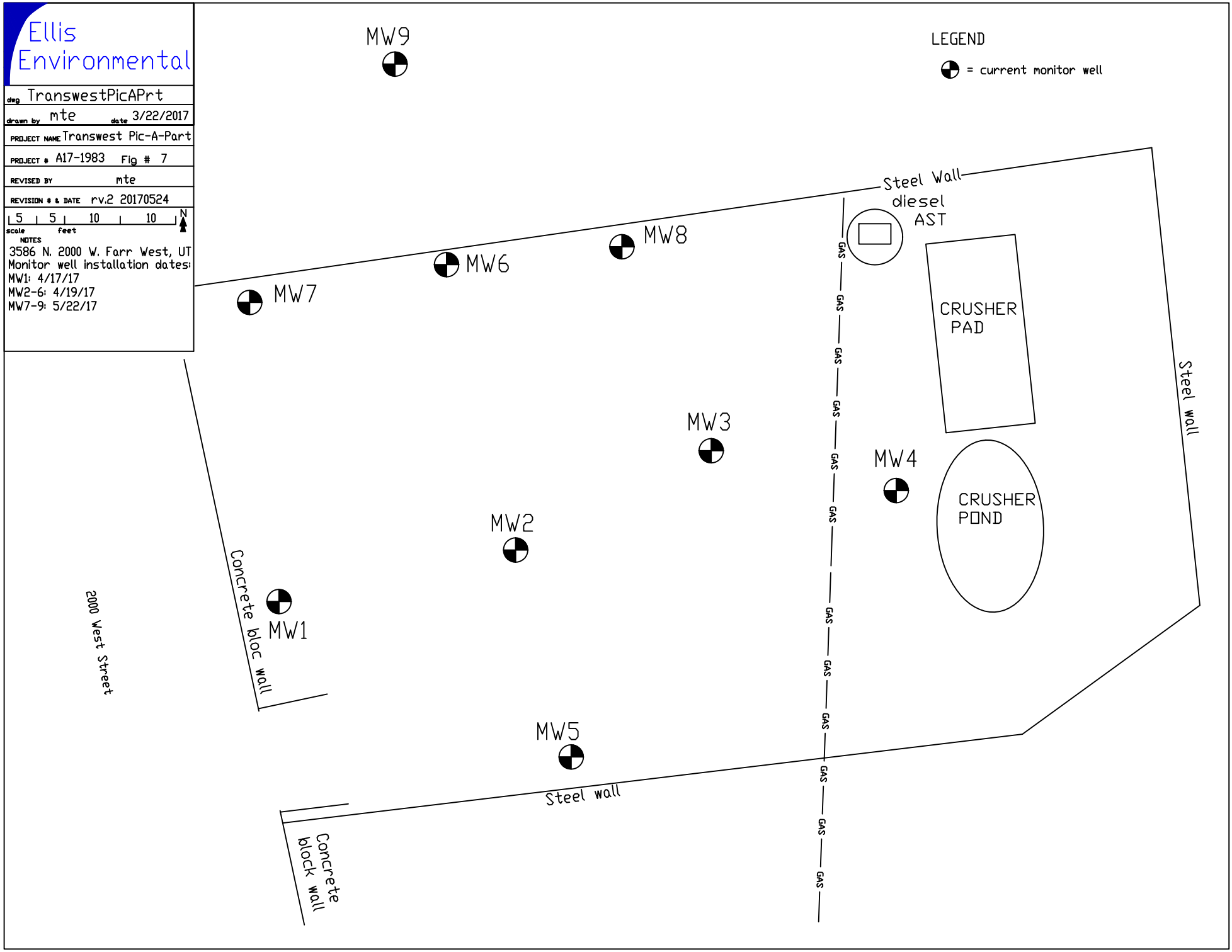
scale 5 | 5 | 10 | 10 feet N

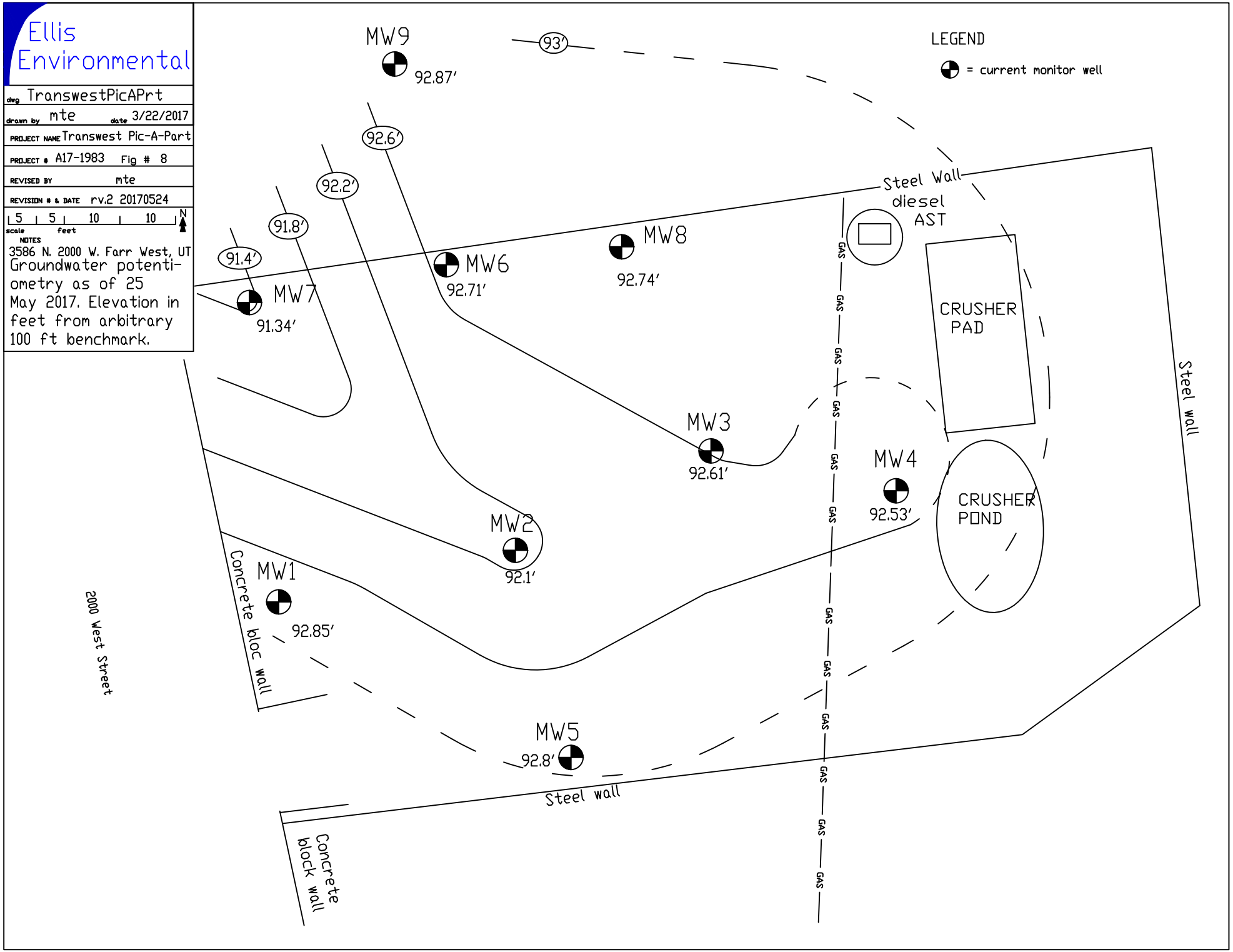
NOTES

3586 N. 2000 W. Farr West, UT

Soil borings emplaced 3/16/2017 and Monitor Wells emplaced 4/17,19 5/23/2017




Ellis Environmental
dwg TranswestPicAPrt
drawn by mte date 3/22/2017
PROJECT NAME Transwest Pic-A-Part
PROJECT # A17-1983 Fig # 7
REVISED BY mte
REVISION # & DATE rv.2 20170524
5 5 10 10 N
scale feet
NOTES
3586 N. 2000 W. Farr West, UT
Monitor well installation dates:
MW1: 4/17/17
MW2-6: 4/19/17
MW7-9: 5/22/17
LEGEND
= current monitor well
MW9
MW8
MW6
MW7
MW3
MW4
MW2
MW1
MW5
Steel Wall
diesel AST
CRUSHER PAD
CRUSHER POND
Steel wall
Steel wall
Concrete bloc wall
Concrete block wall
2000 West Street
GAS


Ellis Environmental
dwg TranswestPicAPrt
drawn by mte date 3/22/2017
PROJECT NAME Transwest Pic-A-Part
PROJECT # A17-1983 Fig # 8
REVISED BY mte
REVISION # & DATE rv.2 20170524
5 5 10 10
scale feet
N
NOTES
3586 N. 2000 W. Farr West, UT
Groundwater potentiometry as of 25 May 2017. Elevation in feet from arbitrary 100 ft benchmark.
LEGEND
= current monitor well
MW9
92.87'
93'
92.6'
92.2'
91.8'
91.4'
MW7
91.34'
MW6
92.71'
MW8
92.74'
MW3
92.61'
MW4
92.53'
MW2
92.1'
MW1
92.85'
MW5
92.8'
Steel Wall
diesel AST
CRUSHER PAD
CRUSHER POND
Steel wall
Steel wall
Concrete bloc wall
Concrete block wall
2000 West Street
GAS

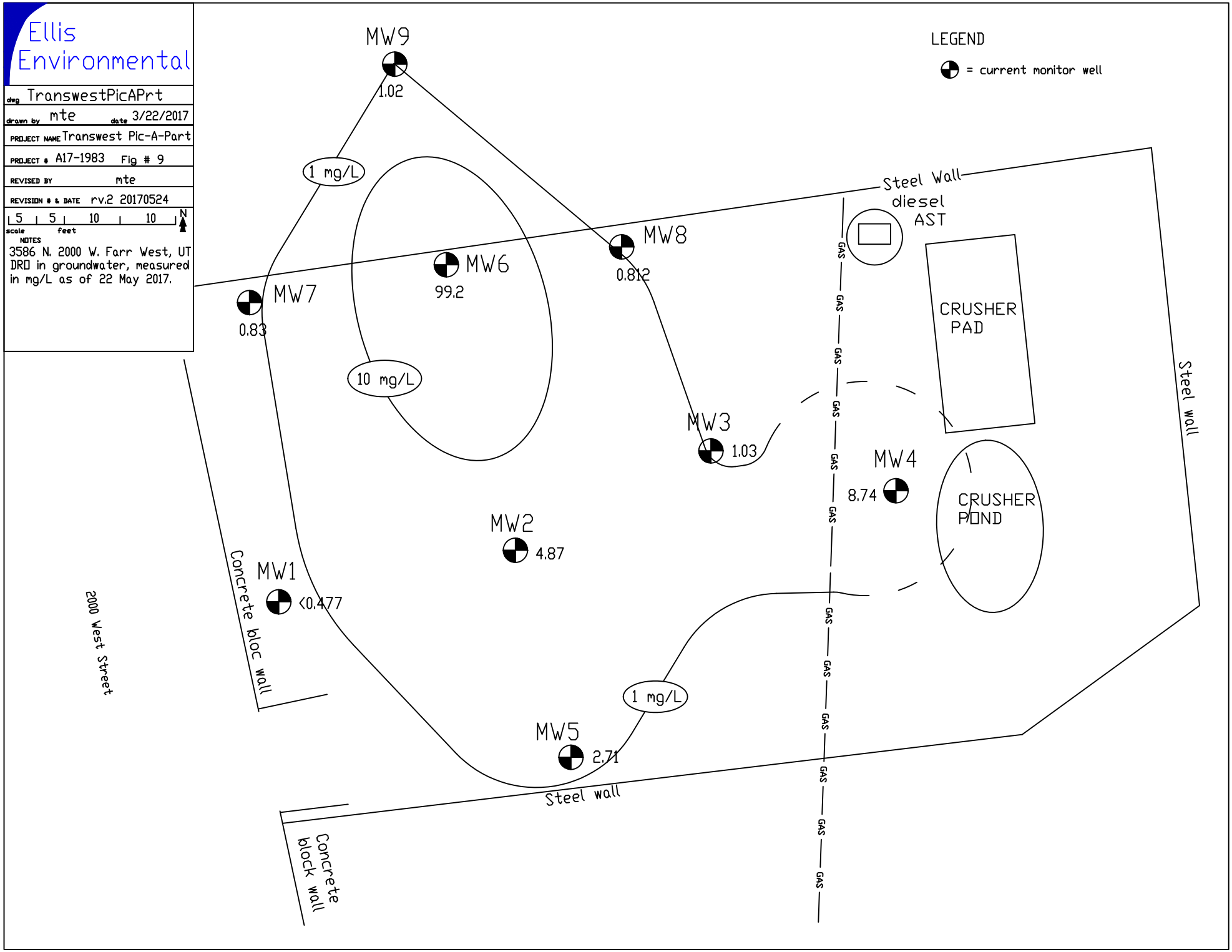
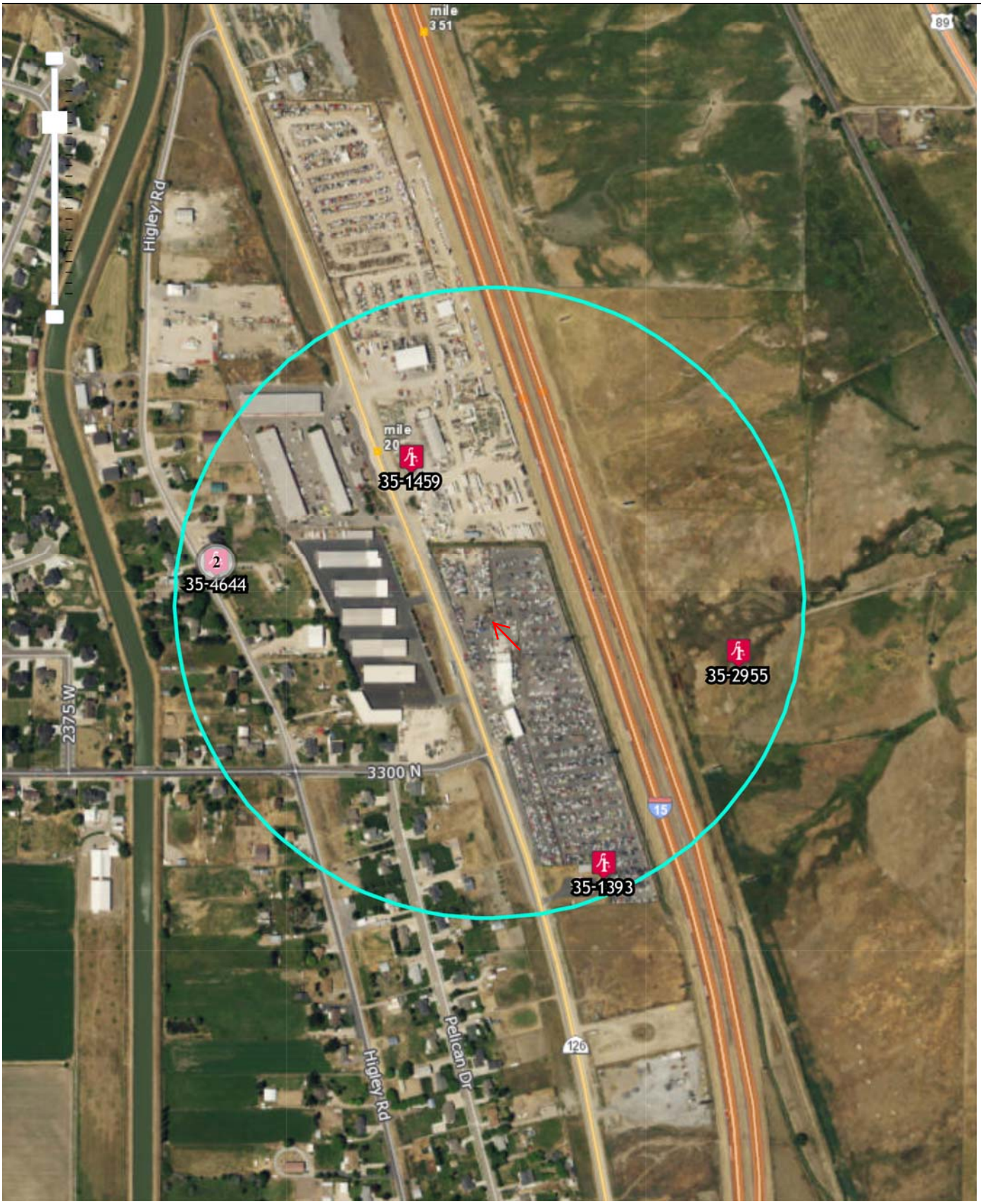

Ellis Environmental
dwg TranswestPicAPrt
drawn by mte date 3/22/2017
PROJECT NAME Transwest Pic-A-Part
PROJECT # A17-1983 Fig # 9
REVISED BY mte
REVISION # & DATE rv.2 20170524
scale 5 5 10 10 feet
N
NOTES
3586 N. 2000 W. Farr West, UT
DRO in groundwater, measured in mg/L as of 22 May 2017.
LEGEND
= current monitor well
MW9
1.02
1 mg/L
MW8
0.812
MW6
99.2
MW7
0.83
10 mg/L
Steel Wall
diesel AST
CRUSHER PAD
Steel wall
MW3
1.03
MW4
8.74
CRUSHER POND
MW2
4.87
MW1
<0.477
2000 West Street
Concrete bloc wall
1 mg/L
MW5
2.71
Steel wall
Concrete block wall
GAS

Figure 10. ISL distances to critical structures and to the property boundaries. Distances were measured on Google Earth and are considered approximate.

Appendix B

Documents

Utah.gov Services Agencies



Map of 4 water rights within 1/4 mile of Transwest Pick-A-Part crusher (red arrow); DWR Database

0 300 600ft

Search Radius: 1320 ft.

From the SE corner North 570 West 1300 section 23 township 7N range 2W SLbm

WR Number	Diversion Type	Well Log	Location	Status	Priority	Uses	CFS	ACFT	Address	Owner Name	Latitude	Longitude
35-1393	Underground	21484	S533 W833 NE 26 7N 2W SL	P	19621017	DO	0.015	0.000	ROUTE 3 BOX 117	KEITH MENDENHALL	41.3200456522	-112.028220987
35-1459	Underground	21471	N1180 W1620 SE 23 7N 2W SL	P	19630805	DI	0.003	0.000	BOX 147A, ROUTE #3	V. A. AUCTION INC.	41.3247223875	-112.031160806
35-2955	Underground		N345 W257 SE 23 7N 2W SL	P	1900	DS	0.002	0.000	PLAIN CITY UT 84404	WILLIAM H. HESLOP	41.3224745791	-112.026161432
35-4642	Underground		N753 W2444 SE 23 7N 2W SL	P	1920	DI	0.040	0.000	3635 HIGLEY ROAD	ROBERT GLEN AND CATHERINE COLES	41.3235232996	-112.034142891
35-4644	Underground		N753 W2444 SE 23 7N 2W SL	P	1920	DI	0.040	0.000	3605 HIGLEY ROAD	HARVEY W. & JOAN HIGLEY	41.3235232996	-112.034142891

OGDEN SUGAR FACTORY, UTAH (426414)

Period of Record Monthly Climate Summary

Period of Record : 09/01/1924 to 06/07/2009

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	36.3	42.7	52.3	62.5	72.6	82.4	92.1	89.9	79.6	66.6	49.6	39.0	63.8
Average Min. Temperature (F)	17.7	23.0	30.0	37.4	45.2	52.6	59.8	57.8	48.2	38.2	28.2	20.9	38.2
Average Total Precipitation (in.)	1.58	1.44	1.68	2.03	1.86	1.31	0.55	0.77	1.20	1.63	1.50	1.49	17.05
Average Total SnowFall (in.)	10.6	4.9	3.0	0.5	0.0	0.0	0.0	0.0	0.0	0.2	2.4	4.9	26.5
Average Snow Depth (in.)	2	1	0	0	0	0	0	0	0	0	0	1	0

Percent of possible observations for period of record.
Max. Temp.: 97% Min. Temp.: 97.8% Precipitation: 94.7% Snowfall: 85% Snow Depth: 73%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

Appendix C

Statements of Qualifications

DAVID B. JOHNSON, PE, PLS, MBA

(801)-787-4569 / djohnson@johnsonenginc.com / 4436 S 1025 E Salt Lake City, Utah 84124

Education

MS
Brigham Young University — Provo, Utah
- April 2005-Treatment Wetland Design for the Salton Sea, California

MBA
University of Utah — SLC, Utah
- December 2010

BS
Brigham Young University — Provo, Utah
- April 2004-Civil Engineering

Land Surveying
Salt Lake Community College — SLC, Utah
- Satisfied the Utah PLS education requirements

Employment History

Johnson Engineering, Inc. — Salt Lake City, Utah (2014-Present)
Owner and Founder of Johnson Engineering, Inc. (**www.johnsonengineeringinc.com**)
- Responsible for grading and drainage design for residential and commercial land development projects.
- Responsible for the design of lead shot traps and lead dust suppression for national gun ranges.
- Responsible for construction staking, conducting topo surveys, boundary surveys, and HD scanning.
- Certified Underground Storage Tank Consultant with Utah Department of Environmental Response and Remediation (DERR).

Anderson Engineering Company, Inc. — Salt Lake City, Utah (2005-2014)
Professional Engineer and Land Surveyor
- Responsible for project design and the preparation of construction documents.
- Responsible for project management, including: the allocation of resources; the development and training of personnel; and, quality assurance.
- Responsible for construction staking, conducting topo surveys, boundary surveys, and HD scanning.

Agrarian Research and Management Co., Ltd. — Provo, Utah (2004-2005)
Project Engineer and Land Surveyor
- Responsible for project design, land surveying, and construction management for environmental projects throughout California.

Spanish Fork City Engineering Department — Spanish Fork City, Utah (2002-2004)
Geographic Information Systems (GIS) Intern
- Responsible for collecting and managing GIS data for city utilities.

BYU Materials Research Department — Provo, Utah. (2003)
Research Assistant
- Responsible for soil sample analysis of local road base material for frost heave research.

Skills and Certifications

Computer Skills:
AutoCAD Civil 3D
ArcGIS Suite
Microsoft Office
Leica Cyclone
Microsoft Project

Survey Equipment:
Trimble S6 Total Station
Trimble GPS Systems
Leica C10 HD Scanner

Additional Skills:
Fluent in writing and speaking Spanish.

Certifications:
Civil Engineer
- UT # 5338869-2203
- CA # 77583
- WY# 14049

MSHA Training
- 24 hr

Certifications Continued:
OSHA Hazwoper
- 40 hr

Professional Land Surveyor
- UT # 5338869-2201
- CA # 8876

Heavy Construction Contractor
- UT # 8940121-5551

Utah UST Consultant (DERR)

Personal

Brigham Young University Football Letterman (2002) — Provo, Utah (2000-2002)
BYU Student-Athlete Business Mentor — Provo, Utah (2011 to Present)

EllisEnvironmental
a division of thevisiongroup inc.

STATEMENT OF QUALIFICATIONS

Mark T. Ellis- President, The Vision Group, Inc.; including divisions Ellis Environmental and IntelliSolve (1991- present); Certified, Utah Solid and Hazardous Waste Control Board as Consultant (CC19) and Groundwater and Soil Sampler (GS-0081). Certified as Environmental Manager in Nevada, #EM-1191. Qualified, Arizona Consultant. Certified Contractor, South Carolina (UCC-0373). 40 hour hazardous materials management (29 CFR 1910.120). Trained in land appraisal principles with Basic Principles of Land Appraisal and USPAP classes. B.S. Zoology (emphasis on Limnology & Water Chemistry) from BYU in 1978.

Chief Science Officer, Pure Environmental Management, LLC, (2009 to 2015).

Inventor:
- Subsurface Metabolism Enhancement (SME) hydrocarbon bioremediation system, Patent # 6,464,005; Winner of Stoel-Rives Utah Innovator 2010 for Clean Technology and Energy.
- Fuel Vault™, Patent #5,037,239, interest sold to Olsen-Beal Associates.
- Release Detection and Remediation Response (RDR^2), Patent #8,235,627.
- SME Sensor, Patent #7,705,312; Infrared sensor for hydrocarbons, oxygen, CO_2 and methane.
- Identity Theft Protection, pat. pending.
- SMECℓ, Aerobic, chlorinated solvent bioremediation system, pat. pending.

Vice-President of Environmental Services for Olsen-Beal Associates, Orem, Utah. Directed development of Fuel Vault™. Provided environmental services for the petroleum, real estate industries (1990-1991).

Director of Environmental Services, Westech Fuel Equipment, Murray, Utah. Provided environmental assessment and tank closure services to owners of underground storage tanks (1989-1990).

Utah Division of Environmental Quality:
- Manager of the Utah Underground Storage Tank Program, ST/LUST program (1987- 1989).
- Member of UST/LUST Task Force with ASTWMO, (1988- 1989).
- Acid Rain Coordinator for the State of Utah; chair of Utah ADTAC; member, WESTAR and WAD Task Force (1984-1987).
- Air Quality Compliance Officer for the Utah Bureau of Air Quality, (1980-1981, 1984-1987).
- Water Quality Specialist with the Utah Bureau of Water Pollution Control, (1981-1984).

Environmental experience and management includes:
- Citations from Utah Governor (1) and Utah Division of Environmental Health (2) for excellence
- UST closures, including the required site assessments for 347 tanks
- Phase I and II environmental audits/assessments, AAI, TSA at over 1,272 properties since 1989
- LUST abatement and remediation projects at over 130 projects
- Installation/design of Fuel Vault™ facilities at 6 sites
- Research and installation of closed and open loop fisheries at 4 projects
- Hazardous waste compliance at 55 sites
- Air Quality compliance at 15 sites
- Water quality projects at many sites including LUST projects and stormwater plans
- Projects in 16 States (AK, AZ, CA, CO, ID, IN, MT, NV, PA, RI, SC, TN, UT, WA, WI, WY)
- Qualified as Expert Witness in Utah and Arizona courts, 15 projects

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