



January 23, 2020

Mr. Brian Steglitz, PE
Manager – Water Treatment
City of Ann Arbor
919 Sunset Road
Ann Arbor, MI 49103

RE: Hydrogeological Services – 1,4-dioxane Residential Basement Sampling

Dear Mr. Steglitz:

The City of Ann Arbor (City) has requested services to assist with the sampling of 1,4-dioxane in flooded basement water in residential homes in the Gelman plume footprint where groundwater is shallow. The following information describes the scope of services, schedule and budget.

SCOPE OF SERVICES

The task is outlined below to assist the City with 1,4-dioxane sampling for water in residential basements. Coordination with homeowners will need to be completed to first identify where wet basements are known to exist and then after a rain event that causes flooding. Since it is unknown how many samples will be needed, costs are provided for collection of 1 sample; 4 samples and 8 samples in a day. Reporting results to the homeowner and the City of Ann Arbor are included.

Task 1: Survey Letter and Homeowner Coordination

Coordination in the potential flooded basement area as identified on Figure 1 of the Technical Memorandum will be completed initially. This will include a survey letter sent to the 85 homeowners identified in the area (**Attachment A**), describing the City's intent to sample wet basements and requesting a response on whether or not they have had a wet basement in the past and if so, requesting contact information.

After responses are received and those homeowners with a wet basement are compiled, Tetra Tech will provide additional information to those homeowners on who to contact when their basement is flooded. For the purposes of estimating the coordination cost, it is assumed that 50% or 43 homes will have a wet

basement. These homes will be compiled into a new list for sampling. When a wet basement occurs, it will be the responsibility of the homeowner to contact Tetra Tech to sample the water.

Tetra Tech will create a checklist that will identify common household products that contain 1,4-dioxane, the location of a basement sump if present, the type of flooring, visible staining and any other information pertinent at collection. Each home that is sampled will also have the checklist completed and if the homeowner consents, the flooded area will be documented with photos.

For the purpose of estimating this time, 16 hours of staff time have been included to identify homeowner addresses, draft and send letters and create a checklist. An additional 8 hours of time is included to compile responses and a new subset list. Finally, 33 hours of staff time are included to coordinate during rain events by taking homeowner calls, updating spreadsheets and coordinating with the sampling team for the event. This is assumed as three hours per rain event for a total of 11 rain events that cause flooding. These costs are included in **Table 1**.

Task 2: Basement Water Sampling

Prior to collecting a sample, Tetra Tech personnel will complete the checklist of the area to identify potential 1,4-dioxane containing products in the basement. The task consists of collecting water samples for 1,4-dioxane in flooded basements. The samples will be collected from each location using either a peristaltic pump and tubing or with a sampling syringe, depending on the depth of the standing water. Estimated costs are provided for collecting one sample, four samples and eight samples in **Table 1**. Eight samples are likely the most that can be completed in one day for one field person, given the coordination necessary with homeowners. A duplicate sample and one trip blank are included in each scenario. Tetra Tech recommends collecting one duplicate per 10 samples, or one per day, whichever is less. Cost per sample and 100 samples is included in **Table 1**.

These samples will be submitted to Pace Analytical Laboratory (Pace) for USEPA method 522 analysis, which has a reporting limit of 0.07 micrograms per Liter (ug/L). This method will enable lower concentrations of 1,4-dioxane to be detected in the target area. Pace did not provide a price break based on volume but that could be negotiated by Tetra Tech. Results of the sampling will be compared to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) shallow groundwater screening level of 1,900 parts per billion for 1,4-dioxane identified in the proposed rules package in 2017 and sent to City of Ann Arbor personnel.

Task 3: Reporting

Tetra Tech will provide a letter to each homeowner and City of Ann Arbor, summarizing the site visit, sample collection and laboratory results. A final report will be completed for the City of Ann Arbor that includes the spatial distribution and sampling results for those homeowners for whom a sample was collected. All documentation will be appended. Cost per report is included in **Table 1**.

PROPOSED BUDGET

Tetra Tech has prepared the tables below to describe the cost based on sampling.

TABLE 1 – WATER SAMPLING						
Task 1	Survey Letter and Homeowner Coordination					\$4,281
Task 2	Basement Sampling					
	Labor	Lab	Reimbursables	Total	Cost per Sample	Cost per 100 Residential Homes
	1 Sample	\$567	\$248	\$307	\$1,122	\$112,200
	4 Samples	\$1,087	\$495	\$336	\$1,918	\$48,000
	8 Samples	\$1,554	\$825	\$380	\$2,759	\$34,500
Task 3	Reporting					
Homeowner Letter	Cost per home					Cost per 43 homes
	\$332					\$14,276
City of Ann Arbor Final Report						\$1,126

The City has requested a subtotal assuming four samples will be collected in each trip. For these purposes we have assumed all 43 homes will be sampled in 11 trips (one trip will include three samples) for a cost of \$20,640 for Task 2. The total including all three tasks is \$40,323.

SCHEDULE

Tetra Tech is prepared to begin work immediately upon receiving authorization to proceed and will complete sampling as directed by the City.

COMPENSATION

Work will be performed on an hourly rate basis as defined in our master agreement.

EXECUTION

If you agree with the terms of this proposal, please execute a purchase order to serve as a task order under our 2016 master agreement. Tetra Tech appreciates this opportunity to continue to provide our services to the City of Ann Arbor’s Water Treatment Services Unit.

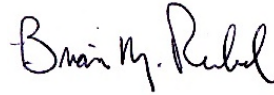
Mr. Brian Steglitz
January 23, 2020
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If you have any questions, please contact Patti McCall at 734.213.4069.

Sincerely,



Patti J. McCall
Associate Hydrogeologist



Brian M. Rubel, PE
Vice President

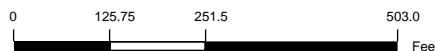
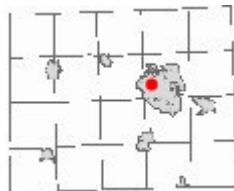
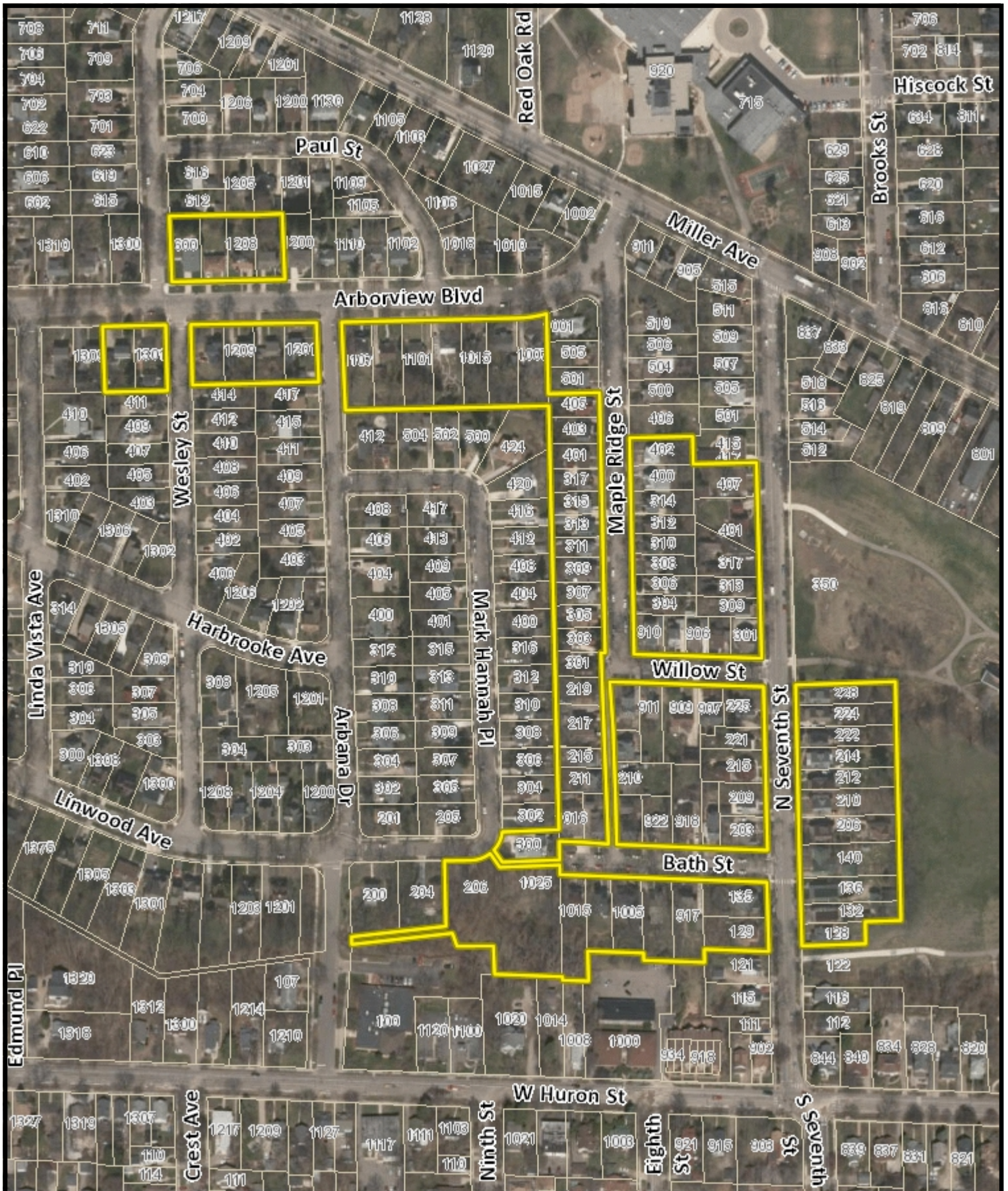
Attachment A
West Park Property Owners
Tetra Tech, January 10, 2020

Attachment A
West Park Area Property Owners
Ann Arbor, MI

PARCEL NUMBER	PROPERTY ADDRESS	OWNER ADDRESS	OWNER CITY	OWNER STATE	OWNER ZIP
09-09-29-215-041	128 N SEVENTH ST	128 N SEVENTH ST	ANN ARBOR	MI	48103
09-09-29-203-007	129 N SEVENTH ST	129 N SEVENTH ST	ANN ARBOR	MI	48103
09-09-29-215-040	132 N SEVENTH ST	132 N SEVENTH ST	ANN ARBOR	MI	48103
09-09-29-203-006	135 N SEVENTH ST	135 N SEVENTH ST	ANN ARBOR	MI	48103
09-09-29-215-039	136 N SEVENTH ST	136 N SEVENTH ST	ANN ARBOR	MI	48103
09-09-29-215-038	140 N SEVENTH ST	140 N SEVENTH ST	ANN ARBOR	MI	48103
09-09-29-202-005	203 N SEVENTH ST	2631 TESSMER RD	ANN ARBOR	MI	48103
09-09-29-215-037	204 N SEVENTH ST	206 N SEVENTH ST	ANN ARBOR	MI	48103
09-09-29-202-006	209 N SEVENTH ST	4779 COLLINS AVE #4301	MIAMI BEACH	FL	33140
09-09-29-215-036	210 N SEVENTH ST	543 DETROIT ST	ANN ARBOR	MI	48104
09-09-29-215-035	212 N SEVENTH ST	212 N SEVENTH ST	ANN ARBOR	MI	48103
09-09-29-215-034	214 N SEVENTH ST	214 N SEVENTH ST	ANN ARBOR	MI	48103
09-09-29-202-007	215 N SEVENTH ST	2631 TESSMER RD	ANN ARBOR	MI	48103
09-09-29-202-019	221 N SEVENTH ST	221 N SEVENTH ST	ANN ARBOR	MI	48103
09-09-29-215-033	222 N SEVENTH ST	222 N SEVENTH ST	ANN ARBOR	MI	48103
09-09-29-215-032	224 N SEVENTH ST	520 SIXTH ST	ANN ARBOR	MI	48103
09-09-29-202-009	225 N SEVENTH ST	225 SEVENTH ST	ANN ARBOR	MI	48103
09-09-29-215-031	228 N SEVENTH ST	228 N SEVENTH ST	ANN ARBOR	MI	48103
09-09-29-200-018	301 N SEVENTH ST	301 N SEVENTH ST	ANN ARBOR	MI	48103
09-09-29-200-019	309 N SEVENTH ST	309 N SEVENTH ST	ANN ARBOR	MI	48103
09-09-29-200-020	313 N SEVENTH ST	313 N SEVENTH ST	ANN ARBOR	MI	48103
09-09-29-200-021	317 N SEVENTH ST	317 N SEVENTH ST	ANN ARBOR	MI	48103
09-09-29-200-022	401 N SEVENTH ST	401 N SEVENTH ST	ANN ARBOR	MI	48103
09-09-29-200-023	407 N SEVENTH ST	407 N SEVENTH ST	ANN ARBOR	MI	48103
09-09-29-202-004	910 BATH ST	910 BATH ST	ANN ARBOR	MI	48103
09-09-29-203-005	917 BATH ST	917 BATH ST	ANN ARBOR	MI	48103
09-09-29-202-003	918 BATH ST	918 BATH ST	ANN ARBOR	MI	48103
09-09-29-203-004	921 BATH ST	921 BATH ST	ANN ARBOR	MI	48103
09-09-29-202-002	922 BATH ST	922 BATH ST	ANN ARBOR	MI	48103
09-09-29-203-018	1005 BATH ST	1005 BATH ST	ANN ARBOR	MI	48103
09-09-29-202-001	1006 BATH ST	1006 BATH ST	ANN ARBOR	MI	48103
09-09-29-203-002	1011 BATH ST	1011 BATH ST	ANN ARBOR	MI	48103
09-09-29-201-021	1012 BATH ST	1012 BATH ST	ANN ARBOR	MI	48103
09-09-29-203-001	1015 BATH ST	1015 BATH ST	ANN ARBOR	MI	48103
09-09-29-201-020	1016 BATH ST	1016 BATH ST	ANN ARBOR	MI	48103
09-09-30-135-026	300 MARK HANNAH PL	300 MARK HANNAH PL	ANN ARBOR	MI	48103
09-09-29-202-015	210 BUCHOLZ CT	210 BUCHOLZ CT	ANN ARBOR	MI	48103
09-09-29-201-019	211 BUCHOLZ CT	211 BUCHOLZ CT	ANN ARBOR	MI	48103
09-09-29-201-018	215 BUCHOLZ CT	1301 LUTZ AVE	ANN ARBOR	MI	48103
09-09-29-202-014	216 BUCHOLZ CT	4856 BIRKDALE DR	ANN ARBOR	MI	48103
09-09-29-201-017	217 BUCHOLZ CT	PO BOX 3393	ANN ARBOR	MI	48106

Attachment A
West Park Area Property Owners
Ann Arbor, MI

PARCEL NUMBER	PROPERTY ADDRESS	OWNER ADDRESS	OWNER CITY	OWNER STATE	OWNER ZIP
09-09-29-201-016	219 BUCHHOLZ CT	1129 BYDDING RD	ANN ARBOR	MI	48104
09-09-29-200-017	904 WILLOW ST	904 WILLOW ST	ANN ARBOR	MI	48103
09-09-29-200-016	906 WILLOW ST	906 WILLOW ST	ANN ARBOR	MI	48103
09-09-29-202-018	907 WILLOW ST	907 WILLOW ST	ANN ARBOR	MI	48103
09-09-29-200-015	908 WILLOW ST	908 WILLOW ST	ANN ARBOR	MI	48103
09-09-29-202-017	909 WILLOW ST	909 WILLOW ST	ANN ARBOR	MI	48103
09-09-29-200-014	910 WILLOW ST	910 WILLOW ST	ANN ARBOR	MI	48103
09-09-29-202-012	911 WILLOW ST	911 WILLOW ST	ANN ARBOR	MI	48103
09-09-29-202-013	1007 WILLOW ST	1007 WILLOW ST	ANN ARBOR	MI	48103
09-09-29-201-015	301 MAPLE RIDGE ST	301 MAPLE RIDGE ST	ANN ARBOR	MI	48103
09-09-29-201-014	303 MAPLE RIDGE ST	303 MAPLE RIDGE ST	ANN ARBOR	MI	48103
09-09-29-200-013	304 MAPLE RIDGE ST	304 MAPLE RIDGE ST	ANN ARBOR	MI	48103
09-09-29-201-013	305 MAPLE RIDGE ST	305 MAPLE RIDGE ST	ANN ARBOR	MI	48103
09-09-29-200-012	306 MAPLE RIDGE ST	306 MAPLE RIDGE ST	ANN ARBOR	MI	48103
09-09-29-201-012	307 MAPLE RIDGE ST	1336 NICOLET PL	DETROIT	MI	48207
09-09-29-200-011	308 MAPLE RIDGE ST	308 MAPLE RIDGE ST	ANN ARBOR	MI	48103
09-09-29-201-011	309 MAPLE RIDGE ST	309 MAPLE RIDGE ST	ANN ARBOR	MI	48103
09-09-29-200-010	310 MAPLE RIDGE ST	310 MAPLE RIDGE ST	ANN ARBOR	MI	48103
09-09-29-201-010	311 MAPLE RIDGE ST	311 MAPLE RIDGE ST	ANN ARBOR	MI	48103
09-09-29-200-009	312 MAPLE RIDGE ST	312 MAPLE RIDGE ST	ANN ARBOR	MI	48103
09-09-29-201-009	313 MAPLE RIDGE ST	313 MAPLE RIDGE ST	ANN ARBOR	MI	48103
09-09-29-200-008	314 MAPLE RIDGE ST	314 MAPLE RIDGE ST	ANN ARBOR	MI	48103
09-09-29-201-008	315 MAPLE RIDGE ST	315 MAPLE RIDGE ST	ANN ARBOR	MI	48103
09-09-29-201-007	317 MAPLE RIDGE ST	1030 N LOGAN ST. 2S	DENVER	CO	80203
09-09-29-201-006	401 MAPLE RIDGE ST	1311 LUTZ AVE	ANN ARBOR	MI	48103
09-09-29-201-005	403 MAPLE RIDGE ST	403 MAPLE RIDGE ST	ANN ARBOR	MI	48103
09-09-29-201-004	405 MAPLE RIDGE ST	405 MAPLE RIDGE ST	ANN ARBOR	MI	48103
09-09-30-135-001	1007 ARBORVIEW BLV	1007 ARBORVIEW BLV	ANN ARBOR	MI	48103
09-09-30-135-002	1009 ARBORVIEW BLV	1009 ARBORVIEW BLV	ANN ARBOR	MI	48103
09-09-30-135-003	1015 ARBORVIEW BLV	1015 ARBORVIEW BLV	ANN ARBOR	MI	48103
09-09-30-135-004	1017 ARBORVIEW BLV	1017 ARBORVIEW BLV	ANN ARBOR	MI	48103
09-09-30-135-005	1101 ARBORVIEW BLV	1101 ARBORVIEW BLV	ANN ARBOR	MI	48103
09-09-30-135-006	1105 ARBORVIEW BLV	1105 ARBORVIEW BLV	ANN ARBOR	MI	48103
09-09-30-135-007	1107 ARBORVIEW BLV	1107 ARBORVIEW BLV	ANN ARBOR	MI	48103
09-09-30-133-013	1201 ARBORVIEW BLV	1201 ARBORVIEW BLV	ANN ARBOR	MI	48103
09-09-19-412-010	1204 ARBORVIEW BLV	1204 ARBORVIEW BLV	ANN ARBOR	MI	48103
09-09-30-133-014	1205 ARBORVIEW BLV	1205 ARBORVIEW BLV	ANN ARBOR	MI	48103
09-09-19-412-009	1208 ARBORVIEW BLV	1208 ARBORVIEW BLV	ANN ARBOR	MI	48103
09-09-30-133-015	1209 ARBORVIEW BLV	3652 118TH AVE	ALLEGAN	MI	49010
09-09-19-412-008	1212 ARBORVIEW BLV	1212 ARBORVIEW BLV	ANN ARBOR	MI	48103
09-09-30-133-016	1215 ARBORVIEW BLV	1215 ARBORVIEW BLV	ANN ARBOR	MI	48103
09-09-30-130-014	1301 ARBORVIEW BLV	1301 ARBORVIEW BLV	ANN ARBOR	MI	48103
09-09-30-130-015	1305 ARBORVIEW BLV	1305 ARBORVIEW BLV	ANN ARBOR	MI	48103
09-09-19-412-007	600 WESLEY ST	600 WESLEY ST	ANN ARBOR	MI	48103



1 : 3,018

1/15/2020



NOTE: Parcels may not be to scale.

The information contained in this cadastral map is used to locate, identify and inventory parcels of land in Washtenaw County for appraisal and taxing purposes only and is not to be construed as a "survey description". The information is provided with the understanding that the conclusions drawn from such information are solely the responsibility of the user. Any assumption of legal status of this data is hereby disclaimed.