ADEQ Arizona Department of Environmental Quality

Synthetic Organic Chemical (SOC) Monitoring Waiver Application

Groundwater Sources Only – One Application per EPDS

If enrolled in the Monitoring Assistance Program – *DO NOT APPLY*
Review Denial Criteria (Appendix A) – *if applicable, DO NOT APPLY*

Part 1: General Public Water System (PWS) Information

LTF# (to be filled out by ADEQ):	**Application Date:**
PWS Name:	**PWS ID#:**
PWS Mailing Address:	
Contact Person:	**Phone#:**
Email Address:	
PWS Type (Select one): ☐ CWS ☐ NTNCWS	**Population Served:**

Part 2: Source Information

40 CFR §141.24(H)/A.A.C. R18-4-105

Entry Point to the Distribution System (EPDS) number: _____

List all water sources connected to the EPDS. *Submit a separate waiver application for each EPDS*.

Well Name	ADWR Number (55-)	Latitude/Longitude

*For each groundwater source/well include the information listed in Appendix F (Required Source Information) as an attachment.

Are there any new or reactivated sources since the last compliance monitoring event? ☐ Yes ☐ No

Are there surface water, GUDI, or suspect GUDI sources? ☐ Yes ☐ No

Are there any septic systems within 100 feet of any of the drinking water source(s)? ☐ Yes ☐ No
If yes, contact ADEQ for guidance.

Is there a current Source Water Protection Plan (SWPP)? ☐ Yes ☐ No

Has the SWPP been updated in the last 3 years? ☐ Yes ☐ No

Have all the Sources contributing to the EPDS been evaluated? ☐ Yes ☐ No

Has the PWS verified that all ALUs are implementing BMPs or operating under an ADEQ approved operating permit? ☐ Yes ☐ No

Part 3: Compliance Data Information

Is there any Treatment associated with this Source? ☐ Yes ☐ No

If yes, what contaminant is the treatment being used for: _____

If yes, what type of treatment is being used: _____

Is there history of agricultural use in the study area, and Nitrate levels greater than 10 mg/L? ☐ Yes ☐ No

Starting year which waiver is being applied for:

List the Compliance sample data and Laboratory Work Order Number/Specimen ID for the last three compliance periods of SOC samples for this EPDS: (use additional paper if needed)

Monitoring Period (eg. 2015-2017)	**Compliance Sample Date**	**Lab Work Order Number/Specimen ID**	**Were all SOC analytes sampled for?**

***If there are samples listed here that were not submitted to ADEQ, the waiver approval will be put on hold until we acquire the needed Drinking Water Analytical Reporting (DWAR) form from the system.

Were any result from the above compliance samples detected at or above the reporting limit, as specified in CFR 40 §141.24 for the specific analyte? ☐ Yes ☐ No

Have any contaminants met or exceeded the MCL in the last 15 years, as specified in CFR 40 §141.61? ☐ Yes ☐ No

Part 4: SOC Adjacent Land Use (ALU) Analysis

If no ALUs are identified within a ½ mile for any of the sources, *proceed to part 5*.

For **each** ALU identified within a ½ mile of the source plot and label the location on a map. The label(s) must correspond with the source data sheet in Appendix G (Example Map and Source Data Sheet). A form has been provided in Appendix D (Land Use Determination Form) to help determine if identified lands uses are relevant ALUs. A partial list of ALUs that should be identified is included in Appendix C (ALU Types).

Have all ALUs within a ½ mile of each source been evaluated? ☐ Yes ☐ No

If ALUs are identified calculate the fixed radius for 1, 3 and 10 year time of travel. The standard fixed radius calculation is provided in Appendix E (Fixed Radius Equation). Plot the fixed radius on the map (Appendix G). Provide Best Management Practices (BMPs) implemented at facilities within a 10 year time of travel.

Part 5: Certification

I certify that the above information provided on the waiver application and waiver matrix, to the best of my knowledge, is complete and correct, and has been verified to the fullest extent possible.

I certify the well(s) are currently installed as permitted and that all components function as intended and are in good condition.

Name of Application Preparer (type or print)	Signature	Date
Name of System Owner/Representative (type or print)	Signature	Date
Title		

Appendix A - Denial Criteria

- If one or more new sources have been added (since the last three monitoring period compliance data has been collected), the waiver cannot be approved.
- If last 3 monitoring periods have had a detection above the reporting limit for SOCs.
- If an EPDS has an MCL violation has been received for an SOC contaminant within the past 15 years.
- If the source water associated to the EPDS has elevated Nitrate levels greater than 10 mg/L.
- Any source within one-year time of travel which could impact groundwater.
- Any source within three-year time of travel if best management practices (BMPs) have not been implemented.
- Existing violation of relevant ADEQ permits (APP, AZPDES, HAZWASTE, UST/LUST).
- Any Water Quality Assurance Revolving Fund (WQARF), uncharacterized release or remedial project within 10-year time of travel if any contaminates listed in Appendix B are associated with the release.
- Septic Tanks or leach fields within 100 feet of the drinking water source
- If a water source is suspect GUDI the EPDS is not eligible for a waiver until a final GUDI determination is made
- Waivers are granted based on risk and they may be denied based on risk based criteria and/or a lack of the information provided with the application.

Appendix B – SOC Waiver Analytes

Analyte Code	Contaminant	MCL (mg/L)	RPL (mg/L)
2051	Alachlor (Lasso)	0.002	0.0002
2050	Atrazine	0.003	0.0001
2046	Carbofuran	0.04	0.0009
2959	Chlordane	0.002	0.0002
2931	Dibromochloropropane (DBCP)	0.0002	0.00002
2105	2,4-D (2,4-Dichlorophenoxyacetic acid)	0.07	0.0001
2946	Ethylene dibromide (EDB)	0.00005	0.00001
2065	Heptachlor	0.0004	0.00004
2067	Heptachlor epoxide	0.0002	0.00002
2274	Hexachlorobenzene	0.001	0.0001
2042	Hexachlorocyclopentadiene	0.05	0.0001
2010	Lindane (BHC-Gamma)	0.0002	0.00002
2015	Methoxychlor	0.04	0.0001
2383	***Polychlorinated biphenyls** (PCBs)	0.0005	0.0001
2326	Pentachlorophenol	0.001	0.00004
2020	Toxaphene	0.003	0.001
2110	2,4,5-TP (Silvex)	0.05	0.0002
2306	Benzo(a)pyrene	0.0002	0.00002
2031	Dalapon	0.2	0.001
2035	Di(2-ethylhexyl)adipate	0.4	0.0006
2039	Di(2-ethylhexyl)phthalate	0.006	0.0006
2041	Dinoseb	0.007	0.0002
2032	Diquat	0.02	0.0004
2033	Endothall	0.1	0.009
2005	Endrin	0.002	0.00001
2034	Glyphosate	0.7	0.006
2036	Oxamyl	0.2	0.002

2040	Picloram	0.5	0.0001
2037	Simazine	0.004	0.00007
2063	2,3,7,8-TCDD (Dioxin)	(3×10^{-8})	(5×10^{-9})

*** Water systems can either submit data for PCBs or analyze for the 7 Aroclors listed below:**

Analyte Code	Aroclor		RPL (mg/L)
2388	Aroclor 1016	**If any of the 7 Aroclors are detected, the system must reanalyze the sample using Method 508A to quantitate PCBs (as decachlorobiphenyl).**	0.00008
2390	Aroclor 1221		0.02
2392	Aroclor 1232		0.0005
2394	Aroclor 1242		0.0003
2396	Aroclor 1248		0.0001
2398	Aroclor 1254		0.0001
2400	Aroclor 1260		0.0002

Appendix C – ALU Types

	Type of Facility or Operation
1	Feedlots
2	Golf Courses/Parks
3	Logging
4	Pesticide Mixing or Storage
5	Industrial Construction
6	Nurseries
7	Agricultural Land
8	Fertilizer
9	Pulp Mill
10	Herbicides/Pesticides
11	Wood treatment plants
12	Chemical manufacturing plants
13	Municipal or industrial waste incineration facilities.
14	Municipal or industrial landfills.
15	Highway/Interstate Railroad easements where defoliant.
16	Utility Substation
17	Veterinary clinic/ pet groomer
18	Industrial/hazardous Waste Disposal/storage
19	Landfill, Dump
20	Military Installation
21	Municipal Wastewater Treatment
22	Metal Plaiting
23	Power Plant
24	Machine Shop
25	Photo Processer

Appendix D – Land Use Determination Form

Adjacent Land Use (ALU)
Synthetic Organic Chemicals (SOC)

Direction: Use this form to assist you in the determining if a facility may be an ALU for the purposes of an SOC Waiver.

Facility ALU: _____

Name of Contact Person: _____

Telephone: _____

Email: _____

Address: _____

_____

Type of Facility: _____

Lat/Long of Facility: _____

SOCs include many herbicides, pesticides, insecticides, fungicide and defoliants. They can also be found at manufacturing facilities, feed lots and paper mills. A list of SOCs is provided in **Appendix B** of the SOC waiver application. List any SOCS that are used, stored, transported, manufactured and/or mixed at the facility. However, if you are unfamiliar with the chemicals below, please list the brand names of any the herbicides, pesticides, insecticides, fungicide and defoliants.

Chemical	Amount at the Facility	Amount Stored as Waste

Do not include de minimis amounts of chemicals. De minimis quantities are:

Chemicals stored in amounts typical of residential use and stored in the containers as purchased form a local retail store such as a local hardware store, auto parts store or grocery/commercial store.

- 5 gallons/40 lb. or less of residential strength chemicals.

Has there been a chemical spill at the facility?
List the chemical and amount released: _____
List Best Management Practices used at the facility:

Appendix E – Fixed Radius Equation

Fixed radius calculation for 1, 3 and 10 year time of travel intervals for waiver applications.

Variables:

Fixed Radius = r

Cubic feet per year = Q_a

Time of Travel = T (years)

Pi = π = 3.14

Specific Yield = n = 0.15 (default) (dimensionless)

The length of well below the water table = Kl

Fixed Radius Equation:

$$r_{(T)} = \sqrt{\frac{Qa * T}{\pi * n * Kl}}$$

Example:

The following example calculation is for a fixed radius at a 10 year time of travel. In order to calculate fixed radius you will need to know the maximum pump capacity in gallons per minute (gpm), the depth of the well and the depth to groundwater.

Max pump capacity in the well = 50 gpm

Conversion factor from gpm to cubic feet per year (f^3/year) = 70,267

$Q_{a\ (T)}$ = Max pump capacity * Conversion factor = 50 gpm * 70,267 = 3513350 (f^3/year)

$Q_{a\ (10)} = Q_a * T$ = 3513350 (f^3/year) * 10 (year) = 35133500 f^3

Depth of well = 430 f

Depth to water = 260 f

Kl = 430 $f_{(D\ well)}$ – 260 $f_{(D\ water)}$ = 170 f

n = specific yield = 0.15

(π * n * Kl) = 3.14 * 0.15 * 170 f = 80.07

$$r_{(10)} = \sqrt{\frac{35133500\ (f^3)}{80.07\ (f)}} = \sqrt{438784(f^2)} = 662\ f$$

The fixed radius calculation cannot be used for wells in hard rock geology such as granite and basalt where fracture flow predominates. The capacity of the pump and well construction information must be known to use this calculation. If the fixed radius calculation cannot be used the default is ½ mile.

Appendix F – Required Source Information

The following information must be provided for each well

Maps depicting:

- Groundwater flow direction
- Groundwater velocity
- A half mile radius around each well
- Accurate ALU location within a half mile of the well
- The 1, 3 and 10 year time of travel (If ALUs are identified)

Boring logs from the source well (or information on regional geology if not available)

Pump test data (if available)

Depth to groundwater

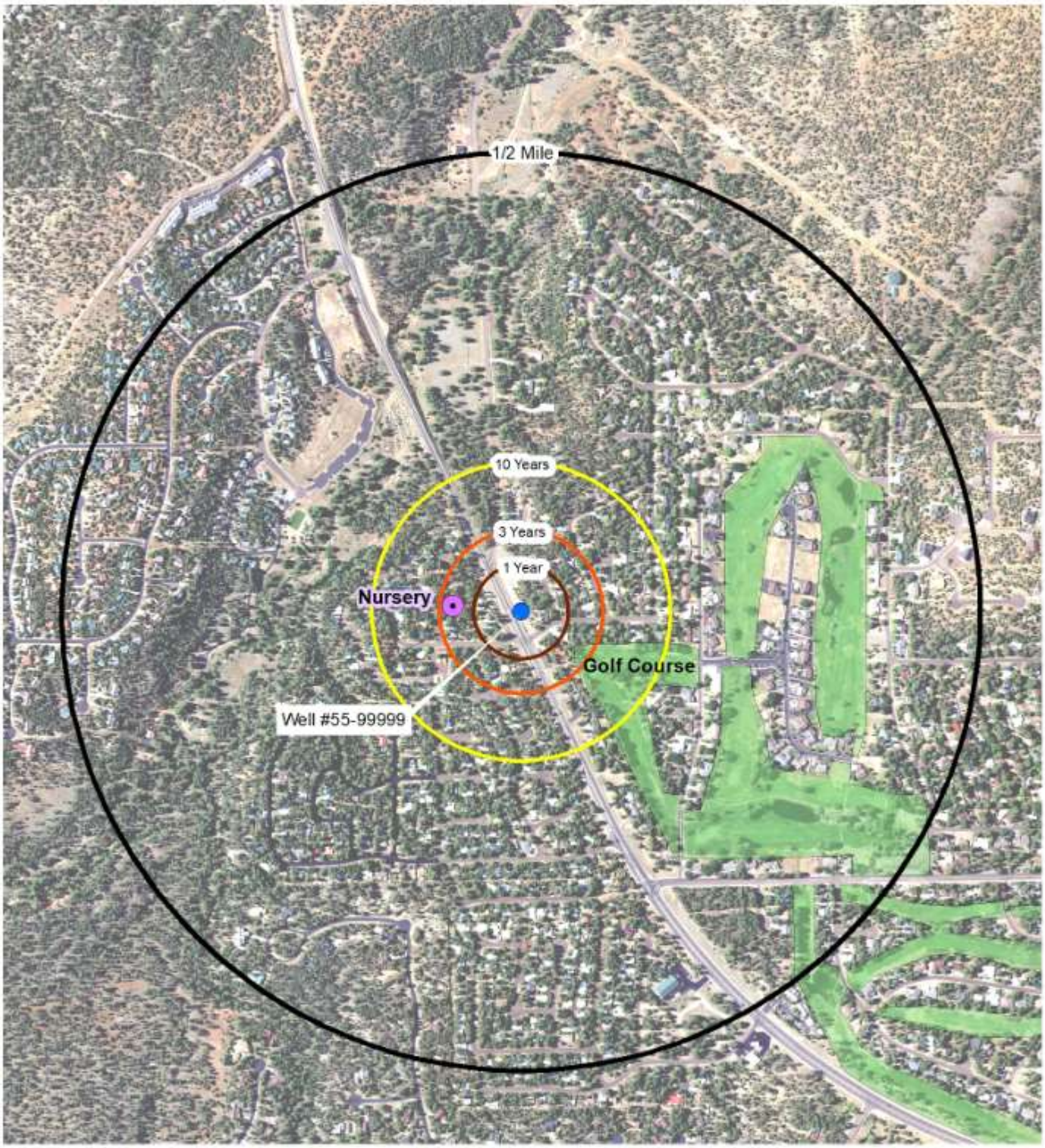
Appendix G - Example Map and Source Data Sheet

Source Data Sheet	
Facility Name:	Municipal Golf Course
Facility Type:	Golf Course
Address:	111 E Main Street, Nowhere, AZ 85000
Lat/Long:	34°14 31.6"N 110°01'09.5"W
Time of Travel from Source:	? Year
Best Management Practices attached:	☒ Yes ☐ No
Facility Name:	123 Nursery
Facility Type:	Nursery
Address:	111 E Main Street, Nowhere, AZ 85000
Lat/Long:	34°14 31.6"N 110°01'09.5"W
Time of Travel from Source:	? Year
Best Management Practices attached:	☒ Yes ☐ No
Facility Name:	
Facility Type:	
Address:	
Lat/Long:	
Time of Travel from Source:	
Best Management Practices attached:	☐ Yes ☐ No

PWS Name
Public Water System #AZ04XXXXX
Well #'s 55-99999

Potential Contaminant Time-of-Travel
(in years) to Reach Water Supply

ADEQ Arizona Department of Environmental Quality



PWS Name
Well # 55-99999

Time-of-Travel
1 years = 272 ft
3 years = 470 ft
10 years = 858 ft

Sample Well

N

0 0.09 0.18 0.27 0.36 0.45
Miles

1 in = 0.14 miles

This map is for general reference only and may not be all inclusive. More detailed information and specific locations can be obtained by contacting the Arizona Department of Environmental Quality.