

**STORMWATER
MONITORING
GUIDANCE
MANUAL
For
MS4 Activities**



ARIZONA DEPARTMENT OF TRANSPORTATION

July 2009

Disclaimer

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1.0 INTRODUCTION

1.1 Permit Background

The Arizona Department of Transportation (ADOT) is regulated under the Arizona Pollutant Discharge Elimination System (AZPDES) permitting program because it owns and operates a statewide MS4 (municipal separate storm sewer system). MS4s (as defined in 40 Code of Federal Regulations [CFR] §122.26[b][8]) include any publicly owned conveyance or system of conveyances used for collecting and conveying stormwater that discharges to “waters of the United States” (WUS). Such a system may include roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, or storm drains. The term “municipality” (as defined at 40 CFR §122.2) applies to ADOT as a public body that has jurisdiction over disposal of sewage, industrial wastes, or other wastes.

ADOT’s current AZPDES permit (ADOT Permit) was issued on August 15, 2008, by the Arizona Department of Environmental Quality (ADEQ). This permit replaces the original National Pollutant Discharge Elimination System (NPDES) permit issued by U.S. Environmental Protection Agency (USEPA) on September 30, 1999. The scope of the current permit includes all stormwater discharges associated with statewide construction, industrial, and MS4 activities under ADOT’s purview.

1.2 Monitoring Requirements Overview

The ADOT Permit requires monitoring of stormwater and non-stormwater discharges associated with municipal activities under ADOT control and reporting of those monitoring results to ADEQ. The following types of MS4 monitoring are required under the ADOT Permit and will be discussed in this manual:

- Wet-weather monitoring at outfalls for compliance with Arizona Surface Water Quality Standards (SWQS)
- Dry-weather field screening and analytical monitoring to detect and eliminate illicit discharges

This manual will assist ADOT to comply with the monitoring requirements of the ADOT Permit and ensure that monitoring results are properly recorded and reported. This manual identifies the following:

- The water quality parameters to be monitored
- When and how to monitor
- Documentation requirements
- Instructions on how to record monitoring results
- When and where to report monitoring results

The most significant change from previous permits requires the updating of this monitoring manual to describe a comprehensive approach to dry-weather field screening. As part of the ADOT permit's requirements, this updated manual will also include the following:

- Dry-weather field screening methodology
- Water quality impacts assessment

Additionally, the water quality standards for discharges from ADOT's MS4 under the ADOT Permit are tied to Arizona's current SWQS (Arizona Administrative Code [A.A.C.] Title 18, Chapter 11, Article 1). Note, however, that individual water quality parameters may change pending adoption of the December 2008 amended SWQS by ADEQ. All criteria for surface water quality parameters listed within this manual will adhere to the revised SWQS once approved.

This manual is intended to be used by ADOT solely as guidance to clarify the reporting terms and conditions of the ADOT Permit. Please consult the ADOT Water Quality Group or the ADOT Permit for official requirements. Further references to stormwater monitoring protocols and instructions will be available in the ADOT Quality Assurance Manual (QAM).

2.0 WET-WEATHER MONITORING

ADOT shall collect stormwater samples from the first representative storm event of each wet season (June 1–October 31 and November 1–May 31) and subsequent representative storm events as necessary to collect at least one stormwater sample for each wet season from each outfall or monitoring location. Sampling shall be conducted over the first 3 hours of the discharge or for the entire discharge period, if the discharge lasts less than 3 hours. Sampling efforts should include the “first flush” (first 30 minutes of stormwater discharge) whenever possible. A representative storm event is defined in the ADOT Permit as a storm event of greater than 0.1 inch of rainfall and that occurs at least 72 hours after the previously measurable (greater than 0.1 inch of rainfall) storm event.

2.1 Monitoring Site Locations

Previous ADOT permits required wet-weather monitoring from only two representative locations, one in Phoenix and one in Tucson. For the first 12 months of the ADOT Permit term, ADOT will continue its existing monitoring program at these locations.

Wet-weather monitoring currently occurs at the following ADOT locations:

- Phoenix area – retention basin located at the northeast corner of 32nd Street and Loop 202
- Tucson area – south side of Interstate 10 and Grant Road within the ADOT Grant Road Maintenance Yard

In the second year of the permit, the current Phoenix monitoring station will be abandoned, and a new station will be identified and located where stormwater discharges directly into a WUS. The existing Tucson station will remain at the same location. Three additional monitoring stations shall be selected in accordance with Section 8.7.2.1(a)(i–iv) of the ADOT Permit. ADOT shall identify and describe all five of the monitoring or outfall stations in the updated Statewide Stormwater Management Program (SSWMP).

If at any time during the permit term, a Total Maximum Daily Load (TMDL) is established for any receiving water into which ADOT is discharging, the discharging outfall(s) shall be added as an ADOT monitoring site location. The ADOT naming convention for monitoring sites consists of the route number followed by the mile post. For example, a monitoring site along Loop 101 at mile post 3.5 would be named “101-3.5.”

2.2 Monitoring Frequencies and Parameters

ADOT shall collect stormwater samples from the first representative storm event of each wet season and subsequent representative storm events as necessary to collect at least one stormwater sample for each wet season from each outfall or monitoring location. Table 1 lists the parameters to be analyzed for each sample collected from ADOT monitoring locations, along with their associated frequencies. If samples for volatile organic compounds (VOCs), semi-VOCs, and pesticides cannot be collected in years 2 and 4, ADOT shall continue to monitor VOCs, semi-VOCs, and pesticides in

subsequent years to ensure that the parameter is analyzed from each outfall or monitoring location for at least two summer and two winter seasons during the permit term.

Table 1. Stormwater Monitoring Parameters

Parameter Group	Parameters	Sampling Frequency
Field Calculation:	<ul style="list-style-type: none"> Discharge (cubic feet per minute) 	Each time an outfall is sampled, for each aliquot
Conventionals	<ul style="list-style-type: none"> pH Temperature Hardness Specific conductance Total Dissolved Solids (TDS) (mg/L) Total Suspended Solids (TSS) (mg/L) Turbidity Biochemical Oxygen Demand (BOD) (mg/L) Chemical Oxygen Demand (COD) (mg/L) Surfactants 	Once each wet season for each year in the permit term
Inorganics	<ul style="list-style-type: none"> Cyanide, total (µg/L) Sulfates 	Once each wet season for each year in the permit term
Nutrients (mg/L):	<ul style="list-style-type: none"> Ammonia as N Nitrate (NO₃-N) Nitrite (NO₂-N) Total Kjeldahl Nitrogen (TKN) as N Total Phosphorus Ortho-P Sodium Calcium Chloride 	Once each wet season for each year in the permit term
Microbiological	<ul style="list-style-type: none"> <i>E. coli</i> (CFU/100 mg or MPN) Fecal Coliform 	Once each wet season for each year in the permit term
Metals (µg/L): Metals shall be analyzed for total metals (a 1:1 ratio of total to dissolved is assumed)	<ul style="list-style-type: none"> Antimony Arsenic Barium Beryllium Cadmium Chromium Copper Lead Mercury Nickel Selenium Silver Zinc 	Once each wet season for each year in the permit term
Organic Toxic Pollutants	<ul style="list-style-type: none"> Total Petroleum Hydrocarbons (TPH) Total Oil and Grease (mg/L) Chlorine 	Once each wet season for each year in the permit term
BTEX Compounds (µg/L)	<ul style="list-style-type: none"> Benzene Ethyl benzene Toluene Total xylene 	Once each wet season for permit years 2 and 4

Table 1 (con't.). Stormwater Monitoring Parameters

Parameter Group	Parameters	Sampling Frequency
Acid Compounds (µg/L)	<ul style="list-style-type: none"> • 2-chlorophenol • 2,4-dichlorophenol • 2,4-dimethylphenol • 4,6-dinitro-o-cresol • 2,4-dinitrophenol • 2-nitrophenol • 4-nitrophenol • p-chloro-m-cresol • Pentachlorophenol • Phenol • 2,4,6-trichlorophenol 	Once each wet season for permit years 2 and 4
Bases/Neutrals (µg/L)	<ul style="list-style-type: none"> • Acenaphthene (PAH) • Acenaphthylene (PAH) • Anthracene (PAH) • Benz(a)anthracene (PAH) • Benzo(a)pyrene (PAH) • Benzo(b)fluoranthene (PAH) • Benzo(g,h,i)perylene (PAH) • Benzo(k)fluoranthene (PAH) • Chrysene (PAH) • Dibenzo(a,h)anthracene (PAH) • Diethyl phthalate • Dimethyl phthalate • Di-n-butyl phthalate • Di-n-octyl phthalate • 1,2-diphenylhydrazine (as azobenzene) • Fluoranthene (PAH) • Fluorene (PAH) • Indeno (1,2,3-cd)pyrene (PAH) • Naphthalene (PAH) • Phenanthrene (PAH) • Pyrene (PAH) 	Once each wet season for permit years 2 and 4
Pesticides (µg/L)	<ul style="list-style-type: none"> • Aldrin • Alpha-BHC • Beta-BHC • Gamma-BHC • Delta-BHC • Chlordane • 4,4'-DDT • 4,4'DDE • 4,4'-DDD • Dieldrin • Alpha-endosulfan • Beta-endosulfan • Endosulfan sulfate • Endrin • Endrin aldehyde • Heptachlor • Heptachlor epoxide • Toxaphene 	Once each wet season for permit years 2 and 4

In addition to the parameters listed in Table 1, for any outfall to an impaired water, ADOT is required to sample for the pollutants of concern listed on the 2004 303(d) list (Appendix A) once each wet season for each year of the permit term.

2.3 Sample Collection Time Frames

The ADOT permit requires that water quality monitoring be performed during two wet-weather seasons throughout the permit term (June 1–October 31 and November 1–May 31). Flow from a representative storm event shall be sampled at least once each wet season for each outfall or monitoring location. Sampling shall be conducted over the first 3 hours of the discharge or for the entire discharge period if it is less than 3 hours. Sampling shall include the first 30 minutes of stormwater discharge (first flush) whenever possible.

2.4 Sample Collection Method

ADOT shall assess the applicable sampling requirements on an outfall-by-outfall basis using a method specified in the ADOT permit or a test procedure listed in 40 CFR 136 or in 9 A.A.C. 14, Article 6 (see QAM for more detail). Both discrete and flow-weighted composite samples of stormwater discharge shall be collected as follows:

- Discrete manual samples for cyanide, oil and grease, TPH, *E. coli*, and VOCs
- Field measurements for flow, pH, and temperature
- Flow-weighted composite samples for all other parameters listed in Table 1

A discrete manual (or grab) sample can define water quality at a distinct point in time. These samples are easily collected and are favored when the anticipated water quality of the discharge is homogeneous, or unchanging, in nature. A flow-weighted composite sample will define representative water quality over a measured period of time. These samples are favored when the anticipated water quality of the discharge is heterogeneous, or fluctuating, in nature.

Sample collection protocol to be used is detailed in the ADOT QAM. Proper procedures, such as collection methods, quality assurance/quality control (QA/QC) samples, preservative to use, and holding times for the samples, will be outlined in the ADOT QAM. All samples taken to meet the monitoring requirements in this permit shall conform to these procedures, whether collection and handling is performed directly by ADOT or contracted to a third party.

3.0 DRY-WEATHER MONITORING (FIELD SCREENING)

The primary objective of dry-weather monitoring is to detect and eliminate inappropriate, illicit dry-weather discharges to and from ADOT's MS4s. Dry-weather monitoring, or field screening, will result in numerous outfalls being investigated or "screened" at least once each year to identify illicit connections and illegal dumping activity. Outfalls where non-stormwater flows are detected shall be monitored at a higher frequency to identify and/or eliminate the discharge source.

Elimination of illicit connections and illegal discharges is a multi-step process that includes identifying source(s), education and/or enforcement, best management practice implementation, and follow-up investigations. It is important to return to the site once the source has been eliminated to confirm that the source was identified correctly and that dry-weather flow has stopped.

3.1 Monitoring Site Locations

Dry-weather field screening shall occur at the following ADOT locations:

- Previously identified outfalls
- Yet-to-be-identified outfalls

The 2005 Phase I and Phase II Stormwater System Maps identify 71 major outfalls where dry-weather monitoring is to occur. The ADOT permit requires half of the 71 outfalls to be inspected within the first year of the permit and the remainder of these outfalls to be inspected in the second year of the permit term. After year 2, annual inspection is required at all 71 monitoring locations. Additional outfalls will be identified, and ADOT is required to field screen at least 500 major outfalls or all major outfalls in the system, if less. Dry-weather field screening shall take place either at major outfalls or at other outfall points (or access points such as manholes).

The location and total number of all major stormwater outfalls operated by ADOT is unknown at this time. During the permit term, ADOT shall develop a map identifying all of ADOT's major and priority outfalls. A priority outfall is defined as 1) an outfall that discharges to an impaired, not attaining, or unique receiving water; 2) an outfall located in areas with a high potential for illicit discharges, such as industrial facilities; or 3) an outfall known to have discharged an illicit discharge(s) in the past five years. Inspection of all identified priority outfalls is also required at least once during the ADOT Permit term.

The ADOT naming convention for outfall monitoring locations consists of the route number followed by the mile post. For example, a monitoring site along Loop 101 at mile post 3.5 would be named "101-3.5."

3.2 Monitoring Frequencies and Parameters

Dry-weather field screening consists of three types of monitoring: 1) qualitative field screening observations of physical and biological conditions, 2) flow measurements if flowing discharges are present, and 3) analytical monitoring if flowing discharges are present. Following is a detailed discussion of each.

3.2.1 Qualitative Observations

Qualitative field observations must be made and documented on the dry-weather field screening data sheet (Appendix B) during each site visit, and photographs should be taken. Observations can be categorized as a) non-flowing, b) evidence of past discharge, c) flowing discharge, or d) flowing discharge from obvious source. General field observations to be made during each site visit for all categories of discharge include the following:

- location, type and condition of the outfall
- presence of floatables
- visible deposits or staining
- vegetation conditions
- weather conditions
- time since last rainfall

Table 2 presents required follow-up actions that must be taken for each category of observation.

Table 2. Follow-Up Actions to Dry-Weather Field Screening Observations

Category	Action
Non-flowing, no ponded water	<ul style="list-style-type: none">• Document general field parameters on field data sheet
Non-flowing, non-ponded water but evidence of past discharge	<ul style="list-style-type: none">• Document general field parameters on field data sheet• Continue to monitor as necessary to identify and/or eliminate the source
Flowing discharge	<ul style="list-style-type: none">• Document general field parameters on field data sheet• Conduct source investigation within 15 days• Include analytical monitoring if source cannot be readily identified
Flowing discharge from obvious source	<ul style="list-style-type: none">• Document general field parameters on field data sheet• Immediately begin efforts to eliminate discharge

3.2.2 Flow Measurements

Flow measurements should be obtained during each site visit at sites with flowing discharges. The discharge rate can be measured using either a permanent flow measurement instrument or field methods. These measurements can be useful for the following:

- estimating pollutant mass loading
- prioritizing outfalls for future investigation
- identify significant changes in discharge that may be indicative of an illegal release upstream

Flow measurements and methods should be documented on the dry-weather field screening data sheet.

3.2.3 Visual Attributes

At each monitoring site where flowing water is present, a narrative description of the following information shall be recorded on the field data sheet:

- water color
- odor
- turbidity
- the presence of an oil sheen, surface scum, foam, or other floatables
- any other relevant observations regarding non-storm water discharges or illegal dumping

3.2.4 Analytical

In addition, to help identify the source of the discharge, grab samples may be collected for field or laboratory analysis of water quality indicator parameters. Indicator parameters can be used to identify a specific discharge or discriminate between different discharges. A narrative description of the results of indicator parameter analysis and methods used shall be provided on the field data sheet. Suggested indicator parameters include the following:

- Bacteria (Total Coliform, Fecal Coliform, *E. coli*, or *Enterococcus*)
- Detergents
- Surfactants
- Boron
- Optical Brighteners
- Ammonia-N
- Potassium
- Fluoride
- Chlorine
- Hardness
- Conductivity (TDS)
- Turbidity
- pH
- Temperature

Many of the indicator parameters can be measured in the field and are an excellent screening tool to indicate, or rule out, potential sources of discharge. Field measurements are a quick way to evaluate and investigate dry-weather flows; however, there may be times when it is necessary to verify the field test results by collecting and submitting samples to an analytical laboratory. Indicator parameters vary across different communities, and no single analysis is adequate to identify a source. To help distinguish one type of illicit discharge from another, a combination of indicator parameters should be selected based on local conditions and discharge types. General guidance to help characterize possible sources of illicit discharges based on indicator parameters is provided in Appendix A (Section G, Table 1) of the ADOT Permit.

Numerous monitoring parameters and techniques, such as smoke testing, video monitoring, and dye testing, are available and may be appropriate in certain situations for source identification investigations in MS4s with intricate storm drain networks or large drainage areas. A resource for these types of investigations can be found in the Center for Watershed Protection October 2004 guidance manual, *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*.

3.3 Sample Collection Time Frames

Under the ADOT Permit, dry-weather field screening is required for numerous outfalls at various times throughout the permit term, as indicated in Section 2.2 of this manual. When an outfall has dry-weather flow, two grab samples shall be collected within a 24-hour period, with a minimum period of 4 hours between samples.

4.0 ANALYTICAL METHODS

All analytical work shall be performed as described in 40 CFR 136 in accordance with ADOT quality control standards. Proper collection and analyses procedures for all ADOT monitoring are contained in the ADOT QAM. The QAM describes project management, sample collection procedures, approved analytical methods, and the data review process.

All samples collected for monitoring shall be analyzed using a method specified in the ADOT permit or, if not specified, ADOT shall analyze the pollutant as outlined in the QAM.

5.0 QUALITY ASSURANCE/QUALITY CONTROL

The ADOT Permit requires ADOT to develop and keep a QAM that documents ADOT policies and procedures ensuring adequate QA/QC for stormwater monitoring. The policies and procedures described in the QAM are intended to ensure that stormwater analytical data meet the requirements of the permit. The QAM shall be followed for all ADOT monitoring site.

5.1 Field Records

Field records must be kept to record all activities at each monitoring site. Information such as sample collection date and time, field measurements, observations, and discharge measurements is recorded in the field records. Field records are summarized as follows:

- Dry-weather field screening – Appendix B contains a blank Dry Weather Field Screening Site Report form
- Wet-weather monitoring – field data should be recorded on an Analytical Monitoring Report form (Appendix C)

6.0 REPORTING REQUIREMENTS

ADOT is required to document all stormwater monitoring—both in wet and dry weather. A separate form is completed for each monitoring site. All forms and data should be submitted to the ADOT Water Quality Group as they are completed. The compilation and submittal of the Annual Report are the responsibility of the Water Quality Manager. The Water Quality Manager will compare the analytical results to the applicable SWQS for the receiving water or to facility-specific assessment levels as identified in the Permit.

Wet-weather monitoring report forms and dry-weather field screening forms shall be submitted to the following address:

ADOT Office of Environmental Services
Water Quality Group
1611 W. Jackson Street, MD EM02
Phoenix, AZ 85007

Appendix B contains a blank Dry Weather Field Screening Site Report form, and Appendix C contains a blank Analytical Monitoring Report form, both of which may be photocopied. Fillable forms are available on the ADOT Water Quality website (http://www.azdot.gov/Highways/OES/Water_Quality/Index.asp).

ADOT is required to report the status of dry-weather field screening activities and is required to summarize an evaluation of the progress of the dry-weather field screening program in the Annual Report.

6.1 Records Retention

ADOT shall retain copies of all sampling data, monitoring information and forms, and copies of all reports for a period of at least 5 years from the expiration of the ADOT Permit (until 2018). ADEQ may extend the retention period at any time.

7.0 REFERENCES

- Aerotech Environmental Laboratories. 2004. *Laboratory Quality Manual*. Phoenix, Arizona.
- American Public Health Association, American Water Works Association, and Water Pollution Control Federation (APHA, AWWA, and WPCF). 1998. *Standard Methods for the Examination of Water and Wastewater*. 20th ed. Washington, D.C.
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- Center for Watershed Protection. 2004. *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*. October.
- . 2001. *Appendix D: Illicit Connection/Illegal Discharge Detection and Elimination Model Program Guidance*. San Diego Stormwater Co-permittees. November 13.
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- Flood Control District of Maricopa County. 1999. *Field Sampling Protocol (Version 4.5)*. Phoenix, Arizona.
- Maricopa Association of Governments. 1999. *Regional Transportation Plan*. Phoenix, Arizona.
- Pima Association of Governments. 1999. *Regional Transportation Plan*. Tucson, Arizona.
- U.S. Environmental Protection Agency. 2000. *Storm Water Discharges: U.S. Code of Federal Regulations, Title 40, Chapter 1, §122.26*. Office of Water, Washington, D.C.

8.0 GLOSSARY

303(d) List – The 303(d) list is a list of waterbodies that have a beneficial use that is impaired by one or more pollutants. The 303(d) list is required by Section 303(d) of the federal Clean Water Act (CWA). Waterbodies included on this list are referred to as “impaired waters.” The state must take appropriate action to improve impaired waterbodies by establishing TMDLs and reducing/eliminating pollutant discharges.

A.A.C. – Arizona Administrative Code

ADEQ – Arizona Department of Environmental Quality

ADOT – Arizona Department of Transportation: the permittee, owner/operator, and project managers of all its contractors and sub-contractors.

Assessment Level (AL) – A numeric value, expressed as a concentration or a physical or chemical property of a pollutant, that when exceeded may indicate a potential defect in the SWPPP or BMPs. Monitoring results that exceed ALs are not permit violations but require the permittee to re-evaluate the SWPPP or BMP effectiveness and assess the potential for improvements to reduce pollutants.

AZPDES – Arizona Pollutant Discharge Elimination System

Best Management Practices (BMPs) – Schedules of activities, prohibitions of practices, operation and maintenance procedures, and other management practices used to prevent or reduce pollution to waters of the U.S. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

BOD – Biochemical Oxygen Demand

CFR – Code of Federal Regulations

COD – Chemical Oxygen Demand

Contractor – Party responsible for carrying out the contract per plans and specifications.

CWA – Clean Water Act; the federal water pollution control act amendments of 1972 (Public Law 92-500;86Stat.816;33 United States Code [U.S.C.] Section 1251 through 1376), as amended (Arizona Revised Statutes [A.R.S.] §49-201[6]).

Discharge – Any release, spill, leak, pump, flow, escape, dumping, or disposal of any liquid, semisolid or solid substance. Also means any addition of any pollutant to waters of the United States from any point source (A.R.S. 49-255[2]).

Downstream – In the direction of the current of a stream.

Ephemeral flow – Surface water that has a channel that is at all times above the water table, that flows only in direct response to precipitation, and that does not support a self-sustaining fish population (A.A.C. R18-11-101).

Holding time – The maximum amount of time a sample may be stored before analysis; this includes time transporting a sample to the laboratory for analysis plus the time for the laboratory to begin sample evaluation.

Impaired water – A surface water that has been assessed by ADEQ or USEPA under Section 303(d) of the CWA as not attaining a water quality standard for at least one designated use and is listed in Arizona’s 303(d) and Other Impaired Waters List.

Intermittent flow – Surface water flows only at certain times of the year when receiving water from springs or from some surface source such as melting snow in mountainous areas (i.e., seasonal).

L – Liter; equal to 1,000 milliliters.

mg – Milligram; equal to 0.001 gram.

mg/L – Milligram per liter; roughly equivalent to one part per million.

mL – Milliliter; equal to 0.001 liter.

Monitoring – Refers to a variety of activities and processes through which ADOT will obtain information relevant to its implementation of the stormwater quality management program so that the need for and/or opportunities for revising or refining its program can be identified.

MS4 – Municipal separate storm sewer system; a conveyance of system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, and storm drains):

1. Owned or operated by a state, city, town, county, district, association, or other public body (created by or pursuant to state law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under state law such as a sewer district, flood control district or drainage district, or similar entity, or a designated and approved management agency under Section 208 of the CWA (22 U.S.C. 1288), that discharges to a water of the U.S.;
2. Designated or used for collecting or conveying stormwater;
3. That is not a combined sewer; and
4. That is not part of a publicly owned treatment work (A.A.C. R18-9-A901[22])

Nonpoint source – These sources of pollutants come from nondiscrete discharges such as atmospheric deposition, contaminated sediment, and land uses that generate polluted runoff like agriculture, urban land development, forestry, construction, and on-site sewage disposal systems. Nonpoint source pollution also encompasses activities that either change the natural flow regime of a stream or wetland or result in habitat disturbance.

Not attaining – Surface water is not attaining its uses, but a TMDL does not need to be completed because: 1) A TMDL has been approved and is being implemented, 2) Another action is occurring so that the surface water is expected to attain its uses before the next assessment, or 3) The impairment is due to pollution where a pollutant loading cannot be calculated (e.g., hydromodification).

NPDES – National Pollutant Discharge Elimination System; the point source discharge permit program established by §402 of the CWA (A.A.C. R18-11-101[32]).

Outfall – A point source as defined by 40 CFR 122.2 at the point where an MS4 discharges to waters of the U.S. and does not include open conveyances connecting two municipal separate storm sewers or pipes, tunnels, or other conveyances which conduct segments of the same stream or other waters of the U.S. and are used to convey waters of the U.S. (40 CFR 122.26[b][9]). Outfalls do not include crossdrain structures or culverts installed under a road that function only to maintain the natural flow of surface waters and drainage. However, a structure that collects or diverts drainage that has contacted the road surface for discharge into a waterbody is considered an outfall under the ADOT Permit.

Parameter – A variable, measurable property whose value is a determinant of the characteristics of a system; for example, temperature, pH, and turbidity are parameters of water.

Phase I – USEPA published permit application requirements for Phase I storm water sources on November 16, 1990. The regulations, promulgated on November 16, 1990 (*Federal Register* 55:47990), require NPDES permits for discharges from two broad categories of storm water discharges: 1) MS4s serving populations of 100,000 or more; and 2) discharges associated with industrial activity (including discharges from construction activities disturbing 5 acres or greater of total land area).

Phase II – The Phase II rule requires storm water discharges from small MS4s and small construction sites to be covered under an NPDES permit. Phase II covers “urbanized areas” that are defined as land areas comprising one or more places (central places) and the adjacent densely settled surrounding areas (urban fringe) that together have a residential population of at least 50,000 and an overall population density of at least 1,000 people per square mile. Phase II small construction sites designated by the rule are those that disturb between 1 and 5 acres of land. In addition, sites disturbing less than 1 acre would be subject to regulation if they are part of a larger common plan of development or sale.

Point source – Any discernible, confined, and discrete conveyance or collection system (e.g., pipe, channel, culvert, etc.) by which pollutants are or may be discharged.

Pollutant – Fluids, contaminants, toxic wastes, toxic pollutants, dredged spoil, solid waste, substances and chemicals, pesticides, herbicides, fertilizers and other agricultural chemicals, incinerator residue, sewage, garbage, sewage sludge, munitions, petroleum products, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and mining, industrial, municipal and agricultural wastes or any other liquid, solid, gaseous, or hazardous substances (A.R.S. 49-201[29]).

QAM – Quality Assurance Manual

QA/QC – Quality Assurance and Quality Control; a system of procedures, checks, audits, and corrective actions to ensure that all environmental monitoring and sampling, and other technical and reporting activities, are of the highest achievable quality.

Quality control – Individual procedures, checks, audits, and corrective actions taken to ensure that all environmental monitoring and sampling, and other technical and reporting activities, are of the highest achievable quality.

Sample – A small amount of water collected from a larger portion intended to show the nature and quality of the rest.

Sampling – The act of collecting samples.

Sediment – Organic or inorganic material that is carried by or is suspended in water and that settles out to form deposits in the storm drain system or receiving waters.

Sensitive receiving water – Impaired and not-attaining waters.

SSWMP – Statewide Stormwater Management Program; a comprehensive program to manage the quality of stormwater discharged from the storm sewer system in all areas within Arizona, except for Indian Country. The term Statewide Stormwater Management Program is also used to refer to the written document that describes the SSWMP.

Surface receiving water – A surface water that has a stormwater discharge flowing into it.

Surface water – A water of the U.S. that includes the following:

- A water that is currently used, was used in the past, or may be susceptible to use in interstate or foreign commerce;
- An interstate water, including an interstate wetland;
- All other waters, such as in intrastate lake, reservoir, natural pond, river, stream (including an intermittent or ephemeral stream), creek, wash, draw, mudflat, sandflat, wetland, slough, backwater, prairie pothole, wet meadow, or playa lake, the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such water:
 1. That is or could be used by interstate or foreign travelers for recreational or other purposes;
 2. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
 3. That is used or could be used for industrial purposes by industries in interstate or foreign commerce;
- An impoundment of a surface water as defined by this definition;

- A tributary of a surface water identified in subsections (1) through (4) of this definition; and
- A wetland adjacent to a surface water identified in subsections (1) through (5) of this definition (A.A.C. R18-11-101[43]).

SWQS – Arizona Surface Water Quality Standards as provided in A.A.C. Title 18, Chapter 11, Article 1.

TDS – Total Dissolved Solids

TMDL – Total Maximum Daily Load; the maximum loading on a pollutant basis that a surface water can assimilate and still attain and maintain a specific water quality standard during all conditions. The TMDL allocates the loading capacity of the surface water to point sources and nonpoint sources identified in the watershed, accounting for natural background levels and seasonal variation, with an allocation set aside as a margin of safety.

TPH – Total Petroleum Hydrocarbons

TSS – Total Suspended Solids

Turbidity – A cloudy condition in water resulting from suspended silt or organic matter.

Upstream – Toward the source or upper part of a stream; against the current.

USEPA – U.S. Environmental Protection Agency

VOC – Volatile Organic Compounds; emitted as gases from certain solids or liquids.

Water quality standards – State-adopted and USEPA-approved ambient standards for water bodies. The standards prescribe the use of the water body and establish the water quality criteria that must be met to protect designated uses.

µg – Microgram; equal to 0.000001 gram.

µg/L – microgram per liter; roughly equivalent to one part per billion.

Appendix A

Arizona's 2004 303(d) and Other Impaired Waters List

Surface Water Stream Reach or Lake Number	Pollutants or Parameters of Concern	
	303(d) List TMDL required	TMDL completed or not required 4a = TMDLs complete but water quality remains impaired 4b = no TMDL required, water is impaired but expected to attain standards by next list
Bill Williams Watershed		
Alamo Lake AZL15030204-0040	Mercury in fish tissue, pH (high), ammonia	
Coors Lake AZL15030204-5000	Mercury in fish tissue	
Boulder Creek unnamed tributary - Wilder Creek AZ15030202-006B	Mercury	
Boulder Creek Wilder Creek – Copper Creek AZ15030202-005A	Wilder Creek – Butte Creek	4a Arsenic, copper, zinc
	Butte Creek – Copper Creek	4a Arsenic
Burro Creek Boulder Creek - Black Canyon AZ15030202-004	Mercury	
Colorado – Grand Canyon Watershed		
Colorado River Parashant Canyon - Diamond Creek AZ15010002-003	Selenium, suspended sediment concentration	
Paria River Utah border - Colorado River AZ14070007-123	Suspended sediment concentration	
Virgin River Beaver Dam Wash - Big Bend Wash AZ15010010-003	Selenium, suspended sediment concentration	
Colorado – Lower Gila Watershed		
Colorado River Hoover Dam - Lake Mohave AZ15030101-015	Selenium	
Gila River Coyote Wash - Fortuna Wash AZ15070201-003	Boron, selenium	
Painted Rock Borrow Pit Lake AZL15070201-1010	DDT metabolites, toxaphene and chlordane in fish tissue, dissolved oxygen	
Little Colorado – San Juan Watershed		
Bear Canyon Lake AZL15020008-0130	pH	
Lake Mary (lower) AZL15020015-0890	Mercury in fish tissue	
Lake Mary (upper) AZL15020015-0900	Mercury in fish tissue	
Little Colorado River West Fork of the Little Colorado River - Water Canyon Creek AZ15020001-011		4a Turbidity/suspended sediment concentration
Little Colorado River Water Canyon Creek - Nutrioso Creek AZ15020001-010		4a Turbidity/suspended sediment concentration
Little Colorado River Nutrioso Creek - Carnero Wash AZ15020001-009		4a Turbidity/suspended sediment concentration

Surface Water Stream Reach or Lake Number	Pollutants or Parameters of Concern	
	303(d) List TMDL required	TMDL completed or not required 4a = TMDLs complete but water quality remains impaired 4b = no TMDL required, water is impaired but expected to attain standards by next list
Little Colorado River unnamed reach (15020001-021) to Lyman Lake AZ15020001-005		4a Turbidity/suspended sediment concentration
Little Colorado River Silver Creek - Carr Wash AZ15020002-004	<i>Escherichia coli, sediment</i>	
Little Colorado River Porter Tank Draw - McDonalds Wash AZ15020008-017	Copper, silver, suspended sediment concentration	
Long Lake AZL15020008-0820	Mercury in fish tissue	
Lyman Lake AZL15020001-0850	Mercury in fish tissue	
Nutriosio Creek headwaters - Picnic Creek AZ15020001-017		4a Turbidity/suspended sediment concentration
Nutriosio Creek Picnic Creek - Little Colorado River AZ15020001-015		4a Turbidity/suspended sediment concentration
Rainbow Lake AZL15020005-1170		4a Nutrients and pH
Soldiers Lake AZL15020008-1440	Mercury in fish tissue	
Soldiers Annex Lake AZL15020008-1430	Mercury in fish tissue	
Middle Gila Watershed		
Alvord Park Lake AZL15060106B-0050	Ammonia	
Cash Mine Creek headwaters - Hassayampa River AZ15070103-349		4a Copper, zinc
Cash Mine Creek (unnamed tributary to) headwaters - Cash Mine Creek AZ15070103-415		4a Cadmium, copper, zinc
Chaparral Lake AZL15060106B-0300	Dissolved oxygen, <i>Escherichia coli</i>	
Cortez Park Lake AZL15060106B-0410	Dissolved oxygen, pH (high)	
French Gulch headwaters - Hassayampa River AZ15070103-239	Copper, zinc, cadmium	
Gila River Salt River - Agua Fria River AZ15070101-015	DDT metabolites, toxaphene and chlordane in fish tissue	
Gila River Agua Fria River - Waterman Wash AZ15070101-014	DDT metabolites, toxaphene and chlordane in fish tissue	
Gila River Waterman Wash - Hassayampa River AZ15070101-010	DDT metabolites, toxaphene and chlordane in fish tissue	
Gila River Hassayampa River - Centennial Wash AZ15070101-009	DDT metabolites, toxaphene and chlordane in fish tissue	
Gila River Centennial Wash - Gillespie Dam AZ15070101-008	DDT metabolites, toxaphene, and chlordane in fish tissue, boron, selenium	
Gila River Gillespie Dam - Rainbow Wash AZ15070101-007	DDT metabolites, toxaphene and chlordane in fish tissue	
Gila River Rainbow Wash - Sand Tank AZ15070101-005	DDT metabolites, toxaphene and chlordane in fish tissue	

Surface Water Stream Reach or Lake Number	Pollutants or Parameters of Concern	
	303(d) List TMDL required	TMDL completed or not required 4a = TMDLs complete but water quality remains impaired 4b = no TMDL required, water is impaired but expected to attain standards by next list
Gila River Sand Tank - Painted Rocks Reservoir AZ15070101-001	DDT metabolites, toxaphene and chlordane in fish tissue	
Hassayampa River headwaters - Copper Creek AZ15070103-007A		4a Cadmium, copper, zinc, and pH
Hassayampa River Buckeye Canal - Gila River AZ15070103-001B	DDT metabolites, toxaphene and chlordane in fish tissue	
Mineral Creek Devils Canyon - Gila River AZ15050100-012B	Copper, selenium	
Painted Rocks Reservoir AZL15070101-1020A	DDT metabolites, toxaphene and chlordane in fish tissue	
Queen Creek headwaters - Superior Mine WWTP AZ15050100-014A	Copper	
Queen Creek Superior Mine WWTP - Potts Canyon AZ15050100-014B	Copper	
Salt River 23rd Ave WWTP -Gila River AZ15060106B-001D	DDT metabolites, toxaphene and chlordane in fish tissue	
Turkey Creek unnamed tributary at 34°19'28" / 112°21'28" – Poland Creek AZ15070102-036B	Cadmium, copper, lead, zinc	
Salt River Watershed		
Canyon Lake AZL15060106A-0250	Dissolved oxygen	
Christopher Creek headwaters - Tonto Creek AZ15060105-353		4a Escherichia coli
Crescent Lake AZL15060101-0420	pH (high)	
Gibson Mine tributary headwaters - Pinto Creek AZ15060103-887		4a Copper
Pinto Creek headwaters – tributary at 33°19'27" / 110°54'56" AZ15060103-018A		4a Copper
Pinto Creek tributary at 33°19'27" / 110°54'56" – Ripper Spring AZ15060103-018B		4a Copper
Pinto Creek Ripper Spring - Roosevelt Lake AZ15060103-018C	Selenium, copper	
Salt River Stewart Mountain Dam - Verde River AZ15060106A-003	Dissolved oxygen, copper	
Tonto Creek headwaters - unnamed tributary at 34°18'10" / 111°04'14" AZ15060105-013A	Dissolved oxygen, nitrogen	4a Escherichia coli
Tonto Creek unnamed tributary at 34°18'10" / 111°04'14" – Haigler Creek	Nitrogen	4a Escherichia coli
San Pedro – Willcox Playa – Rio Yaqui Watershed		
Brewery Gulch headwaters - Mule Gulch AZ15080301-337	Copper	

Surface Water Stream Reach or Lake Number	Pollutants or Parameters of Concern	
	303(d) List TMDL required	TMDL completed or not required 4a = TMDLs complete but water quality remains impaired 4b = no TMDL required, water is impaired but expected to attain standards by next list
Mule Gulch headwaters - above Lavender Pit AZ15080301-090A	Copper	
Mule Gulch above Lavender Pit - Bisbee WWTP AZ15080301-090B	Copper, pH (low)	
Mule Gulch Bisbee WWTP - Highway 80 Bridge AZ15080301-090C	Copper, zinc, pH (low), cadmium	
San Pedro River Mexico border - Charleston AZ15050202-008	Copper	
San Pedro River Babocomari Creek - Dragoon Wash AZ15050202-003	<i>Escherichia coli</i>	
San Pedro River Dragoon Wash - Tres Alamos Wash AZ15050202-002	Nitrate	
San Pedro River Aravaipa Creek - Gila River AZ15050203-001	<i>Escherichia coli</i> , selenium	
Santa Cruz – Rio Magdalena – Rio Sonoyta Watershed		
Alum Gulch headwaters - 31°28'20" / 110°43'51" AZ15050301-561A		4a Cadmium, copper, pH (low), zinc
Alum Gulch 31°28'20" / 110°43'51" - 31°29'17" / 110°44'25"		4a Cadmium, copper, pH (low), zinc
Arivaca Lake AZL15050304-0080		4a Mercury in fish tissue
Cox Gulch headwaters - 3R Canyon AZ15050301-560		4a Cadmium, copper, zinc, and pH (low)
Cox Gulch, (unnamed tributary of) headwaters - Cox Gulch AZ15050301-877		4a Cadmium, copper, zinc, and pH (low)
Harshaw Creek headwaters - Sonoita Creek AZ15050301-025		4a Copper and pH (low)
Harshaw Creek, (unnamed tributary of) (Endless Chain Mine tributary) headwaters - Harshaw Creek AZ15050301-888		4a Copper and pH (low)
Humbolt Canyon headwaters - Alum Gulch AZ15050301- 340		4a Cadmium, copper, zinc, and pH (low)
Lakeside Lake AZL15050302-0760	Dissolved oxygen, ammonia, nitrogen, phosphorus, chlorophyll	
Nogales and East Nogales washes Mexico border - Potrero Creek AZ15050301-011	Chlorine, <i>Escherichia coli</i> , ammonia, copper	
Parker Canyon Lake AZL15050301-1040	Mercury in fish tissue	
Pena Blanca Lake AZL15050301-1070		4a Mercury in fish tissue
Rose Canyon Lake AZL15050302-1260	pH	

Surface Water Stream Reach or Lake Number	Pollutants or Parameters of Concern	
	303(d) List TMDL required	TMDL completed or not required 4a = TMDLs complete but water quality remains impaired 4b = no TMDL required, water is impaired but expected to attain standards by next list
Santa Cruz River Mexico border - Nogales WWTP AZ15050301-010	<i>Escherichia coli</i>	
Sonoita Creek 750 feet below WWTP - Santa Cruz River AZ15050301-013C	Zinc	4b Dissolved oxygen
Three R Canyon headwaters - 31°28'35" / 110°46'19" AZ15050301-558A		4a Cadmium, copper, pH (low), zinc
Three R Canyon 31°28'35" / 110°46'19" - 31°28'27" / 110°47'12" AZ15050301-558B		4a Cadmium, copper, pH (low), zinc
Three R Canyon 31°28'27" / 110°47'12" – Sonoita Creek AZ15050301-558C		4a Copper and pH (low)
Three R Canyon, (unnamed tributary of) headwaters - Three R Canyon AZ15050301-889		4a Cadmium, copper, zinc, and pH (low)
Upper Gila Watershed		
Cave Creek headwaters - South Fork of Cave Creek AZ15040006-852A	Selenium	
Gila River Skully Creek - San Francisco River AZ15040002-001	Selenium	
Gila River Bonita Creek - Yuma Wash AZ15040005-022	<i>Escherichia coli, sediment</i>	
Luna Lake AZL15040004-0840		4a Dissolved oxygen, pH (high), and a fish kill in 1999 (addressed through nutrient TMDL)
San Francisco River headwaters - New Mexico border AZ15040004-023	Sediment	
Verde River Watershed		
East Verde River Ellison Creek - American Gulch AZ15060203-022B	Selenium	
Grande Wash headwaters - Ashbrook Wash AZ15060203-991		4b <i>Escherichia coli</i>
Granite Creek headwaters - Willow Creek AZ15060202-059A	Dissolved oxygen	
Oak Creek At Slide Rock State Park AZ15060202-018B		4a <i>Escherichia coli</i>
Pecks Lake AZL15060202-1060		4a Dissolved oxygen (addressed through nutrient TMDL)
Stoneman Lake AZL15060202-1490		4a pH (high) (addressed through nutrient TMDL)
Verde River Oak Creek - Beaver Creek AZ15060202-015		4a Turbidity/suspended sediment concentration

Surface Water Stream Reach or Lake Number	Pollutants or Parameters of Concern	
	303(d) List TMDL required	TMDL completed or not required 4a = TMDLs complete but water quality remains impaired 4b = no TMDL required, water is impaired but expected to attain standards by next list
Verde River Beaver Creek - HUC boundary 15060203 AZ15060202-001		4a Turbidity/suspended sediment concentration
Verde River West Clear Creek - Fossil Creek AZ15060203-025		4a Turbidity/suspended sediment concentration
Verde River Bartlett Dam - Camp Creek AZ15060203-004	Selenium, copper	
Watson Lake AZL15060202-1590	Nitrogen, dissolved oxygen, pH	
Whitehorse Lake AZL15060202-1630	Dissolved oxygen	

Appendix B

Dry Weather Field Screening Site Report Form



DRY WEATHER FIELD SCREENING SITE REPORT

General Information	
Outfall Name/ID: _____	
Date: _____	Time: _____ Amount of time since last rainfall: _____
Inspector(s): _____	
Immediate Surrounding Land Use Type: (circle one)	
<input type="checkbox"/> Industrial <input type="checkbox"/> Commercial <input type="checkbox"/> Residential <input type="checkbox"/> Municipal <input type="checkbox"/> Agriculture <input type="checkbox"/> Mixed <input type="checkbox"/> Unknown	
Receiving Water: _____	
(water of the U.S., USGS map waters, or ADEQ designated waters)	
Access Instructions: _____	
(nearest intersection or landmark)	

I. Outfall Information

Type	Shape	Material	Dimensions	Condition
<input type="checkbox"/> Single	<input type="checkbox"/> Box	<input type="checkbox"/> CMP	<input type="checkbox"/> less than 6"	<input type="checkbox"/> Good
<input type="checkbox"/> Double	<input type="checkbox"/> Circular	<input type="checkbox"/> HDPE	<input type="checkbox"/> 12"-35"	<input type="checkbox"/> Poor
<input type="checkbox"/> Triple	<input type="checkbox"/> Elliptical	<input type="checkbox"/> PVC	<input type="checkbox"/> 36"-59"	<input type="checkbox"/> Needs work (explain)
<input type="checkbox"/> Other: _____	<input type="checkbox"/> Trapezoid	<input type="checkbox"/> RCP	<input type="checkbox"/> 60" and greater	
	<input type="checkbox"/> Parabolic	<input type="checkbox"/> Steel		
	<input type="checkbox"/> Other: _____	<input type="checkbox"/> Concrete		
		<input type="checkbox"/> Earthen		
		<input type="checkbox"/> Rip-rap		
		<input type="checkbox"/> Other: _____		

Photograph of Outfall (note file name): _____

II. Outfall Discharge

Flow*	Smell	Floatables	Vegetative/Algae	Deposits
<input type="checkbox"/> Dry	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None
<input type="checkbox"/> Slow	<input type="checkbox"/> Musty	<input type="checkbox"/> Sewage	<input type="checkbox"/> Normal	<input type="checkbox"/> Sediment
<input type="checkbox"/> Moderate	<input type="checkbox"/> Sewage	<input type="checkbox"/> Oil sheen	<input type="checkbox"/> Excessive	<input type="checkbox"/> Oil
<input type="checkbox"/> Fast	<input type="checkbox"/> Rotten eggs	<input type="checkbox"/> Soap suds	<input type="checkbox"/> Inhibited	<input type="checkbox"/> Other: _____
	<input type="checkbox"/> Solvent	<input type="checkbox"/> Other: _____	(If no flow but excessive or inhibited growth, schedule additional site visit).	
	<input type="checkbox"/> Chlorine			
	<input type="checkbox"/> Other: _____			

<p>Visual Observations</p> <p>(If flow is present complete the following and schedule additional site visit. Report discharge to ADOT Water Quality Group and conduct source investigation within 15 days. See Appendix A, Section G of the ADOT permit for further information on source identification investigations.)</p>
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<p>1st Visit Date/Time: _____ Precipitation <96 hours? Yes / No Flow? Yes / No pH: : _____su Color: # _____ Cl2: _____ppm Ammonia: _____ppm Cu: _____ppm Oil sheen: Y / N Phenols: _____ppm Surface scum: Y / N Deterg: _____ppm Air Temp: _____°F Turbidity: _____NTU Water Temp: _____°F</p> <p style="text-align: center;">Attach copy of Chain of Custody Record (see manual for example form)</p> <p>Physical Observations (1st Visit): (circle appropriate, for "other" write in description)</p> <p><u>Deposits</u>: none sediments oily other <u>Odor</u>: none musty sewage rotten eggs solvent chlorine other <u>Biological</u>: none fish algae other Signature: _____</p>	<p>2nd Visit (>4 hours and <24 hours later) Date/Time: _____ Precipitation <96 hours? Yes / No Flow? Yes / No pH: : _____su Color: # _____ Cl2: _____ppm Ammonia: _____ppm Cu: _____ppm Oil sheen: Y / N Phenols: _____ppm Surface scum: Y / N Deterg: _____ppm Air Temp: _____°F Turbidity: _____NTU Water Temp: _____°F</p> <p style="text-align: center;">Attach copy of Chain of Custody Record (see manual for example form)</p> <p>Physical Observations (2nd Visit): (circle appropriate, for "other" write in description)</p> <p><u>Deposits</u>: none sediments oily other <u>Odor</u>: none musty sewage rotten eggs solvent chlorine other <u>Biological</u>: none fish algae other Signature: _____</p>
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<p>1st Visit Use one of the following: A. Free Fall into container: Volume: _____(gal) Time: _____(sec) B. Channel/pipe Flow (provide sketch): Depth: _____(in) Width: _____(in) Velocity: _____(ft/sec)</p> <p>Discharge estimate: _____(gpm)</p>	<p>2nd Visit (>4 hours and <24 hours later) Use one of the following: A. Free Fall into container: Volume: _____(gal) Time: _____(sec) B. Channel/pipe Flow (provide sketch): Depth: _____(in) Width: _____(in) Velocity: _____(ft/sec)</p> <p>Discharge estimate: _____(gpm)</p>
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Additional Notes (sketch [use additional sheets if necessary], flow data, observations):

Appendix C

Analytical Monitoring Report Form



ANALYTICAL MONITORING REPORT

(COMPLETE A SEPARATE FORM FOR EACH MONITORING POINT)

Facility Name:		Monitoring Point:	
Year:	Date/Time Collected:	Monitoring Personnel Name(s):	
Time Rainfall Began:	Duration of Rainfall Event (hours):	Rainfall Amount (inches):	
Runoff Source: Rainfall or Snowmelt	Time Elapsed Since Last 0.1 inch Rainfall Event (hours):	Qualifying Rainfall Event: YES or NO	
Estimated Total Volume of Discharge (Include units; gal, ft³, etc.):			
PARAMETER	SAMPLE TIME	HOW WAS SAMPLE COLLECTED?	QC SAMPLES
1.			Duplicate Split
2.			Duplicate Split
3.			Duplicate Split
4.			Duplicate Split
5.			Duplicate Split
Remarks, calculations, mine dewatering information, unusual circumstances that may affect sample results, additional information:			
Signature of Monitoring Personnel:			