FACT SHEET AND SUPPLEMENTAL INFORMATION

FOR THE PROPOSED ISSUANCE OF A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORM WATER GENERAL PERMIT FOR MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4s) IN THE MIDDLE RIO GRANDE WATERSHED (NMR04A000)

April 17, 2013

U.S. Environmental Protection Agency
Region 6
1445 Ross Ave.
Dallas, TX 75202

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FACT SHEET AND SUPPLEMENTAL INFORMATION

I. SUMMARY

The Director of the EPA Region 6 Water Quality Management Division is proposing to issue a NPDES general permit for storm water discharges from municipal separate storm sewer systems (MS4s) located in the Middle Rio Grande Watershed in the State of New Mexico. This permit offers discharge authorization to regulated MS4s within the boundaries of the Bureau of the Census-designated 2000 and 2010 Albuquerque Urbanized Areas and any other MS4s in the watershed designated by the Director as needing a MS4 permit. This permit is intended to replace both the individual NPDES Permit NMS000101 issued on January 31, 2012 and the expired general permits NMR040000 and NMR04000I for dischargers in this watershed area. Note that a separate general permit action(s) will be undertaken in the near future to replace the general permits for coverage elsewhere within the State of New Mexico and on Indian Country Lands located within New Mexico.

There will be opportunities for the public to provide comments on the draft permit during a sixty (60) day public comment period starting on the date notice is published in the Federal Register. Following permit authorization, annual reports on the status of program implementation and any proposed changes to the SWMP will be required and there will also be opportunities for local review and input on the annual reports prior to submittal to EPA.

II. BACKGROUND

The following is an overview of the basic requirements of the NPDES storm water permit program, the requirements of the proposed general permit, and the planning activities carried out during the development of the permit. Additional information may be obtained via the EPA Storm Water Program website at: http://www.epa.gov/npdes/stormwater.

A. Basis for Permit Conditions

1. Statutory and Regulatory Basis for Permit Conditions

The discharge control conditions established by this permit are based on Section 402(p)(3)(B) of the Act which mandates that a permit for discharges from MS4s must effectively prohibit the discharge of non-stormwater to the MS4; and require controls to reduce pollutants in discharges from the MS4 to the maximum extent practicable (MEP) including best management practices (BMPs), control techniques, and system, design and engineering methods, and such other provisions as the Administrator deems appropriate for the control of pollutants. MEP is the statutory standard that established the level of pollutant reductions that MS4 operators must achieve. MEP is the statutory standard that established the level of pollutant reductions that both Phase I and Phase II MS4 operators must achieve. MS4 permits requiring implementation of Best Management Practices (BMPs) addressing the Six Minimum Control Measures at 40 CFR 122.34(b) are generally deemed to be an appropriate means of meeting the MEP standard. The overall intent of the permit conditions is to support the statutory goals of Section 101 of the Act to restore and maintain the chemical, physical and biological integrity for the Nation's waters. The 1987 Water Quality Act (WQA) amended

the Clean Water Act (CWA) by adding section 402(p) which requires that NPDES permits be issued for various categories of storm water discharges. Section 402(p)(2) requires permits for five categories of storm water discharges, commonly referred to as Phase I of the NPDES Storm Water Program. Included in Phase I are discharges from large MS4s (systems serving a population of 250,000 or more and medium MS4s (systems serving a population of 100,000 to 250,000). Phase I regulations (40 CFR 122.26) published November 16, 1990 (55 FR 47990) addressed discharges from large MS4s including city of Albuquerque MS4, which includes all MS4s located within the corporate boundary of the city of Albuquerque.

Section 402(p)(6) of the CWA requires permitting for certain additional storm water discharges (Phase II of the storm water program) to protect water quality. EPA promulgated final Phase II storm water regulations on December 8, 1999 (64 FR 68722). These regulations set forth the additional categories of discharges to be permitted and the requirements of the program. The additional discharges to be permitted included small MS4s located in Urbanized Areas designated by the Bureau of the Census and those designated by the Director on a case-by-case basis to protect water quality. Provisions and criteria for waivers were included for MS4s with a population under 1,000 (40 CFR 122.32(d) and under 10,000 (40 CFR 122.32 (e). These waivers must be reconsidered every five years. This proposed permit would combine coverage for both Phase I and Phase II regulated MS4s in the Albuquerque area into a single general permit.

Section 402(p)(3)(B) of the Act is silent on the issue of compliance with water quality standards for MS4 discharges. Protection of water quality and compliance with TMDLs are addressed through the CWA 402(p)(3)(B)(iii) authority for "other such provisions as the Administrator deems appropriate for the control of pollutants." Note also that under section 402(p)(6), "stormwater discharges" from certain small MS4s were designated "to be regulated to protect water quality . . .". On August 1, 1996, EPA issued the Interim Permitting Approach for Water Quality-Based Effluent Limitations in Storm Water Permits policy that addressed use of Best Management Practices (BMPs) in storm water permits to provide for attainment of water quality standards. The memorandum explains the rationale being implemented for the draft permit. As described in the memorandum, the Clean Water Act (Act) does not always require numeric effluent limitations to meet technology and water quality requirements. Section 502 defines "effluent limitations" to mean any restriction on quantities, rates and concentrations of constituents discharged from point sources. EPA has, through regulation, interpreted the statute to allow non-numerical limitations to supplement or replace numeric limitations in specific instances that meet the criteria at 40 CFR §122.44(k). This is consistent with the court's decision in NRDC v. Costle, 568 F.2d 1369 (D.C. Cir. 1977), in which the court held that EPA need not establish numeric effluent limitations where such limitations were infeasible. In September 1999, the Ninth Circuit Court addressed the water quality standards issue and ruled that water quality standards compliance by MS4s is discretionary on the part of the permitting authority (Defenders of Wildlife v. Browner, 191 F.3d 1159 (9th Cir. 1999)). On November 22, 2002, the Directors of EPA's Office of Wetlands, Oceans, and Watersheds and the Office of Wastewater Management clarified NPDES permit requirements based on Total Maximum Daily Loads (TMDLs) addressing storm water sources in Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs memo to regional Water Division Directors. On November 12, 2010, the Environmental Protection Agency (EPA) issued a memorandum entitled "Revisions to the November 22, 2002 Memorandum "Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs". The memorandum is available at: http://www.epa.gov/npdes/pubs/establishingtmdlwla_revision.pdf. The 2010 memorandum reflects the considerable experience States and EPA have obtained in developing TMDLs and stormwater

permits since 2002. Where a TMDL addresses storm water discharges from an MS4 or other regulated storm water discharge, NPDES permits must be consistent with assumptions and requirements of the Waste Load Allocations in the TMDL. EPA expects that most water quality-based effluent limits for NPDES-regulated MS4 discharges will be in the form of Best Management Practices, and that numeric limitations will be used in rare instances.

Proposed permit conditions requiring controls to mimic predevelopment runoff for up to the 90th percentile storm are intended to reduce the pollutants in discharges from new or significant re-development. The controls will also have benefits for flood control and reduction on impacts on natural channels due to changes in hydrology. Note that there are a number of places in section 402(p) where "stormwater discharges" rather than "pollutants" are covered. For example, under section 402(p)(1) and (2), "stormwater discharges composed entirely of stormwater" from large and medium MS4s are required to have NPDES permits. Under section 402(p)(6), "stormwater discharges" from certain small MS4s were designated "to be regulated to protect water quality . . .". Even in section 402(p)(3)(B)(iii) where the statute requires that MS4 permits include "controls to reduce pollutants" in MS4 discharges, the means for requiring reduction in pollutants includes "management practices, control techniques and system design and engineering methods, . . .".

Program areas incorporated into the 2003 Albuquerque MS4 permit were based on the 1990 Phase I permit application requirements at 40 CFR 122.26(d). Since both Phase I and Phase II MS4s are subject to the same MEP standard of the Act, EPA Region 6 took into consideration the 1999 Phase II MS4 permit requirements at 40 CFR 122.34 to set the regulatory requirements for both Phase I and Phase II MS4s located in the Middle Rio Grande watershed. For the most part, the Six Minimum Measures at 40 CFR 122.34 correspond to existing program elements in the reissued 2012 Albuquerque MS4 permit (NMS000101), with addition of compliance schedules for MS4s implementing cooperative programs and new MS4s. Any MS4 designated as needing a permit after issuance of this permit could be given an alternate compliance schedules by the Director at the time of designation. Phase II minimum permit requirements have been incorporated into today's permit to ensure that the MEP level of effort expected of Albuquerque, a Phase I large municipal separate storm sewer system, is no less than that required of small Phase II MS4s.

As authorized by 40 CFR 122.44(k), the permit utilizes controls in the form of a comprehensive SWMP, as the mechanism to implement the statutory requirements. Section 402(p)(3)(B)(iii) of the Act clearly includes structural controls as a component of the MEP requirement. EPA encourages permittees to explore opportunities for pollution prevention measures, while reserving the more costly structural controls for higher priority watersheds, or where pollution prevention measures are unfeasible or ineffective. See Table 1a for a list of potential permittees.

References to regulations at 40 CFR 122 are those effective as of April 1, 2013.

Table 1a. Potential Permittees Eligible for Coverage under the Permit.

Permittee Class Type	Description	Entity
Class A	MS4s within the Cooperate Boundary of the COA including former co-permittees under the NPDES permit No NMS000101	-City of Albuquerque -AMAFCA (Albuquerque Metropolitan Arroyo Flood Control) -UNM (University of New Mexico) -NMDOT (New Mexico Department of

		Transportation District 3)
Class B	MS4s designated under 40 CFR 122.32(a)(1). Based on 2000 Decennial Census Map	-Bernalillo County -Sandoval County -Village of Corrales -City of Rio Rancho -Los Ranchos de Albuquerque -KAFB (Kirtland Air Force Base) -Town of Bernalillo -EXPO (State Fairgrounds/Expo NM) -SSCAFCA (Southern Sandoval County Arroyo Flood Control Authority)
Class C	MS4s designated under 40 CFR 122.26(a)(1)(v), 40 CFR 122.26(a)(9)(i)(C) or (D), or 40 CFR 122.32(a)(2) or MS4s newly designated under 122.32(a)(1) based on 2010 Decennial Census Map	-ESCAFCA (Eastern Sandoval County Arroyo Flood Control Authority) -Sandia Labs (DOE)
Class D	MS4s within Indian Country Lands designed under 40 CFR 122.26(a)(1)(v), 122.26(a)(9)(i)(C) or (D), 122.32(a)(1), or 122.32(a)(2)	-Pueblo of Sandia -Pueblo of Isleta -Pueblo of Santa Ana

2. **Discharge goals**

The State of New Mexico, Pueblo of Sandia, and Pueblo of Isleta, but not the Pueblo of Santa Ana, have EPA-approved water quality standards. The goal of the permit is for implementation of the SWMP and other permit conditions to provide a reasonable assurance that the permitted activity will be conducted in a manner which will not violate applicable Water Quality Management Plan and Water Quality Standards, including but not limited to the following:

No discharge of toxics in toxic amounts. It is the National Policy that the discharge of toxics in toxic amounts be prohibited (Section 101(a)(3) of the Act). The State of New Mexico Standards for Interstate and Intrastate Surface Waters (20.6.4.13 F.) state that "Surface waters of the State shall be free of toxic pollutants from other than natural causes in amounts, concentrations or combinations that affect the propagation of fish or that are toxic to humans, livestock or other animals, fish or other aquatic organisms, wildlife using aquatic environments for habitation or aquatic organisms for food, or that will or can be reasonably expected to bio-accumulate in tissues of fish, shellfish, and other aquatic organisms to levels that will impair the health of aquatic organisms or wildlife or result in unacceptable tastes, odor or health risks to human consumers of aquatic organisms." The Pueblo of Sandia Water Quality Standards (Section III.O) state that "Toxic substances shall not be present in receiving waters in quantities that are toxic to human, animal, plant, or aquatic life, or in quantities that interfere with the normal propagation, growth, and survival of the sensitive indigenous aquatic biota." Similarly, the Pueblo of Isleta Water Quality Standards (Section III.N) state that "Toxic substances shall not be present in surface waters in quantities that are toxic to human, animal, plant,

or aquatic life, or in quantities that interfere with the normal propagation, growth, and survival of the sensitive indigenous aquatic biota."

No discharge of pollutants in quantities that would cause a violation of State or Tribal water quality standards. Section 301(b)(1)(C) of the Act and 40 CFR 122.44(d) require that NPDES permits include "...any more stringent limitations, including those necessary to meet water quality standards, treatment standards, or schedule of compliance, established pursuant to State law or regulations. EPA is using CWA 402(p)(3)(B)(iii) authority for "other such provisions as the Administrator deems appropriate for the control of pollutants" to include permit requirements supporting protection of water quality standards and compliance with TMDLs.

No discharge of floatable debris, oils, scum, foam, or grease in other than trace amounts. The State of New Mexico Standards for Interstate and Intrastate Surface Waters (20.6.4.13 B) states that "Surface waters of the State shall be free of oils, scum, grease and other floating materials resulting from other than natural causes that would cause the formation of a visible sheen or visible deposits on the bottom or shoreline, or would damage or impair the normal growth, function or reproduction of human, animal, plant or aquatic life." The Pueblo of Sandia Water Quality Standards (Section III.B), state that "Surface waters shall be free from objectionable oils, scum, foam, grease, and other floating materials and suspended substances resulting from other than natural causes (including visible films of oil, globules of oil, grease, or solids in or on the water, stream bottom or coatings on stream banks or that would damage or impair the normal growth, function or reproduction of wildlife, plant or aquatic life)." Similarly, the Pueblo of Isleta Water Quality Standards (Section III.B) state that "Surface waters shall be free from objectionable oils, scum, foam, grease, and other floating materials and suspended substances of a persistent nature resulting from other than natural causes (including visible films of oil, globules of oil, grease, or solids in or on the water, or coatings on stream or lake banks)."

No discharge of non-stormwater from the municipal separate storm sewer system, except in accordance with Part I.A.4. Permits issued to MS4s are specifically required by Section 402(p)(3)(B) of the Act to "...include a requirement to effectively prohibit non-stormwater discharges into the storm sewers..." 40 CFR 122.26(d)(2)(iv)(B)(1) and 122.34(b)(3)(iii) allows the permittee to accept certain non-stormwater discharges where they have not been identified as significant sources of pollutants. The definition of "illicit discharge" at 40 CFR 122.26(b)(2) excludes discharges subject to its own NPDES permit, so such permitted non-storm water discharges would not be subject to the prohibition on non-stormwater.

No degradation or loss of State or Tribal -designated uses of receiving waters as a result of stormwater discharges from the municipal separate storm sewer (unless authorized in accordance with the State or Tribal Antidegradation Policy). The State of New Mexico and the Pueblos of Isleta and Sandia have adopted Antidegradation Policies and Implementation Plans as part of their Water Quality Standards which provide for maintenance of existing in-stream water uses; existing water quality levels where existing water quality exceeds the levels necessary to support propagation of fish, shellfish, and wildlife, and recreation in and on the water (except where the State or Tribe has determined that lowering water quality is necessary to accommodate important economic or social development in the area where the waters are located); existing water quality where high quality waters constitute an outstanding national or tribal resource (e.g. waters of National and State parks and wildlife refuges or exceptional recreational or ecological significance); and compliance with Section 316 of the Act where potential water quality impairment is associated with a thermal

discharge.

B. **Middle Rio Grande Watershed Based MS4 Permit Pilot**

In 2009, at the request of EPA, the National Research Council (NRC) published a report entitled "Urban Stormwater Management in the United States". The NRC recommended that EPA use a watershed based permitting approach to improve the stormwater program. As a first step, they suggested doing a pilot program that will allow EPA to explore the many complexities of watershed-based permitting (WBP). EPA announced three pilots areas selected to explore watershed permitting concepts for stormwater management: 1) Ramsey-Washington Metro Watershed District in Minneapolis/St. Paul, Minnesota; 2) Middle Rio Grande Watershed in Albuquerque, New Mexico; and 3) Menomonee Watershed, Milwaukee area, Wisconsin. The EPA watershed permitting workgroup has been working in partnership with the EPA Regions, the state permitting authorities and other stakeholders in the selected watersheds. Some of the pilots' goals include implementing mechanisms to better tailor stormwater management plans and stormwater permits to meet the needs and conditions of the selected watersheds. In addition, the pilots will document efficiencies that can be gained by the permitted entities in implementing certain elements of the stormwater program, e.g., education, outreach, and monitoring.

The Middle Rio Grande valley (see map in Addendum A) was chosen as one of three pilot Watershed-Based Permit (WBP) projects nationwide because of existing water quality impairment in the Rio Grande and the opportunity to work on the challenges of permitting unique to arid and semi-arid parts of the country. The pilot project was aimed at developing a permit for MS4s in the area that would be more effective at addressing watershed issues while accommodating opportunities for cooperative programs that would hopefully be less expensive to implement. Being part of the pilot project does not create a new obligation to have a permit where one was not already required either due to automatic (MS4s within the Albuquerque Urbanized Area) or case-by-case designation under either Phase I or Phase II of the NPDES Storm Water Program. Some of the factors that EPA Region 6 considered to select this area as a pilot are provided below:

- **Impaired Waters**: The MRG is listed on the 2012-2014 State of New Mexico Clean Water Act §303(d) list of impaired water bodies with *E. Coli*, temperature, dissolved oxygen, PCBs, gross alpha and ambient bioassays acute aquatic toxicity. Las Huertas and Tijeras arroyos, tributaries of the MRG, are listed for nutrients in some, but not all, segments. The presence of these pollutants in the receiving waters is an indicator of degradation of the surface waters designated beneficial uses. The permit allows both the Phase I and Phase II permittees to adopt a common minimum set of goals in the watershed to avoid any further loss or degradation of designated beneficial uses within the watershed's component waterbodies.

- **Upstream Pollutant Contributions**. The water quality of the MRG may be attributable to upstream sources in addition to local discharges. Traditional approaches to NPDES permitting often provide little consideration of upstream sources except as background concentrations of a pollutant. Often attainment of water quality standards and other water quality goals is independent on addressing upstream pollutant contributions. The proposed individual and cooperative monitoring requirements in Part III.A.1 can help to identify upstream pollutant contributions to the regulated MS4s, the education and outreach requirements may also promote early and continuous involvement of parties responsible for upstream sources.

- **Opportunities to Establish Cooperation and Partnerships:** The permit includes flexibility to

establish cooperation among permittees and watershed stakeholders, particularly in the areas of education, outreach and monitoring. Permittees may work collaboratively, possibly with a lead permittee to coordinate work, thereby maximizing cooperation, integrating and prioritizing implementation, and potentially reducing costs. The proposed permit is flexible so that the development and implementation of a joint SWMP among several permittees can be achieved in cooperation with public agencies or private entities. The primary benefit of implementing a cooperative watershed framework in this area is that it can more effectively and efficiently improve water quality than uncoordinated, single-source oriented stormwater management programs.

- **Watershed Hydrological and Topographical Features.** The Rio Grande along with several other waters of the United States, flows through multiple jurisdictions, including tribal lands (Pueblo of Santa Ana, Pueblo of Isleta, Pueblo of Sandia) and support multiple beneficial uses such as drinking water supply, ceremonial use, contact recreation, fishing, agricultural irrigation, etc. for the tribes and local communities. The flow of surface water through the local watershed is regulated through an extensive and complex system of canals, drains, diversions, pump stations, and storm water detention basins, along with natural and channelized arroyos. The major mechanism of transport pollutants is likely via arroyos, ditches and storm water conveyances. Residential, commercial, industrial, university, state, and federal buildings, roadways, and parking lots in the urban area all contribute storm water runoff to the river. The proposed permit will require the permittees to identify structural elements, natural or man-made topographical and geographical formations, MS4 operations activities, and/or areas indicated as potential sources of pollutants in the receiving waters of the Rio Grande. Such requirements will help the permittees to understand the watershed hydrological and topographical features allowing the permittees to assess the permitted area to further identify potential sources of pollutants.

- **Protection of Endangered Species.** Several endangered species are found within the watershed. The Rio Grande silvery minnow (*Hybognathus anarus*) is found not only in the Rio Grande, but also in tributaries including the North Diversion Channel. The United States Fish and Wildlife Servicew (USFWS) has established designated critical habitat for the silvery minnow within this reach of the Rio Grande. The southwestern willow flycatcher (*Empidonax traillii extimus*) is also found in the bosque along the Rio Grande.

In 2010, a precursor Interagency Planning Group among potential permittees, federal, state, regional and local agencies, including watershed and water quality workgroups, was formed, and met regularly in facilitated sessions to provide input on the development of the permit. EPA Region 6 and its partners, including the New Mexico Environment Department, have provided a large number of hours educating the potential permittees, the local community, and other interested parties on local stormwater issues. Staff of NMED carried multiple presentations to elected officials from each affected jurisdiction located across the regulated MS4 area. As demonstrated throughout this pilot and other projects presented in Addendum F, Watershed-based Permitting Approaches are being implemented in a variety of watersheds though out the country. In the case of the Region 6 pilot, local governmental offices and environmental groups have voiced their interest and general support on the pilot planning activities. See Addendum A for a list of agencies and organizations that participated in the Middle Rio Grande Watershed Based MS4 Permit meetings.

During the pilot activities, the EPA's Office of Research and Development and EPA Region 6 conducted a study that evaluated the use of best management practices (BMPs) for stormwater management in an

arid climate. The System for Urban Stormwater Treatment and Analysis Integration (SUSTAIN) was the platform used for this study focused in the Albuquerque Metropolitan area. . This case study presented an approach to identify cost-effective stormwater management strategies with the objective of reducing *E. coli* loading based on a target consistent with the Middle Rio Grande *E. coli* TMDL. A study report was finalized and documents the various steps in developing a *SUSTAIN* application in the Middle Grande watershed. The SUSTAIN platform can be used as a tool to implement the permit (e.g. supports users in selecting suitable locations for common structural BMPs). Additional information on the model can be found at http://www.epa.gov/nrmrl/wswrd/wq/models/sustain/

Ciudad Soil and Water Conservation District (a watershed stakeholder in the Middle Rio Grande Watershed area) also actively participated in the pilot. The District submitted a proposal for a 604(b) State Grant to develop an algorithm (or stormwater program implementation tool) to allocated equitable compliance resource and financial commitments among the watershed-based MS4 permitee agencies. The tool was designed for those permittees interested in participating in a cooperative program.

The proposed watershed permit, is designed to accommodate a general permit approach using a Notice of Intent (NOI) to be covered by the general permit in lieu of an individual permit application. The operator of a regulated MS4 must include with its NOI, summaries of its chosen BMPs and measurable goals for each minimum control measure. The NOI may include schedules to fully develop and implement the stormwater program consistent with compliance schedules included in the permit. To help identify the most appropriate BMPs for programs, EPA has posted a list of BMPs that can be used to meet the Stormwater Phase II Rule's six minimum control measures to serve as guidance. (http://cfpub1.epa.gov/npdes/stormwater/menuofbmps/index.cfm)

C. **Existing Stormwater Permits in the Middle Rio Grande**

1. **Region 6 Large MS4 Permit**

Medium and large MS4s are subject to the permit application requirements found at 40 CFR 122.26(d) unless a general permit is available. Previously, Phase I permittees in Albuquerque were covered by an individual permit based on information submitted in the permit application. Information required in the application included a physical description of the MS4, legal authority of the MS4 operator, a characterization of the surrounding sources and the pollutants found in the storm water discharge, and a description of fiscal resources.

The most significant portion of the application is the development of a proposed storm water management program that meets the standard of "reducing pollutants to the Maximum Extent Practicable (MEP)." Storm water management programs for medium and large MS4s include measures to:

- Identify major outfalls and pollutant loadings;
- Detect and eliminate non-storm water discharges to the system;
- Reduce pollutants in runoff from industrial, commercial, and residential areas; and
- Control storm water discharges from new development and redevelopment areas.

The existing Phase I MS4 permit (NMS000101) will have early termination when the proposed watershed based MS4 permit becomes effective. Co-permittees with the City of Albuquerque includes the Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA); University of New Mexico; and

New Mexico State Highway Transportation Department.

2. **Region 6 Small MS4 Permit**

Phase II small MS4s operators in the Middle Rio Grande would have previously been covered by (or could have been covered by) the final general permits for small MS4s in New Mexico (NMR040000) and Indian Country in New Mexico (NMR04000I) that were issued on May 31, 2007, and expired June 30, 2012. Potential MS4scovered by this proposed general permit include the City of Rio Rancho, Bernalillo County, Sandoval County, Southern Sandoval County Arroyo Flood Control Authority, Eastern Sandoval County Arroyo Flood Control Authority, Town of Bernalillo, Los Ranchos de Albuquerque, Village of Corrales, Kirtland AFB, State Fairgrounds/EXPO NM, Sandia Labs, Pueblo of Isleta, Pueblo of Santa Ana, and Pueblo of Sandia. Note that an NPDES permit cannot establish an independent duty to apply for a permit – only those MS4s required by statute and implementing regulations to have a permit will need permit coverage, so it possible that not all listed entities will require a permit.

D. **Waivers for Small MS4s in Urbanized Areas**

The Phase II regulations at 40 CFR 122.32(d) and (e) provides a mechanism for granting permitting waivers from needing a permit for automatically designated small MS4s in urbanized areas provided the following criteria can be met:

1. MS4s with a Population Less than 1,000 Within the Urbanized Area

Available where the MS4 is not contributing substantially to the pollutant loadings of a physically interconnected MS4 that is regulated by the NPDES storm water program; and

If discharges include any pollutant(s) that have been identified as a cause of impairment of any receiving water body, storm water controls are not needed based on wasteload allocations that are part of an EPA approved or established "total maximum daily load" (TMDL) that addresses the pollutant(s) of concern.

Note: This “less than 1,000 population” waiver is effectively unavailable at this time for MS4s discharging directly to the Rio Grande in a segment listed as impaired by the State of New Mexico since the approved bacteria TMDL for the Rio Grande in non-tribal waters did not find MS4 controls were not needed.

2. MS4s with a Population of Under 10,000 Within the Urbanized Area

Available where the permitting authority has evaluated all waters of the U.S., including small streams, tributaries, lakes, and ponds, that receive a discharge from the MS4;

For all such waters, the permitting authority has determined that storm water controls are not needed based on wasteload allocations that are part of an EPA approved or established TMDL that addresses the pollutant(s) of concern or, if a TMDL has not been developed or approved, an equivalent analysis that determines sources and allocations for the pollutant(s) of concern. Pollutant(s) of concern include biochemical oxygen demand (BOD), sediment or a parameter that addresses sediment (such as total suspended solids, turbidity or siltation), pathogens, oil and grease, and any pollutant that has been identified as a cause of impairment of any water body that receives a discharge from the MS4; and

The permitting authority has determined that future discharges from the MS4 do not have the potential to result in exceedances of water quality standards, including impairment of designated uses, or other significant water quality impacts, including habitat and biological impacts.

Note: The more difficult to qualify for "under 10,000 population" waiver is also effectively unavailable at this time for MS4s in the area cover by this permit since a) TMDLs (or equivalent analysis) have not been performed on all receiving waters; b) the approved bacteria TMDL for the Rio Grande in non-tribal waters did not find that MS4 controls were not needed; and c) no analysis of the impacts of future MS4 discharges reaching the required conclusions is available.

3. **Claiming Waivers**

As described above, waivers may generally be granted for MS4s with a population of 1,000 to 10,000 only if comprehensive information is available showing that current and future MS4 discharges would not be a threat to water quality. For the MS4s with a population less than 1,000, however, a waiver may generally be granted unless the MS4 is contributing substantially to the pollutant loadings of a physically interconnected regulated MS4s or is discharging a pollutant of concern directly to an impaired water (unless a TMDL has been approved finding MS4 controls are not needed). Eligible MS4s wishing to obtain a waiver should submit information required in Addendum B to:

William K. Honker P. E.
Director Water Quality Protection Division (6WQ)
Environmental Protection Agency
1445 Ross Ave, Suite 1200
Dallas, TX 75202-2733

Only the portion of a MS4's population located within an urbanized areas is used for deciding whether or not a waiver may be available. Maps of urbanized areas are available at http://cfpub.epa.gov/npdes/stormwater/urbanmaps.cfm. See Section E below for guidance on estimating population for state and federal facilities. The New Mexico Environment Department CWA 303(d) list of impaired waters is available online at http://www.nmenv.state.nm.us/. To date, no Tribal waters in the area have been placed on a CWA 303(d) list.

E. **Facilities Operated by the Federal or State Government, or Other Public Entity**

The definition of a small MS4 in the Phase II regulations (40 CFR 122.26(b)(16)(iii)) includes storm sewers at facilities operated by the Federal or State government (or other public entities such as a sewer or port district) such as military bases, universities, hospitals and prisons. However, the definition does not include facilities which consist of very discrete areas, such as an individual post office; elementary, middle, or high school; state, county or federal building; etc. which do not have a "system" of municipal storm sewers. For example, a few buildings in a complex (e.g. a federal or state courthouse) and their associated parking lots and driveways with storm drains connecting to the surrounding city's MS4 would not be likely to operate a MS4. On the other hand, a military base with interior roads and storm sewer infrastructure operated by the base would have an MS4.

Potentially affected facilities within urbanized areas are also eligible for the permitting waiver discussed above in Section II.D based on population. The Phase II regulations do not provide guidance on how to determine population for these facilities. Region 6 believes that a reasonable method is to combine the

total resident population and the number of full-time workers. Facility operators should use this method to determine their population, and the applicability of the Phase II regulations to their specific facilities.

It should also be noted that county or city facilities (such as hospitals or prisons) with systems of separate storm sewers that are located within a permitted area for the same county or city generally would not need a separate permit. The discharges from these facilities would be covered by the county or city-wide MS4 permit. However, if a county or city operates a facility with a system of separate storm sewers within a municipal separate storm sewer system and the facility is outside its permitted area (e.g., county hospital complex located in an incorporated city, etc.), the facility would also need permit coverage for that facility. This extended coverage under on NOI is available by indicating on the MS4 map that those facilities are considered part of the larger MS4 and including applicable conditions for the facilities in the operator's SWMP rather than filing a separate NOI for that facility. Facilities with regulated discharges of storm water associated with industrial or construction activities do require separate permit coverage based on those activities, which could be obtained by the currently available general permits for storm water associated with construction activity (NMR120000/NMR12000I) and storm water associated with industrial activity (NMR050000/NMR05000I).

F. Environmental Impacts of Discharges from MS4s

1. National Reports and Studies

The 1987 decision by Congress to require NPDES permitting for the storm water discharges discussed above was based on a growing awareness of the environmental significance of nonpoint sources of pollutants. For example, EPA's report entitled "National Water Quality Inventory, 1998 Report to Congress" (EPA, 2000) shows that storm water related discharges from non-point and point sources are the leading causes of existing water quality impairments.

The Nationwide Urban Runoff Program (NURP), which was sponsored by EPA in the years 1978 through 1983, also showed that storm water runoff is a significant source of pollutants (EPA, 1983). The study identified 77 priority toxic pollutants in storm water runoff discharged from residential, commercial and light industrial areas. Of these toxic pollutants, heavy metals such as copper, lead and zinc were detected most frequently and at levels of greatest concern. More information and copies of documents with additional information on the environmental impacts of storm water discharges are available via EPA's storm water web page at www.epa.gov/npdes/stormwater.

Most recently, EPA asked the National Research Council (NRC) to conduct a review of its stormwater program, considering all entities regulated under the program, i.e., municipal, industrial and construction. In October 2008, the National Research Council released the report Urban Stormwater Management in the United States (The National Academies Press, 2009) finding, among other things, that "the rapid conversion of land to urban and suburban areas has profoundly altered how water flows during and following storm events, putting higher volumes of water and more pollutants into the nation's rivers, lakes, and estuaries. These changes have degraded water quality and habitat in virtually every urban stream system.

This report recommends a number of actions, including conserving natural areas, reducing hard surface cover (e.g., roads and parking lots—impervious surface areas), and retrofitting urban areas with features that hold and treat stormwater (NRC, Report in Brief, 2008). The Report in Brief can be accessed at: http://dels.nas.edu/dels/rpt_briefs/stormwater_discharge_final.pdf. A full copy of the report can be

obtained from The National Academies Press, http://books.nap.edu/catalog.php?record_id=12465. A prepublication copy is available at: http://www.epa.gov/npdes/pubs/nrc_stormwaterreport.pdf.

EPA shares the NRC Committee's perspective that it is imperative that the stormwater regulations be as effective as possible in protecting water quality. The NRC Report has provided EPA with the opportunity to reexamine the effectiveness of its stormwater programs, some of which are nearly 20 years old. For instance, EPA is interested in assessing the level of accountability that the regulations and the permits issued under the regulations provide to MS4s to minimize the discharge of pollutants in stormwater. The role of MS4s in reducing stormwater impacts from the built environment is crucial and growing, given that these sources of adverse water quality impacts are continually expanding. As the urban, suburban and exurban human environment expands, there is an increase in impervious land cover and therefore an increase in stormwater discharges. This increase in impervious land cover reduces or eliminates the natural infiltration of precipitation, which greatly increases the volume of stormwater discharges. This increased volume of stormwater discharges results in the scouring of rivers and streams; degrading the physical integrity of aquatic habitats, stream function and overall water quality. In addition, the increase in impervious land cover results in the increase of the pollutant load discharged from storm sewers. As precipitation moves across roads, rooftops, and other impervious surfaces, it picks up pollutants that are then discharged, either directly or through storm sewers, to our Nation's waters.

Phase I MS4s and Phase II MS4s are required through the MS4 permit to address stormwater discharges from new development and redevelopment in their SWMPs, but the regulations do not include specific management practices or standards to be implemented. Among the Phase I requirements for a SWMP is a "comprehensive master plan to develop, implement, and enforce controls to reduce the discharge of pollutants from municipal storm sewers, which receive discharges from areas of new development and significant redevelopment. Such plan shall address controls to reduce pollutants in discharges from municipal separate storm sewers after construction is completed." (40 CFR 122.26(d)(2)(iv)(A)(2)).

Phase II regulations include post construction requirements as one of the six minimum control measures to be addressed in the SWMP. Small MS4s must "develop, implement, and enforce a program to address" stormwater discharges from new development and redevelopment projects of one acre or greater to "ensure that controls are in place that would prevent or minimize water quality impacts." 40 CFR 122.34(b)(5). The program must include strategies including structural and/or non-structural best management practices (BMPs) appropriate for the community; use of ordinances or other regulatory mechanisms to the extent allowable under State, Tribal or local law; and measures to ensure adequate long-term operation and maintenance of BMPs. The Phase II rule recommends (but does not require) that the program to address stormwater from new development and redevelopment should attempt to maintain pre-development runoff conditions by installing and implementing stormwater control measures.

In December 28, 2009, EPA announced its plans to initiate national rulemaking to establish a comprehensive program to reduce stormwater discharges from new development and redevelopment and make other regulatory improvements to strengthen its stormwater program. EPA is considering ways to strengthen the MS4 permit regulations, including establishing specific requirements for stormwater discharges from, at a minimum, new development and redevelopment; expanding the area defined as MS4s to include rapidly developing areas; and devising a single set of consistent regulations for all MS4s. In addition, EPA is exploring regulatory options to directly address stormwater discharges from new development and redevelopment, including new and redeveloped sites outside the MS4 boundary, that may be contributing to waterbody impairment, through the designation of an additional category or

categories of discharges under CWA section 402(p)(6). Final action on this rulemaking is not expected before December 10, 2014, so this general permit will be issued before the rule comes into effect.

2. Local Discharge Monitoring Data and Receiving Water Issues

a. General

The Middle Rio Grande is listed on the 2012-2014 State of New Mexico Clean Water Act §303(d) list of impaired water bodies with *E. Coli*, temperature, dissolved oxygen, PCBs, gross alpha, and ambient bioassays acute aquatic toxicity. Las Huertas and Tijeras arroyos, tributaries of the MRG, are listed for nutrients. The presence of *E. Coli* is an indicator of the possible presence of other microbial pathogens that may interfere with designated uses. There are also many potential surface water quality issues and problems due to a combination of urban and rural land uses in this watershed. NPDES permitted facilities and non-point sources (e.g., wildlife, agricultural activities and domesticated animals, urban runoff, failing onsite wastewater disposal system, and domestic pets) could contribute to exceedences of the water quality criteria.

The Rio Grande in this area is historically, socially, and culturally significant to Native American tribes, Hispanic communities, and the more recent settlers and residents. Irrigated agriculture via *acequias*, or ditches, is part of the way of life in New Mexico. Agricultural users hold most of the surface water rights in the region and must be included in actions that affect their flow or sources.

The Rio Grande flows through multiple jurisdictions, including tribal lands (Pueblo of Santa Ana, Pueblo of Isleta, Pueblo of Sandia) and it is a source of water for various uses, including drinking water supply, recreation, and ceremonial use, to the local tribes and communities. The flow of surface water through the local watershed is regulated through an extensive and complex system of canals, drains, diversions, pump stations, and storm water detention basins, along with natural and channelized arroyos. The major mechanism of transport of fecal coliform is likely via arroyos, ditches and storm water conveyances. Roadways and parking lots in the urban area also contribute storm water runoff to the river. Many roadside drains lead directly or indirectly to the river. AMAFCA and the City of Albuquerque manage storm water in the Albuquerque metropolitan area, ESCAFCA and SSCAFCA manages storm water for areas in Sandoval County. These entities are State of New Mexico political subdivisions charged with protecting people and property in their jurisdictions from flooding.

The City of Albuquerque is located in Bernalillo County, New Mexico. Historical monthly mean precipitation (1914 - July 2013) during the annual monsoon rain season from May to September ranges from 0.68 inches in June to 1.6 inches in August. Annual mean precipitation in the area is 8.6 inches. A 90th percentile storm for the area has been calculated by the City of Albuquerque as 0.35 inches, indicating that 90 percent of storms in the area have 0.35 inches or less of precipitation.

Las Huertas Creek is located mostly in southeastern Sandoval County. The main channel flows north to and through the village of Placitas and then heads northwest under Interstate 25 and west to meet the Rio Grande near the town of Bernalillo (Bandeen et al. 2005).

Tijeras Arroyo in eastern Bernalillo County, New Mexico, is also a tributary to the middle Rio Grande. The creek originates from springs and seeps in the Sandia and Manzanita Mountains, which flow through Tijeras Canyon then southwest towards Kirtland Air Force Base and the southern

portion of the city of Albuquerque. Historic and current land uses in these watersheds include farming, ranching, forestry, and residential/commercial related activities. Much of the land ownership is private including ownership by Santa Ana pueblo, but the United States Forest Service (USFS), Bureau of Land Management (BLM), and the US Department of Defense also own and manage tracts of public lands in these watersheds.

b. **Quality of the Receiving Waters**

Middle Rio Grande and Tributaries

Stormwater discharges from the designated MS4s are made to Segment No. 20.6.4.105 and 20.6.4.106 in the Middle Rio Grande Basin. These segments are described in the State of New Mexico Standards for Interstate and Intrastate Surface Waters as follows:

New Mexico Standard Segment 20.6.4.105: The main stem of the Rio Grande from the headwaters of Elephant Butte Reservoir upstream to Alameda Bridge (Corrales Bridge), and intermittent flow below the perennial reaches of the Rio Puerco that enters the main stem of the Rio Grande.
New Mexico Standard Segment 20.6.4.106: The main stem of the Rio Grande from Alameda Bridge (Corrales Bridge) upstream to the Angostura Diversion Works and intermittent water in the Jemez River below the Jemez Pueblo boundary that enters the main stem of the Rio Grande.

Designated uses of these segments, according to State of New Mexico, Pueblo of Sandia, and Pueblo of Isleta water quality standards are provided in Table 1b. Specific NMED numeric criteria are provided in Table 1c.

Table 1b: Designated Uses of the MRG – Segment 20.6.4.105 and Segment 20.6.4.106

State of New Mexico designated uses	Pueblo of Sandia designated uses	Pueblo of Isleta designated uses
Irrigation Marginal Warmwater Aquatic Life Livestock Watering Wildlife Habitat Primary Contact	Warmwater Aquatic Life/ Fishery Use Coolwater Aquatic Life/Fishery Use Primary Contact Ceremonial Use Primary Contact Recreational Use Secondary Contact Recreational Use Agricultural Water Supply Use Industrial Water Supply Use Domestic Water Supply Use Wildlife Habitat Use	Warmwater Fishery Primary Contact Ceremonial Primary Contact Recreational Agricultural Water Supply Industrial Water Supply

Las Huertas Creek and Tijeras Arroyo

The applicable WQS for Las Huertas Creek and Tijeras Arroyo are set forth in sections 20.6.4.99 and 20.6.4.111 as follows:

New Mexico Standard Segment 20.6.4.99: PERENNIAL WATERS - All perennial unclassified waters of the state. Designated Uses: warmwater aquatic life, livestock watering, wildlife habitat and primary contact.
.
New Mexico Standard Segment 20.6.4.111: RIO GRANDE BASIN - Perennial reaches of Las Huertas creek. Designated Uses: high quality coldwater aquatic life, irrigation, livestock watering, wildlife habitat and primary contact.

Intermittent Waters located in the Middle Rio Grande Watershed

The applicable WQS for drains are set forth in 20.6.4.98 as follows:

New Mexico Standard Segment 20.6.4.98: INTERMITTENT WATERS - All non-perennial unclassified waters of the state, except those ephemeral waters included under 20.6.4.97 NMAC. Designated Uses: livestock watering, wildlife habitat, marginal warmwater aquatic life and primary contact.

Table 1c. State of New Mexico specific criteria

Segment	Criteria
Segment 20.6.4.105	**(1)** The use-specific numeric criteria set forth in 20.6.4.900 NMAC are applicable to the designated uses. **(2)** At mean monthly flows above 100 cfs, the monthly average concentration for: TDS l,500 mg/L or less, sulfate 500 mg/L or less and chloride 250 mg/L or less.
Segment 20.6.4.106	**(1)** The use-specific numeric criteria set forth in 20.6.4.900 NMAC are applicable to the designated uses. **(2)** At mean monthly flows above 100 cfs, the monthly average concentration for: TDS 1,500 mg/L or less, sulfate 500 mg/L or less and chloride 250 mg/L or less.
Segment 20.6.4.99 PERENNIAL WATERS	The use-specific criteria in 20.6.4.900 NMAC are applicable to the designated uses, except that the following site-specific criteria apply: the monthly geometric mean of E. coli bacteria 206 cfu/100 mL or less, single sample 940 cfu/100 mL or less.
Segment 20.6.4.111	The use-specific numeric criteria set forth in 20.6.4.900 NMAC are applicable to the designated uses, except that the following segment-specific criterion applies: temperature 25°C (77°F) or less.

Segment 20.6.4.98 INTERMITTENT WATERS	The use-specific criteria in 20.6.4.900 NMAC are applicable to the designated uses, except that the following site-specific criteria apply: the monthly geometric mean of E. coli bacteria 206 cfu/100 mL or less, single sample 940 cfu/100 mL or less.

Other tributaries to the Rio Grande include the various arroyos, agricultural drains, acequias, and irrigation channels flowing through state and tribal lands in the area. Many of these conveyances are listed waters of the State (while in the State) where NMWQS 20.6.4.98 applies and waters of the Tribe (while in Indian Country) where Pueblo of Isleta Surface Water Quality Standards and Pueblo of Sandia Water Quality Standards apply (see Table 1b) and would likely be considered waters of the United States, including the Albuquerque Riverside Drain and Sandia Drain. All or portions of the North Diversion Channel, South Diversion Chanel and some arroyos, including but not limited to, Tijeras arroyo, Calabacillas Arroyo, the San Antonio Arroyo, La Cueva Arroyo, South Pino Arroyo, North Pino Arroyo, Embudo Arroyo, Hahn Arroyo, Black Arroyo, North and South Domingo Baca Arroyos, North El Camino Arroyo, Bear Canyon Arroyo, East and West Amole Arroyo, Grantline channel and four hills arroyo have been formally determined to be jurisdictional waters of the United States by the U.S. Army Corps of Engineers. Even should a particular drain not be a water of the United States, it would still serve as a conduit to the Rio Grande and thus provide a route for MS4 discharges to reach a water of the United States. Conveyances operated by the Middle Rio Grande Conservancy District, many of which take in water from the Rio Grande north of Albuquerque and connect the Rio Grande at several locations throughout and south of Albuquerque and thus are effectively conveying water of the U.S., are presumed to be waters of the United States absent evidence to the contrary, but EPA has not made, nor intends to make, any additional formal jurisdictional calls at this time.

c. **Clean Water Act 303 (d) Lists of Water Quality Impaired Waterbodies:**

Section 303(d) of the federal Clean Water Act requires each state to identify surface waters within its boundaries that are not meeting, or expected to meet, water quality standards. Section 303 further requires the states to prioritize their listed waters for development of a Total Maximum Daily Load (TMDL). A TMDL can be best described as a water body, watershed or basin-wide budget for pollutant influx to a watercourse.

The Middle Rio Grande is listed on the 2012-2014 State of New Mexico Clean Water Act §303(d) list of impaired water bodies with *E. Coli*, temperature, dissolved oxygen, PCBs, gross alpha, and ambient bioassays acute aquatic toxicity. Las Huertas and Tijeras arroyos (from Four Hills Bridge to headwaters), tributaries of the MRG, are listed for nutrients, Tijeras Arroyo (Rio Grande to Four Hills Bridge) was not assessed during the last NMED tributary assessment. The presence of *E. Coli* is an indicator of the possible presence of other microbial pathogens that may interfere with designated uses. There are also many potential surface water quality issues and problems due to a combination of urban and rural land uses in this watershed. NPDES permitted facilities and non-point sources (e.g., wildlife, agricultural activities and domesticated animals, urban runoff, failing onsite wastewater disposal system, and domestic pets) could contribute to exceedences of the water quality criteria.

d. **Fish Kill:**

In June 2004, the North Diversion Channel, approximately 700 meters west of the 4th Street Bridge, experienced a fish kill. USGS-BRD-Yankton Field Research Station personnel were engaged in toxicity testing when the fish kill was encountered. Dissolved oxygen, measured previously by the USGS-BRD along an identical transect, vertically as well a longitudinally, at levels averaging 4 to 5 mg/L, was found at levels <1 mg/L (personal communication) concurrent to the fish kill. Measurements of dissolved oxygen in the middle Rio Grande at this time reportedly were above 6 mg/L. The fish kill is the second in known history in this vicinity, with a prior occurrence in 1989. It should be noted that no endangered silvery minnows were found in association with the 2004 incident. In May 2012 the City of Albuquerque and AMAFCA submitted a strategy to reduce and/or eliminate exceedances of applicable dissolved oxygen (DO) water quality standards in the receiving waters of the Rio Grande. The strategy has been underway since 2008 when the MS4 permittees became aware that there may be a problem with discharges to the Rio Grande from the North Diversion Channel. An investigation by AMAFCA and the City of Albuquerque regarding the oxygen levels in the North Diversion Channel and ways to address the problem is ongoing and results will be reported under the permit as a permit condition. The dissolved oxygen investigation and responses required by the proposed permit supports efforts to address municipal storm water discharge contributions to low in-stream dissolved oxygen levels.

A 2009 study of dissolved oxygen in the North Diversion Channel by the permittees indicated the stormwater itself was generally high in Dissolved Oxygen, typically greater than 5.5 mg/l. One theory regarding the dissolved oxygen sags in the Rio Grande was that stagnation was occurring during periods of low flow in one or more pools near the confluence with the Rio Grande, and subsequent storms pushed this stagnant water into the River. Following the 2004 fish kill, the permittees added structural controls to improve circulation and route low (<50cfs) flows to the Alameda Drain to help avoid the conditions than may have been responsible for the 2004 fish kill.

The 2012 Strategy included the construction of a wide shallow pool that will allow better circulation of river water and will provide nursery habitat to the Rio Grande Silvery Minnow, a listed endangered species in the Middle Rio Grande. The construction project was finalized in Spring 2012. The proposed permit will include provisions to revise the City and AMAFCA Strategy to further assess and implement source controls to address dissolved oxygen in the area as data recently submitted indicates low level of dissolved oxygen at the North Diversion Channel and downstream locations.

e. **Fish Consumption Advisory**:

In February 2009, the New Mexico Department of Game and Fish, the New Mexico Department of Health, and the New Mexico Environment Department jointly issued a fish consumption advisory limiting the consumption of channel catfish and white bass taken from the Rio Grande between Interstate 25 and US Highway 550 due to PCB levels in fish tissue. More information on the Advisory is available at: http://www.nmenv.state.nm.us/swqb/advisories/ .

f. **Monitoring Data:**

The discharges from the MS4 consist of surface runoff (non-stormwater and stormwater) and groundwater from various land uses in drainage basins within the Albuquerque area. The quality and quantity of these discharges vary considerably and are affected by the hydrology, geology, land use characteristics of the watersheds, seasonal weather patterns, and frequency and duration of storm events.

The City of Albuquerque collected extensive monitoring data before and during the prior permit terms. The five discharge points monitored for the prior permit were intended to provide representative data on the quality of discharges from the Albuquerque MS4 as a whole. Parameters sampled are EPA's priority pollutants; including conventional, non-conventional, organic toxics, and other pollutants. Conventional pollutants and metals are reported annually while monitoring the remainder is performed biannually. Monitoring data is intended to assist the permittees in determining appropriate stormwater management practices. Table 1 and 2 in Addendum G summarize monitoring data submitted under the previous permit terms. The monitored sites include the North Diversion Channel (NDC), the South Diversion Channel (SDC), the San Antonio, the San Jose, and the Barelas sites/Tijeras Arroyo.

EPA has compared the monitoring data submitted on discharge monitoring reports by the Albuquerque MS4 permittees during the permit terms to the national stormwater databases as shown in Table 5. The table reflects an average concentration of a subset of the pollutant monitored by the permittees during the permit term at the five designated monitoring sites and compares discharge concentrations to the NURP, CDM, and NSQD datasets. Note that comparison to national databases provides a basis for comparison, but is not always easy due to variations in climate and geography. Data from the NSQD for Maricopa County (Phoenix, AZ area) was also included for comparison of information more representative of an arid area.

The data was evaluated against water quality standards to determine if the pollutant concentrations in the stormwater are elevated relative to applicable water quality standards (Table 2a and Table 2b). Monitoring data exceeding a water quality criterion provides reason to be concerned about that parameter, but does not mean that the discharge has caused or contributed to an exceedance of the in-stream water quality standard nor impaired the designated use. Since stormwater discharges are episodic, application of chronic criterion is particularly problematic since aquatic organisms would not be likely to be exposed to the same stormwater discharge for the seven (7) day period of a chronic toxicity test. Even though application of chronic standards to even averages of episodic stormwater discharge values is not a particularly good indicator of whether the in-stream standard was actually being exceeded, it is encouraging to note that only lead had an average value above the New Mexico, Pueblo of Isleta, and Pueblo of Sandia chronic toxicity water quality standards and cadmium had an average value above the Pueblo of Isleta and Pueblo of Sandia chronic toxicity water quality standards.

For initial screening purposes to calculate the water quality criteria for hardness-dependent metals, a representative hardness value of 161 mg/l of CaCO3 for the receiving waters, the Rio Middle Grande, was utilized. Ambient hardness data was drawn from EPA's STORET (STOrage and RETrieval computerized data system) and represents the average value during the 2004-2013permit term for the reach of the Middle Rio Grande extending south of Angostura Diversion to Isleta Pueblo (Assessment Units 2105.50 and 2105.1_00).

Table 2a. NM Aquatic Water Quality Criteria

Constituent	UNITS	ACUTE AQUATIC CRITERIA	CHRONIC AQUATIC CRITERIA[3]
		NM WQS[1]	NM WQS [1]
Total Suspended Solids	mg/L	n/a	n/a
Biochemical Oxygen Demand	mg/L	n/a	n/a
Chemical Oxygen Demand	mg/L	n/a	n/a
Total Phosphorus	mg/L	n/a	n/a
Dissolved Phosphorus	mg/L	n/a	n/a
Total Kjeldahl Nitrogen	mg/L	n/a	n/a
Nitrite and Nitrate	mg/L	n/a	n/a
Arsenic	µg/l	340[2]	150[2]
Cadmium	µg/l	2.49[2]	0.64[2]
Copper	µg/l	21.17[2]	13.52 [2]
Chromium III	µg/l	845.84[2]	110.03[2]
Lead	µg/l	108.74[2]	4.24 [2]
Mercury	µg/l	1.4[2]	0.77[2]
Thallium	µg/l	n/a	n/a
Zinc	µg/l	248.12[2]	187.92 [2]
PCBs	µg/l	2	0.014

1 Calculated from New Mexico Water Quality Standards for Interstate and Intrastate Surface Waters, 20.6.4 NMAC dated 7/2010, hardness of 162 mg/l as CaCO3, pH of 8.3 s.u.
2 Dissolved fraction
3 Chronic standards included above are for informational purposes, due to their short term and intermittent nature, storm water discharges would exert more of an acute than chronic effect on receiving waters.

Table 2b. Pueblo of Isleta and Pueblo of Sandia Aquatic Water Quality Criteria

Constituent	UNITS	Pueblo of Isleta		Pueblo of Sandia	
		ACUTE AQUATIC CRITERIA	CHRONIC AQUATIC CRITERIA[4]	ACUTE AQUATIC CRITERIA	CHRONIC AQUATIC CRITERIA[4]
		Isleta WQS[1]	Isleta WQS [1]	Sandia WQS[3]	Sandia WQS[3]
Total Suspended Solids	mg/L	n/a	n/a	n/a	n/a
Biochemical Oxygen Demand	mg/L	n/a	n/a	n/a	n/a
Chemical Oxygen Demand	mg/L	n/a	n/a	n/a	n/a

Constituent	UNITS	Pueblo of Isleta		Pueblo of Sandia	
		ACUTE AQUATIC CRITERIA	CHRONIC AQUATIC CRITERIA[4]	ACUTE AQUATIC CRITERIA	CHRONIC AQUATIC CRITERIA[4]
Total Phosphorus	mg/L	n/a	n/a	n/a	n/a
Dissolved Phosphorus	mg/L	n/a	n/a	n/a	n/a
Total Kjeldahl Nitrogen	mg/L	n/a	n/a	n/a	n/a
Nitrite and Nitrate	mg/L	n/a	n/a	n/a	n/a
Arsenic	µg/l	340[2]	150[2]	340[2]	150[2]
Cadmium	µg/l	3.39[2]	0.36[2]	3.22[2]	0.34[2]
Copper	µg/l	21.17[2]	13.52 [2]	21.17[2]	13.52 [2]
Chromium III	µg/l	845.84[2]	110.03[2]	845.84[2]	110.03[2]
Lead	µg/l	108.74[2]	4.24 [2]	108.74[2]	4.24 [2]
Mercury	µg/l	2.4	0.012	2.4	0.012
Thallium	µg/l	n/a	n/a	n/a	n/a
Zinc	µg/l	176.36[2]	177.79 [2]	176.36[2]	177.79 [2]
PCBs	µg/l	n/a	0.014	n/a	0.014

1 Calculated from Pueblo of Isleta Water Quality Standards Surface Waters, dated 3/2002, hardness of 162 mg/l as CaCO3, pH of 8.3 s.u.
2 Dissolved fraction
3 Calculated from Pueblo of Sandia Water Quality Standards Surface Waters, dated 3/2010, hardness of 162 mg/l as CaCO3, pH of 8.3 s.u.
4 Chronic standards included above are for informational purposes, due to their short term and intermittent nature, storm water discharges would exert more of an acute than chronic effect on receiving waters.

i. **Phthalates**. Phthalates account for the majority of detections of monitored organics in Albuquerque stormwater. Bis (2-Ethylhexyl) Phthalate is the most commonly detected parameters, and is not toxic to aquatic organisms. Di-N-Butyl Phthalate is the second most commonly detected organic in Albuquerque stormwater. Although di-n-butyl phthalate, butyl benzyl phthalate and diethyl phthalate are aquatically toxic, the levels detected in the stormwater typically are below the No Observable Effects Concentrations (NOEC) for microorganisms, algae, invertebrates and fish.

ii. **Polycyclic Aromatic Hydrocarbons (PAHs)**. Fluoranthene and pyrene are the most detected PAHs in Albuquerque stormwater. The maximum detected level of fluoranthene during the 2009-2011 permit term was 2.7 µg/l. The maximum detected level of pyrene was 1.3 µg/l. Naphthalene was detected at a concentration of 0.49 µg/l. PAHs toxicity studies (*Schirmer et. al*) indicate that fluoranthene and pyrene appear to have the most potential to impact fish through phytotoxicity when water solubility is taken into account. Literature also shows EC50s of 55 (11.12 µg/l) and 93 nM (18.81 µg/L) for pyrene and fluoranthene (each has a molecular weight of 202.26 g/mol). The detected average concentrations in Albuquerque stormwater for pyrene and

fluoranthene are below these EC50 values.

iii. **Bacteria**. Site 002 (South Diversion Channel) showed high levels of fecal coliform at 1730000 cols/100 ml. Although EPA observed that the levels of fecal coliform are greater than the applicable water quality criterion of 200-cfu/100 ml for all five sampling locations, water quality standards apply in-stream, not at end of pipe. Table 3 shows the TMDL results in terms of load estimates and TMDL target values for fecal coliform over eight years. Because the fecal coliform contamination appears to be a watershed-wide concern, the proposed permit incorporate cooperative programs so that MS4 permittees can work with other stormwater partners, including watershed stakeholders to implement a watershed-wide public information program, targeted at the control of dog feces and other pollutant sources in the Middle Rio Grande watershed. It should also be noted that a microbial source tracking assessment study funded by the NMED, Bernalillo County, and AMAFCA was carried out in the Middle Rio Grande. The study indicated that agricultural sources and septic tank malfunctions may not be major sources of fecal coliform in runoff. The largest fraction of bacteria matched those found in avian sources, followed by canine, human/sewage, rodents, bovines, and equines.

The Middle Rio Grande has been 303(d) listed as impaired for bacteria and a TMDL was established in 2002, for fecal coliform. The MS4 was assigned target levels of loadings for fecal coliform and implemented in the permit NMS000101. Monitoring performed by the permittees and submitted to EPA on discharge monitoring reports (see Table 3) demonstrate that fecal discharges from the MS4 at the five monitoring points are below the TMDL targets.

A new bacteria TMDL for the Middle Rio Grande was approved by the Water Quality Control Commission on April 13, 2010. The new TMDL modifies: 1) the indicator parameter for bacteria from fecal coliform to *E. coli*, and 2) the way the waste load allocations (WLAs) are assigned (see Table 4). Note that the terms and content of the TMDL itself are outside the scope of this permit and comments on the TMDL (as opposed to implementation of the TMDL by the permit) cannot be considered as part of this permitting action. Information on the *E. coli* TMDL is available online at: http://www.nmenv.state.nm.us/swqb/Rio_Grande/Middle/index.html . The permit includes control and monitoring requirements for E. coli and measurable goals based on the TMDL WLA must be adopted by affected permittees.

Table 3. Total Maximum Daily Loading (TMDL) for *Fecal Coliform*

	Maximum 30-day Geometric mean, *fecal coliform* forming units (cfu)/day								
	Target From TMDL	**2003-2004**	**2004-2005**	**2005-2006**	**2006-2007**	**2007-2008**	**2008-2009**	**2009-2010**	**2010-2011**
NDC	6.438×10^{11}	1.05×10^{11}	1.24×10^{10}	3.21×10^{11}	3.05×10^{10}	1.67×10^{11}	1.13×10^{11}	9.39×10^{10}	5.37×10^{10}
SDC	1.444×10^{11}	3.69×10^{7}	3.9×10^{7}	4.85×10^{8}	1.67×10^{7}	8.49×10^{9}	1.23×10^{7}	1.93×10^{9}	1.17×10^{9}
San Jose	1.068×10^{10}	5.12×10^{9}	1.54×10^{9}	2.10×10^{9}	2.71×10^{8}	3.21×10^{9}	4.23×10^{8}	1.27×10^{7}	1.40×10^{7}
Tijeras Arroyo	1.199×10^{11}	2.43×10^{5}	3.4×10^{6}	4.74×10^{9}	9.23×10^{6}	1.77×10^{10}	2.19×10^{7}	2.71×10^{8}	1.04×10^{7}

Source: 2009/2010/2011 Albuquerque Municipal Separate Storm Sewer System (MS4) Permit No NMS000101 TMDL Progress Report

Table 4. 2010 TMDL Waste Load Allocations (WLAs)[2] for *E. coli*: Rio Grande[1]

Stream Segment	Stream Name	Permittee Class	FLOW CONDITIONS & ASSOCIATED WLA (cfu/day)[3]				
			High	Moist	Mid-Range	Dray	Low
2105_50	Isleta Pueblo boundary to Alameda Street Bridge (based on flow at USGS Station NM08330000)	Class A	3.36×10^{10}	8.41×10^{10}	5.66×10^{10}	2.09×10^{10}	4.67×10^{9}
		Class B Class C	3.73×10^{9}	9.35×10^{9}	6.29×10^{9}	2.32×10^{9}	5.19×10^{8}
2105.1_00	non-Pueblo Alameda Bridge to Angostura Diversion (based on flow at USGS Station NM08329928)	Class A	5.25×10^{10}	1.52×10^{10}	_	5.43×10^{9}	2.80×10^{9}
		Class B Class C	2.62×10^{11}	7.59×10^{10}	_	2.71×10^{10}	1.40×10^{10}

[1] Total Maximum Daily Load for the Middle Rio Grande Watershed, NMED, 2010.
[2] The WLAs for the stormwater MS4 permit was based on the percent jurisdiction area approach. Thus, the MS4 WLAs are a percentage of the available allocation for each hydrologic zone, where the available allocation = TMDL – WLA – MOS.
[3] Flow conditions relate to percent of days the flow in the Rio Grande at a USGS Gauge exceeds a particular level: High 0-10%; Moist 10-40%; Mid-Range 40-60%; Dry 60-90%; and Low 90-100%. (Source: Figures 4.3 and 4.4 in 2010 Middle Rio Grande TMDL)

Formula to Calculate *E. coli* Bacteria Loadings (from the Bacteria TMDL)

C as cfu/100 ml * 1000 ml/1 L /0.264 gallons * Q = cfu/day

Where: C = water quality standard criterion for bacteria
Q = stream flow in million gallons per day (mgd)

iv. Temperature. None of the samples for temperature exceeded the State of New Mexico's water quality standard of 32.2°C at the five sampling locations. The new State impaired waters listing identifies a 2013 temperature schedule for a probable temperature impairment for Middle Rio Grande River Segment **20.6.4.105**. Although NMED has several approved temperature TMDLs, these are typically in small coldwater streams. Approaches recommended in these small coldwater streams may not be practicable for the Middle Rio Grande in the Albuquerque area. Therefore, the Middle Rio Grande may need an alternate approach. Approaches recommended in NMED approved temperature TMDLs may be found at http://www.nmenv.state.nm.us/swqb/TMDL/list.html.

As required by Table V of the existing permit (NMS000101) for the Phase I permittees, AMAFCA and the City of Albuquerque submitted in May 1, 2012 a strategy to monitor the temperature of discharges onto the Rio Grande. According to AMAFCA and the City, temperature data collected via grab samples during storm events at the five outfalls monitoring stations from 1992 to the present along with water temperature data monitoring stations from

sondes in the North Diversion channel (NDC) Embayment area were submitted. This data supported the permittees' belief that storm water discharge from the Albuquerque metropolitan area MS4 had not contributed to temperature exceedances in the receiving waters of the Rio Grande.

EPA Region 6 is inviting and will consider comments and input on the proposed requirements specified in Part I.C.1.f to address impairment for temperature in the Middle Rio Grande. Requirements in Part I.C.1.f will be only applicable to the City of Albuquerque and AMAFCA. Comments on the proposed requirements (Part I.C.1.f) to address impairment for temperature must reference "Temperature Requirements".

v. **Metals**. Only two monitoring sites, the South Diversion Channel and the San Antonio Channel, demonstrated levels of lead greater than one of the criterion. Three values for dissolved lead were greater than the Pueblo of Isleta, Pueblo of Sandia and New Mexico chronic aquatic criterion of 4.24 µg/l. None of the concentrations observed for dissolved lead exceeded the acute aquatic criterion of 108.74 µg/l. Two monitoring sites, the North Diversion Channel and the Barelas, indicated levels of cadmium above the corresponding Pueblo of Isleta and Pueblo of Sandia chronic aquatic criteria of 0.36 µg/l and 0.34 µg/l. None of the concentrations observed for dissolved cadmium exceeded the Tribal or the State acute aquatic criteria. Since chronic toxicity reflects exposure to a particular concentration over a longer period of time (e.g., seven days for the chronic toxicity test) exceedance of a chronic criterion in an episodic short term stormwater discharge does not necessarily mean that the in-stream concentration in the receiving water would have exceeded the chronic toxicity standard for sufficient time to actually violate the chronic toxicity standard. EPA notes that the Rio Grande has not been listed as impaired due to lead or cadmium.

Three samples for zinc exceeded the State, the Pueblo of Isleta and the Pueblo of Sandia acute aquatic criterion of 176.36 µg/l and chronic criterion of 177.79 µg/l. The average values of zinc did not exceed either of the Tribal nor the New Mexico acute aquatic criterion or the chronic aquatic criterion. EPA notes that the Rio Grande has not been listed as impaired due to zinc.

Many toxicity studies have demonstrated that bioavailibity of metals are affected by pH. For example, Mary K. Schubauer and Joseph R. Dierkes tested the acute of lead to *Ceriodaphnia dubia, Pimephales promelas, Hyalella azteca* and *Lumbriculus variegates* at three pH values (6.3 s.u., 7.3 s.u., and 8.3 s.u.) in very hard reconstituted water. Toxicity of lead was greatest at pH 6.3 s.u. and least at pH 8.3 s.u. to most of the species. Stormwater data in the City of Albuquerque for pH shows a minimum average value of pH of 7 s.u. therefore it is suspected that that lead toxicity to epibenthic and benthic organisms might be reduced by the levels of pH encountered in the stormwater and the levels of pH of approximately 8 s.u.1 encountered in the receiving waters. Various studies (EPA Ambient Water Quality Criteria document for zinc, EPA

1 pH of 8 was extracted from the Cynthia Abeyta's presentation at http://www.fws.gov/southwest/bhg/Water_Quality.htm

440/5-80-079) have also shown that the chronic toxicity of zinc to daphnids appears to increase with increasing hardness, a phenomenon which may be attributable to ingestion of precipitated zinc by Dahnia magna in hard water tests. The average hardness of 162 mg/l of CaCO3 for the receiving waters was calculated for the MRG. After comparing this value with the average values of harness encountered in the stormwater, it appears that the chronic toxicity of zinc could be reduced by the low levels of hardness encountered in the stormwater (e.g. maximum annual average concentration of 42.8 mg/l of CaCO3 for hardness at the San Antonio outfall). The permit includes monitoring requirements for collecting additional data within the MS4 or at additional appropriate instream locations should monitoring results indicate that MS4 discharges may be contributing to instream exceedances of WQS. The purpose of this additional monitoring effort is to identify sources of elevated pollutant loadings so they can be addressed by the SWMP. (See Part III.A.1.h of the proposed permit)

vi. **Fish Tissue and Sediment**. Because zinc, cadmium, and lead may attach to the soil and bioaccumulation of these metals from sediment and ingestion of aquatic organisms may occur, EPA evaluated sediment data and fish tissue collected in the area. Sediments samples were collected by the NMED in October 2006 – September 2007 as part of the 2007 water quality survey in the middle Rio Grande. Many metals were detected in sediment samples during the first year of the survey at each station. Arsenic at the Bosque del Apache site was the only metal to exceed the Screening Quick Reference Table for Inorganic in sediments (SQuiRT) lowest screening level. The SQuiRT levels were developed by the Coastal Protection and Restoration Division (CPR) of the National Oceanic and Atmospheric Administration (NOAA) and serve as a useful screening level tool to determine potential chemicals of concern in sediments. Fish tissue samples were also collected with the assistance of the New Mexico Department of Game and Fish (DGF) on May 8-9, 2007 at three longitudinal reaches: Highway 550 Bridge to North AMAFCA; North AMAFCA to Alameda Bridge; and Rio Bravo Bridge to Los Padillas. Fish collected in this survey contained chemicals above the method detection limits. The only contaminants not detected were lead and selenium for all samples and cadmium at two of the four sites. NMED found that most of the chemicals, except zinc, were detected at concentrations below limits that could impact fish health. Continued monitoring will be necessary to determine sources of zinc in the Albuquerque UA MS4s.

Although several pollutants exceed the applicable aquatic life criteria and the MSGP industrial benchmark values at the monitoring location (as opposed to instream after mixing), several toxicity studies completed in the area have indicated no toxicity to both *Ceriodaphnia dubia* and fathead minnow. A toxicity test was performed by the USGS in 1999 where stormwater runoff collected from the NDC on August 10, 19992 was used to determine if the stormwater would produce toxic effects to aquatic life using *Ceriodaphnia dubia* and fathead minnow. In October 2009, a toxicity test was also performed by the Phase I MS4 permittees at the NDC and it also indicates no toxicity effects on the fathead minnow and *Ceriodaphnia dubia.* In July 22, 2011, the Phase I permittees carried out a toxicity test using both fathead minnows and *Daphnia pulex,*the test results indicated that both species passed the acute test at all storm water and river dilutions. A request (August 1, 2011 City of Albuquerque letter) to drop the annual 48-hour acute toxicity testing was also made as a result of discussion with Fish and Wildlife Service personnel who indicated that these tests aren't indicative of long-term health of the Rio Grande Silvery

2 July 16, 2010 Final Biological Evaluation for NPDES Permit No NMS000101, City of Albuquerque Municipal Separate Sewer System

Minnow. According to the Phase I permittees, the cost savings that result from the reduction of these sampling and testing events will be used to conduct additional PCB screening in the metropolitan area watershed.

It is well documented that the urbanization of an area contributes to changes in the quantity and quality of stormwater discharges and has negative impact on waters of the US. Information presented in Tables 1 and 2 of Addendum G and Table 5 illustrates the variable nature of stormwater but also highlights the potential for Water Quality Standards to be exceeded in the discharge. This does not necessarily mean an instream exceedance of water quality standards would have occurred. A conclusion can be drawn that if pollutant concentration data presented is representative of the municipal stormwater runoff from the Albuquerque Urbanized Area, there is potential for chronic and even acute toxicity. High velocity channelized stormwater flows can also cause habitat modification, exacerbating negative effects. EPA's recognition of the potential for municipal stormwater discharges to degrade receiving water quality is the basis for development of municipal stormwater regulations and permits. However, while water quality effects from municipal stormwater discharges can be anticipated, assessing the degree to which receiving waters are affected is a complex process. Assessing the degree to which municipal stormwater discharges affect species that occupy those receiving waters or whose habitat is supported is even more complex.

The ubiquitous nature of stormwater runoff does not allow for the cessation of municipal stormwater discharges regardless of EPA's action on a permit. Instead, the program uses the National Pollutant Discharge Elimination System (NPDES) permitting mechanism to require the implementation of controls designed to prevent harmful pollutants from being washed by stormwater runoff into local water bodies. The Albuquerque UA municipal stormwater program is also required to reduce the discharge of pollutants to the "maximum extent practicable" and to satisfy the water quality goals of the Clean Water Act. Specifically, implementation of the SWMP and monitoring requirements of the permit will reduce pollutants in MS4 discharges, help guide adaptive management changes by the permittees, and provide information necessary to require more stringent permit requirements through the permit modification process if necessary.

Table 5: MS4 DMR Data vs. National Storm Water Quality Databases

CONSTITUENT	UNITS	SOURCE	MEAN	NO. OF EVENTS
Total Suspended Solids	mg/L	NURP[1]	174	2000
		CDM[2]	78.4	3047
		NSQD[3]	79.1	3404
		MC[4]	129.11	3493
		ABQ[5] PH1 Site 1	3438	<12
		ABQ PH1 Site 2	1032	<12
		ABQ PH1 Site 3	2502	<12
		ABQ PH1 Site 4	51681	<12
		ABQ PH1 Site 5	528	<12
Biochemical Oxygen Demand	mg/L	NURP	10.4	474
		CDMa	14.1	1035
		NSQD	10.9	2973
		MC[4]	17.3	3105

CONSTITUENT	UNITS	SOURCE	MEAN	NO. OF EVENTS
		ABQ PH1 Site 1	59	<12
		ABQ PH1 Site 2	22	<12
		ABQ PH1 Site 3	40	<12
		ABQ PH1 Site 4	26.6	<12
		ABQ PH1 Site 5	18.8	<12
Chemical Oxygen Demand	mg/L	NURP	66.1	1538
		CDM	52.8	2639
		NSQD	71.2	2699
		MC[4]	79.14	2750
		ABQ PH1 Site 1	560	<12
		ABQ PH1 Site 2	300	<12
		ABQ PH1 Site 3	330.5	<12
		ABQ PH1 Site 4	2200	<12
		ABQ PH1 Site 5	134	<12
Total Phosphorus	mg/ L	NURP	0.337	1902
		CDM	0.315	3094
		NSQD	0.373	3162
		MC[4]	0.41	3285
		ABQ PH1 Site 1	2.2	<12
		ABQ PH1 Site 2	1.5	<12
		ABQ PH1 Site 3	1.8	<12
		ABQ PH1 Site 4	6.9	<12
		ABQ PH1 Site 5	0.4	<12
Dissolved Phosphorus	mg/L	NURP	0.1	767
		CDMb	0.129	1091
		NSQD	0.107	2093
		MC[4]	0.20	2477
		ABQ PH1 Site 1	0.2	<12
		ABQ PH1 Site 2	0.2	<12
		ABQ PH1 Site 3	0.6	<12
		ABQ PH1 Site 4	0.2	<12
		ABQ PH1 Site 5	0.3	<12
Total Kjeldahl Nitrogen	mg/L	NURP	1.67	1601
		CDM	1.73	2693
		NSQD	1.74	3034
		MC[4]	2.04	3191
		ABQ PH1 Site 1	4.2	<12
		ABQ PH1 Site 2	3.1	<12
		ABQ PH1 Site 3	7	<12
		ABQ PH1 Site 4	14.7	<12
		ABQ PH1 Site 5	1.6	<12
Copper	µg/L	NURP	66.6	849
		CDM	13.5	1657
		NSQD	17.8	2356
		MC[4]	30.65	2722
		ABQ PH1 Site 1	76.6	<12
		ABQ PH1 Site 2	48	<12

CONSTITUENT	UNITS	SOURCE	MEAN	NO. OF EVENTS
		ABQ PH1 Site 3	58.1	<12
		ABQ PH1 Site 4	195.7	<12
		ABQ PH1 Site 5	21.1	<12
Lead	µg/L	NURP	175	1579
		CDM	67.5	2713
		NSQD	24.4	2250
		MC[4]	39.15	2949
		ABQ PH1 Site 1	99.3	<12
		ABQ PH1 Site 2	59	<12
		ABQ PH1 Site 3	178	<12
		ABQ PH1 Site 4	215.9	<12
		ABQ PH1 Site 5	13.4	<12
Zinc	µg/L	NURP	176	1281
		CDM	162	2234
		NSQD	110	2888
		MC[4]	226.8	3007
		ABQ PH1 Site 1	394	<12
		ABQ PH1 Site 2	360	<12
		ABQ PH1 Site 3	1228	<12
		ABQ PH1 Site 4	995	<12
		ABQ PH1 Site 5	1163	<12

1 Nationwide Urban Runoff Program (NURP 1983)
2 Camp, Dresser, and McGee National Stormwater Database (CDM) (Smullen and Cave 2002)
3 National Stormwater Quality Database (NSQD), (Pitt 2005)
4 Maricopa County New Mexico data from National Stormwater Quality Database (NSQD), (Pitt 2005)
5 Albuquerque monitoring sites. It represents the maximum average vales from Table 1 and 2 in Addendum G

vii. Gross Pollutants. Litter, vegetative debris, floatable material, and coarse sediments (1.75" nominal or larger) found in Albuquerque stormwater may be contributing pollutants to the environment. The permit includes control and monitoring requirements for gross pollutants, including floatables.

viii. Dissolved Oxygen. Stormwater from the Albuquerque MS4 has been measured and reported to EPA each year on discharge monitoring reports. Average values shown in Tables 1 and 2 in Addendum G indicate BOD levels above national stormwater database averages. EPA's Multi-Sector Stormwater General Permit for Industrial Activities benchmark value for COD is 120 mg/L (BOD times 4). The averages of COD measured at Albuquerque MS4 monitoring locations are well above the 120 mg/L benchmark. The permit includes control and monitoring requirements for dissolved oxygen.

Nitrogen and phosphorus generally are present at background levels below 0.3 mg/L and 0.05 mg/L, respectively. Although average nutrients levels calculated indicate levels above these, the permit includes control and monitoring requirements should monitoring results indicate that MS4 discharges may be contributing to instream exceedances of nitrogen and phosphorus WQS.

ix. **PCBs in the San Jose Drain and North Diversion Channel**. The San Jose Drain and the North Diversion Channel are one of many sites in central New Mexico, along the middle Rio Grande where elevated levels of PCBs have been found in the water column at levels near to or exceeding New Mexico water quality standards for protection of wildlife habitat/livestock watering and human health. The Department of Energy (DOE) Oversight Bureau of the New Mexico Environment Department (NMED) has compiled and blank-corrected PCB data generated during the 2002-2003 Los Alamos National Lab (LANL) and NMED cooperative study of the Upper Rio Grande Watershed (NMED DOE Oversight Bureau Correspondence and Transmittal Letter, signed S. Yanicak, to G. Turner, DOE, Dated June 6, 2006). The data was analyzed using EPA Method 1668A, for its high sensitivity to quantify the PCBs at reportable levels in laboratory blanks. Elevated levels of PCBs were found in stormwater in the San Jose Drain, along with elevated sediment levels. A fish advisory was issued in March 2009 to limit consumption of channel catfish and white bass taken from this reach of the Rio Grande because of high levels of PCBs found in fish tissue. PCB studies continue in the Rio Grande and the results of these studies could drive changes to the SWMP and/or permit in the future.

On April 15, 2010, NMED released results of a study conducted in 2009 of Rio Grande water quality near the Santa Fe Buckman Direct Diversion and in Albuquerque during storm flow conditions. The study indicates that stormwater events in the Albuquerque area have the potential to carry concentrations of PCBs into the Rio Grande that can harm wildlife and humans consuming PCB contaminated fish. While it is possible that the PCBs are entering the Rio Grande from the North Diversion Channel, which drains stormwater from 89.7 square miles in the northeastern part of Albuquerque, further investigation is needed to confirm whether the source of the contamination is in the North Diversion Channel watershed or further upstream in the Rio Grande (NMED Press Release Dated April 19, 2010).

In June 1, 2012, AMAFCA and the City of Albuquerque formulated a strategy to screen for PCBs in watersheds that drain to the channel and San Jose drain. The permit includes control and monitoring requirements to address concerns regarding PCBs in the San Jose Drain and North Diversion Channel drainage areas by continue updating/revising and implementing a strategy to identify and eliminate controllable sources of PCBs that cause or contribute to exceedances of applicable water quality standards in waters of the United States.

In a letter dated April 20, 2010, the New Mexico Environment Department notified EPA that pursuant to Section 401 of the Clean Water Act, the use of EPA Method 1668: Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by HRGC/HRMS (Congener Method) for PCB monitoring under the permit was a condition for certification of permit NMS000101. Although EPA Method 1668 has been proposed, it has not been approved under 40 CFR 136 for use in compliance monitoring for NPDES permits. However, use of this more sensitive EPA method will provide lower detection levels necessary to determine if PCBs are in discharges to or from the MS4 at levels that have reasonable potential to cause or contribute to an exceedance of State or Tribal water quality standards. Under the proposed permit, for purposes of sediment sampling as part of a screening program to identify area(s) where PCB control/clean-up efforts may need to be focused, either the Arochlor test (EPA Method 8082) or USGS test method (8093) may be utilized. EPA Method 1668 should be utilized when PCB water column monitoring is conducted to determine compliance with permit requirements.

G. **Permitting Options for MS4s**

The Phase I and II regulations provide two options for MS4s located in the Middle Rio Grande Watershed to obtain required storm water permits for MS4 discharges:

1. Apply for coverage under the proposed general permit discussed in this fact sheet.

2. Apply for an individual permit.

Region 6 believes that most EPA-regulated MS4s in the Middle Rio Grande Watershed will seek coverage under the proposed general permit (which can also accommodate cooperative or shared programs between individual MS4s under the general permit). However, the other option is also available to MS4s which may believe that the terms and conditions of the general permit are not appropriate for them. Note, however, that the same technology and water quality requirements and concerns would apply to an individual permit, likely leading to the same or very similarly conditions for any alternative permit for MS4s in the Albuquerque area. Application requirements for individual permits are found at 40 CFR 122.33(b)(2).

I. Opportunities for Public Input Into the Permit Process

As with all NPDES permits, the public has the opportunity to provide input on the permit during the public comment period described at the beginning of this document. Since general permits are issued without an application to positively identify who will be using the permit, the conditions of today's permit are designed to control pollutants to the Maximum Extent Practicable in all discharges that fall within the general permit's scope of eligibility. In developing NPDES permit conditions and evaluating effects of permit issuance, EPA bases decisions on the assumption that the permittee will fully comply with all applicable permit conditions.

In reviewing the proposed permit, the public should take into consideration that only those MS4 operators that meet all eligibility conditions will be able to use the permit, and then must comply with all permit conditions. Reviewers should also note that the Phase II regulations at 40 CFR 122.34(a) do allow up to 5 years for new operator of a small MS4 to complete development and implementation of a storm water management program. Existing permittees must continue existing programs, updating as necessary, to comply with the requirements of the proposed permit. Comments on the permit requirements and/or the nature of these "existing" and "future" programs that will be updated during the life of the permit must be made in the context of the proposed general permit.

Consistent with 40 CFR 122.34(b)(2), Part I.D.5.h of the permit requires permittees to develop, update, and implement a public involvement/participation program as part of their comprehensive storm water management program. Interested members of the public are encouraged to contact their local officials for information on how they can participate in the development and implementation of local storm water management programs.

To obtain coverage under the general permit, the operator of the MS4 will need to submit a Notice of Intent and information on their storm water management program (see Part I.B of the permit). The proposed permit will require the permitttees to provide local public notice of and make available for public review a copy of the complete NOI and attachments before the NOI is submitted to EPA for

approval (see Part I.A.3.a.(i).(a)). Once these documents have been received by EPA, they become public records and are available for review by interested parties under the Freedom of Information Act.

EPA Region 6 is inviting and will consider comments and input on the proposed requirements specified in Part I.A.3.a.(i).(a) to address public comments before the NOI is submitted to EPA for approval. Comments on the proposed requirement (Part I.A.3.a.(i)(a) must reference "Public Participation Requirement".)

The Federal regulations at 40 CFR 122.28(b)(3) regarding administration of general permits allows the Director to require any discharger authorized by a general permit to apply for and obtain an individual NPDES permit. This eventuality is covered by Part IV.M of the permit and provides a mechanism to address situations with individual dischargers where there is a water quality problem with the discharges from a particular MS4 and the permittee has failed to address the problem with appropriate modifications to the storm water management program. Any interested person may petition the Director to take action under these regulations.

III. COVERAGE OF THE PROPOSED GENERAL PERMIT

A. Geographic Coverage

This permit covers the Middle Rio Grande Sub-Watersheds depicted in Addendum A

B. MS4s Covered by the 2000 and 2010 Census

Table 6 provides a list of the small MS4s within Urbanized Areas as of the 2000 and 2010 Census. As discussed above, EPA Region 6 is relying primarily on the 2000 and 2010 Census Urbanized Areas to determine which MS4s are subject to permitting. Table 6 below also provides the names of the city and county "places" within the areas covered by the proposed MS4 general permits. Phase I MS4s within the corporate boundary of the City of Albuquerque (COA) served by, or otherwise contributing to discharges from the municipal separate storm sewer system (MS4) owned and/or operated by the City of Albuquerque (COA), and former co-permittees established under permit No NMS000101, included Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA), New Mexico Department of Transportation (NMDOT), and University of New Mexico (UNM). Note that the list includes the names of non-traditional municipal, state, tribal, or federal MS4s located within these areas which would also need permits. Maps of Census 2010 Urbanized Areas and lists of cities and counties located within them are available online at http://cfpub1.epa.gov/npdes/stormwater/urbanmaps.cfm.

Table 6 Places within Census 2000 and 2010 Urbanized Areas

Place	County	Population based on 2000 Census	Population based on 2010 Census
City of Albuquerque	Bernalillo	447,780	545,852
Albuquerque Metropolitan Arroyo Flood Control Authority	Bernalillo	---	---
New Mexico Department of	Bernalillo/Sandoval	---	---

Transportation District			
University of New Mexico	Bernalillo	---	---
City of Rio Rancho	Sandoval	51,055	87,521
Bernalillo County	Bernalillo	556,678*	662,564
Carnuel ***	Bernalillo	511	592
North Valley ***	Bernalillo	11,923	11,333
South Valley ***	Bernalillo	38,572	40,976
Sandoval County	Sandoval	89,908**	131,561
Placitas ***	Sandoval	---	544
Southern Sandoval County Arroyo Flood Control Authority	Sandoval	---	---
Town of Bernalillo	Sandoval	6,600	8,320
Los Ranchos de Albuquerque	Bernalillo	5,092	6,024
Eastern Sandoval County Arroyo Flood Control Authority	Sandoval	---	---
Village of Corrales	Bernalillo/Sandoval	7,334	8,329
Pueblo of Sandia	Sandoval	344	297
Pueblo of Isleta	Bernalillo	487	481
Pueblo of Santa Ana	Sandoval	433	353
State Fairgrounds/Expo NM	Bernalillo	---	---
Kirtland AFB	Bernalillo	---	---
Sandia National Laboratories/DOE	Bernalillo	---	---
Sandia Heights ***	Bernalillo	---	3193
Paradise Hills ***	Bernalillo	---	4256
Edith Endave ***	Sandoval	---	185
Algodones ***	Sandoval	---	449

* 27,294 people were estimated in Bernalillo County in the 2000 Census within the UA that is not located within an incorporated place. An incorporated place is created to provide governmental functions for a concentration of people. For example, a city or municipality is an incorporated place.
** 1,110 people were estimated in Sandoval County in the 2000 Census within the UA that is not located within an incorporated place.
*** CDP Census Designated Place are delineated solely to provide data for settled concentrations of population that are identifiable by name but are not legally incorporated under the laws of the state in which they are located. CDPs are populated areas that lack separate municipal government, but which otherwise physically resemble incorporated places. In terms of implementing the NPDES storm water program, it should be noted that the Counties should include those areas as part of their jurisdictional areas.

C. **Authorized Discharges**

Subject to the terms and conditions of Part I.A.3, and Part I.A.5, the general permit authorizes municipal storm water discharges and certain allowable non-storm water discharges from all parts of the operator's municipal separate storm sewer system. The list of allowable non-storm water discharges in Part I.A.4 are taken primarily from 40 CFR 122.34(b)(3)(iii). The permit also allows the permittee to identify other similar occasional incidental non-storm water discharges, such as those from charity car washes, that need not be treated as illicit discharges provided the discharges would not be significant contributor of

pollutants either due to their nature or conditions placed upon them by the permittee.

IV. LIMITATIONS ON COVERAGE

A. **Storm Water Discharges Mixed with Non-Storm Water**

The permit requires the permittee to prohibit all types of non-storm water discharges into its MS4, except for discharges that are authorized by a separate NPDES permit, and allowable non-storm water discharges listed in Part I.A.4 of the permit. The permit also does not allow coverage for discharges of storm water associated with industrial activity (40 CFR §122.26(b)(14)(i) through (ix) and (xi)), or storm water discharges from construction activity (40 CFR §122.26(b)(14)(x) or 40 CFR §122.26(b)(15)). Coverage for such discharges is available under the September 29, 2008, Multi-Sector General Permit and the February 29, 2012 Construction General Permit.

B. **Water Quality Protection**

Federal regulations at 40 CFR §122.4(d) provide that no permit may be issued if the "conditions cannot ensure compliance with the applicable water quality requirements." While CWA §402(p)(3)(B) does not specifically mandate compliance with CWA §301 water quality requirements, CWA §402(p)(3)(B)(iii) does provide the authority to include conditions the Administrator or State/Tribe determines appropriate for control of pollutants. Given the overall goal of water quality protection in the CWA and the express purpose of Phase II of the NPDES storm water program to regulate storm water discharges to protect water quality, water quality based controls are deemed appropriate for this permit.

Unlike individual permits that include requirements tailored to site-specific considerations, general permits, while tailored to specific industrial processes or types of discharges (e.g. offshore oil and gas or storm water), do not contain site-specific requirements that address the water quality conditions of the waters receiving the discharge. Therefore, general permits rely on permittees to certify that they meet the eligibility conditions and implement requirements that will ensure compliance with the conditions of the permit. The permit requirements at Part I.C.1 and Part I.D.1 are intended to ensure that those seeking coverage under this general permit select, implement, and maintain BMPs for their Storm Water Management Program that will reduce the discharge of pollutants to the Maximum Extent Practicable and will be adequate and sufficient to protect water quality standards of state and tribal waters for all pollutants of concern.

For this permit, eligibility provisions do not hinge on the operator making a determination of compliance with applicable water quality standards. Rather, the permit limits operators from obtaining coverage under this permit if EPA makes such a determination. In those instances when EPA does make such a determination, EPA may require the operator to obtain coverage under an individual permit or may allow coverage under this permit provided that the operator includes appropriate controls and implementation procedures in its SWMP. As is required in Parts I.C.1 and I.D, operators are required to select, implement, and maintain BMPs that minimize pollutants in the discharge to the Maximum Extent Practicable (MEP) and will protect water quality. Except where specifically required by EPA to perform additional measures, a SWMP developed in accordance with these requirements will be considered as stringent as necessary to ensure that discharges do not cause or contribute to an excursion above any applicable state water quality standard. As such, EPA expects that compliance with the terms of the general permit will ensure compliance with water quality standards.

C. **Consistency with an Applicable Total Maximum Daily Load (TMDL) Analysis**.

A Total Maximum Daily Load (TMDL) is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources. Under current regulations and EPA program guidance (40 CFR §130.2 and §130.7), States establish TMDLs that include wasteload allocations from point sources, and load allocations from non-point sources and natural background conditions. Wasteload allocations are defined as the portion of a receiving water's loading capacity that is allocated to point source dischargers. TMDLs are established at levels necessary to attain and maintain the applicable narrative and numerical water quality standards with seasonal variations and a margin of safety that take into account any lack of knowledge concerning the relationship between effluent limitations and water quality. TMDLs are developed on a pollutant- and waterbody-specific basis. In some instances, TMDLs may combine multiple pollutants into one set of TMDL documents; however, the specific TMDL wasteload and load allocations are to be pollutant-specific. Although States are have the primary responsible for establishing TMDLs, in some instances EPA establishes the TMDLs. Once established or approved by EPA, TMDLs are implemented through water quality management plans and through NDPES permits. NPDES regulations, at 40 CFR §122.44(d)(1)(vii)(B), require that EPA ensure that NPDES permit limits are consistent with the assumptions and requirements of any available wasteload allocation pursuant to 40 CFR §130.7. Generally, this requires EPA to ensure that NPDES permits incorporate applicable assumptions and requirements detailed in TMDLs approved or established by EPA.

Appendix B of the permit shows waste load allocations for MS4s located in the permitted area. Permitttees are required to include BMPs in their Storm Water Management Program targeting pollutants of concern for TMDLs (i.e., targeted controls) and adopt a measurable goal based on the WLA provided in the TMDL. Permittees are also required to have or participate in a monitoring/assessment program aimed at determining whether discharges are consistent with the assumptions and WLAs of a TMDL.

D. **Endangered Species**

The Endangered Species Act (ESA) of 1973 requires Federal Agencies such as EPA to ensure, in consultation with the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) (also known collectively as the "Services"), that any actions authorized, funded, or carried out by the Agency (e.g., EPA issued NPDES permits authorizing discharges to waters of the United States) are not likely to jeopardize the continued existence of any Federally-listed endangered or threatened species or adversely modify or destroy critical habitat of such species (see 16 U.S.C. 1536(a)(2), 50 CFR 402 and 40 CFR 122.49(c)).

To ensure actions required by this permit are not likely to jeopardize the continued existence of any currently listed as endangered or threatened species or adversely affect its critical habitat, Part I.C.3 of the proposed permit has included strategies to address dissolved oxygen and pollutant loads associated with sediment (e.g., metals, etc. adsorbed to or traveling with sediment, as opposed to clean sediment) into the receiving waters of the Rio Grande.

A list of listed or proposed endangered or threatened species within the geographic areas covered by the proposed permit is maintained at EPA's website at http://cfpub.epa.gov/npdes/stormwater/endangerspecies.cfm. Information on endangered and threatened

species and designated critical habitat is also available directly from the U.S. Fish and Wildlife Service's website at http://criticalhabitat.fws.gov/crithab/, which provides additional information on the species. The principal threats to these species which may be associated with the storm water discharges that would be authorized under the permits are loss or modification of habitat and materials such as pesticides and other pollutants in the discharges. The requirements of the permit are designed to both improve the quality of existing unregulated discharges and address impacts on discharges related to future municipal growth.

E **Historic Preservation**

The National Historic Preservation Act (NHPA) requires Federal agencies to take into account the effects of Federal undertakings, including undertakings on historic properties that are either listed on, or eligible for listing on, the National Register of Historic Places. The term "Federal undertaking" is defined in the existing NHPA regulations to include any project, activity, or program under the direct or indirect jurisdiction of a Federal agency that can result in changes in the character or use of historic properties, if any such historic properties are located in the area of potential effects for that project, activity, or program. See 36 CFR 802(o). Historic properties are defined in the NHPA regulations to include prehistoric or historic districts, sites, buildings, structures, or objects that are included in, or are eligible for inclusion in, the National Register of Historic Places. See 36 CFR 802(e).

Federal undertakings include the EPA's issuance of general NPDES permits. To ensure compliance with the NHPA, the proposed permit authorizes storm water discharges only under the following circumstances:

1. The **storm water discharges, and discharge related activities by the permittee** do not affect a property that is listed or has been reviewed and determined to be eligible for listing on the National Register of Historic Places as maintained by the Secretary of the Interior; or

2. The MS4 has obtained and is in compliance with a written agreement with the State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO) that outlines all measures that will be undertaken to mitigate or prevent adverse effects to historic properties.

The above requirements are implemented via the eligibility requirements of the proposed permit (Part I.A.3.b) which restricts permit eligibility to storm water discharges and storm water discharge-related activities which meet either of the above criteria. The above criteria are based on the criteria used in the EPA Region 8 and Region 1 general permit for small MS4s. The process and criteria are also similar to those in EPA's September 28, 2008, Multi-sector General Permit for discharges of storm water associated with industrial activity (73 FR 56572). Region 6 believes these conditions are also appropriate for the small MS4 general permit. Appendix C to the proposed permit (derived from the Region 1 and Region 8 general permits) provides additional direction which must be followed by permit applicants concerning the determination of permit eligibility. Permittees must certify that they have met the eligibility requirement when they submit their notices of intent requesting coverage under the permit.

For new development and redevelopment projects as well as construction activities that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, the permit will require the permittees to develop standards to direct growth to identified areas to protect areas with historic properties concerns. The permit includes requirements to preserve and protect environmentally and ecologically sensitive areas, including historic properties.

In addition to the eligibility provisions in Part I.A.3.b applicable to the MS4 designated area, the proposed permit also includes requirements (see requirements in Part IV.U) to protect archeological and historic sites located within the corporate boundary of the City of Albuquerque and Tribal lands. This permit does not authorize any stormwater discharges nor require any controls to control stormwater runoff which are not in compliance with any historic preservation laws.

V. SUMMARY OF PERMIT CONDITIONS

A. Notification Requirements

In accordance with 40 CFR 122.28(b)(2)(i), a notice of intent (NOI) must be submitted by all dischargers seeking discharge authorization under the proposed general permit.

1. Deadlines for NOIs

Class A Permittees: For existing MS4s within the Corporate Boundary of the COA including former co-permittees under the NPDES permit No NMS000101, the deadline is 90 days from permit issuance.
Class B Permittees: For existing MS4s in urbanized areas designated under 40 CFR 122.32(a)(1) based on the 2000 Census, the deadline for submittal of the NOI is 90 days from permit issuance.
Class C Permittees: For new MS4s in urbanized areas designated under 40 CFR 122.32(a)(1) based on the 2010 Census or designated by the Director to protect water quality in a receiving water, the deadline for submittal of the NOI is 180 days from permit issuance
Class D permittees: For new or existing tribal MS4s in urbanized areas designated under 40 CFR 122.32(a)(1) based on both the 2000 and 2010 Census or designated by the Director to protect water quality in a receiving water, the deadline for submittal of the NOI is 180 days from permit issuance

MS4s intending to use cooperative programs to satisfy one or more SWMP or monitoring elements shall submit their NOIs no later than 180 days from permit issuance.

For new operators of all or a part of an already permitted MS4 (due to change on operator or expansion of the MS4) who will take over implementation of the existing SWMP covering those areas, the NOI must be submitted 30 days prior to taking over operational control of the MS4. Existing permittees who are expanding coverage of their MS4 area (e.g., city annexes part of unincorporated county MS4) are not required to submit a new NOI, but must comply with Part I.D.6.d. Note that these NOI deadlines would not prevent a permittee from later participating in an existing or new cooperative program element.

Any MS4 designated as needing a permit after issuance of this permit will be given a deadline for NOI submittal by the Director at the time of designation.

2. Contents of NOI

EPA has provided a suggested format in Appendix D of the permit. The required information may be provided in narrative form in a letter to the permitting authority. The following information must be provided:

a. The name of the municipal entity/tribe/state agency/federal agency, mailing address, and

telephone number;

b. An indication of whether the MS4 is a Federal, State, Tribal, or other public entity;
c. The urbanized area or core municipality (if the MS4 is not located in an urbanized area) where the MS4 is located; the name of the organization, county(ies) where the MS4 is located, and the latitude and longitude of an approximate center of the MS4;
d. The name of the major receiving water(s). If there are discharges to a water with an applicable Total Maximum Daily Load, a certification that the SWMP complies with the requirements of Part I.C.2 of the permit;
e. An indication of whether all or a portion of the MS4 is located on Indian Country lands and would have discharges to waters under tribal jurisdiction.
f. If the MS4 is relying on another entity to satisfy one or more of the permit obligations, the identity of that entity(ies) and the element(s) they will be implementing.
g. Certification of whether the permittee has met eligibility criteria for protection of historic properties.
h. A description of the storm water management program (SWMP), including best management practices (BMPs) that will be implemented and the measurable goals for each of the storm water minimum control measures specified in Part I.D.5 of this permit, the month and year in which the MS4 operator will start and fully implement each of the minimum control measures or the frequency of the action, the name of the person(s) responsible for implementing or coordinating the SWMP, and the supporting documentation required by Part I.A.3.b

The NOI must be signed in accordance with Part IV.H of the proposed permit and must include the certification statement in Part IV.H.4 of the permit. Signature for the NOI, which effectively takes the place of an individual permit application, may not be delegated to a lower level under Part IV.H.2. (see also 40 CFR 122.22(a) and (b)).

3. **Where to Submit the NOI**

NOIs must be submitted to EPA, Region 6 at an address that will be included in the final permit. It is possible that the final permit will require copies of the NOI to be provided to State or Tribal authorities, the U.S. Fish and Wildlife Service, the State and/or or Tribal Historic Preservation Officer (or similar cultural resources position).

4. **Reapplication for Coverage When the General Permit Expires**

The proposed general permit will expire five years from its effective date. If the permit is not reissued or replaced prior to the expiration date, it will be administratively continued in accordance with the Administrative Procedures Act and remain in force and effect. Any permittee who was granted permit coverage prior to the expiration date will automatically remain covered by the continued permit until the earliest of:

a. Reissuance or replacement of the permit, at which time a new NOI must be submitted in accordance with the requirements of the reissued permit; or
b. Issuance of an individual permit for the discharges; or
c. A formal permit decision is made by the Director not to reissue the general permit, at which time dischargers must seek coverage under an alternative general permit or an individual permit.

5. **Permittees with Cooperative Elements in their SWMP**

Any MS4 that meets the requirements of Part I.A of the proposed permit may choose to partner with one or more other regulated MS4 to develop and implement a SWMP or SWMP element. The partnering MS4s must submit separate NOIs and have their own SWMP, which may incorporate jointly developed program elements. If responsibilities are being shared as provided in Part I.D.3 of this permit, the SWMP must describe which permittees are responsible for implementing which aspects of each of the minimum measures. All MS4 permittees are subject to the provisions in Part I.D.6.

Each individual MS4 in a joint agreement implementing a permit condition will be independently assessed for compliance with the terms of the joint agreement. Compliance with that individual MS4s obligations under the joint agreement will be deemed compliance with that permit condition. Should one or more individual MS4s fail to comply with the joint agreement, causing the joint agreement program to fail to meet the requirements of the permit, the obligation of all parties to the joint agreement is to develop within 30 days and implement within 90 days an alternative program to satisfy the terms of the permit.

6. **Notice of Termination**

A discharger covered by the general permit must terminate coverage if any of the following conditions are met:

a. A new operator has assumed responsibility for the MS4; or
b. The discharger has ceased operations at the MS4; or
c. The permittee is able to eliminate the storm water discharges from the MS4.

EPA has not developed a special notice of termination (NOT) form for MS4s. As such, to terminate coverage a letter including the following information must be submitted:

a. Name, mailing address, and location of the MS4 for which the notification is submitted.
b. The name, address and telephone number of the operator addressed by the Notice of Termination;
c. The NPDES permit number for the MS4;
d. An indication of whether another operator has assumed responsibility for the MS4, the discharger has ceased operations at the MS4, or the storm water discharges have been eliminated; and
e. The following certification:

   I certify under penalty of law that all storm water discharges from the identified MS4 that are authorized by an NPDES general permit have been eliminated, or that I am no longer the operator of the MS4, or that I have ceased operations at the MS4. I understand that by submitting this Notice of Termination I am no longer authorized to discharge storm water under this general permit, and that discharging pollutants in storm water to waters of the United States is unlawful under the Clean Water Act where the discharge is not authorized by an NPDES permit. I also understand that the submission of this Notice of Termination does not release an operator from liability for any violations of this permit or the Clean Water Act.

NOTs, signed in accordance with Part IV.H of the permit, must be sent to EPA at an address that will be provided with final permit.

7. **Effective Date of Coverage**

Coverage will generally become effective upon notification of EPA's approval.

B. **Storm Water Management Program (SWMP) Requirements**

The proposed general permit requires that all dischargers covered by the permit develop and implement a SWMP. The SWMP is the means through which dischargers comply with the CWA's requirement to control pollutants in the discharges to the maximum extent practicable (MEP), and comply with the water quality related provisions of the CWA. EPA considers MEP to be an iterative process in which an initial SWMP is proposed and then periodically upgraded as new BMPs are developed or new information becomes available concerning the effectiveness of existing BMPs (64 Fed. Reg. 68754).

Minimum Pollution Control Measures: The Phase II regulations at 40 CFR 122.34 set forth the following six minimum pollution control measures to be included in SWMPs.

1. Public Education and Outreach on Storm Water Impacts.
2. Public Involvement/Participation.
3. Illicit discharge detection and elimination.
4. Construction Site Storm Water Runoff Control.
5. Post-Construction Storm Water Management in New Development and Redevelopment.
6. Pollution Prevention/Good Housekeeping for Municipal Operations.

For each minimum measure, the regulations specify certain required elements, and also guidance which provides additional information concerning what an adequate program should include. The proposed permit includes nearly verbatim the required program elements for each minimum measure. The proposed permit also includes a number of additional requirements for each minimum measure which were derived from the recommendations of the regulations. These provisions are included in the permit as requirements rather than recommendations to ensure their enforceability. Addendum C to this fact sheet provides a list of the requirements of the regulations and the guidance for each minimum measure.

Recognizing that traditional MS4s such as cities and counties, non-traditional MS4s such as flood control districts and military bases, and transportation department MS4s have inherently different scopes of authority, the SWMP requirements may be modified as necessary to accommodate these different kinds of MS4s. For example, the audience for public education programs by a city would be the general public, while the audience at a military base would be base personnel (including dependents), contractors, and visitors. Likewise, the Highway Department and Flood Control Authorities have little, if any, authority or direct responsibility for third part activities outside the right of way encompassing their structures, meaning that SWMP elements such as the construction and development programs will likely only apply to that permittees own construction projects even though their "jurisdiction" may encompass larger areas, such as the city of Albuquerque, where these programs would be implemented by the city for residential and commercial development projects. EPA recognizes that in-stream monitoring would capture not only the benefits of upland controls inside the MS4s, but also any additional water quality controls related to flood control structures that had been placed in a water of the United States. Federal facilities must also comply with the Energy Independence and Security Act of 2007 (EISA) for federal development and redevelopment projects.

EPA has also developed a menu of BMPs for small MS4s which is available on EPA's website at http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm to assist in the development of SWMPs. The menu provides detailed descriptions of BMPs which may be included in SWMPs to satisfy the

requirements of the six minimum measures. In addition, Addendum D to this fact sheet provides descriptions of program elements which have been developed by Phase I MS4s. Phase I MS4s have been under permit for several years now, and have acquired considerable experience in storm water quality management. As such, Phase II MS4s may wish to coordinate program elements with Phase I MS4s to gain additional insights from the experiences of Phase I MS4s.

Controlling Runoff from New Development and Redevelopment requires that the permittees develop a program to incorporate long-term stormwater controls into new development and redevelopment projects. EPA specifically requests comments for alternate approaches by which permittees may meet these objectives.

In December 2007, Congress enacted the Energy Independence and Security Act of 2007. Section 438 of that legislation establishes strict stormwater runoff requirements for federal development and redevelopment projects. The intent of Section 438 of the Energy Independence and Security Act of 2007 (EISA) is to require federal agencies to develop and redevelop applicable facilities in a manner that maintains or restores stormwater runoff to the maximum extent technically feasible. The intention of the statute is to maintain or restore the pre-development site hydrology during the development or redevelopment process. To be more specific, this requirement is intended to ensure that receiving waters are not negatively impacted by changes in runoff temperature, volumes, durations and rates resulting from federal projects. Implementation of Section 438 of the EISA, applicable to federal facilities, can be achieved through the use of the green infrastructure/low impact development (GI/LID) infrastructure tools.

Long-term Stormwater Controls. Land development directly affects watershed functions, and water quality in receiving waters. When development occurs in previously undeveloped areas, the resulting alterations to the land can dramatically change how water is transported and stored. Development creates impervious surfaces and compacted soils that increase surface runoff and decrease ground water infiltration. These changes can increase the volume and velocity of runoff, the frequency and severity of flooding, peak storm flows as well as the type, concentration, and quantity of pollutants in discharges.

Phase II MS4 regulations found at 40 CFR 122.23(b)(5) state that a Phase II MS4 must "develop, implement, and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into [the] small MS4. [The] program must ensure that controls are in place that would *prevent or minimize water quality impacts*." To that end, the regulations require that a MS4 develop and implement a program to address post-construction runoff from newly developed and redeveloped areas, and ensure the long-term operation and maintenance of these management practices.

Because the creation of impervious surfaces and the generation of runoff pollutants are created by activities and decisions at the site scale, neighborhood scale, and watershed or regional scale, this permit sets up a framework to consider pivotal activities at multiple scales. A program to implement site level controls for new and redevelopment are an evolution of activities required under the prior MS4 permits, and implementation of the necessary components of this programs are achievable within the time frame of this 5 year permit term. Implementation of some pivotal controls for activities at the watershed or regional scale may be, in some cases, longer-term propositions. Therefore, this permit sets up the framework for initial steps, with the understanding that some institutional controls may not be fully implemented until the next permit term. However, even though all of these activities may be on different

schedules, the permittee should consider all of them in the context of an integrated stormwater management program to ensure that they complement each other.

Site and Neighborhood Design provisions require the permittees to adopt and implement stormwater performance standards for new and redevelopment projects, and a program to implement those standards.

A variety of water quality standards continue to be exceeded in most urban and urbanizing streams, and stormwater discharges are commonly identified as the causes; currently there are thousands of waters nation-wide with impairments attributable to stormwater.

As urbanization occurs, a corresponding increase in impervious surface area also occurs. These changes to the landscape cause the volumes, rates and durations of runoff-related discharges to increase, along with a corresponding increase in pollutant loadings. In addition, stream channels are destabilized due to the increased energy of the runoff that results in bank cutting, stream channel widening, channel incision and detrimental sediment mobilization and deposition. Because of these changes in runoff volumes and rates, the stream systems and waterbodies within and downstream of urbanization are commonly impaired due to sediment and nutrient loadings, increased total suspended solids, poor biotic communities, and increased stream temperatures.

Stormwater management standards are most commonly written with provisions that promote or require extended detention controls, such as extended detention wet ponds, dry detention basins or constructed wetlands. There are multiple problems with extended detention as a water quality management practice. Primary to this is that receiving stream dynamics are based on balances of much more than just discharge rates. Extended detention practices are first and foremost designed to prevent downstream flooding and not to protect downstream channel stability and water quality. For decades, water quality protection has been a secondary goal, or one omitted entirely during the design of these facilities. Over time it has become apparent through research and monitoring that these practices do not effectively protect the physical, chemical or biological integrity of our receiving waters. Furthermore, operation and maintenance of these systems to ensure they perform as designed requires a level of managerial and financial commitment that is often not provided. A number of researchers have documented that detention ponds fail to meet their design goals in terms of maintaining water quality, downstream habitat and biotic integrity of the receiving waters.

There is now a large body of research demonstrating that practices that mimic the natural water cycle – processes that result in the infiltration, evapotranspiration and capture and use of stormwater – are simultaneously advantageous for protecting the physical, chemical and biological characteristics of receiving waters. Why? Because these practices are designed to mimic the way natural vegetated landscapes respond to precipitation events. When it rains or when snow melts, vegetated areas (forests, prairies and grasslands, gardens and trees) intercept, evaporate and absorb much of the rainfall. Some of the precipitation is also absorbed or infiltrated into the soil. Ideally, site designs and plans should make use of these natural systems and processes as much as possible to mimic or preserve the site hydrology, i.e., the balance of plant uptake of water, infiltration of runoff into the soil and groundwater table, and the natural runoff patterns into natural drainage ways and streams.

Most bioinfiltration measures are designed to not discharge at all during small storm events, which means that pollutants do not reach the receiving water. There are good performance data for practices that infiltrate and/or evapotranspire stormwater. Research studies on bioretention practices and permeable pavements can be found at the following links:

Dr. Allen Davis, University of Maryland
http://www.ence.umd.edu/~apdavis/LID-Publications.htm

Dr. William Hunt, North Caroline State University
http://www.bae.ncsu.edu/topic/bioretention/publications.html,

Dr. Michael E. Dietz, Utah State University
"Low Impact Development Practices: A Review of Current Research and Recommendations for Future Directions"
http://www.springerlink.com/content/nq44j610685n4112/

Dr. Jack Clausen, University of Connecticut
http://www.bae.ncsu.edu/programs/extension/wqg/319/319index_files/Ct-98.1.pdf

Under natural conditions approximately 10% of the volume of precipitation falling to earth runs off to surface waters via surface/overland flow. Nearly all of the remaining amount of stormwater infiltrates, or is intercepted or taken up by plants. This natural system can be successfully adapted in developed and developing watersheds to protect receiving waters from both pollutants and altered hydrology. This permit proposes a simple performance standard to ensure the hydrology associated with new development and redevelopment sites mirror the pre-development hydrology of the previously undeveloped site. Analysis of precipitation data indicates that 90% of the 24 hour (or less) rainfall events are 1 inch or less. Therefore stormwater systems designed to mirror the pre-development hydrology will reasonably mimic the natural hydrologic process. All new and redevelopment projects must design, implement and maintain a system of controls that will prevent an increase in the one-hundred-year, two-hour peak runoff, a change in the time of the peak, or an increase in the total runoff from its pre-development values and manage pre-development runoff values on site.

Because implementing this performance standard will require changes to local codes and ordinances, as well as development of a municipal review and approval process, a compliance schedule for each permittee class type has been proposed. . This performance standard must be implemented and enforced via an ordinance and/or other enforceable mechanism(s). Note that EPA proposes to retain the ability to provide modified schedules for permittees brought into the permit at a later date due to decisions on waivers or designations. Permitees brought into the permit at a later date may already be beyond or incapable of meeting deadlines established for permittees who were aware of their need for a permit at the time the permit was issued.

The permit also includes several additional water quality requirements, as applicable, that the permittee should implement via enforceable requirements within their jurisdiction. For activities/operations with demonstrable potential for pollutant loadings that may contaminate groundwater, water quality treatment for pollutants of concern must be provided if infiltration measures are to be used, e.g., areas handling chemicals, automobile service stations and lawn care operations/greenhouses/nurseries that handle fertilizers and pesticides. If an operation cannot implement adequate preventive or treatment measures to ensure compliance with groundwater and/or surface water quality standards, then stormwater must be properly treated via an NPDES-permitted facility or licensed waste hauler.

State water quality standards include priority protections for certain waters of the state. As applicable measures to prevent addition of pollutants to the water body, including thermal pollutants, must be

implemented.

When considered at the watershed scale, certain types of development can either reduce existing impervious surfaces, or at least create less associated imperviousness. At this scale, development can be used as one approach to improving water resources.

Plan Review, Approval and Enforcement provisions require that the permittees incorporate the standards outlined in Part I.D.5.b into site plan review, approval and enforcement procedures to ensure accountability for their implementation. Plan review procedures include pre-application procedures, site plan review and approval procedures, submittal of as-built certification within 90 days of project completion, post-construction verification procedures, and an education program for municipal staff and those subject to these requirements.

Maintenance Agreements provisions require that the permittees obligate the owner of long-term management practices to properly operate and maintain them for their accepted life span. This obligation can take the form of a maintenance agreement between the land owner and/or the developer, which would be transferred to subsequent owners, between the permittee and a homeowner's association, covenants and restrictions on the property deed itself, or other type of contract requiring all owners of the property to properly maintain and operate management practices. The maintenance agreement shall allow the permittee or its designee to perform maintenance or corrective actions neglected by the property owner/operator, and bill or recoup costs from that owner/operator.

Assessments provisions require the permittees to conduct assessments to provide a foundation for program improvements to be implemented during the next permit term.

C. **Measurable Goals**

A requirement to adopt measurable goals for the SWMP was included in the Phase II regulations at 40 CFR 122.34(d)(1) to ensure that the public can better evaluate the level of effort used by MS4s in controlling pollutants in the discharges and to ensure accountability of the MS4s. EPA Region 6 believes this requirement of smaller MS4s is appropriate for tracking the success of large MS4 programs, including the Albuquerque MS4.

Measurable goals are quantifiable measures of progress in implementing the various BMPs which comprise a SWMP. Measurable goals may consist of specific one-time only objectives such the development of a storm water ordinance by a certain date, or they may consist of numeric objectives for the frequency of implementation of a given BMP (such as the frequency of street sweeping or catch basin cleaning). Measurable goals may also consist of specific objectives for water quality improvement over a given time period.

Measurable goals must be included for each specific BMP which is included in the SWMP. EPA has developed a measurable goals guidance which is available on EPA's website at http://www.epa.gov/npdes/stormwater/measurablegoals/index.htm. Example measurable goals are provided for each of the six minimum measures to assist MS4s in the development of their own measurable goals. Region 6 recommends that this guidance be reviewed by MS4s in developing their measurable goals.

D. **Sharing Responsibility for SWMP Implementation**

The Phase II regulations at 40 CFR 122.35(a) recognize that one or more of the minimum measures may be implemented within a given MS4 by an entity other than the discharger (for example, a county may implement a street sweeping program in a given city within the county). As such, the regulations and Part I.D.3.b of the proposed permit provide that a given MS4 may rely on another entity to implement some of the required minimum measures if:

1. The other entity, in fact, implements the control measure;

2. The particular control measure, or component thereof, is at least as stringent as the corresponding requirement set forth in the permit; and

3. The other entity agrees to implement the control measure on behalf of the particular MS4.
   In the annual reports which are required under Parts III.B and D of the proposed permit, the MS4 must also specify that it relies on another entity to satisfy some of its permit obligations. If a given MS4 relies on another entity for implementation of a particular BMP, the MS4 remains responsible for compliance with the permit if the other entity fails to implement the BMP. However, where there are clear delineations of responsibility in interjurisdictional agreements, compliance with those locally agreed-upon responsibilities (combined with prompt development and implementation of an alternative program element should a cooperative program fail to be implemented fully), will be used to assess compliance for each individual permittee. The proposed permit also requires that the MS4 provide the other entity with the reporting requirements of Parts III.B and D of the permit. The other entity must then provide the annual report information for the MS4 as described in Parts III.B and D of the permit.

E. Qualifying State, Tribal or Local Programs

The Phase II regulations at 40 CFR 122.34(c) recognize that State, Tribal or local programs may already exist which meet the requirements of one or more of the six minimum measures. In such a case, the regulations and Part I.D.8 of the proposed permit provide that the MS4 may include the local qualifying program in the SWMP instead of developing a new program in accordance with the requirements of the minimum measure. A local qualifying program must include, at a minimum, the relevant requirements of the six minimum measures described in the regulations at 40 CFR 122.34(b).

F. **Review of SWMPs by Region 6**

Parts I.A.6.a.(iii) and I.A.6.c of the proposed permit allow Region 6 to notify a given MS4 that the SWMP which was submitted with the NOI, or the measurable goals, do not meet one or more of the minimum requirements of the permit. This provision allows that Region 6 to require upgrades or modifications to SWMPs which may be deficient or less effective than originally expected, and ensure that the SWMPs are adequate to meet the objectives of the general permit. Changes to SWMPs, when required, must be made within 30 days of receipt of notification or as specified by the Director in the notice to the permittee.

G. **Special Conditions**

1. **Compliance with Water Quality Standards**

The proposed permit (Part I.C.1) requires that discharges not cause or contribute to a violation of an applicable numeric or narrative surface water quality standard. When exceedances do occur, the permit also requires that the permittee take all necessary actions to ensure that future discharges do not cause or contribute to a violation and must document the actions in the SWMP. If a violation remains or recurs, coverage under the general permit may be terminated by EPA, and EPA may require an alternative general permit or individual permit. The language in the proposed permit is similar to language in EPA's MSGP. As also discussed above in section II.A, Region 6 believes that the proposed requirements are consistent with the intent of the Phase II program as described in the preamble to the Phase II regulations.

More specifically, the permit includes provisions to address dissolved oxygen, PCBs, and temperature in the receiving waters of the Rio Grande as a continuation of program in 2012 NMS000101 individual permit.

2. Discharges to Impaired Waters with and without approved TMDLs

40 CFR 122.44 (d)(1)(vii) requires that NPDES permit conditions be consistent with State and Tribal water quality standards and available waste load allocations (WLAs) in an approved Total Maximum Daily Load (TMDL). Inclusion of conditions to protect the quality of receiving waters are based on the authority of Section 402(p)(3)(B)(iii) of the Act. The requirements in the permit are designed to implement the requirements of the TMDL. The TMDL requires the use of controls to meet water quality standards in stormwater through a combination of source reductions and structural controls. Where stormwater has the potential to cause or contribute to the impairment, the permittee shall include in the SWMP controls targeting the pollutant(s) of concern along with their corresponding measurable goals.

Discharges of pollutant(s) of concern to impaired water bodies for which there is an EPA approved total maximum daily load (TMDL) are not eligible for this general permit unless they are consistent with the approved TMDL. A water body is considered impaired for the purposes of this permit if it has been identified, pursuant to the latest EPA approved CWA §303(d) list, as not meeting New Mexico Surface Water Quality Standards.

The permit requires the permittees to control the discharges of pollutant(s) of concern to impaired waters and waters with approved TMDLs and to assess the success in controlling those pollutants in the SWMP document. If the pollutant of concern is bacteria, the permit includes provisions to implement focused BMPs addressing the five areas below. .

A. Sanitary Sewer Systems
   - Make improvements to sanitary sewers;
   - Address lift station inadequacies;
   - Identify and implement operation and maintenance procedures;
   - Improve reporting of violations; and
   - Strengthen controls designed to prevent over flows

B. On-site Sewage Facilities (for entities with appropriate jurisdiction)
   - Identify and address failing systems; and
   - Address inadequate maintenance of On-Site Sewage Facilities (OSSFs).

C. Illicit Discharges and Dumping

- Place additional effort to reduce waste sources of bacteria; for example, from septic systems, grease traps, and grit traps.

D. Animal Sources
- Expand existing management programs to identify and target animal sources such as zoos, pet waste, and horse stables.

E. Residential Education: Increase focus to educate residents on:
- Bacteria discharging from a residential site either during runoff events or directly;
- Fats, oils, and grease clogging sanitary sewer lines and resulting overflows;
- Decorative ponds; and
- Pet waste.

If the permittee discharges directly into an impaired water body without an approved TMDL, the proposed permit requires the permittee determine whether the MS4 may be a source of the pollutant(s) of concern by referring to the CWA §303(d) list and then determining if discharges from the MS4 would be likely to contain the pollutant(s) of concern at levels of concern. The proposed permit requires the permittees to implement BMPs, to reduce, the discharge of pollutant(s) of concern that contribute to the impairment of the water body. Where the impairment is for bacteria or nutrients, the permittee shall identify potential significant sources and develop and implement targeted BMPs for those sources. The annual report must include information on compliance with this section, including results of any sampling conducted by the permittee.

EPA also requires revisions to the SWMP to include the requirements of the TMDL and/or its associated implementation plan. Monitoring of the discharges may also be required, as appropriate, to ensure compliance with the TMDL.

3. Endangered Species Act (ESA) Requirements

EPA has included requirements to ensure actions required by this permit are not likely to jeopardize the continued existence of any currently listed as endangered or threatened species or adversely affect its critical habitat. The proposed permit requires the permittees to implement a sediment pollutant load reduction strategy to assess and reduce pollutant loads associated with sediment. The ESA provisions also require the permitttees to identify (or continue identifying) structural elements, natural or man-made topographical and geographical formations, MS4 operations, or oxygen demanding pollutants contributing to reduced dissolved oxygen in the receiving waters of the Rio Grande. The permittees shall implement controls, and updating/revising as necessary, to eliminate discharge of pollutants at levels that cause or contribute to exceedances of applicable water quality standards for dissolved oxygen in waters of the Rio Grande. The permit will require the City of Albuquerque and AMAFCA to continue conducting continuous monitoring of dissolved oxygen (DO) and temperature to confirm the remedial action at the North Diversion Channel Embayment.

H. **Discharge Limitations.**

No numeric limitations are proposed at this time. In accordance with 40 CFR 122.44(k), the EPA has required a series of storm water control measures, in the form of a comprehensive SWMP, in lieu of numeric limitations. Additional controls or numeric limitations may be included in the final permit, if necessary, to implement conditions of certification under Section 401 of the Act.

I. **Monitoring, Recordkeeping, and Reporting Requirements**

1. **Monitoring Requirements**

The Phase II storm water regulations at 40 CFR 122.34(g) require that small MS4s evaluate program compliance, the appropriateness of the BMPs in their SWMPs and progress towards meeting their measurable goals. Phase I MS4s were (40 CFR 122.26(d)((2)(iii)(C) and (D)) require to monitor the MS4 to provide data necessary to assess the effectiveness and adequacy of SWMP control measures; estimate annual cumulative pollutant loadings from the MS4; estimate event mean concentrations and seasonal pollutants in discharges from major outfalls or sub-watersheds identify and prioritize portions of the MS4 requiring additional controls; and, identify water quality improvements or degradation. EPA believes the Phase I MS4s have collected sufficient data during previous permit terms to calculate pollutant base loading.

The permit also requires monitoring to support prioritization of storm water control efforts and protection of water quality. Four types of monitoring are required by the permit. Due to the variability of stormwater discharges and limited resources available to municipalities, the cost of the monitoring program needs to be balanced with the monitoring objectives and the more important goal of actually implementing controls that directly affect the quality of the stormwater discharged. While separated for clarity in the permit, the monitoring requirements do overlap to an extent and to avoid duplication and added expense, the permit specifically allows coordination between monitoring programs to use monitoring data collected for one purpose to be used to satisfy part or all of another's data collection requirement.

Wet Weather Monitoring: The goal of the Wet Weather Monitoring Program is (1) to gather information on the response on the receiving waters to wet weather discharges from the MS4 and (2) to help identify areas contributing higher levels of pollutants so the permittees can target more effective SWMP strategies for these areas of the MS4. The permit will require the permittees to sample discharges resulting from storm events at locations coming into the MS4 jurisdictional (upstream) area and leaving the MS4 jurisdictional area (downstream). The sampling may be conducted at outfalls, internal sampling stations, and/or in-stream monitoring locations. Permittees may choose either Option A (Individual Monitoring program) or option B (Cooperative Monitoring Program). The permittees must sample for TSS, TDS, COD, BOD_5, DO, oil and grease, *E.coli*, pH, total kjeldahl nitrogen, nitrate plus nitrite, dissolved phosphorus, total ammonia plus organic nitrogen, total phosphorus, PCBs, gross alpha, and parameters from monitoring under permits NMR040000 or/and NMR04000I whose mean values are at or above a WQS. Indicators parameters TSS, BOD, and COD were included as they would relate to DO impairment or lead to a suspected water quality parameter of concern. Parameters included in 40 CFR 122.26 (d)(2)(iii)(A(3) such as TSS, TDS, COD, BOD5, oil and grease, pH, TKN, nitrate plus nitrite, dissolved phosphorus, total ammonia plus organic nitrogen, and total phosphorus were required to sample in the permit so that the permittees will obtain information on the quality and quantity of the MS4 discharges.

Dry Weather Discharge Screening of MS4: The proposed permit includes the dry weather discharge screening to identify, investigate, and address areas within the its jurisdiction that may be contributing excessive levels of pollutants to the Municipal Separate Storm Sewer System as a result of dry weather discharges (i.e., discharges from separate storm sewers that occur without the direct influence of runoff from storm events, e.g. illicit discharges, allowable non-stormwater, groundwater infiltration, etc.). This

program may be coordinated with the illicit discharge detection and elimination program required in Part I.D.5.e.

Floatable Monitoring: The permittees must assess floatable material in discharges to and/or from their MS4. The permit proposes to monitor for floatable material at least twice per year at priority locations and at minimum of two (2) stations except as provided in Part III.A.3.

Industrial and High Risk Runoff Monitoring (Applicable to areas within the corporate boundaries of the City of Albuquerque): An industrial and high risk runoff monitoring element has been included in previous Phase I permits to implement 40 CFR 122.26(d)(2)(iv)(5). This requirement does not apply to Phase II MS4s.The Phase I permittees shall monitor stormwater discharges from Type 1 and 2 industrial facilities which discharge to the MS4 provided such facilities are located in their jurisdiction.

To comply with the above monitoring/assessment program requirements, EPA is providing flexibility to consider alternatives to the traditional end-of-pipe monitoring which is commonly found in most NPDES permits (64 Fed. Reg. 68769). Instead, EPA is encouraging a mix of physical, chemical, biological, or programmatic indicators such as described in Claytor and Brown (1996). EPA has designed a monitoring frame work to accommodate cooperative programs among the permittees so that meaningful results can be obtained based on limited monitoring dollars. EPA is also open to creative monitoring plan proposals which could reduce the total number of monitoring locations not only for a single permittee, but across a group of cooperatively permittees.

The nature of the monitoring activities which will be implemented by permittees will largely depend on the measurable goals selected by the permittees. As discussed above in Section V.C of this fact sheet, measurable goals may be measures of the level of effort of an MS4 in implementing a given BMP (such as frequency of street sweeping), or they may be measures of water quality improvement. Region 6 believes that for the last five-year term of the general permit, most existing MS4s opted for measurable goals which consist of a given level of effort in implementing a particular BMP. During the program implementation of the proposed permit, existing MS4s will update/revise as necessary, their existing measurable goals to comply with the requirements of this permit. As such, the monitoring activities will largely consist of keeping track of these efforts. This information must be submitted to Region 6 in the annual report described in Part III.B. of the proposed permit

2. **Recordkeeping**

In accordance with 40 CFR 122.34(g)(2), Part IV.P of the proposed general permit requires that records required by the permit be retained by the permittee for at least three years from the date of the sample, measurement, report or application, or for the term of this permit, whichever is longer. In addition, in accordance with these same regulations, the permit requires that the permittee make these records (including the SWMP) available to the public during regular business hours.

3. **Reporting**

In accordance with 40 CFR 122.34(g)(3) and 40 CFR 122.42(c)(1)), Part III.B of the proposed general permit requires the submittal of an annual report to the permitting authority. The following information is required:

SWMP(s) status of implementation: shall include the status of compliance with all schedules established under this permit and the status of actions required in Parts I, III, and VI.

SWMP revisions: shall include revisions, if necessary, to the assessments of controls or BMPs reported in the permit application (or NOI for coverage under this permit) under 40 CFR §122.26(d)(2)(v) and §122.34(d)(1)(i) are to be included, as well as a cumulative list of all SWMP revisions during the permit term.

Performance assessment: shall include:

a. an assessment of performance in terms of measurable goals, including, but not limited to, a description of the number and nature of enforcement actions and inspections, public education and public involvement efforts;

b. a summary of the data, including monitoring data, that is accumulated throughout the monitoring year (**October 1 to September 30**); actual values of representative monitoring results shall be included, if results are above minimum quantification level (MQL); and

c. an identification of water quality improvements or degradation.

Annual expenditures: for the reporting period, with a breakdown for the major elements of the stormwater management program and the budget for the year following each annual report. (Applicable only to Class A permittees)

Annual Report Responsibilities for Cooperative Programs: preparation of a system-wide report with cooperative programs may be coordinated among cooperating MS4s and then used as part of individual Annual Reports. The report of a cooperative program element shall indicate which, if any, permittee(s) have failed to provide the required information on the portions of the MS4 for which they are responsible to the lead permittee.

Joint responsibility for reports covering cooperative programs elements shall be limited to participation in preparation of the overview for the entire system and inclusion of the identity of any permittee who failed to provide input to the annual report.

Individual permittees shall be individually responsible for content of the report relating to the portions of the MS4 for which they are responsible and for failure to provide information for the system-wide annual report no later than March 1st of each year.

A brief summary of any issues raised by the public on the draft Annual Report, along with permittee's responses to the public comments must be also included.

Electronic submittal of the documents required in the permit using a compatible Integrated Compliance Information System (ICIS) format would be allowed if available.

EPA Region 6 is inviting and will consider comments and input on the proposed requirements specified in Part III.D.2 to submit electronic copy of the DMRs, annual reports, and other reports required in the permit using a

system compatible with the Integrated Compliance Information System (ICIS). Comments on the proposed requirements (Part III.D.2) must reference "Electronic Reporting Requirements)

VI. **PERMIT MODIFICATIONS**

A. Reopener Clause

The EPA may reopen and require modifications to the permit (including the SWMP) based on the following factors: changes in the State's Water Quality Management Plan and State or Federal requirements; adding permittees; SWMP changes impacting compliance with permit requirements; changes in permit conditions based on completion of Endangered Species Act consultation; other modifications deemed necessary by the EPA to adhere to the requirements of the Act. Implementation of the SWMP is expected to result in the protection of water quality standards. The permit does, however, contain a reopener clause should new information indicate the discharges from the MS4 are causing, or significantly contributing to, a violation of the State's water quality standards.

B. Other changes

The EPA has attempted to develop permit language to clarify the permit requirements concerning possible changes to the SWMP, permittees status, and other changes.

Terminated Permittees. The process for terminating coverage for an existing permittee shall adhere to the regulations 40 CFR 122.64. A notice of intent to terminate shall be issued in accordance with draft permit procedures.

SWMP Changes. The SWMP is intended as a functioning mechanism for the permittees' use. Therefore, minor changes and adjustments to the various SWMP elements are expected. Incorporating this form of document into an NPDES permit has some inherent conflicts. The regulatory rules concerning permit changes and modifications do not easily translate to the minor changes that will be necessary for various elements during the permit term. The changes may be necessary to more successfully adhere to the goals of the permit. The EPA has determined that these minor changes that are specifically described in the permit shall not be considered permit modifications as defined in the regulations. Part I.D.6.b of the permit describes the allowable procedure for the permittees to perform additions and minor changes to the SWMP. This section in no way implies that the permittees are allowed to impact or change elements that directly relate to permit conditions for the SWMP. Any changes requested by the permittees shall be reviewed by the EPA. The EPA has 60 days to respond to the permittees and inform them if the suggested changes impact or change the SWMP's compliance with a permit requirement and therefore are either disallowed or requires a formal permit modification procedure.

Additions. The EPA's intent is to allow the permittees to annex lands and accept the transfer of operational authority over portions of the MS4 without mandating a permit modification. Implementation of appropriate SWMP elements for these additions (annexed land or transferred authority) is required. Upon notification of the additions in the Annual Report, the EPA may require a modification to the permit based on the new information.

Monitoring sites. The permit is issued on a system-wide basis in accordance with Section 402(p)(3)(I) of the Act and authorizes discharges from all portions of the MS4 owned or operated by the permittees. Since all outfalls are authorized, changes in monitoring locations, other than those with specific numeric effluent limitations, shall be considered minor modifications to the permit and shall be made in accordance with the procedures at 40 CFR 122.63.

J. **STATE AND TRIBAL INPUT UNDER CWA §401(a)(1) and §401(a)(2):.**

The coverage area of this proposed general permit will include authorization of discharges to, or upstream of, waters under the jurisdiction of the State of New Mexico, Pueblo of Isleta, Pueblo of Sandia, and Pueblo of Santa Ana, EPA has already begun consultations with the State of New Mexico, the Pueblo of Sandia, and Pueblo of Isleta regarding the proposed permit reissuance. CWA §401(a)(1) requires EPA to obtain certification of a proposed permit where a discharge is to a water under the jurisdiction of a State or a water under the jurisdiction of a Tribe that has been approved for "Treatment in the Same Manner as a State" (TAS) for the CWA Water Quality Standards and Certification Programs (see 40 CFR 131.8). EPA Region 6 is requesting CWA§401(a)(1) Certification for discharges to waters of the State, the Pueblo of Isleta, and the Pueblo of Sandia. CWA 401(a)(2) requires NPDES permits to also be protective of the water quality of affected downstream states and tribes. The State of New Mexico, the Pueblo of Isleta, the Pueblo of Sandia, and the Pueblo of Santa Ana will also have the opportunity to provide input on the proposed permit regarding impacts upstream discharges may have on their jurisdictional waters. Should a CWA §401(a)(1) state or tribal certification contain conditions for certification, the final permit will include, as required by 122.44(d)(3), requirements necessary to conform with that conditional certification. Permit conditions based on a CWA §401(a)(1) Conditional Certification will only apply to discharges directly to waters under that authority's jurisdiction, Permit conditions imposed in response to state or tribal comments made under CWA 401(a)(2) may apply both to dischargers within and upstream of that jurisdiction. EPA will meet its obligation under CWA §401 prior to finalizing this permit.

VII. Permit Appeal Procedures

Within 120 days following notice of EPA's final decision for the general permit under 40 CFR 124.15, any interested person may appeal the permit in the Federal Court of Appeals in accordance with Section 509(b)(1) of the CWA. Persons affected by a general permit may not challenge the conditions of a general permit as a right in further Agency proceedings. They may instead either challenge the general permit in court, or apply for an individual permit as specified at 40 CFR 122.21 (and authorized at 40 CFR 122.28), and then petition the Environmental Appeals Board to review any condition of the individual permit (40 CFR 124.19 as modified on May 15, 2000, 65 Fed. Reg. 30886).

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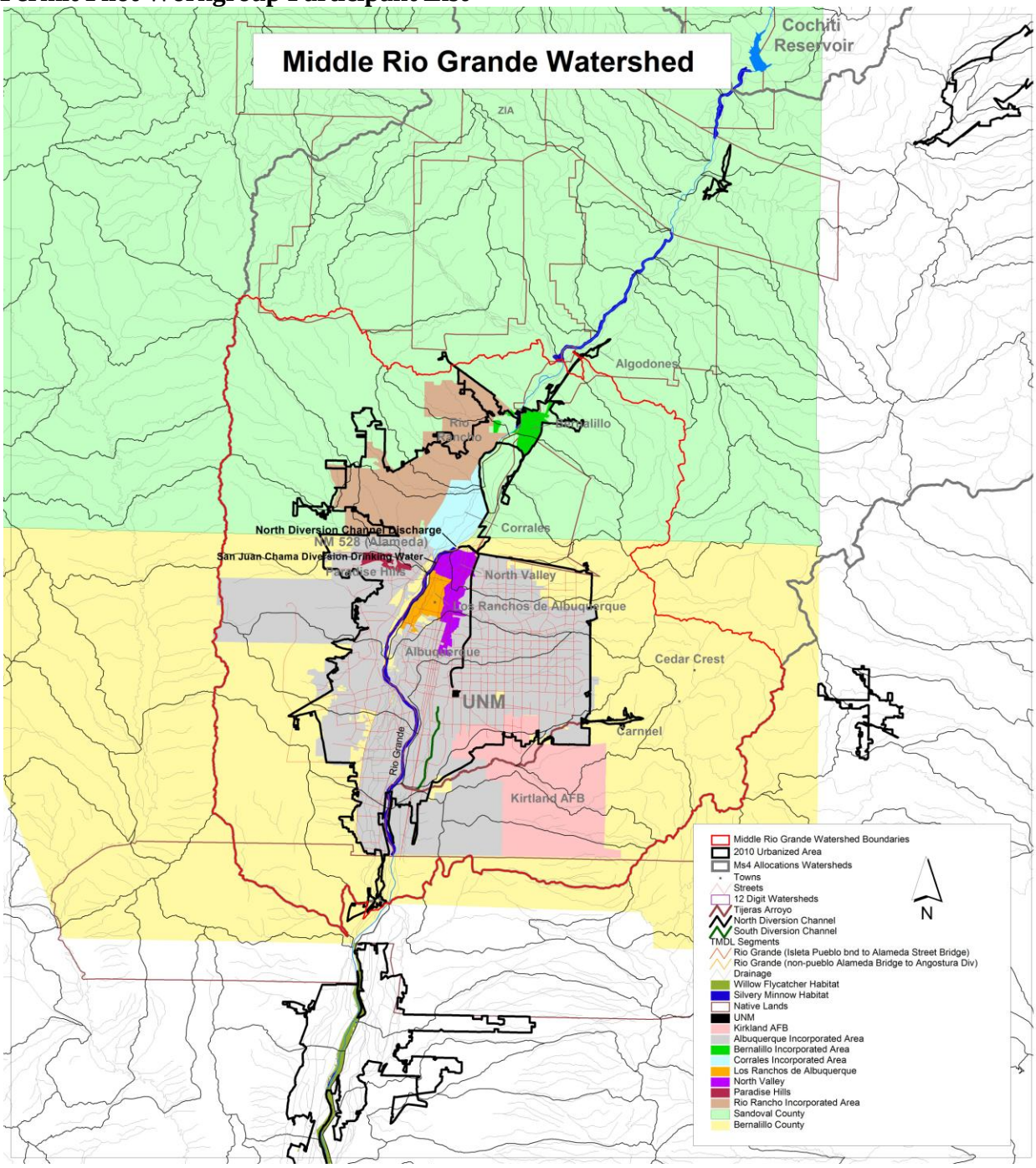
Addendum A. Middle Rio Grande (MRG) Watershed – MRG Watershed Based Permit Pilot Workgroup Participant List



Middle Rio Grande Watershed Based MS4 Permit Pilot – Workgroup Participant List (February 2010 – February 2013)

First Name	Last Name	Agency/Organization
Karen	Agogino	DOE
Tom	Allen	Ciudad SWCD, Bosque School
Teri	Anderson	UNM
John	Appel	General Counsel - Corrales
John	Avila	Village of Corrales
Shawna	Bailey	Pueblo of Isleta
Ted	Barber	NMDOT District 3
Debbie	Bauman	CABQ
Larry	Blair	E. SCAFCA
Guy	Bralley	Sandoval County
Joseph	Brem	MRGCD
Kali	Bronson	DBS and A
Tony	C de Baca	Town of Bernalillo
Abel	Camarena	Isleta Pueblo
Randall	Carroll	City of Rio Rancho
Michael	Castillo	ESCAFCA
Dewey	Cave	Mid-Region Council of Governments
Debbie	Cook	City of Rio Rancho
Kevin	Daggett	AMAFCA
Jenn	Dann	KAFB
Sandra	Gaiser	MRCOG
David	Gensler	MRGCD
Sue	Hanson Putze	Ciudad SWCD
David	Heber	OSE
Danny	Hernandez	Chairman, AMAFCA Board
Vern	Hershberger	UNM
Bernie	Hoffnar	Ciudad SWCD
Carolyn	Holloway	NNSA-DOE
Dustin	James	KAFB
John C.	Jaramillo	NM EXPO
Larry	Kennedy	NM EXPO
Tim	Karpoff	Karpoff & Associates
John	Korkosz	City of Rio Rancho
Jerry	Lovato	AMAFCA
Melissa	Lozoya	City of Albuquerque
Fred	Marquez	Sandoval County
Joe	Mauser	Sandia Labs
Tim	McDonough	Los Ranchos de Albuquerque
Yvette	McKenna	MRG Endangered Species Collaborative
Travis	Miller	UNM

First Name	Last Name	Agency
Ramona	Montoya	Pueblo of Isleta
Dan	Mourning	Dan Mourning
Adrian	Oglesby	MRGCD
Kevin	Daggett	AMAFCA/City of Albuquerque
Xavier	Pettes	City of Rio Rancho
Richard	Powell	NMED SWQB
Maria	Rinaldi	Town of Bernalillo
Philip	Rios	Sandoval County
Chip M.	Roma	Sandia Labs
Kelly	Romero	Sandoval County
John	Romero	OSE
Linda	Seebach	Village of Los Ranchos
Chris	Segura	KAFB
Alfred	Sena	Rio Rancho Public Schools
Scott	Sensanbaugher	City of Rio Rancho
Edwin	Singleton	Bureau of Land Management
M	Springfield	Sandoval County
Brad	Stebleton	Sandoval County
Jorge	Stephen	NCS Engineers
Tony	Tafoya	Village of Corrales
Chuck	Thomas	SSCAFCA
Bruce	Thomson	UNM Water Resources Program
Cyndie	Tidwell	Village of Corrales
Mayor Jack	Torres	Town of Bernalillo
Tim	Trujillo	NMDOT District 3
Jeanne	Tunell	CABQ
Bart	VandenPlas	Santa Ana Pueblo
Kathy	Verhage	City of Albuquerque
Juan	Vigil	Sandoval County
Cody	Walker	Pueblo of Isleta
Jennifer	Wellman	Santa Ana Pueblo
Pam	Woodruff	AMAFCA
Susan	Woods	USDOI Bureau of Reclamation
Andrew	Erdmann	OSE
Steve	Glass	Ciudad SWCD
Rick	Shean	ABCWUA
Judith	Wong	CABQ - Parks and Rec

First Name	Last Name	Agency
Jay	Evans	CABQ - Open Space
Dan	McGregor	Bernalillo County
Richard	Campos	Sandoval County
Richard	Mertz	UNM
Raymond	Hensley	THE Group/EXPO NM
Jessica	Bennett	Grad Student - NM Tech
Anita	Steed	Bernalillo County
Dave	Gatterman	SSCAFCA
Molly	Blumhoefer	UNM Grad Student
Ty	Jameson	Town of Bernalillo
Hashem	Faidi	NMDOT
Jane	DeRose Bamman	ABCWUA
Michael	Jensen	Amigos Bravos

Addendum B: Applying for Small Municipal Separate Storm Sewer System (MS4) Waiver

40 CFR- CHAPTER I- PART 122

§122.32 As an operator of a small MS4, am I regulated under the National Pollutant Discharge Elimination System (NPDES) storm water program?

(a) Unless you qualify for a waiver under paragraph (c) of this section, you are regulated if you operate a small MS4, including but not limited to systems operated by federal, State, Tribal, and local governments, including State departments of transportation; **and:**

(1) Your small MS4 is located in an urbanized area as determined by the latest Decennial Census by the Bureau of the Census. {If your small MS4 is not located entirely within an urbanized area, only the portion that is within the urbanized area is regulated); or

(2) You are designated by the NPDES permitting authority, including where the designation is pursuant to §§ 123.35(b)(3) and (b)(4) of this chapter, or is based upon a petition under §122.26(f).

(b) You may be the subject of a petition to the NPDES permitting authority to require an NPDES permit lH· your discharge of storm water. If the NPDES permitting authority determines that you need a permit, you are required to comply with§§122.33 through 122.35.

(c) The NPDES permitting authority may waive the requirements otherwise applicable to you if you meet the criteria of paragraph (d) or (e) of this section. If you receive a waiver under this section, you may subsequently be required to seek coverage under a NPDES permit in accordance with § l 22.33(a) if circumstances change. (See also §123.35(b) of this chapter.)

(d) The NPDES permitting authority may waive permit coverage if your MS4 serves a population of less than 1,000 within the urbanized area and you meet the following criteria:

(1) Your system is not contributing substantially to the pollutant loadings of a physically interconnected MS4 that is regulated by the NPDES storm water program (see§123.35(b)(4) of this chapter); and

(2) If you discharge any pollutant(s) that have been identified as a cause of impairment of any water body to which you discharge, storm water controls arc not needed based on wasteload allocations that arc part of an EPA approved or established "total maximum daily load" (TMDL) that addresses the pollutant(s) of concern.

(e) The NPDES permitting authority may waive permit coverage if your MS4 serves a population under 10,000 and you meet the following criteria:

(1) The permitting authority has evaluated all waters of the U.S., including small streams, tributaries, lakes, and ponds, that receive a discharge from your MS4;

(2) For all such waters, the permitting authority has determined that storm water controls arc not needed based on wasteload allocations that are part of an EPA approved or established TMDL

that addresses the pollutant(s) of concern or, if a TMDL has not been developed or approved, an equivalent analysis that determines sources and allocations for the pollutant(s) of concern;
(3) For the purpose of this paragraph (e), the pollutant(s) of concern include biochemical oxygen demand,
sediment or a parameter that addresses sediment (such as total suspended solids, turbidity or siltation), pathogens, oil and grease, and any pollutant that has been identified as a cause of impairment of any water body that will receive a discharge from your MS4; and
(4) The permitting authority has determined that future discharges from your MS4 do not have the potential to result in exceedances of water quality standards, including impairment of designated uses, or other significant water quality impacts, including habitat and biological impacts.

A waiver request should include:

I) A description of the small MS4 and flow paths for storm water that could (or could not) enter a water of the United States directly or indirectly. Include a description of any interconnection with other regulated MS4s.

2) A detailed description of how the eligibility requirements above have been met.

3) An evaluation of how flows from your MS4 could be contributing substantially to pollutant loads in other MS4s (if applicable).

4) A description of any water quality problems in any receiving waters (not limited to Clean Water Act 303(d) listings if there is data indicating waters may be impaired, but not listed).

Note: The boundary of "regulated" small MS4s is defined by the larger of the 2000 and 2010 Census Urbanized Area boundaries. In the Phase II rule Federal Register notice, the EPA specified that areas covered by a previous Census do not drop out where an Urbanized Area has shrunk in a later Census. Waivers need to address the combined area. In addition to the Rio Grande, local irrigation channels and drains may be waters of the United States.

Addendum C. Regulatory Requirements and Guidance for SWMPs for MS4s

The six minimum control measures for SWMPs are listed below, broken down into the required components, and the guidance from the Phase II regulations (40 CFR 122.34). Additional guidance and information on municipal storm water programs, Best Management Practices (BMPs), model ordinances, and measurable goals is available online via links on the EPA Storm Water Program web page at http://www.epa.gov/npdes/stormwater.

1**. Public Education and Outreach on Storm Water Impacts.**

a. SWMP Must Include:

(1) implement a public education program to distribute educational materials to the community or conduct equivalent outreach activities about the impacts of storm water discharges on water bodies and the steps that the public can take to reduce pollutants in storm water runoff.

b. EPA Guidance on Public Education and Outreach:

(1) use storm water educational materials provided by your State, Tribe, EPA, environmental, public interest or trade organizations, or other MS4s;
(2) inform individuals and households about the steps they can take to reduce storm water pollution, such as ensuring proper septic system maintenance, ensuring the proper use and disposal of landscape and garden chemicals including fertilizers and pesticides, protecting and restoring riparian vegetation, and properly disposing of used motor oil or household hazardous wastes;
(3) inform individuals and groups how to become involved in local stream and beach restoration activities as well as activities that are coordinated by youth service and conservation corps or other citizen groups;
(4) tailor the program, using a mix of locally appropriate strategies, to target specific audiences and communities. Program should target some of the materials or outreach programs to be directed toward targeted groups of commercial, industrial, and institutional entities likely to have significant storm water impacts. For example, providing information to restaurants on the impact of grease clogging storm drains and to garages on the impact of oil discharges;
(5) tailor the outreach program to address the viewpoints and concerns of all communities, particularly minority and disadvantaged communities, as well as any special concerns relating to children.

2. **Public Involvement/Participation**.

a. SWMP Must Include:

(1) at a minimum, comply with State, Tribal and local public notice requirements when implementing a public involvement/participation program.

b. EPA Guidance:

(1) include the public in developing, implementing, and reviewing your storm water management program and should make efforts to reach out and engage all economic and ethnic groups. Opportunities for members of the public to participate in program development and implementation include serving as citizen representatives on a local storm water management panel, attending public hearings, working as citizen volunteers to educate other individuals about the program, assisting in program coordination with

other pre-existing programs, or participating in volunteer monitoring efforts. (Citizens should obtain approval where necessary for lawful access to monitoring sites.)

3. **Illicit Discharge Detection and Elimination**.

a. SWMP Must Include:

(1) develop, implement and enforce a program to detect and eliminate illicit discharges (as defined at 40 CFR 122.26(b)(2)) into the small MS4;
(2) develop, if not already completed, a storm sewer system map, showing the location of all outfalls and the names and location of all waters of the United States that receive discharges from those outfalls;
(3) to the extent allowable under State, Tribal or local law, effectively prohibit, through ordinance, or other regulatory mechanism, non-storm water discharges into the storm sewer system and implement appropriate enforcement procedures and actions;
(4) develop and implement a plan to detect and address non-storm water discharges, including illegal dumping, to the system;
(5) inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste; and
(6) address the following categories of non-storm water discharges or flows (i.e., illicit discharges) only if they are identified by the MS4 as significant contributors of pollutants to the small MS4: water line flushing, landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20)), uncontaminated pumped ground water, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space pumps, footing drains, lawn watering, individual residential car washing, flows from riparian habitats and wetlands, dechlorinated swimming pool discharges, and street wash water (discharges or flows from fire fighting activities are excluded from the effective prohibition against non-storm water and need only be addressed where they are identified as significant sources of pollutants to waters of the United States).

It should also be noted that the fire fighting activities referred to above, from which discharges need not necessarily be prohibited, are emergency situations only and do not include non-emergency situations such as fire fighting training activities.

b. EPA Guidance:

(1) ensure that the plan to detect and address illicit discharges include the following four components: procedures for locating priority areas likely to have illicit discharges; procedures for tracing the source of an illicit discharge; procedures for removing the source of the discharge; and procedures for program evaluation and assessment.
(2) conduct visual screening of the outfalls during dry weather and conduct field tests of selected pollutants as part of the procedures for locating priority areas.

4. **Construction Site Storm Water Runoff Control**.

a. SWMP Must Include:

(1) develop, implement, and enforce a program to reduce pollutants in any storm water runoff to the small MS4 from construction activities that result in a land disturbance of greater than or equal to one acre.

Reduction of storm water discharges from construction activity disturbing less than one acre must be included in the program if that construction activity is part of a larger common plan of development or sale that would disturb one acre or more. If the NPDES permitting authority waives requirements for storm water discharges associated with small construction activity in accordance with 40 CFR 122.26(b)(15)(i), the MS4 is not required to develop, implement, and/or enforce a program to reduce pollutant discharges from such sites.

The program must include the development and implementation of, at a minimum:

(a) an ordinance or other regulatory mechanism to require erosion and sediment controls, as well as sanctions to ensure compliance, to the extent allowable under State, Tribal, or local law;
(b) requirements for construction site operators to implement appropriate erosion and sediment control best management practices;
(c) requirements for construction site operators to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality;
(d) procedures for site plan review which incorporate consideration of potential water quality impacts;
(e) procedures for receipt and consideration of information submitted by the public; and
(f) procedures for site inspection and enforcement of control measures.

b. EPA Guidance:

(1) consider as examples ensure compliance - non-monetary penalties, fines, bonding requirements and/or permit denials for non-compliance;
(2) include procedures for site plan review including the review of individual pre-construction site plans to ensure consistency with local sediment and erosion control requirements;
(3) include procedures for site inspections and enforcement of control measures including steps to identify priority sites for inspection and enforcement based on the nature of the construction activity, topography, and the characteristics of soils and receiving water quality; and
(4) provide educational and training measures for construction site operators, including requiring a storm water pollution prevention plan for construction sites within the jurisdiction that discharge into the system.

5. **Post-Construction Storm Water Management in New Development and Redevelopment**.

a. SWMP Must Include:

(1) develop, implement, and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into the small MS4. The program must ensure that controls are in place that would prevent or minimize water quality impacts;
(2) develop and implement strategies which include a combination of structural and/or non-structural best management practices (BMPs) appropriate for the community; and
(3) use an ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects to the extent allowable under State, Tribal or local law; and
(4) ensure adequate long-term operation and maintenance of BMPs.

b. EPA Guidance:

(1) ensure that the BMPs chosen are appropriate for the local community; minimize water quality impacts; and attempt to maintain pre-development runoff conditions;
(2) in choosing appropriate BMPs, participate in locally-based watershed planning efforts which attempt to involve a diverse group of stakeholders including interested citizens. When developing a program that is consistent with this measure's intent, EPA recommends that the MS4 adopt a planning process that identifies the municipality's program goals (e.g., minimize water quality impacts resulting from post-construction runoff from new development and redevelopment), implementation strategies (e.g., adopt a combination of structural and/or non-structural BMPs), operation and maintenance policies and procedures, and enforcement procedures;
(3) in developing your program, consider assessing existing ordinances, policies, programs and studies that address storm water runoff quality. In addition to assessing these existing documents and programs, the MS4 should provide opportunities to the public to participate in the development of the program;
(4) ensure the appropriate implementation of the structural BMPs by considering some or all of the following: re-construction review of BMP designs; inspections during construction to verify BMPs are built as designed; post-construction inspection and maintenance of BMPs; and penalty provisions for the noncompliance with design, construction or operation and maintenance; and
(5) ensure that the requirements be responsive to the constantly changing storm water technologies, developments or improvements in control technologies.

6. **Pollution Prevention/Good Housekeeping for Municipal Operations**.

a. SWMP Must Include:

(1) develop and implement an operation and maintenance program that includes a training component and has the ultimate goal of preventing or reducing pollutant runoff from municipal operations; and
(2) using training materials that are available from EPA, your State, Tribe, or other organizations, the program must include employee training to prevent and reduce storm water pollution from activities such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and storm water system maintenance.

b. EPA Guidance:

(1) at a minimum, consider the following in developing the program:

(a) maintenance activities, maintenance schedules, and long-term inspection procedures for structural and non-structural storm water controls to reduce floatables and other pollutants discharged from the separate storm sewers;
(b) controls for reducing or eliminating the discharge of pollutants from streets, roads, highways, municipal parking lots, maintenance and storage yards, fleet or maintenance shops with outdoor storage areas, salt/sand storage locations and snow disposal areas operated by the MS4, and waste transfer stations;
(c) procedures for properly disposing of waste removed from the separate storm sewers and areas listed above (such as dredge spoil, accumulated sediments, floatables, and other debris); and
(d) ways to ensure that new flood management projects assess the impacts on water quality and examine existing projects for incorporating additional water quality protection devices or practices; and

(2) include operation and maintenance as an integral component of all storm water management

programs. This measure is intended to improve the efficiency of these programs and require new programs where necessary.

Addendum D. Example SWMP Components

1. **Public Education and Outreach on Storm Water Impacts.**

Case Study Location: Texas: Austin

Educating Pet Owners and Gardeners

Summary:

Austin's Watershed Protection and Development Review Department and Parks and Recreation Department have joined forces to help clean up parks and trails through the Scoop the Poop program, which provides Mutt Mitt dispensers in many of the popular parks. Another Austin partnership encourages stormwater-friendly gardening.

Case Study Location: Maine: State of

Maine Public Education Campaign Raises Stormwater Pollution Awareness

Summary:

Maine's 28 regulated MS4 communities and 8 nested entities teamed up with Maine DEP and other agencies to launch the state's first public outreach effort based exclusively on social marketing principles. Directed by independent market research, Maine DEP aimed its media campaign at college-educated 35-55-year-olds. Its aim was twofold – improve awareness of stormwater pollution sources and educate the public on how pollution gets into local waters.

2. **Public Involvement/Participation**.

Case Study Location: Georgia: Metro Atlanta

Reaching Citizens with Workshops and an Informative Web Site

Summary:

The Clean Water Campaign offers a series of popular workshops in partnership with the University of Georgia Cooperative Extension Service and other agencies. These workshops have been instrumental in educating members of the public and encouraging them to reduce stormwater pollution. In addition, the Clean Water Campaign's comprehensive Web site, in English and Spanish, details how to reduce stormwater pollution around the home and on the job.

Case Study Location: Colorado: Boulder

Public Education and Outreach on Stormwater Impacts

Summary:

The Boulder Creek and Saint Vrain Watershed WASH Project has two principle components to their education and outreach program: a school based WatershED Program and a community outreach program. The school based WatershED includes water curriculum, teacher training, water festival, and

classroom programs. The community-based programs include water quality campaigns, brochures, tributary signs and more. This case study will highlight the school based program.

3. **Illicit Discharge Detection and Elimination**.

Case Study Location: Michigan: Wayne County

Focus on Commercial and Industrial Site Visits

Summary:

The Wayne County, Michigan, Department of Environment conducted an investigation of 5,753 nonresidential facilities from 1987 to the present to detect and eliminate illicit connections and illicit discharges.

Case Study Location: Ohio: Cuyahoga County

A Program for Identifying and Eliminating Failing Septic Systems

Summary:

For more than 10 years, the Cuyahoga County Board of Health has implemented a program to permit and inspect septic systems (onsite wastewater treatment systems) to reduce the number of failing systems in operation, thereby reducing flows of inadequately treated household sewage to storm drain systems and receiving waters.

4. **Construction Site Storm Water Runoff Control**.

Case Study Location: Colorado: Douglas County

A Comprehensive Erosion Control Permit Program

Summary:

Douglas County, Colorado, is one of America's fastest growing counties. In the decade between 1990 and 2000, its population nearly tripled. To address its high growth rate, the Douglas County Construction Site Runoff Control Program (hereafter referred to as The Program) developed a successful permit review, issuance and inspection process, and wrote a comprehensive Grading, Erosion and Sediment (GESC) Control manual.

Case Study Location: North Carolina: Charlotte

Cooperative Erosion Control Enforcement and Compliance

Summary:

The City of Charlotte and the County of Mecklenburg (CharMeck) have collaborated to develop an effective erosion and sediment control enforcement program that employs frequent inspections, Notices of Violation, and fines as well as an appeal process to effectively and fairly require compliance.

5. **Post-Construction Storm Water Management in New Development and Redevelopment**

Case Study Location: Virginia: Arlington County

Innovative Stormwater Management Standards and Mitigation

Summary:

The Arlington County Department of Environmental Services has developed pollutant removal requirements for all development sites, as well as a watershed management fund to which developers may contribute in lieu of actual BMP implementation.

Case Study Location: Maryland: Prince George's County

Incorporating Low Impact Development into Stormwater Management

Summary:

For more than ten years Prince George's County has been a leader in implementing and developing guidance on lot-level best management practices to control stormwater and restore predevelopment hydrologic functions to urban and suburban systems.

6. **Pollution Prevention/Good Housekeeping for Municipal Operations**.

Case Study Location: The City of Cocoa Beach, Florida,

Floatable Removal Program

Summary:

The City developed an insert for catch basins that makes floatable removal more effective and easy. Twice per month, storm water crews inspect and clean as necessary all 760 storm water drains in Cocoa Beach. Sediment-clogged storm lines are cleaned on a schedule using a truck with a jet hose and vacuum. For further information contact City of Cocoa Beach, Florida, Storm water Department, (407) 868-3292. Source: NRDC, Storm Water Strategies Community Responses to Runoff Pollution, May 1999.

Case Study Location: The Howard County (MD)

Park Design to Reduce Pesticide and Fertilizer Use

Summary:

The Howard County (MD) Parks and Recreation Department found that wildflower meadows were twenty times less expensive to maintain than conventional turf grass. This strategy also reduces the amount of pesticides and fertilizers applied to county grounds. They incorporated a strategy into new parks as they are being developed. For further information contact Howard County Parks and Recreation Department, MD, (410) 313-4730.

Municipal Maintenance

Case Study Location: Alameda County Public Works (CA)

Municipal Maintenance

Summary:

The Alameda Clean Water Program provides an example of a pollution prevention plan for a fleet maintenance facility. The plan requires the following: a pollution prevention team, site map, list of significant materials, description of potential pollutants, and assessment of potential pollutant sources, and storm water BMPs. For further information contact the Alameda County Countywide Clean Water Program, Alameda County Public Works, (510) 670-5543. Source: Model Urban Runoff Program, Appendix 3L.

Case Study Location: Palo Alto (CA)

Municipal Maintenance

Summary:

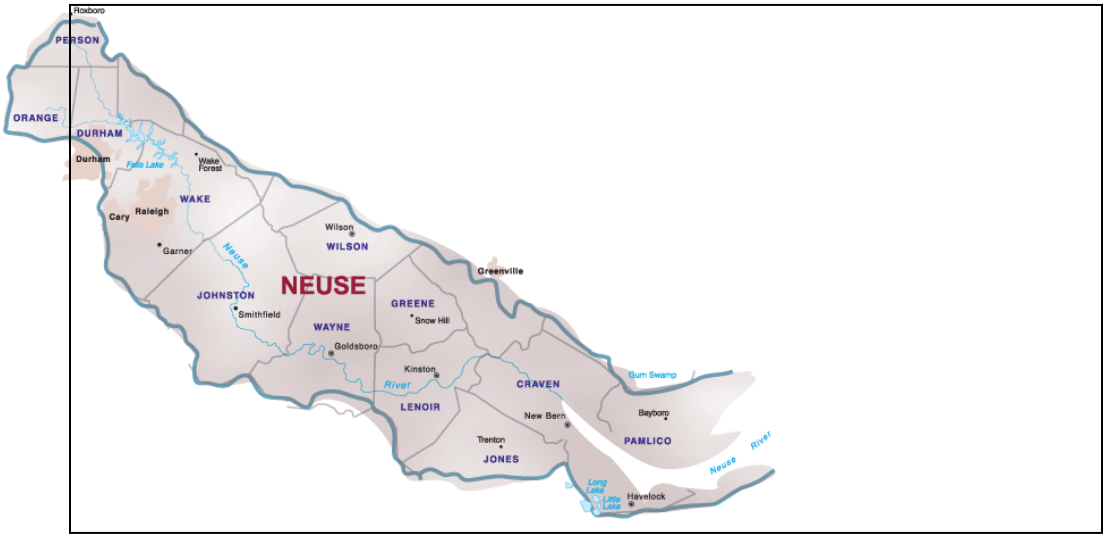
In Palo Alto, CA, a Phase I MS4 permittee, pollution prevention planning and engineering resulted in a decrease in pollutant concentrations originating from public utility yards. Concentrations of metals in storm water runoff decrease significantly with BMP employment and regular monitoring has demonstrated that improvements in storm water quality have been sustained over several years.

Addendum F. Example of Watershed Based Permitting

Watershed-based NPDES permitting is a process that emphasizes addressing all stressors within a hydrologically-defined drainage basin, rather than addressing individual pollutant sources on a discharge-by-discharge basis. Watershed-based permitting can encompass a variety of activities ranging from synchronizing permits within a basin to developing water quality-based effluent limits using a multiple discharger modeling analysis. The type of permitting activity will vary depending on the unique characteristics of the watershed and the sources of pollution impacting it. The ultimate goal of this effort is to develop and issue NPDES permits that better protect entire watersheds. Below is one example of NPDES permitting. Additional case studies are found at http://cfpub1.epa.gov/npdes/wqbasedpermitting/wspermitting.cfm

Watershed-based Permit for the Neuse River—North Carolina

The Neuse River flows southeasterly approximately 200 miles from its headwaters in Orange and Person Counties in North Carolina to its mouth at the Pamlico Sound near New Bern. The Neuse contains over 3,000 stream miles and drains 6,234 square miles including all or part of 23 counties. The drainage area is 8.8% of the State of North Carolina. The over 1 million people live in the basin 1.01 million people (14.9% of the state residents) live in the Neuse River (NCDENR, 1999).



The Neuse River basin (North Carolina Office of Environmental Education)
Neuse River Watershed Analysis

Stressors and Pollutants of Concern
A proliferation of nuisance algal blooms in the late 1970s and early 1980s led to concerns about eutrophication in the Neuse River basin. Studies during this time concluded that phytoplankton growth in the Neuse was not limited by the major nutrients of nitrogen or phosphorus. Similar conclusions from other studies led to a ban on phosphate detergent and classification of the lower basin as Nutrient Sensitive Water (NSW) in January, 1988 (NCDENR, 1999).

Early efforts stemming from the designation of the Neuse as a NSW required new and expanding NPDES

dischargers, as well as existing ones with design flows greater than 0.05 MGD, to meet a quarterly average phosphorus limit of 2 mg/l. In 1993, North Carolina's Division of Water Quality completed the Neuse River Basinwide Water Quality Management Plan, which recognized the reductions in total phosphorus loading that had been achieved through the phosphate detergent ban and other efforts to manage phosphorus. Although reductions in phosphorus loading greatly reduced algal blooms in the river and freshwater, uppermost portion of the estuary, eutrophication was still a problem in much of the estuary. For example, during July, September, and October 1995, there were extensive fish kills in the Neuse estuary. Sampling showed the water was often hypoxic only 1 to 2 meters below the surface and that there was a prevalence of algal blooms. Though not directly linked to the fish kills through published data, *Pfiesteria piscida* was found in the water where many of the fish kills occurred. Some researchers suggested that it might have been responsible for 30 to 50 percent of the fish kills in the estuary and that its presence is stimulated by eutrophic conditions. The fish kills and the threat of *Pfiesteria* led to a review of water quality and management actions to expedite nutrient loading reductions (NCDENR, 1999).

North Carolina placed the Neuse River estuary on its 1994, 1996 and 1998 303(d) impaired waters lists. Controlling nutrients is the most direct way to reduce chlorophyll *a* concentrations, and additional studies indicated that nitrogen is the main nutrient of concern in the Neuse River estuary. In addition, many nonpoint source management strategies aimed at nitrogen will obtain parallel phosphorus reductions. Therefore, the North Carolina Division of Water developed a Phase I of a TMDL for total nitrogen for the Neuse River estuary. The TMDL was approved by EPA on August 26, 1999. Phase II of the TMDL for total nitrogen was approved by EPA on March 19, 2002. The TMDL addresses chlorophyll *a* as its endpoint, but seeks to manage total nitrogen in order to limit chlorophyll *a* in the estuary (NCDENR, 2002).

Opportunities to Address Pollutants at a Watershed Level

The Neuse River Basin Nutrient Sensitive Waters Management Strategy: Wastewater Discharge Requirements (NSW Strategy) states that the wasteload allocation in the Neuse River total nitrogen TMDL (a total of 1.64 million pounds of total nitrogen at the estuary, equivalent to 3.0 million pounds of total nitrogen per year at point of discharge) was to be allocated among *groups* of dischargers and that the group allocation would be further divided into *individual* discharger allocations based on permitted flows. Thus, the TMDL wasteload allocation was divided among the 110 existing nitrogen-discharging facilities as an annual mass loading limitation and incorporated into NPDES permits as of January 1, 2003. The NSW Strategy also established specific nutrient control requirements for point source dischargers in the watershed and includes a provision allowing point sources to form a compliance association to work collectively to meet the combined total nitrogen WLA of 1.64 million pounds of total nitrogen per year at the estuary (15A NCAC 02B.0234). This series of actions for implementing the TMDL has provided the foundation for the North Carolina Division of Water to take a watershed-based permitting approach to permitting discharges of nutrients in the Neuse basin.

Critical Environmental Conditions

The 1999 Phase I TMDL stated that high spring total nitrogen loading followed by low flow, warm weather conditions in the summer and early fall determine, in part, the magnitude and frequency of algal blooms and fish kills during the warmer months and that algal activity in the estuary increases following storm events in the basin. Therefore, it would be important to control nutrient loading from storm events and nitrogen loading during the late winter and early spring as well as during summer storm events. Both the Phase I and Phase II TMDLs, however, concluded that the reduction in average annual load should result in attainment of water quality standards (NCDENR, 1999, 2002).

Point and Nonpoint Source Contributions
The Phase II TMDL estimated the total baseline loading of total nitrogen at New Bern (where the estuary begins) at 9.65 million pounds per year. Of that total, an estimated 3.32 million pounds per year originates from point sources in the basin and the remaining 6.33 million pounds per year originates from nonpoint sources (5.50 million pounds per year) and background loadings (0.83 pounds per year) (NCDENR, 2002).

The collective point of discharge allocations established in the NSW Strategy and the equivalent estuary allocations are based on facility size and location and are as follows:

Existing dischargers with permitted flows greater than or equal to 0.5 million gallons per day (MGD) (500,000 gallons per day) downstream of Falls Lake Dam have a combined limit of 2.45 million pounds of total nitrogen per year at point of discharge (1.51 million pounds of total nitrogen per year at the estuary).

Existing dischargers with permitted flows greater than or equal to 0.5 MGD upstream of the Falls Lake Dam have a combined limit of 444,000 pounds of total nitrogen per year at point of discharge (44,368 pounds of total nitrogen per year at the estuary).

Existing dischargers with permitted flows less than 0.5 MGD have a combined limit of 138,000 pounds of total nitrogen per year at point of discharge (83,591 pounds of total nitrogen per year at the estuary).

In addition, there are specific limitations on new and expanding discharges and requirements that these discharges either 1) ensure that there is an adequate allocation for their additional loadings or 2) ensure that they make an offset payment to the Wetland Restoration Fund to pay for nonpoint source controls needed to remove the increased nitrogen loading (15A NCAC 02B.0234).

Spatial and Temporal Relationships
The Phase I TMDL noted that, although the TMDL loading targets are annual and point sources would be limited on an annual basis, implementation plans to achieve the loads will address the seasonality issue because nonpoint source best management practices are designed to reduce nitrogen loading during storm events and, therefore, will reduce nitrogen loads during critical periods that studies indicated are important to control. Furthermore, for the point sources, as temperature increases, nutrient removal increases and, thus, point sources were expected to achieve the greatest portion of their reductions during the warmer summer months when point sources contribute more nitrogen load to the estuary (NCDENR, 1999).

In addition, as noted above, the NSW Strategy assigns allocations collectively to point source discharges based on permitted flow (less than 0.5 million gallons per day or greater than or equal to 0.5 million gallons per day) and location (above or below Falls Lake Dam). The allocations are derived from the overall point source wasteload allocation from the TMDL. Furthermore, the rules state that, in the event that the nitrogen wasteload allocation for point sources is revised, the allocations could be revised based on, among other factors, the fate and transport of nitrogen in the river basin (15A NCAC 02B.0234).

Neuse River Multisource Watershed-based Permit (NCDENR, 2008)

Permit Coverage

As discussed above, the NSW Strategy includes group permit option. Dischargers with permitted flows greater than 0.5 MGD are subject to total nitrogen limits either in their individual permits or in a group permit. They can meet these requirements individually or by joining a trading coalition and being covered under a watershed-based group compliance permit. Dischargers below the 0.5 MGD threshold may also join a trading coalition and would be required to meet the collective limit even though they do not have existing nitrogen limits in their NPDES permits.

The Neuse River Compliance Association (Association) was formed in 2002 as a non-profit corporation. On June 28, 2002, the Association applied for a watershed-based group compliance permit to regulate the discharge of total nitrogen from all of its member facilities. The permit (NCC000001) became effective on January 1, 2003, and was modified multiple times to reflect changes in membership.

Effluent Limitations
Appendix A of the permit, referenced in Part I, Section A.(3.), contains the list of co-permittees covered (i.e., Association members), their discharge allocations (i.e., allocation at the point of discharge), their equivalent estuary allocation (i.e., allocation at the estuary) and the estuary allocation for the Association as a whole. Appendix A also lists the transport factor for each facility, which is used to convert between the discharge allocation and the estuary allocation. A transport factor is the fraction of the total nitrogen in a facility's discharge that is expected to reach the estuary. The transport factors are taken from the allocation method described in the NSW Strategy.

The total nitrogen allocations are annual mass limits established on January 1 of each year. They are reevaluated annually and are revised if needed. The current estuary total nitrogen allocation for the Association is 1,149,391 pounds total nitrogen/year. Facilities are responsible for complying with the estuary allocations in the permit rather than the discharge allocations. Therefore, compliance determinations must account for transport factors. An individual facility is in compliance with its estuary allocation if one of two conditions is met:

the Association's estuary load complies with the Association's estuary allocation (which is the combined total of the individual estuary allocations for all members) or,

in the event that the Association estuary load exceeds the Association's estuary allocation, the individual facility's estuary load does not exceed that individual facility's estuary allocation.

If a co-permittee terminates membership in the Association, the member is no longer covered by the group compliance permit and is then subject to the total nitrogen limits included in its existing individual NPDES permit. In addition, the allocations of co-permittees can change as a result of purchases, sales, trades, leases, etc., however, these changes must be recognized in the individual permit and reflected in the permit limits before being incorporated into the Association's permit.

Monitoring and Reporting
The group compliance permit does not contain any monitoring requirements. Each member is required to monitor under its existing individual NPDES permit. The group compliance permit requires that the Association compile all monitoring results obtained by each member to submit in the mid-year and annual reports.

Each facility's individual NPDES permit requires that they submit discharge monitoring reports (DMRs) and the group compliance permit does not duplicate that requirement. However, annual, mid-year, and five-year reports are required of the Association.

Annual reports are required to provide the State with a report on compliance and program status. The permit requires that the annual report include, at a minimum: summary of Discharge Monitoring Reports that outline each co-permittee's discharge and estuary total nitrogen loads as well as the Association's group estuary total nitrogen load; summary of change in membership; summary of allocation transactions affecting allocations of the Association or its members; description of the Association's total nitrogen control strategy for the previous year and any changes upcoming year; detailed description of measures taken to control total nitrogen discharges; assessment of progress made; and description of efforts planned for upcoming year.

All changes in roster or allocations are made through a minor permit modification procedure and the state must be notified of any changes in a mid-year report (Part I, Section A.(2.) of the permit). The five-year report must be submitted to verify that the individual and group allocations are appropriate and adequate.

Special Conditions

The most unique special condition of the Neuse River Compliance Association permit is its group compliance option and, hence, built in water quality trading approach to compliance. This approach is based on the provision for a group permit in the NSW Strategy. For members of the Association, individual limits still apply, but the facilities within the Association are deemed "in compliance" with individual limits as long as the *group* remains in compliance with the combined total nitrogen limitation. If the group exceeds the combined total nitrogen limitation, then the group must make an offset payment to the Wetland Restoration Fund at a current rate of $11 per pound and any facility that has exceeded its *individual* total nitrogen limit is in violation as well.

Addendum G National Pollutant Discharge Elimination System (NPDES) Phase I MS4 Permit Stormwater Data

Table 1. NPDES Phase I MS4 Permit Stormwater Data. 2003 – Aug. 2009 Data

Constituent	001 (NDC)		002 (SDC)		003 San Jose		004 Barelas		005 San Antonio	
	Conc. (mg/L)		Conc. (mg/L)		Conc. (mg/L)		Conc. (mg/L)		Conc. (mg/L)	
	Avg. Conc.	Max. Conc.	Avg. Conc.	Max. Conc.	Avg. Conc.	Max. Conc.	Avg. Conc.	Max. Conc.	Avg. Conc.	Max. Conc.
Biochemical Oxygen Demand, 5-day	28	32	22	25	40	80	25.7	40.5	18.8	23
Chemical Oxygen Demand	560	640	300	560	330.5	480	2200	2200	134	190
Total Suspended Solids	3690	5580	1032	1928	2502	3484	571	728	528	892
Total Dissolved Solids	171	202	161	180	184.7	362	184	272	576.5	997
Total Nitrogen	5.63	5.99	2.48	3.88	6.47	7.9	4.43	5.91	2.44	2.78
Total Kjeldahl Nitrogen	4.23	4.46	3.1	4	7	11	3.28	4.18	1.59	1.84
Total Phosphorus as P	2.2	2.91	0.74	1.17	1.83	2.29	0.85	0.93	0.42	0.66
Diss. Phosphorus as P	0.21	0.27	0.1	0.2	0.6	0.7	0.13	0.18	0.26	0.42
Cadmium/Total	1 (1)	1.15 (1)	0.67 (1)	0.97 (1)	2.37 (1)	3.24 (1)	1.09 (1)	1.83 (1)	0.26 (1)	0.42 (1)
Cadmium/Dissolved	0.95 (1)	1.89 (1)	0.08 (1)	0.15 (1)	0.1 (1)	0.1 (1)	0.15 (1)	0.46 (1)	0.13 (1)	0.17 (1)
Copper/Total	76.6 (1)	81.5 (1)	48 (1)	80.7 (1)	52.4 (1)	63.9 (1)	65.1 (1)	103 (1)	21.1 (1)	34.5 (1)
Copper/Dissolved	6.75 (1)	13.5 (1)	7.1 (1)	9 (1)	10.5 (1)	12 (1)	6.2 (1)	10.9 (1)	5.07 (1)	5.14 (1)
Lead/Total	99.3 (1)	104 (1)	44.54 (1)	77.1 (1)	178 (1)	228 (1)	89.9 (1)	102 (1)	13.4 (1)	24.9 (1)
Lead/Dissolved	0.87 (1)	1.73 (1)	51.96 (1)	64.7 (1)	<2 (1)	<2 (1)	<2 (1)	<2 (1)	3.03 (1)	6.17 (1)
Zinc/Total	394 (1)	474 (1)	155.7 (1)	242 (1)	1228 (1)	1940 (1)	465(1)	643 (1)	48.3 (1)	170 (1)
Zinc/Dissolved	<6.8 (1)	11.3 (1)	142 (1)	171 (1)	30.2 (1)	60.4 (1)	130 (1)	229 (1)	22.7 (1)	22.7 (1)
Mercury/Total	<0.5 (1)	<0.5 (1)	<0.5 (1)	<0.5 (1)	<0.5 (1)	<0.5 (1)	<0.5 (1)	<0.5 (1)	<0.5 (1)	<0.5 (1)
Tri-Valent Chromium	19.8 (1)	20.1 (1)	19.8 (1)	35.5 (1)	25.2 (1)	30.2 (1)	12.6 (1)	12.7 (1)	2.01 (1)	2.24 (1)
Hexa-Valent Chromium	45 (1)	90 (1)	5 (1)	10 (1)	40 (1)	60.1 (1)	40 (1)	70 (1)	20 (1)	20 (1)
Arsenic/Total	7.06 (1)	9.11 (1)	8.92 (1)	14.4 (1)	14 (1)	17.6 (1)	5.9 (1)	8.4 (1)	2.5 (1)	8.3 (1)

Constituent	001 (NDC)		002 (SDC)		003 San Jose		004 Barelas		005 San Antonio	
	Conc. (mg/L)		Conc. (mg/L)		Conc. (mg/L)		Conc. (mg/L)		Conc. (mg/L)	
	Avg. Conc.	Max. Conc.	Avg. Conc.	Max. Conc.	Avg. Conc.	Max. Conc.	Avg. Conc.	Max. Conc.	Avg. Conc.	Max. Conc.
Thallium	0.73 (1)	1.21 (1)	<2 (1)	< 2 (1)	<2 (1)	< 2 (1)	<2 (1)	< 2 (1)	<2 (1)	< 2 (1)
Chloride (as Cl)	8.09	9.53	14.4	17.3	15.7	33.1	9.5	14.3	7.5	7.9
Nitrate Total	2.02	2.02	1.07	1.19	0.77	1.55	1.22	1.51	1.33	1.44
pH	7.3 (3)	8.9 (4)	7.2 (3)	8.9 (4)	7.6 (3)	8.1 (4)	7.1 (3)	8 (4)	7.7 (3)	8.6 (4)
Sulfate	4.33	8.66	19.8	21.5	32.9	54	15.6	28.2	9.39	13.1
Grab Specific Conductivity	138 (2)	151 (2)	226 (2)	242 (2)	524 (2)	524 (2)	194 (2)	301 (2)	143 (2)	215 (2)
Fecal Coliform	28848 (7)	43840 (7)	28261 (7)	43840 (7)	17340 (7)	43840 (7)	8000 (7)	8000 (7)	12588 (7)	27124 (7)
Oil and Grease	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Total Recoverable Phenolics	386 (1)	773 (1)	219 (1)	331 (1)	129 (1)	259 (1)	135 (1)	171 (1)	116.5 (1)	133 (1)
Hardness, Total CACO3	135.5	153	111	122	124.3	159	78	111	84.8	98
Grab Temperature	9 (5)	25 (6)	24 (5)	36.2 (6)	23 (5)	25.5 (6)	24 (5)	24 (6)	7 (5)	190 (6,8)
PCBs	<1 (1)	<1 (1)	<1 (1)	<1 (1)	<1 (1)	<1 (1)	<1 (1)	<1 (1)	<1 (1)	<1 (1)

Source www.epa-otis.gov.

1 µg/L
2 UMHO/CM
3 Minimum value, Standard Units
4 Maximum value, Standard Units
5 Minimum value, °C
6 Maximum value, °C
7 cfu/100 ML
8 Entry database error

Table 2. National Pollutant Discharge Elimination System (NPDES) Phase I MS4 Permit Stormwater Data. Sep. 2009 - 2011

Constituent	001 (NDC)		002 (SDC)		003 San Jose		004 Barelas		005 San Antonio	
	Conc. (mg/L)		Conc. (mg/L)		Conc. (mg/L)		Conc. (mg/L)		Conc. (mg/L)	
	Avg. Conc.	Max. Conc.	Avg. Conc.	Max. Conc.	Avg. Conc.	Max. Conc.	Avg. Conc.	Max. Conc.	Avg. Conc.	Max. Conc.
Biochemical Oxygen Demand, 5-day	59[10]	207[10]	21	39	38.4	90	26.6	40	9.8	12.4
Chemical Oxygen Demand	193.5[10]	269[10]	177.6	378	274.9	582	741.2	2270	83.2	94
Total Suspended Solids	3438[10]	4028[10]	853	2204	969	3948	51681	204860	58.7	216
Total Dissolved Solids	90[10]	98[10]	172.2	234	140.9	368	225.2	314	84	96
Nitrogen, Nitrate Total	0.5[10]	0.65[10]	0.8	1.34	0.8	1.37	2.4	7.3	0.6	0.81
Total Kjeldahl Nitrogen	2.9[10]	4.2[10]	2.9	5.4	4.2	10	14.7	48.9	1.1	1.26
Total Phosphorus as P	1.6[10]	1.8[10]	1.5	3.4	1.4	2.7	6.9	27.5	0.3	0.3
Dissolved Phosphorus as P	0.15[10]	0.19[10]	0.2	0.3	0.2	0.4	0.2	0.4	0.2	0.2
Cadmium/Total	0,7 [1][10]	0.79 [1][10]	0.68 [1]	1.5 [1]	1.20 [1]	3.01 [1]	3.85 [1]	10.7 [1]	0.20 [1]	0.22 [1]
Cadmium/Diss.	0.1 [1][10]	0.1 [1][10]	0.1 [1]	0.1 [1]	0.1 [1]	0.1 [1]	0.23 [1]	0.56 [1]	0.12 [1]	0.19 [1]
Copper/Total	39.9 [1][10]	63.5 [1][10]	45.2 [1]	87 [1]	58.1 [1]	117 [1]	195.7 [1]	633 [1]	10.86 [1]	15.9 [1]
Copper/Dissolved	4.6 [1][10]	5.4 [1][10]	8.5 [1]	10.9 [1]	8.3 [1]	15.3 [1]	12.7 [1]	50.5 [1]	6.3 [1]	10 [1]
Lead/Total	36.6 [1][10]	50.9 [1][10]	59 [1]	141.2 [1]	81.5 [1]	156.5 [1]	215.9[1]	702 [1]	2.1 [1]	4.5 [1]
Lead/Dissolved	0.2 [1][10]	0.3 [1][10]	<1 [1]	<2[1]	<1.2 [1]	<2 [1]	<1.4[1]	2.44 [1]	<0.7 [1]	<2 [1,9]
Zinc/Total	182.3 [1,10]	283 [1,10]	360 [1]	669 [1]	670.4 [1]	1120 [1]	995[1]	2450 [1]	163 [1]	569 [1]
Zinc/Dissolved	<7.5 [1,10]	10 [1,10]	9.2 [1]	21.7 [1]	67.9 [1]	652 [1]	90.8 [1]	316 [1]	10.7 [1]	29.7 [1]

Constituent	001 (NDC)		002 (SDC)		003 San Jose		004 Barelas		005 San Antonio	
	Conc. (mg/L)		Conc. (mg/L)		Conc. (mg/L)		Conc. (mg/L)		Conc. (mg/L)	
	Avg. Conc.	Max. Conc.	Avg. Conc.	Max. Conc.	Avg. Conc.	Max. Conc.	Avg. Conc.	Max. Conc.	Avg. Conc.	Max. Conc.
Mercury/Total	<0.05 (1)(10)	<0.05 (1)(10)	<0.06 (1)	0.09 (1)	<0.2 (1)	<0.11 (1)	<0.1 (1)	<0.2 (1)	<0.05 (1)	<0.05 (1)
Tri-Valent Chromium (10)	10.4 (1)	<15.6 (1)	7.8 (1)	<18.3(1)	<9.3 (1)	<20.8 (1)	<5.8 (1)	<17.8 (1)	<1.7 (1)	<3.5 (1)
Hexa-Valent Chromium (10)	7.81 (1)	<15.62 (1)	15.32 (1)	20 (1)	16.75 (1)	<20.83 (1)	10.21 (1)	20 (1)	2.82 (1)	10(1)
Arsenic/Total	3.59 (1)	7.06 (1)	8.22 (1)	16.8 (1)	6.67 (1)	11.06 (1)	5.57 (1)	10.87 (1)	2.45 (1)	3.22 (1)
Thallium	<0.4 (1,10)	<0.5 (1,10)	<1.3 (1)	< 3 (1)	<1.3 (1)	< 3 (1)	<1.3 (1)	< 3 (1)	<1.2 (1)	< 3 (1)
Chloride (as Cl)	9.2(10)	12.9(10)	11.6	18.1	23.6	45.6	37.2	80.8	5.4	12
Nitrogen Total	3.8(10)	5.3(10)	3.9	6.93	5.8	11.1	17.7	56.5	1.9	2.51
pH	8 (3,10)	8.5 (4,10)	7.2 (3)	8.4 (4)	7.3 (3)	8.7 (4)	7 (3)	8.1(4)	7 (3)	7.6 (4)
Sulfate	4.6(10)	6.9(10)	8.9	9.8	14.1	30.9	18.9	25.7	3.9	5.5
Grab Specific Conductivity	85 (2,10)	100 (2,10)	183 (2)	236 (2)	237.4 (2)	407 (2)	233 (2)	454 (2)	103.7 (2)	157 (2)
Fecal Coliform (7)	132850 (10)	261300 (10)	48444	1.7329e+06	19217	88400	74215	248100	6127	18416
Oil and Grease	<5(10)	<5(10)	<4.9	6.7	<4.9	5.6	<4.6	6.3	<5.6	6.3
Total Recoverable Phenolics	241 (1,10)	633 (1,10)	87.5 (1)	<100 (1)	87.5 (1)	<100 (1)	89.2 (1)	151 (1)	87.5 (1)	<100 (1)
Hardness, Total CACO3	88.1(10)	90.6(10)	100.5	158	109.6	176	99.8	141	42.8	49.9
Grab Temperature	18 (5,10)	25 (6,10)	9 (5)	28.5 (6)	10.2 (5)	26 (6)	19.1 (5)	25.1 (6)	23 (5)	26 (6)
PCBs (9)	<0.1 (1)	<0.1 (1)	<0.1 (1)	<0.2 (1)	<0.1 (1)	<0.2 (1)	N/A	N/A	<0.1 (1)	<0.2 (1)

Source www.epa-otis.gov.

1 µg/L
2 UMHO/C
3 Minimum value, Standard Units
4 Maximum value, Standard Units
5 Minimum value, °C
6 Maximum value, °C
7 cfu/100 ML
8 The value needs to be revised to meet QA/QC requirements.
9 2009, 2010, and 2011 Data
10 2009 and 2010 Data