Storm Water Management

iSWM

for North Central Texas

Formerly Comprehensive Drainage Criteria and Design (CDCD)

NCTCOG Meeting Notice

Tuesday
January 14
9:00 - 11:00 a.m.

or

Thursday
January 16
6:00 - 8:00 p.m.

616 Six Flags Drive
Centerpoint Two
Transportation
Board Room
Arlington, Texas

North Central Texas Council of Governments (NCTCOG)needs your input in developing regional drainage criteria and design guidance.

To address the storm water issues facing the region and in response to certain state and federal regulations, NCTCOG and more than 55 local governments are taking a proactive role in the development of a **comprehensive drainage criteria and design manual for North Central Texas**. This integrated storm water management (iSWM) manual will be the first of its kind in the region to combine comprehensive storm water management practices for both quantity and quality storm water issues. It will be flexible, yet uniform and will provide guidance applicable to projects of all sizes and locations within the region.

The iSWM manual will outline the most current and applicable storm water management techniques, and provide criteria and rationales for the selection of structural and nonstructural water quality and quantity best management practices. The manual will also include detailed design specifications for these controls, and techniques for integrating storm water quality and quantity considerations. Additionally, an updated NCTCOG manual for BMPs during construction will be coordinated with this manual.

To make this project successful, NCTCOG needs your input regarding what your local government is currently doing and what key issues need to be addressed. **Please plan on attending one of the meetings, and bring your existing drainage manuals, ordinances, and criteria to assist with the development of the regional manual criteria.**

With the region's combined efforts, the iSWM manual will provide the most up-to-date criteria and options unique to the storm water issues facing the North Central Texas Region. For more information, contact Kenneth Calhoun, 817/695-9224, email kcalhoun@dfwinfo.com or log on to iSWM.dfwinfo.com.

OUR WATER Take it personally!

Produced by the North Central Texas Council of Governments in cooperation with Regional Storm Water Management Program participants.

DEVELOP -

NATURALLY!

DEVELOP - NATURALLY!

What is Land Development? According to Webster's Dictionary, it is to make the land (the surface of the earth and all its natural resources) suitable for residential or commercial purposes. North Central Texas has been blessed with an abundance of land to develop and a current economy that is second to none. Development is necessary for the economic viability of this region but, as we are learning, how this "development" occurs has a profound impact on the natural environment.

We are seeing the consequences of our thriving economy and our development practices on the environment we live in. Some of our most precious natural resources - including the Trinity River, our area lakes, and the Ancient Cross Timbers Forest - are being degraded, resulting in impaired water quality and loss of habitat. North Central Texas has a great natural heritage that can be preserved by the use of environmentally sensitive development practices.

Many of the practices for minimizing the impact of development can have benefits for the developer in terms of reduced cost and in attracting potential buyers by incorporating features that buyers reportedly consider important when shopping for a home. These practices benefit the eventual residents of the development and the larger community as well.

A natural buffer of trees and vegetation along streams filters storm water before it reaches the waterway and also provides excellent habitat for birds and wildlife. Stream buffers provide natural open space and areas for locating walking/biking paths, both of which are rated as "extremely important" by approximately 75% of recent homebuyers in a national survey. Gardens with native plants, clustered retail stores, wilderness areas, and "interesting little parks" were rated as extremely important by 50% or more of recent homebuyers in the same survey.

Take a look, do some more research, and see how the ***Ten Keys to Developing Naturally*** can help you meet your objectives and improve our environment. Naturally North Central Texas is going to develop -- so let's do it *naturally*!

Ten Keys to Developing Naturally

1. *Maintain existing terrain*

Incorporating the development into the existing terrain rather than regrading the site helps preserve tree canopy and other vegetative cover. Maintaining the terrain and natural drainageways helps to reduce

pollution and storm flows from developments and provides protection for environmentally sensitive features on the site.

2. *Minimize impervious surfaces*

Impervious surfaces include roads, parking lots, driveways, and rooftops, that don't allow infiltration of storm water into the ground. The increase in storm water runoff, along with the pollutants the runoff picks up from impervious surfaces, cause major problems for our waterways. Narrower streets and smaller parking lots benefit the environment and can make a development more attractive as well.

3. *Build in the least sensitive areas*

By building in the least sensitive areas, negative impacts on ecologically valuable features are avoided. Areas that should be preserved include wetlands, floodplains, buffer areas adjacent to streams and lakes, prairies, and stands of mature trees. By increasing the density on the remaining portion of the property, approximately the

same number of building lots or sites can be created compared to "conventional" designs.

4. *Provide open space/parks*

Natural open space is extremely valuable as wildlife habitat, storm water infiltration areas, and as protective buffers for ecologically sensitive areas. Just as important, open space serves as an extension of the individual residential lot. Quality open space that provides opportunities for walking, biking, bird watching, and play is extremely popular with homebuyers.

5. *Preserve streams and floodplains*

Natural streams, floodplains, and riparian buffers are vital to the success of natural systems. Buffered with trees and vegetation, natural streams also provide extremely important aesthetic value to neighborhoods and communities. Natural, undeveloped floodplains provide storage for storm flows, minimizing downstream flooding.

6. *Direct runoff over vegetated areas*

Discharging runoff from roofs, roads, and parking lots into vegetated areas, rather than directly into storm drains offers an opportunity for infiltration of storm water runoff into the ground. Infiltration of storm water runoff reduces both the quantity of water and the amount of pollutants that would otherwise reach a stream or lake. Landscaped and vegetated areas, particularly in commercial and multi-family residential settings, also provide aesthetic value.

7. *Use Texas SmartScape plants*

Landscaped areas, with all of their benefits, can also contribute to the pollution of streams and lakes if they are not managed properly. Using native plants, and those that have been adapted to the local climate and conditions, decreases the potential for water pollution by reducing the amount of water, pesticides, and fertilizer that must be applied to keep the plants healthy - and saves money. *Texas SmartScape* is an interactive multimedia tool on compact disk that can be used to select native and adapted plants for North Texas (see reference information).

8. *Consider ways to reduce car travel*

Automobiles impact the environment in several ways. Pollutants in car exhaust account for almost one-half of the ozone air pollution in the region. Oil, grease, and metals from cars are washed into streams

and lakes when storm water runs off of roads and parking lots. As the number of cars on the road and congestion increases, more air and water pollution will result. Locating developments near transit facilities, incorporating bicycle and pedestrian trails, and/or including a mix of residential and commercial uses can lead to a reduction in automobile travel.

9. *Incorporate storm water treatment controls*

Detention and retention ponds, infiltration basins, and oil / grit separators are devices that "treat" storm water runoff before it is discharged into the nearby stream or lake. Treatment controls (except oil / grit separators) should be considered only after all other *Keys to Developing Naturally* have been explored and implemented to the greatest extent possible. In many cases, the need for these "treatment" or "structural" controls can be avoided altogether, or they can be reduced in size if the amount of runoff and entrained pollutants are minimized by the design of the project. Generally, it is cheaper and more effective to implement design elements that prevent or reduce the generation of storm water runoff and/or pollutants at the source.

10. *Use site controls to manage litter*

Litter that ends up in streams and lakes is more than an eyesore, it can affect water utilities, residents, and wildlife. In commercial areas, inlet controls and wind breaks can be very effective in preventing litter and debris from being discharged into our waterways.

Reference Information

For more information and references to design manuals, including the Texas **SmartScape CD**, please refer to the companion **Guide to Developing Naturally**. The Guide is available at no charge from most North Texas cities and counties or from the **North Central Texas Council of Governments**. The Guide can be downloaded from the NCTCOG Storm Water web site at **www.dfwstormwater.com**, or you may request a copy by calling **817.695.9210**. For specific development requirements, contact the development services department in your city.

Storm Integrated Water Management

for North Central Texas

Formerly the comprehensive drainage and criteria design

Overview of Meeting

- Overall Project Update
- Manual Content Details
- BMP Construction Manual Update
- Project Websites

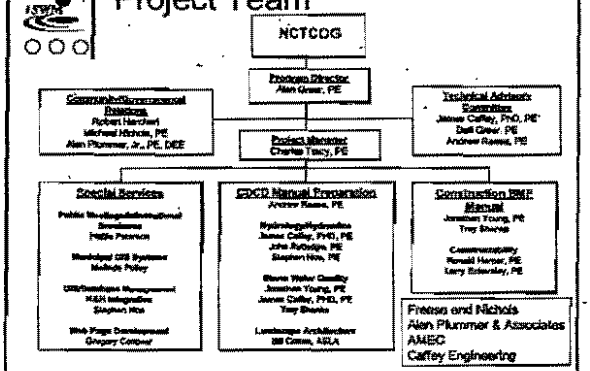
Project Purpose

Providing a comprehensive guideline for

Integrated Storm Water Management

throughout the planning, design, construction and maintenance of storm water infrastructure

Project Team



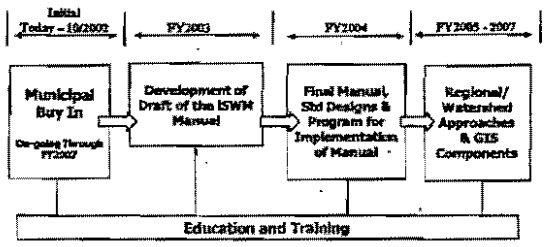
Project Overview

- Develop a step-by-step detailed instructional document
  - Control and management of storm water quality and quantity for new and redevelopment
  - Guide for developers and governmental agencies

Manual Essentials

- Most recent storm water policies and planning techniques
- Integration of storm water quantity and quality considerations
- Up-to-date storm water design criteria
- Guidelines and procedures for planning and design at site and watershed levels
- Storm water controls and BMPs
- Guidelines for inspection and maintenance

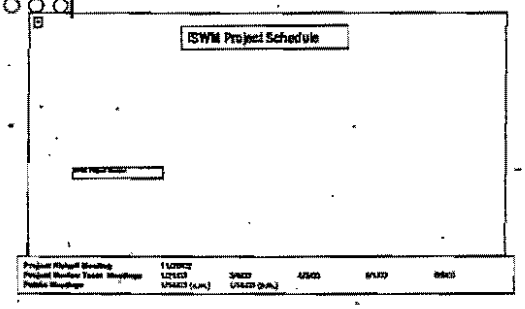
Five-Year Plan



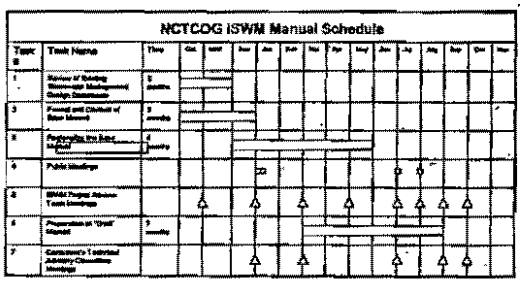
The Benefits

- Address storm water issues through cross city limits
- Improve overall storm water quality throughout the Region
- Level the playing field across the Region
- A regionally-based comprehensive drainage resource
- A "How-To" guide in storm water management for all phases of a project
- Up-to-date regulations and policies
- Standardization of processes
- User-friendly interactive on-line manual

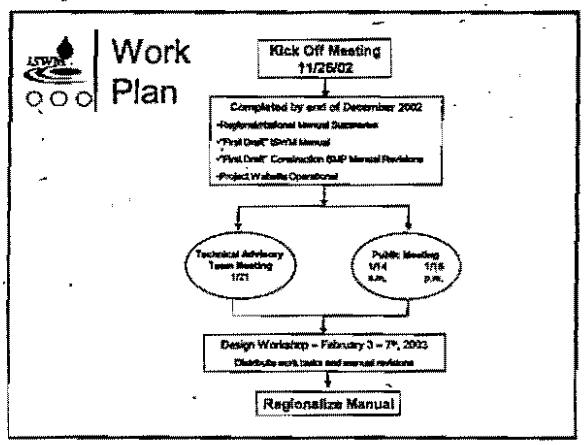
Critical Dates



Critical Dates



Work Plan



iSWM Manual Outline

- Volume 1 – Policy Guidelines
- Volume 2 – Design Manual

Volume 1 - Policy Guide

- Chapter One – Case for Stormwater Management
  - Impacts of Development and Stormwater Runoff
  - Stormwater Impacts
  - Addressing Runoff Impacts Through Stormwater Management

Volume 1 - Policy Guide

- Chapter 2 – Regulatory Requirements for Communities
  - Overview
  - Stormwater Quantity and Flood
  - Prevention Regulations
  - Water Quality Regulations

Volume 1 - Policy Guide

- Chapter 3 – Local Stormwater Management Programs
  - Overview of Local Stormwater Management Programs
  - Developing an Effective Local Stormwater Management Program

Volume 1 - Policy Guide

- Chapter 4 – Implementing Stormwater Management Requirements for Development
  - .Overview
  - Minimum Standards for Development
  - Stormwater Better Site Design Practices
  - Unified Stormwater Sizing Criteria
  - Stormwater Site Design Credits
  - Downstream Assessments
  - Guidance on Structural Stormwater Controls
  - Stormwater Management Site Plans

Volume 1 - Policy Guide

- Chapter 5 – Watershed-Based Stormwater Planning
  - Stormwater Master Planning
  - Comprehensive Watershed Planning for Communities
  - Integration of Site and Watershed-Level Stormwater Planning
  - Inter-jurisdictional Watershed Planning
  - Implementation of Watershed Plans
  - Regional vs. On-site Stormwater Management

Volume 1 - Policy Guide

- Chapter 6 – Flood Plain Management
  - Local Flood Plain Management and Stormwater Management
  - National Flood Insurance Program
  - Strategies and Tools for Improved Flood Plain Management

Volume 1 - Policy Guide

- Chapter 7 – Stormwater System Operations and Maintenance
  - Local Stormwater Operations and Maintenance Programs
  - Implementing An Effective O&M Program
  - Stormwater Retrofitting

Volume 1 - Policy Guide

- Chapter 8 – Stormwater Pollution Prevention Programs
  - Stormwater Pollution Prevention

Volume 1 - Policy Guide

- Chapter 9 – Information Tools for Local Stormwater Management
  - Overview
  - Stormwater Management System Inventories
  - Geographic Information Systems
  - Global Positioning Systems
  - Remote Sensing
  - Computer Models

Volume 1 - Policy Guide

- Appendix A – Contact Agenices for Stormwater Management Regulations and Programs
- Appendix B – Stormwater Site Plan Review Checklist
- Appendix C – Example Stormwater Facility Maintenance Agreement

Volume 2 - Design Manual

- Chapter 1 – Stormwater Management Planning and Design
  - Need for Stormwater Management
  - Stormwater Management Standards
  - Unified Stormwater Sizing Criteria
  - Stormwater Better Site Design
  - Stormwater Site Planning

Volume 2 - Design Manual

- Chapter 2 – Stormwater Hydrology
  - Methods for Estimating Stormwater Runoff
  - Storage Design
  - Outlet Structures

Volume 2 - Design Manual

- Chapter 3 – Structural Stormwater Controls
  - Structural Stormwater Controls Overview
  - General Application Structural Stormwater Controls
  - Limited Application Structural Stormwater Controls
  - Detention Structural Stormwater Controls

Volume 2 - Design Manual

- Chapter 4 – Stormwater Drainage System Design
  - Stormwater Drainage Design Overview
  - Minor Drainage System Design
  - Culvert Design
  - Open Channel Design
  - Energy Dissipation Design

Volume 2 - Design Manual

- Appendix A – Rainfall Tables
- Appendix B – Soils Information
- Appendix C – Miscellaneous Specifications
- Appendix D – Structural Stormwater Control Design Examples
- Appendix E – Structural Control Maintenance Checklists
- Appendix F – Landscaping and Aesthetics Guidance
- Appendix G – Stormwater Computer Models
- Appendix H – Safe Dams Act (Georgia)

iSWM Manual Update

- Regional and National Manual Evaluation Completed
- "First Draft" Red-line/blue-line Markup Completed
- BMP Manual Update Questionnaire in Progress
- Project Website 90% Complete
- New Name and Logo Developed
- Public Meetings in Progress

BMP Update

- 1993 Publication w/ One Revision
- Includes Individual BMPS
  - Erosion Control
  - Sediment Loss Prevention
  - Waste Management

BMP Update

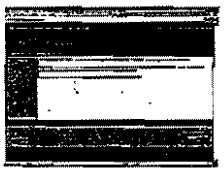
- Fact Sheets Provided For Individual Measures
- Construction Specifications Provided For Appropriate Measures
- Examples
  - Silt Fences
  - Inlet Protection
  - Erosion Control Matting
  - Swales
  - Construction Entrances

BMP Update – Current Activities

- Review of the Manual
- Comparison to Current Practices
  - Locally
  - Other Areas
- Interviews with Local Governments, Developers, Contractors and Engineers
- BMP Questionnaire

iSWM Website Components

- The Manual Review
- Comments
- Surveys
- Contact Information



www.iswm.dfwinfo.com

Storm Integrated Water Management

Formerly the comprehensive drainage and criteria design

INTEGRATED STORM WATER MANAGEMENT (*i*SWM) Project Review Team

Steering Committee (16)

Representation	Representative	Municipality
Drainage/Floodplain Administration	Gordon Scruggs	City of The Colony
Drainage/Floodplain Administration	Steve Parker	City of Dallas
Drainage/Floodplain Administration	Ed Witkowski	City of Denton
Environmental Management	Katrina Martich	City of Arlington
Environmental Management	Gene Rattan	Tarrant County
Planning Administration	_____	
Planning Administration	David Gattis	City of Benbrook
City Engineering Administration	Tre Dibrell	City of Hurst
City Engineering Administration	Lee Stimpson	City of Plano
City Engineering Administration	Jim Dulac	City of Richardson
City Engineering Administration	Thom Guillory	City of Garland
City Engineering Administration	Stan Ballard	City of Terrell
City Engineering Administration	Curt Caldwell	City of Duncanville
City Public Works Administration (**Chair**)	Don McChesney	City of Fort Worth
City Public Works Administration	Larry Barkman	City of Cleburne
??????	_____	

Associated Advisors

Federal/State Agencies

US Army Corps of Engineers
US Environmental Protection Agency Region 6
US Dept. of Housing and Urban Development
Federal Emergency Management Agency Region VI
Texas Commission on Environmental Quality
Texas Department of Transportation
Texas Parks and Wildlife
Texas Water Development Board

Professional Associations

Council of Engineering Companies Ft Worth
Council of Engineering Companies Dallas
Home Builders Association Ft Worth
Home Builders Association Dallas
Associated General Contractors Highway/Utility
Associated General Contractors Quoin
American Institute of Architects
American Planning Association
Texas Public Works Association
American Society of Civil Engineers
American Society of Landscape Architects
Building Officials Association of Texas
Building Owners & Managers Association
National Apartment Association
Urban Land Institute
Water Environment Association of Texas

Advocacy Organizations

Center for Watershed Protection
Low Impact Development Center

Private Development Interests

Academia

Project Consultants

Freese and Nichols, Inc.
Alan Plummer and Associates
AMEC Earth and Environmental, Inc.
Caffey Engineering, Inc.

Project Coordinator

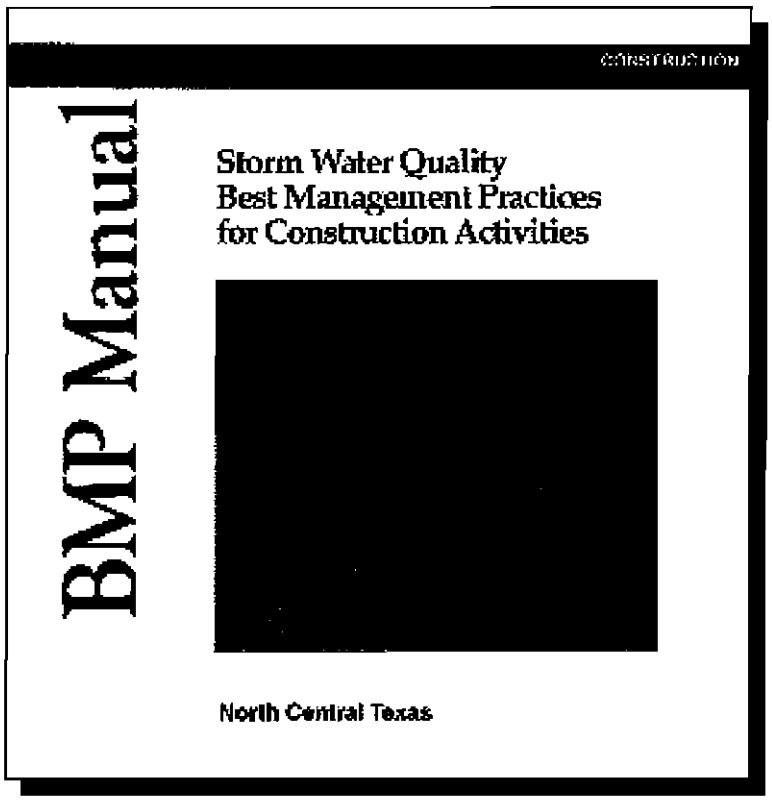
North Central Texas Council of Governments

01/14/2003

North Central Texas Council of Governments
Construction BMP Manual

OUR WATER
Take it personally!

The North Central Texas Council of Governments has initiated a project to revise and update the *Storm Water Quality Best Management Practices for Construction Activities* manual. The "Construction BMP Manual", first published in 1993, was developed to be a guide for those preparing or implementing a Storm Water Pollution Prevention Plan for a construction project. The manual is being revised to reflect the requirements of the soon to be released Texas Pollutant Discharge Elimination System (TPDES) General Permit for Discharges Associated with Construction Activities. In addition, the Storm Water Pollution Prevention Plan (SWPPP) design methodology and the BMPs will be updated to the current state of the art in control of pollutants from construction sites.



A consultant team of Freese and Nichols, Inc. and Alan Plummer Associates will be assisting NCTCOG's Clean Construction Campaign (C3) Team (see box below) and NCTCOG staff on this project. The release of the 3rd Edition of the Construction BMP Manual is anticipated for April/May 2003.

We are looking for input from the users of the Manual to assist in the development of the revised edition. A questionnaire on the Construction BMP Manual can be accessed at www.iswm.dfwinfo.com. Please log on to the site and complete the questionnaire by January 24, 2003 if possible, although we will continue to accept responses after that date. In addition to the survey, we will conduct public meetings to receive comments on a draft of the manual prior to release.

Please contact Jeff Rice, NCTCOG Project Coordinator, at jrice@dfwinfo.com or 817-695-9212 if you would like more information on the project to update the NCTCOG Construction BMP Manual.

The Clean Construction Campaign (C3) Team is an advisory group to NCTCOG's Public Works Council. The goal of C3 is to promote clean construction sites through improved communication, cooperation, and commitment, not through more regulations. The C3 Team will address multiple environmental issues related to construction including construction site runoff and waste control, construction and demolition debris recycling; and off-road diesel equipment emissions.

Storm Integrated Water Management

iSWM

for North Central Texas

iSWM Manual Public Meeting – 1/14 and 1/16/2003

Purpose: To provided the public a status of the activities completed to dates including component details of the iSWM manual. To introduce the public information/comment website for the iSWM project.

Agenda:

9:00 - 9:05 a.m.	Welcome and Introductions	Kenny Calhoun, NCTCOG
9:05 - 9:30 a.m.	Update on Activities to Date	Kenny Calhoun
9:30- 10:30 a.m.	iSWM Manual Update a. Project update b. Details of Manual Components c. BMP Construction Manual Update d. Project Website Introduction	Alan Greer, FNI
10:30 - 10:50 a.m.	Questions and Answers	NCTCOG/Consultants
10:50 - 11:00 a.m.	Meeting Summary	Kenny Calhoun

ISWM Manual Comment Form for Table of Contents Volume 2 (Technical Guidebook)

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COMMENTS:

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CHAPTER 2 – STORMWATER HYDROLOGY

COMMENTS:

CHAPTER 3 – STRUCTURAL STORMWATER CONTROLS

COMMENTS:

COMMENTS:

ADDITIONAL COMMENTS:

iSWM Manual Comment Form for Table of Contents – Volume 1 (Policy Guidebook)

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COMMENTS:

CHAPTER 2 – REGULATORY REQUIREMENTS FOR NORTH TEXAS COMMUNITIES

COMMENTS:

CHAPTER 3 – LOCAL STORMWATER MANAGEMENT PROGRAMS

COMMENTS:

CHAPTER 4 – IMPLEMENTING STORMWATER MANAGEMENT REQUIREMENTS FOR DEVELOPMENT

COMMENTS:

COMMENTS:

COMMENTS:

CHAPTER 5 – WATERSHED-BASED STORMWATER PLANNING

COMMENTS:

CHAPTER 6 – FLOODPLAIN MANAGEMENT

COMMENTS:

CHAPTER 7 – STORMWATER SYSTEM OPERATIONS AND MAINTENANCE

COMMENTS:

CHAPTER 8 – STORMWATER POLLUTION PREVENTION PROGRAMS

COMMENTS:

CHAPTER 9 – INFORMATION TOOLS FOR LOCAL STORMWATER MANAGEMENT

COMMENTS:

ADDITIONAL COMMENTS:

List of Tables

List of Figures

CHAPTER 6

CHAPTER 9

North Central Texas Council of Governments

Construction BMP Manual

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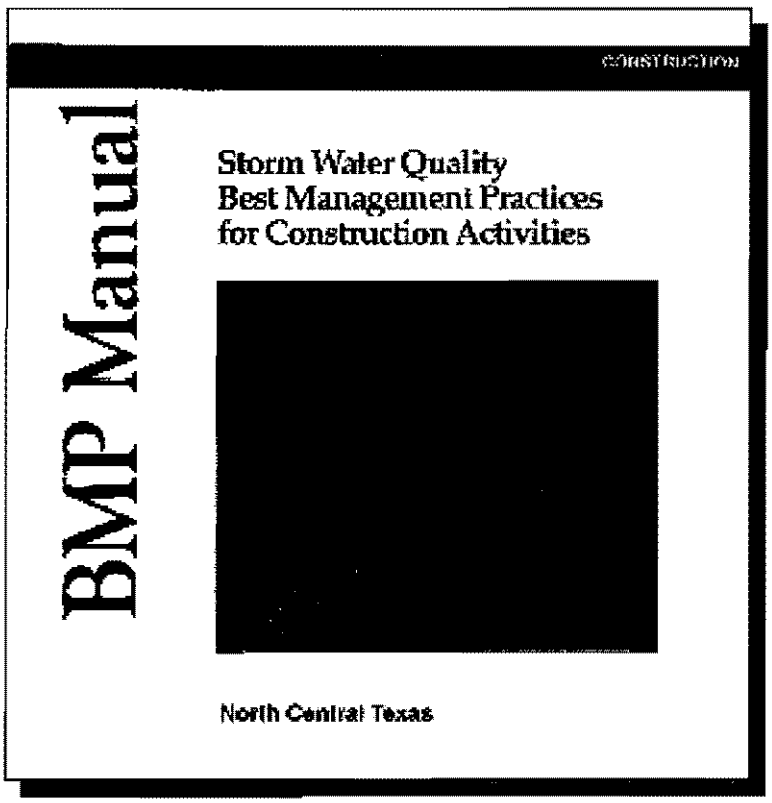

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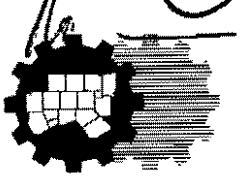
7-30-02 Mike

Yes For The 7-30-02



North Central Texas Council Of Governments

TO: The North Central Texas Region

DATE: July 22, 2002

FROM: Mike Eastland, Executive Director ME

#5587

SUBJECT: Follow-up on Request for Comprehensive Drainage Criteria & Design Project Participation

Support for the Comprehensive Drainage Criteria & Design Project is rolling in! It is early in the process, but firm commitment to participate has been received so far from cities such as Denton, Wylie, Little Elm, Addison, Mansfield, and Stephenville. Indication of participation pending final budget approval has been received from Dallas County and the cities of Plano, Fort Worth, and Grand Prairie. Support is even coming from outside our region, as the City of Sherman is interested in being a player. The regulatory community is also taking notice as indicated in the attached letter from Steve Ligon, Storm Water & General Permits Team Leader for the Texas Natural Resources Conservation Commission (TNRCC). Mr. Ligon states, "This [CDCD Manual] will be an effective tool for local governments and the development industry in addressing the impacts of post-construction storm water runoff."

We are fully aware that these are tough budget times but this is a unique and timely opportunity to develop a tool for this region that will be rivaled only by the Standard Specifications for Public Works Construction in its usefulness and universal applicability to the region. There is significant cost savings to be achieved through regional cooperation. Individual jurisdictions would expend many times more to develop such a manual, or even to just upgrade their existing drainage criteria to incorporate runoff quality considerations required by storm water regulations. As an additional benefit, participating jurisdictions will get discounted manuals and training opportunities.

Other benefits derived from participating in this cooperative project are:

- Long term cost savings to the jurisdiction
- State of the art guidance and technologies
- Consistent drainage assumptions and criteria throughout the region
- Improved drainage designs and management
- Reduced flooding risks
- Easier compliance with regulatory permits (TPDES and 404)
- Enhanced quality of life from "greener" drainage policies
- Reduced staff time to review and approve drainage plans
- Better management of storm water from neighboring communities
- Regional training opportunities for city staff and the development community

Project Briefing
Thursday, August 1, 2002
10:30 - 11:45 a.m.
NCTCOG Offices
616 Six Flags Drive
Arlington, TX 76011

We are hosting a project briefing on August 1 from 10:30 to 11:45 am at the NCTCOG offices at 616 Six Flags Drive, Suite 200, in Arlington. There will be an in-depth presentation on the manual by the consultant team and an opportunity to have any questions that you might have answered. In the interim, additional information including a brochure, presentation, and participation/funding commitment response forms are available at www.dfwworks.com. Also, in an effort to establish a regional baseline, please send us your existing drainage criteria and design guidelines as we are compiling them to submit to the consultant team.

Thank you for your consideration of this request. Please contact Kenneth Calhoun, Development Engineering Specialist, at 817-695-9224 or kcalhoun@dfwinfo.com for additional information.

616 Six Flags Drive, Centerpoint Two
P. O. Box 5888, Arlington, Texas 76005-5888
(817) 640-3300 FAX: 817-640-7806 recycled paper
http://www.dfwinfo.com

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

July 8, 2002

Mr. John Promise, P.E.
Director of Environmental Resources
North Central Texas Council of Governments
P.O. Box 5888
Arlington, Texas 76005-5888

Re: Proposed Comprehensive Drainage Criteria and Design Manual

Dear Mr. Promise:

Thank you for sharing information on the Comprehensive Drainage Criteria and Design Manual, as proposed by the North Central Texas Council of Governments. This will be an effective tool for local governments and the development industry in addressing the impacts of post-construction storm water runoff. The proposal to manage flood control concurrent with the quality of runoff, and to provide a consistent and integrated approach on a regional or watershed basis, is a much desired outcome of any storm water management plan.

Texas Pollutant Discharge Elimination System (TPDES) storm water permits for municipal storm sewer systems will contain the requirement that operators of these systems develop a minimum control measure for areas of new development and re-development. The TPDES general permit for Phase II systems will be issued by December 2002. Development of the proposed manual, consistent with the requirements of this permit, will result in a valuable tool for permittees.

If I can provide you any information or assistance regarding the TPDES storm water permitting program, do not hesitate to contact me directly at (512) 239-4527.

Sincerely,

Stephen M. Ligon, Team Leader
Storm Water & General Permits
Wastewater Permitting Section

SML/mam

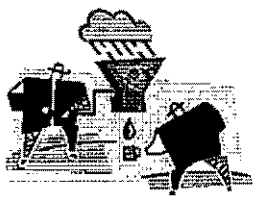
Design Manual

GDCD Manual
Project Briefing

August 1, 2002

Project Overview

- Where are we today?
  - NCTCOG securing funding and commitment of the Region
  - Assessing Regional needs and developing the content of the manual
  - Gathering existing drainage criteria and design guidelines to establish a regional baseline

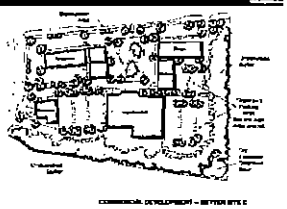


Project Goals

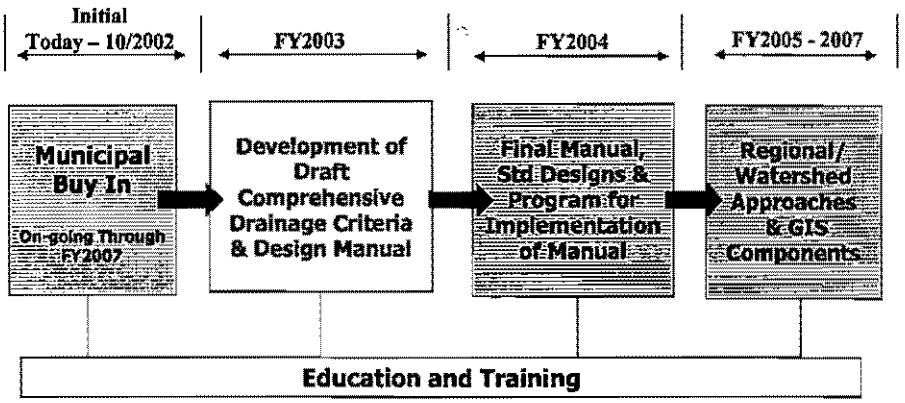
- Fit site plans to the natural drainage system, not the drainage system to the site plan layout
- Provide low maintenance, environmentally sensitive management of storm water quantity and quality
- Meet EPA/TNRCC Post construction and TPDES General Permit Requirements

Project Goals

- Provide development of enhanced community desirability and value
- Consistency in design and review of drainage plans
- Expedited development process

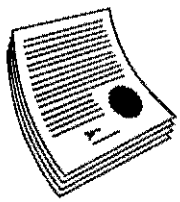


Project Flow Chart



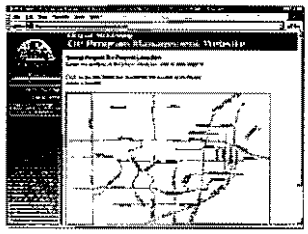
Scope of Services

- Project Goals and Objectives
  - To develop a step-by-step detailed instructional document to guide developers and government agencies on the control and management of storm water quality and quantity on new developments and retrofitting/redevelopment of existing areas



Project Management Approach (FY2003)

- Manual Development
- Development of Project Team website
- Monthly Committee and Stakeholder Meetings
- Quarterly Updates (Meetings & Documents)
- On-going website updates



CDCD Manual Essentials

- Integrates comprehensive storm water management practices
  - Quantity & Quality
- Consists of blocks and layers that will grow with each edition
- Flexible yet has uniform, consistent provisions for specific levels of service
- Applicable to projects of all sizes and locations in the region
- Meets MS4 storm water post construction requirements

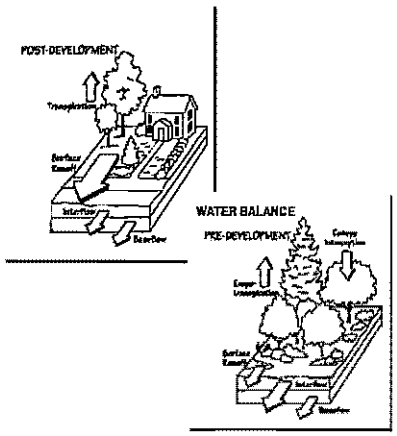
CDCD Manual Essentials

- CD format with on-line compatibility
- Links to web-sites and other technical data will be provided
- Developed for tables, spreadsheets, and technical equations to be interactive and programmed for direct access by user
- User friendly and specific to North Texas Region

CDCD Manual Components (FY2003)

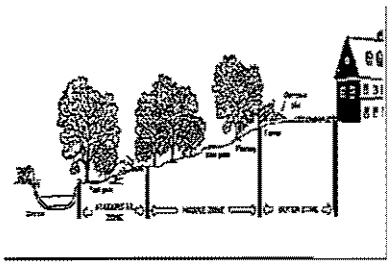
General outline of the manual components

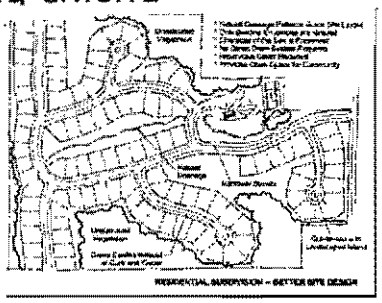
- Introduction
  - Impacts of development on storm water runoff
  - Permitting processes
  - Minimum performance standards



CDCD Manual Components (FY2003)

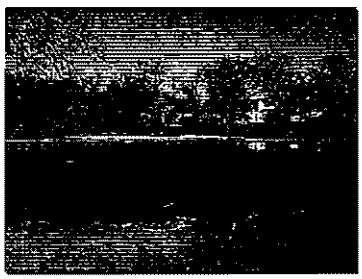
- Pre-Platting and Site Design
- Minimum design standards and permit requirements
- Uniform Storm Water sizing criteria

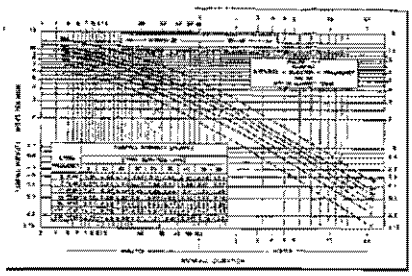




CDCD Manual Components (FY2003)

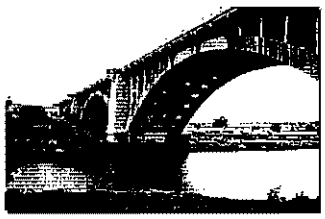
- Hydrologic Analysis
  - Precipitation
  - Soil Conditions
  - Computational Methods

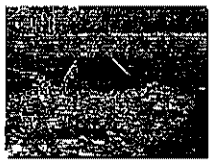




CDCD Manual Components (FY2003)

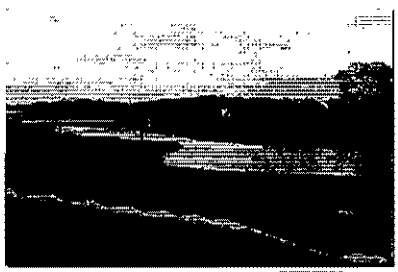
- Hydraulics
  - Storage Design
  - Open Channels
  - Culverts & Bridges
  - Streets and Storm Sewers
  - Overland Flow
  - Non-Erosive Design





CDCD Manual Components (FY2003)

- Floodplain and Watershed Analysis
  - Watershed Modeling
  - Backwater Analysis
  - Riparian Zones and Encroachments



CDCD Manual Components (FY2003)

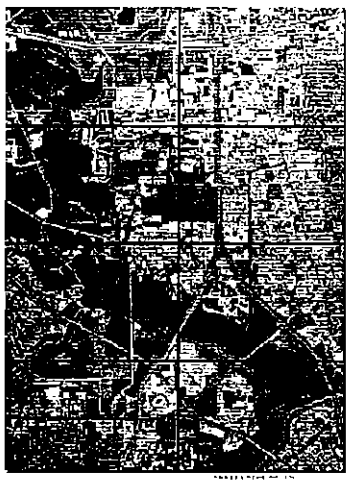
- Bank Stabilization
- Stream Restoration
- Erosion and Sediment Control
  - Construction Phase
  - Post Construction

CDCD Final Manual & Program Implementation (FY2004)

- Final Manual
- Draft Ordinances
- Implementation Plan for Manual
- Development of Case Studies
- Committee and Stakeholder Meetings
- Construction Guidelines and Standards to Implement BMP's
- On-going Website Updates

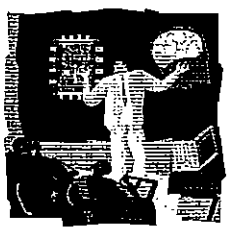
Regional / Watershed Approaches & GIS Components (FY2005 - FY2007)

- Comprehensive Watershed Strategies
- GIS based Watershed Parameters
- GIS based Regional Floodplain Mapping and Modeling
- React to EPA and TNRCC Directives

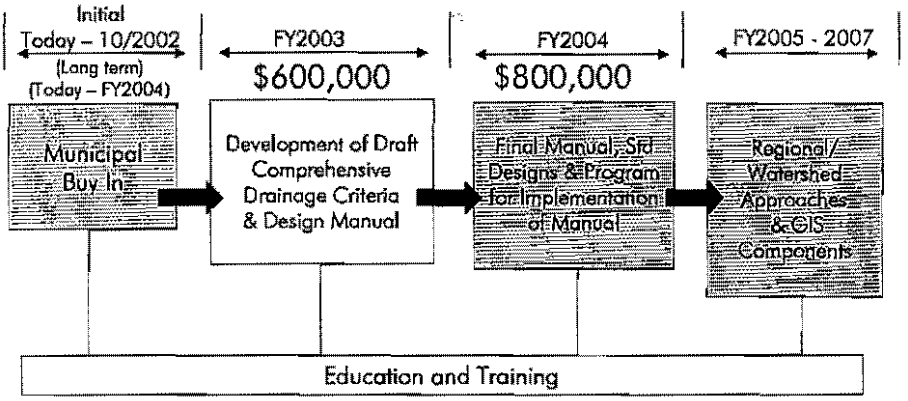


Education & Training (FY2003 - 2007)

- Cooperative Effort between NCTCOG and FNI Team
- Development of Interactive CD for Training and Education
- On-site Training Classes for Municipalities with Hands-on Use of Manual
- Training Classes for Private Consultants, Developers and Contractors



Project Costs

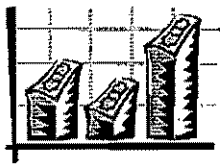


Cost Share Allocations

- MS4 Cities and Cities over 10,000
  - Base Fee (equally allocated 1/2 of FY2003 cost)
  - Population based Fee (1/4 of FY2003 cost)
  - Land area based Fee (1/4 of FY2003 cost)
- MS4 Counties
  - Base Fee
- All other local governments & private stakeholders
  - ½ of Base Fee

Potential Sources of Funding (After FY2003)

- Local Cost-Shares
- Competitive Grants
- Other Contributors (private sector)



Benefits - Municipalities

- Commonality of drainage standards
- Shorter review times, maximizing staff resources
- More confidence in engineering submittals
- Proactive approach to meet storm water regulation
- Take advantage of NCTCOG's education and training program
- Improved quality of storm water discharge

Benefits
Cites w/Existing Drainage Manuals

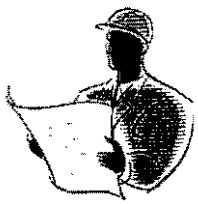
- Updating of criteria and methods
- More precise, user friendly, and interactive computational methods
- Design with less ambiguity
- Integrated quantity and quality planning and system design
- Uniformity of criteria in the region should ease design and reduce construction costs
- Limit flooding impact upstream and downstream of developments

Benefits
Cities w/o Existing Drainage Manuals

- Provides an up-to-date comprehensive manual at a significantly lower cost than doing it yourself
- All the same benefits as those that already have a manual

Benefits
Developers

- Level playing field for drainage across the region
- No surprises when doing projects in various cities
- Reduced time in processing development plans
- Developments that enhance natural features and increase property values
- Greater ease in meeting regulatory requirements



Benefits
Engineering Community

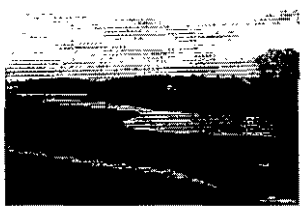
- Standardized design criteria across the region
- Less ambiguity in analysis requirements and criteria interpretation
- Updated modeling standards and parameter values
- Training opportunities
- Standardized design reviews

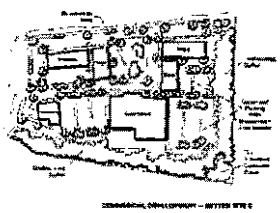
Benefits
Contractors

- Uniformity in constructed facilities
- TPDES permit requirements will be better defined and standardized
- BMP designs should be site specific and more effective
- Construction management effort should be reduced
- Site inspections will become consistent across the region

Benefits
General Public

- Post Construction pollution problems greatly reduced
- New developments will be environmentally friendly
- Mitigation of flood damage due to new construction
- Open space/Green space enhanced
- Opportunity for sustainable growth developments
- Enhancement of overall quality of life in the region





Summary - New Paradigm

- Development and re-development planning process must be re-ordered and re-thought to integrate storm water management
- Desired end result requires a knowledge and fully committed multi-disciplinary team:
  - Developer – Planner – Engineer
  - City Council – City Management – Planning – Engineering – Environmental – Inspections
- Using regional storm water approaches across city limits

Summary – Plan of Action

- Continue to work with local governments and other stakeholders for participation
- Continue Public Outreach & Education on Storm Water Issues
- Research and Compile Existing Drainage Ordinances and Manuals
- Obtain Necessary Dollars to Begin Project and Manual Development in FY2003

Comprehensive Drainage Criteria and Design

What it is and why you should participate...

The Purpose: Unprecedented new development along with aging and often inadequate infrastructure has intensified problems with downstream erosion and flooding. Since these problems are multi-jurisdictional, the region-wide variation in drainage design criteria hinders effective management. Additionally, concerns about the impact of storm water runoff quality to surface and groundwater supplies, recreational rivers and lakes, aquatic habitats and ecosystems, as well as TPDES storm water permit rules, are making it necessary for local governments to address both storm water quantity and quality for areas of new development or redevelopment. Comprehensive guidance in integrated storm water management throughout planning, design, construction, and maintenance of storm water infrastructures is currently nonexistent in North Central Texas.

The Project: In response to the regulations and to address the issues facing the region, the North Central Texas Council of Governments (NCTCOG) has taken a leading role in the development of a comprehensive drainage criteria and design manual for the Region. This manual will detail the most current and applicable storm water management techniques, provide criteria and rationales for the selection of structural and non-structural water quantity and quality Best Management Practices (BMPs). The manual will also include detailed design specifications for these controls, and techniques for integrating storm water quality and quantity considerations. Essential aspects of the manual include:

- Storm water goals, policies and planning
- Integration of storm water quantity and quality considerations
- Storm water design criteria for hydrology and hydraulics
- Guidelines and procedures for storm water planning and design at both site and watershed level
- Catalog of storm water controls and BMPs, and how they can be applied within the Region
- Construction specifications for materials and workmanship
- Guidelines for inspection and maintenance requirements for each control and BMP

What is Required?

The TPDES regulations require the operator of a regulated MS4 to develop, implement, and enforce a program to reduce pollutants in storm water runoff to their MS4 from construction and post construction activities.

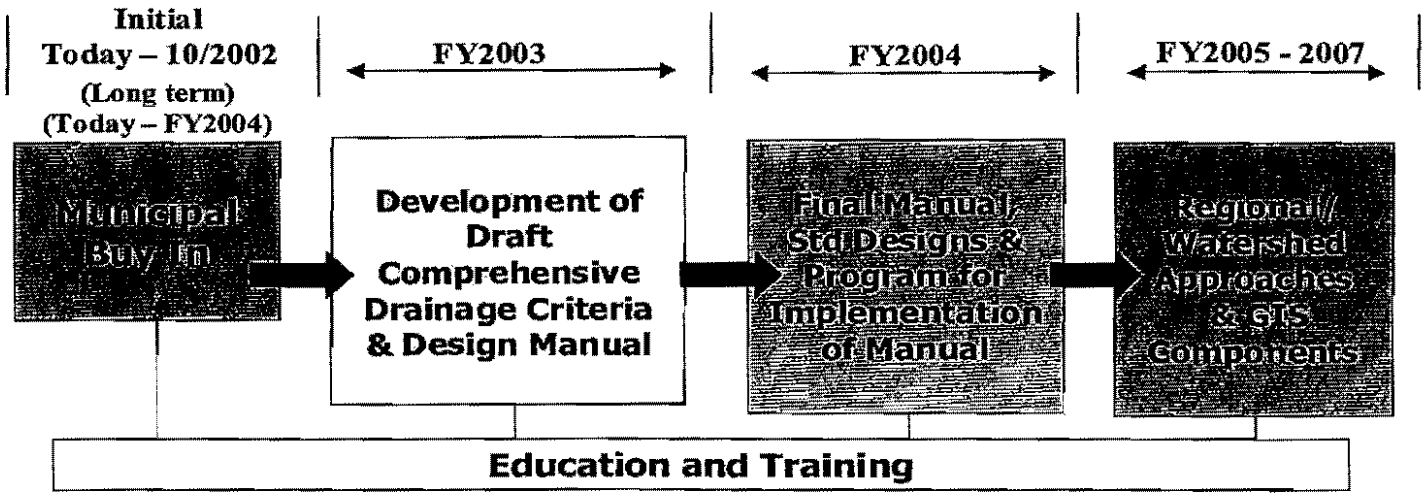
The Benefits: The regional Comprehensive Drainage Criteria and Design Manual will provide:

- A comprehensive drainage resource with guidelines to manage and control both storm water quality and quantity that are tailored for our Region
- A "How-To" guide to provide assistance in storm water management during the planning, design, construction, inspection and maintenance stages
- Updates of the latest regulatory changes
- A cost effective and consistent approach to ordinance development
- Expedited design, development and construction processes
- Standardization of processes across the Region
- Easy-to-use training and education plan
- User friendly, interactive website for immediate access to manual guidelines and examples
- A needed resource developed in a cooperative and cost-effective manner

The Critical Dates: The first and most critical phase is to prepare the "Draft" manual. The following is a summary of the critical dates

- Gain commitment of funding from local governments and stakeholders – Summer 2002
- Continue public outreach and education on storm water issues - Ongoing
- Obtain first year funding for project – September 2002
- Research and compile existing drainage ordinances and manuals – September 2002
- MS4 jurisdictions reference NCTCOG CDCD Manual as a post construction measure for Phase II permits – March 2003
- Manual development – October 2002 to September 2003
- Final "Draft" Manual to Cities – September 2003
- Final CDCD Manual – September 2004
- Implementation and adoption of manual – Ongoing
- Implementation and development of training, educations and regional concepts - Ongoing

The Plan: The CDCD Manual has been proposed as a multi-phased plan as shown:



Your Storm water Solution: The CDCD Manual is a comprehensive manual to be developed to meet the specific regional needs of local governments in North Central Texas. We need your input and funding assistance in making this vital project successful. For more information on this project, please contact NCTCOG project manager, Kenneth Calhoun at 817/695-9224 or at kenny@dfwinfo.com.

FY2003 FUNDING COMMITMENT RESPONSE FORM

Regional Public Works Program

Including Comprehensive Drainage Criteria & Design Manual

_____ I hereby indicate my entity's commitment to participate in the Regional Public Works Program. Please bill me in FY2003 for the amount of $_____.

_____ I hereby indicate my entity will not participate in the Regional Public Works Program.

_____ I am still considering my entity's participation in the Regional Public Works Program and need additional information as indicated below.

Name _____

Municipality or Company _____

Title or Position _____

Signature _____

Comments:

_____

_____

_____

_____

Please mail this form to: Kenneth Calhoun
Department of Environmental Resources
North Central Texas Council of Governments
P.O. Box 5888
Arlington, TX 76005-5888

or fax to the attention of Kenneth Calhoun at 817/695-9191

Questions? Kenneth Calhoun at 817/695-9224 or Sam Brush at 817/695-9213

Cost Share Allocations

Attached is a table of cost share allocations for MS4 jurisdictions. Those not found on the attached table are requested to participate in the amount of $2353.00.

Invoices will be sent in October based on commitment forms received.

Comprehensive Drainage Criteria and Design Manual

Fiscal Year 2003 Program Participation Cost Share

MS4 Jurisdictions and Cities over 10,000 Population

Jurisdiction	Population		Area (Acres)	FY 2003 Cost Share ($)
	2001 (Current)	2025 (Projected)		
Addison	14,623	22,300	2,833	5,587
Allen	48,397	89,000	16,853	8,944
Arlington	338,127	438,500	63,363	22,009
Azle	9,660	13,750	5,274	5,596
Balch Springs	19,444	22,650	5,160	5,759
Bedford	47,309	55,400	6,405	6,657
Benbrook	20,268	25,900	7,713	6,125
Blue Mound	2,388	2,400	344	4,792
Burleson	22,510	49,050	12,610	7,444
Carrollton	111,388	128,700	23,447	10,082
Cedar Hill	33,954	69,150	22,550	9,015
Cleburne	26,604	27,850	19,492	7,290
Cockrell Hill	4,447	3,600	371	4,806
Colleyville	19,831	37,550	8,382	6,632
Collin County				4,706
Coppell	36,845	38,650	9,530	6,519
Corinth	13,455	18,000	5,057	5,672
Corsicana	24,571	24,571	13,891	6,633
Crowley	7,594	14,150	4,256	5,541
Dallas	1,199,809	1,264,750	246,347	57,480
Dallas County				4,706
Dalworthington Gardens	2,218	5,450	1,187	4,993
Denton	82,976	132,700	39,879	12,347
Denton County				4,706
DeSoto	38,214	61,100	13,809	7,763
Double Oak	2,229	5,950	1,396	5,032
Duncanville	36,206	36,050	7,224	6,199
Edgecliff Village	2,555	3,150	762	4,859
Ennis	16,200	21,000	11,771	6,419
Euless	46,166	62,550	10,407	7,346
Everman	5,839	5,800	1,269	4,957
Farmers Branch	27,527	29,500	7,687	6,141
Flower Mound	52,604	88,650	27,640	9,957
Forest Hill	12,949	13,550	2,717	5,278
Fort Worth	542,504	675,600	191,252	40,505
Frisco	42,511	130,450	44,818	13,408
Garland	218,891	242,050	36,544	13,903
Grand Prairie	131,393	193,400	52,175	15,074
Grapevine	42,443	43,650	22,942	7,973
Greenville	24,163	24,163	22,208	7,467
Haltom City	39,297	38,250	7,941	6,304
Hickory Creek	2,269	5,050	2,941	5,155

Jurisdiction	Population		Area (Acres)	FY 2003 Cost Share ($)
	2001 (Current)	2025 (Projected)		
Highland Park	8,794	9,050	1,433	5,047
Highland Village	12,391	19,500	4,101	5,647
Hurst	36,452	39,300	6,337	6,226
Hutchins	2,805	2,650	5,515	5,318
Irving	194,407	228,850	43,300	14,487
Keller	28,058	58,750	11,798	7,634
Kennedale	5,982	14,000	3,865	5,521
Lake Dallas	6,289	7,100	1,677	5,039
Lake Worth	4,629	5,050	1,614	4,983
Lakeside	1,075	1,075	968	4,827
Lancaster	26,270	29,350	18,751	7,276
Lewisville	80,609	110,050	27,089	10,249
Mansfield	29,777	73,200	23,365	9,314
McKinney	58,986	125,600	37,353	12,210
Mesquite	126,570	168,100	27,811	11,744
Midlothian	8,340	19,100	24,249	7,738
Mineral Wells	16,960	16,960	13,553	6,438
North Richland Hills	57,498	82,750	11,666	8,042
Pantego	2,432	3,750	636	4,871
Plano	226,460	312,750	45,831	17,346
Richardson	92,697	101,000	18,279	8,829
Richland Hills	8,132	11,650	2,015	5,213
River Oaks	7,010	6,250	1,275	4,955
Rockwall	18,934	34,650	14,492	7,158
Rockwall County				4,706
Rowlett	45,643	72,350	12,954	7,975
Sachse	10,864	28,750	6,330	6,241
Saginaw	13,290	24,100	4,801	5,875
Sansom Park	4,181	3,950	792	4,866
Seagoville	10,904	21,500	10,425	6,386
Southlake	22,806	32,550	14,363	7,005
Stephenville	14,956	14,956	6,428	5,674
Tarrant County				4,706
Terrell	13,606	13,606	11,934	6,203
The Colony	28,841	45,900	10,068	6,969
University Park	23,218	20,000	2,385	5,320
Watauga	22,101	28,550	2,667	5,683
Waxahachie	21,609	34,900	26,344	8,325
Weatherford	19,381	32,450	14,498	7,070
Westworth Village	2,124	2,050	1,266	4,876
White Settlement	14,958	16,250	3,118	5,386
Wilmer	3,393	2,800	4,028	5,164
Wylie	16,711	29,200	21,308	7,681

* 2025 Projected population estimates unavailable, amount shown same as 2001 population.

North Central Texas Council Of Governments

TO: The North Central Texas Region

DATE: July 22, 2002

FROM: Mike Eastland, Executive Director

SUBJECT: Follow-up on Request for Comprehensive Drainage Criteria & Design Project Participation

Support for the Comprehensive Drainage Criteria & Design Project is rolling in! It is early in the process, but firm commitment to participate has been received so far from cities such as Denton, Wylie, Little Elm, Addison, Mansfield, and Stephenville. Indication of participation pending final budget approval has been received from Dallas County and the cities of Plano, Fort Worth, and Grand Prairie. Support is even coming from outside our region, as the City of Sherman is interested in being a player. The regulatory community is also taking notice as indicated in the attached letter from Steve Ligon, Storm Water & General Permits Team Leader for the Texas Natural Resources Conservation Commission (TNRCC). Mr. Ligon states, "This [CDCD Manual] will be an effective tool for local governments and the development industry in addressing the impacts of post-construction storm water runoff."

We are fully aware that these are tough budget times but this is a unique and timely opportunity to develop a tool for this region that will be rivaled only by the Standard Specifications for Public Works Construction in its usefulness and universal applicability to the region. There is significant cost savings to be achieved through regional cooperation. Individual jurisdictions would expend many times more to develop such a manual, or even to just upgrade their existing drainage criteria to incorporate runoff quality considerations required by storm water regulations. As an additional benefit, participating jurisdictions will get discounted manuals and training opportunities.

Other benefits derived from participating in this cooperative project are:

- Long term cost savings to the jurisdiction
- State of the art guidance and technologies
- Consistent drainage assumptions and criteria throughout the region
- Improved drainage designs and management
- Reduced flooding risks
- Easier compliance with regulatory permits (TPDES and 404)
- Enhanced quality of life from "greener" drainage policies
- Reduced staff time to review and approve drainage plans
- Better management of storm water from neighboring communities
- Regional training opportunities for city staff and the development community

Project Briefing
Thursday, August 1, 2002
10:30 - 11:45 a.m.
NCTCOG Offices
616 Six Flags Drive
Arlington, TX 76011

We are hosting a project briefing on August 1 from 10:30 to 11:45 am at the NCTCOG offices at 616 Six Flags Drive, Suite 200, in Arlington. There will be an in-depth presentation on the manual by the consultant team and an opportunity to have any questions that you might have answered. In the interim, additional information including a brochure, presentation, and participation/funding commitment response forms are available at www.dfwworks.com. Also, in an effort to establish a regional baseline, please send us your existing drainage criteria and design guidelines as we are compiling them to submit to the consultant team.

Thank you for your consideration of this request. Please contact Kenneth Calhoun, Development Engineering Specialist, at 817-695-9224 or kcalhoun@dfwinfo.com for additional information.

616 Six Flags Drive, Centerpoint Two
P. O. Box 5888, Arlington, Texas 76005-5888
(817) 640-3300 FAX: 817-640-7806 recycled paper
http://www.dfwinfo.com

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

July 8, 2002

Mr. John Promise, P.E.
Director of Environmental Resources
North Central Texas Council of Governments
P.O. Box 5888
Arlington, Texas 76005-5888

Re: Proposed Comprehensive Drainage Criteria and Design Manual

Dear Mr. Promise:

Thank you for sharing information on the Comprehensive Drainage Criteria and Design Manual, as proposed by the North Central Texas Council of Governments. This will be an effective tool for local governments and the development industry in addressing the impacts of post-construction storm water runoff. The proposal to manage flood control concurrent with the quality of runoff, and to provide a consistent and integrated approach on a regional or watershed basis, is a much desired outcome of any storm water management plan.

Texas Pollutant Discharge Elimination System (TPDES) storm water permits for municipal storm sewer systems will contain the requirement that operators of these systems develop a minimum control measure for areas of new development and re-development. The TPDES general permit for Phase II systems will be issued by December 2002. Development of the proposed manual, consistent with the requirements of this permit, will result in a valuable tool for permittees.

If I can provide you any information or assistance regarding the TPDES storm water permitting program, do not hesitate to contact me directly at (512) 239-4527.

Sincerely,

Stephen M. Ligon, Team Leader
Storm Water & General Permits
Wastewater Permitting Section

SML/mam