MUNICIPAL BMP “SHOW & TELL”

JUNE 18, 2024

MICROSOFT TEAMS

AGENDA

- Welcome & Housekeeping
- Speakers
  - James House, Town of Prosper
  - Julian Holmes, City of Mansfield
  - Cathy Mathews, City of Fort Worth
- Q&A Roundtable
- NCTCOG Resources
- Thank You & Conclusion

WELCOME & HOUSEKEEPING

- Please keep your line on mute until the end of all the presentations.

- We will have an open Q&A session at the end of the presentations. Please type your question in the chat box or “raise your hand” to speak.

- The webinar slides and recording will be posted on NCTCOG’s website under “NCTCOG Resources” at the link below. Follow-up emails to come.

- https://www.nctcog.org/envir/watershed-management/stormwater/pollution-prevention

****Information provided in this webinar and presentation regarding any specific commercial product by trade name, manufacture or otherwise does not constitute or imply its endorsement, recommendation or approval by the Regional Stormwater Management Coordinating Council (RSWMCC) or NCTCOG.****

North Central Texas Council of Governments

SPEAKERS

James House

Julian Holmes

Cathy Matthews

JAMES HOUSE

Town of Prosper

James House is the Stormwater Utility Administrator in the Engineering Department at the Town of Prosper. He has been with the town for a little over 6 years.

North Central Texas Council of Governments

Woven vs. Nonwoven Silt Fence

+

Town of Prosper

Woven Vs. Nonwoven

Woven Geotextiles

Our geotextiles are manufactured from polypropylene materials which offer optimum performance when used in stabilization applications.

Non Woven Geotextiles

These needle-punched geotextiles are made of 100% polypropylene staple fibers, which are formed into a random network for dimensional stability.

Nonwoven Silt Fence

Applications for Nonwoven Geotextiles

Nonwoven geotextiles are the best solution when you need permeability and soil separation. They are also the perfect solution if you are working on a project that requires drainage. While it may not be as strong as a woven geotextile, it is an excellent choice for specific projects. Therefore, when working on a project, you should know what geotextile will suit the project.

Listed below are some applications of nonwoven geotextile:

- Beneath rock riprap revetment
- Wrapping French drains
- Used with alternative sub-surface drainage solutions
- For projects that require soil separation and permeability

Applications for Woven Geotextiles

There are several applications where woven geotextiles can be applied. As stated, you should ensure that you are using suitable material for your project. When you correctly specify and install woven geotextiles, they extend your project's life, reduce the long-term maintenance costs, and deliver improved performance. Listed below are some applications for woven geotextiles:

- Highways
- Residential streets
- Parking lots
- Beneath driveways

Nonwoven Silt Fence

Non Woven Geotextiles

Our non woven Geotextiles provide the containment and **erosion control** industries with the highest quality geotextiles available. These needle-punched geotextiles are made of 100% polypropylene staple fibers, which are formed into a random network for dimensional stability. They resist ultraviolet deterioration, rotting, biological degradation, naturally encountered basics and acids.

Non woven geotextiles are used in many applications such as drainage, filtration, separation. They function by restricting soil particles but allowing liquid and gases to easily pass through them and are used to improve the performance of environmental and civil construction projects.

TE-12 (12oz)
TE-16 (16oz)

Non Woven Environmental Geotextiles

TE-E6 (6oz)
TE-E7 (7oz)
TE-E8 (8oz)
TE-E10 (10oz)
TE-E12 (12oz)
TE-E14 (14oz)
TE-E16 (16oz)

More Information

Installation Guide

Benefits of Non Woven Geotextile

- Excellent chemical compatibility.
- Long-term performance in strength and durability.
- Extends road and railway life.
- Cost-effective environmental alternative to traditional construction materials.
- Prevents banks from soil erosion.
- Easy to install.

Applications

- Soil separation
- Filtration
- Erosion & sediment control
- Sub-grade stabilization
- Protection for geomembrane liners
- Shoreline protection
- Roadway separation
- Railroad stabilization
- Subsurface drainage
- Containment
- Gas venting
- Under riprap or around pipes

Our Decision

+ Permeability! Less de-watering
+ Other uses on site:
  - Placed under construction exits
  - Made into de-watering bag
  - Placed on bare soil to help prevent erosion

Field Examples

Field Examples

Field Examples

Questions?

James House

jhouse@prospertx.gov

Julian Holmes is the Stormwater Coordinator for the City of Mansfield and has been there since 2018. Prior to that he held positions as an Environmental Investigator for the TCEQ in the Air Quality Division and as an 8th grade science teacher. He also holds a master of science in Biology from UTA and lives in Fort Worth with his wife and children.

JULIAN HOLMES

City of Mansfield

North Central Texas Council of Governments

STORMWATER POND BMP MAINTENANCE

Julian Holmes

Stormwater Coordinator

City of Mansfield

MANSFIELD

ENVIRONMENTAL SERVICES

MCM 5: Pollution Prevention/Good Housekeeping

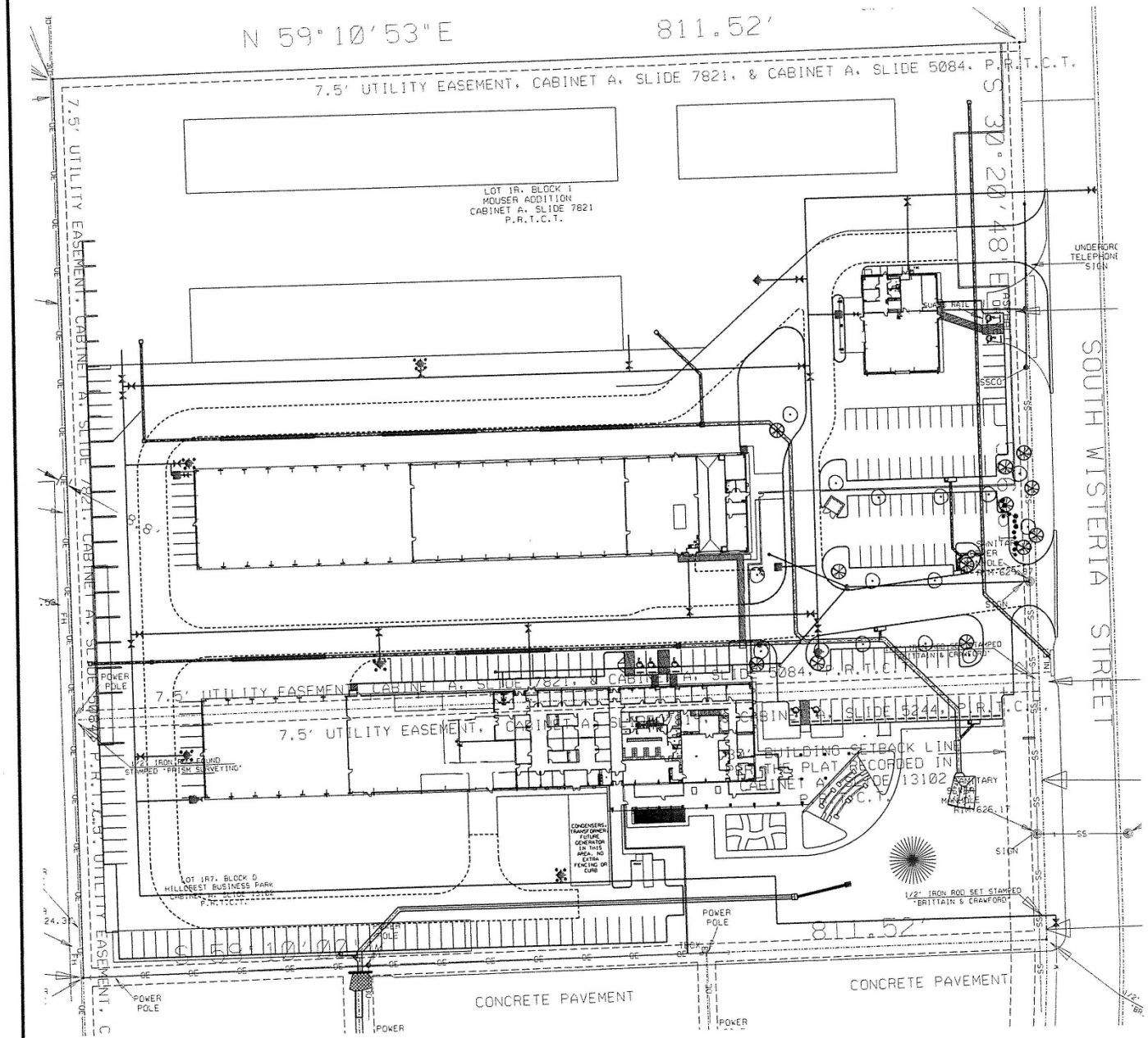
BMB 5.05: Implement the inspection and maintenance program for non-proprietary measures.

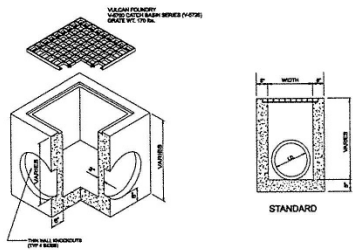
A. About the pond

B. Inspection results

C. 2022 Maintenance Plan
   1. wait for fall – rainy season
   2. pump down the pond
   3. clean out the forebay
   4. plant aquatic plants
   5. wait for rain

Pond Design





SURFACE GRATE INLET DETAIL
N.T.S.

NOTES:

1. REFERENCE SPECIFIC PLAN PROFILE DRAWINGS FOR DETAIL.
2. ALL TRENCH AND SQUARE INLETS SHALL BE FURNISHED WITH HEAVY DUTY TRAFFIC RATED GRATES.

::: CRITICAL :::

LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE AND ARE BASED ON PUBLIC RECORDS. THE CONTRACTOR IS COMPLETELY RESPONSIBLE FOR LOCATING ALL EXISTING UTILITIES, BOTH HORIZONTALLY AND VERTICALLY, BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION.

UTILITY RELOCATION NOTE:

IF ANY EXISTING UTILITY POLES, POWER POLES, GUY WIRES, TELEPHONE UTILITIES, ETC. ARE FOUND TO BE IN CONFLICT WITH THESE CONSTRUCTION PLANS, THE CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY COMPANY AND COORDINATE THE RELOCATION OF ANY AND/OR ALL SUCH UTILITIES (NO SPECIAL PAY).

HAMILTON DUFFY, PC
CONSULTING
CIVIL & ENVIRONMENTAL ENGINEERS - PLANNERS - CONSTRUCTION MANAGERS
8241 MID-CITIES BLVD. - NORTH RICHLAND HILLS, TEXAS 76182
PHONE (817) 268-0408 FAX (817) 284-8408

SITE CONSTRUCTION PLANS

CITY OF MANSFIELD SERVICE CENTER
LOT 1R, BLOCK 1 MOUSER ADDITION
CITY OF MANSFIELD, TARRANT COUNTY, TEXAS

STORM DRAIN PLAN

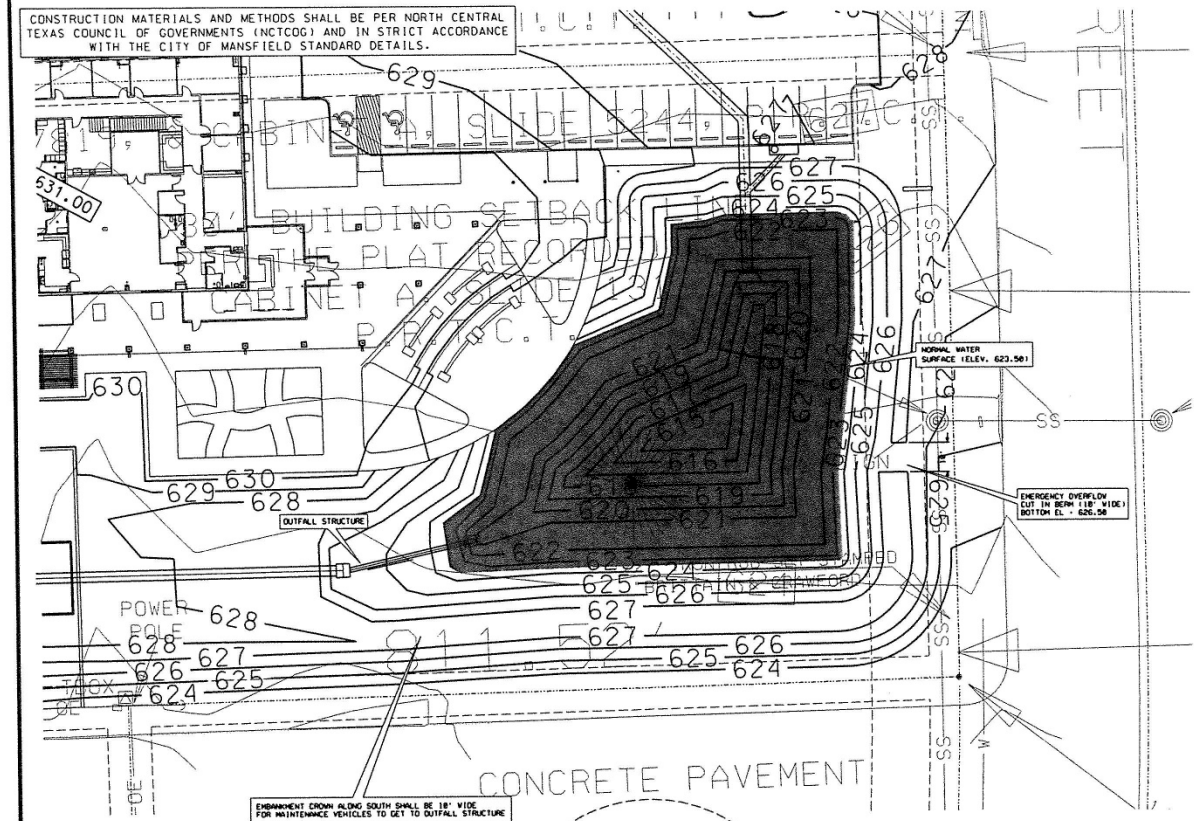
AS-BUILT DRAWINGS
THIS DOES NOT IMPLY A GROUND SURVEY. THE CONTRACTOR MUST VERIFY ALL DIMENSIONS ON ORIGINAL DESIGN DRAWINGS AND CONSTRUCTION MUST CONFORM, NOTED BY CONTRACTOR.
KEITH M. HAMILTON, P.E. 87384 DATE 10-28-15

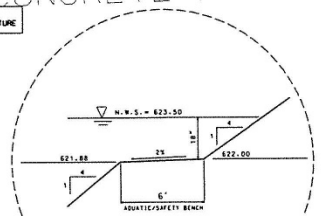
NO.	REVISION	BY	DATE
1	CHANGES DUE TO CITY REVISIONS	KMH	4-25-14

JOB 023-024
DATE 8-26-13
DESIGNED K.M.H.
DRAWN T.D.T.
CHECKED K.M.H.
TEXAS REGISTERED ENGINEERING FIRM F-2760

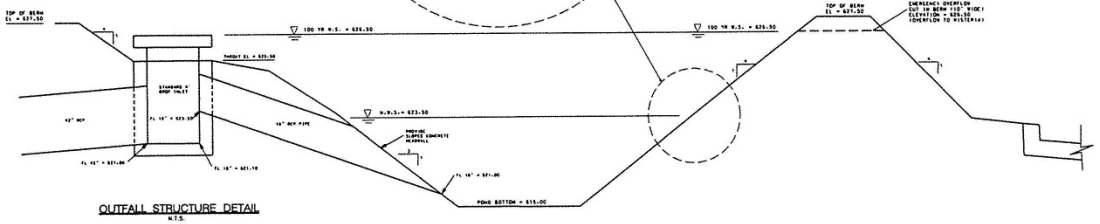
SHEET
C1.02

CONSTRUCTION MATERIALS AND METHODS SHALL BE PER NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) AND IN STRICT ACCORDANCE WITH THE CITY OF MANSFIELD STANDARD DETAILS.





POND EDGE
N.T.S.



OUTFALL STRUCTURE DETAIL
N.T.S.

POND OUTFALL DESIGN

ORIFICE CALCULATIONS

NOTE: STARTING WATER SURFACE FOR POND IS 623.50 FEET (100 YEAR EVENT = 626.50)

OUTFALL STRUCTURE IS AN 18" DIA. ORIFICE

ORIFICE FLOW EQUATION

Q = CA√2GH
C = 0.60
A = 1.77 SQ. FT.
G = 32.2
H = (3.00') - 0.5(1.5') = 2.25'

Q = 12.8 CFS

INLET CAPACITY CALCULATIONS

CURB/DROP OPENING INLET IN SUMP: $Q/L = 3.0Y^{3/2}$

Where:
Q = Storm Drainage Discharge (cfs)
L = Length of Inlet Opening (ft)
Y = (Depth of flow at Opening) (ft)

For 4' Drop Inlet:
12" Depth: Qcap = 48.0 cfs

Q100 = 12.8 + 48.0 = 60.8 CFS (61.1 CFS REQUIRED FROM DRAINAGE AREA MAP)

POND VOLUME CALCULATIONS:

1) STORAGE VOLUME = VOLUME OF AVAILABLE POND STORAGE BETWEEN ELEVATIONS 626.50 AND 623.50 = 46,474 CUBIC FEET

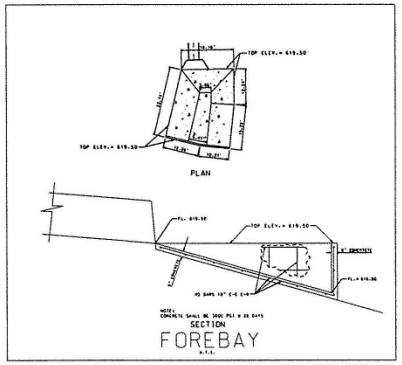
2) NORMAL POOL POND VOLUME = 39,627 CUBIC FEET

3) WATER QUALITY VOLUME (WQV) = RUNOFF FROM FIRST 1.5 INCHES OF RAIN FROM A WATER SHED. FOR THIS POND, THE WQV FOR AREA B IS AS FOLLOWS:

DRAINAGE AREA B = 8.81 ACRES
8.81 X 43560 X 1.5/12 = 47,970 CUBIC FEET

4) FOREBAY VOLUME = 0.1 INCHES PER IMPERVIOUS ACRE OF CONTRIBUTING DRAINAGE AREA AND SHOULD BE 4 TO 6 FEET DEEP:

8.81 X 43560 X 0.1/12 = 3,198 CUBIC FEET



POND SUBRADE PREPARATION SHALL BE AS FOLLOWS:

THE LINER FOR THE LAKE SIDES AND BOTTOM SHALL BE CLAY. THE CLAY MATERIAL UTILIZED FOR THE IMPERVIOUS POND LINER SHALL BE CONSTRUCTED OF CL OR CH SOILS. ALL MATERIAL SHALL HAVE A PLASTICITY INDEX (PI) OF GREATER THAN 20 AND A LIQUID LIMIT (LL) OF GREATER THAN 50. ALL CLAYS MUST BE APPROVED BY THE PROJECT SOILS ENGINEER. CLAY MUST CONSIST OF ON-SITE MATERIAL OR OFF-SITE MATERIAL IF NO CLAY IS AVAILABLE OR IF ON-SITE MATERIAL IS NOT SUFFICIENT.

CONTRACTOR SHALL EXCAVATE TO SUBGRADE AND SUBGRADE SHALL BE FREE OF ROCKS OR OTHER FOREIGN DEBRIS. ANY AREAS THAT ARE PREDOMINANTLY SAND OR GRAVEL SHOULD BE OVER-EXCAVATED BY A MINIMUM OF TWO FEET AND REPLACED WITH AN APPROVED CLAY SOIL AS DESCRIBED ABOVE.

AFTER COMPACTION OF THE SUBGRADE THE CONTRACTOR SHALL SPREAD THE SELECTED CLAY SEAL. THE IMPERVIOUS LINER SHALL BE A MINIMUM OF 2 FEET IN COMPACTED THICKNESS AND SHALL BE CONSTRUCTED IN LAYERS NOT TO EXCEED EIGHT (8) INCHES IN COMPACTED THICKNESS. COMPACTION SHALL BE A MINIMUM OF 95% OF ASTM D698 AND THE MOISTURE CONTENT OF THE MATERIAL SHALL BE 0-3% ABOVE OPTIMUM.

WHEN CONSTRUCTION OF THE IMPERVIOUS POND LINER IS COMPLETE, THE POND SHALL BE FILLED WITH WATER AND KEPT FULL FOR AT LEAST 48 HOURS PRIOR TO MAKING THE TEST OF IMPERVIOUSNESS.

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SITE CONSTRUCTION PLANS
CITY OF MANSFIELD SERVICE CENTER
LOT 1R, BLOCK 1 MOUSER ADDITION
CITY OF MANSFIELD, TARRANT COUNTY, TEXAS

STORM WATER (WET) POND

AS-BUILT DRAWINGS
THIS SHEET NOT IMPLY A RECENT SURVEY. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ORIGINAL DESIGN DEPTHS AND CONSTRUCTION MODIFICATIONS NOTED BY CONTRACTOR.
KEITH M. HAMILTON 87384 DATE 10-28-15

NO.	REVISION	BY	DATE
1	CHANGES DUE TO CITY REVISIONS	KMH	4-25-14

JOB 023-024
DATE 8-26-13
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CHECKED K.M.H.
TEXAS REGISTERED ENGINEERING FIRM F-2578

SHEET
C1.01A

...\023-024 POND PLAN.dgn 10/28/2015 1:49:25 PM


TEXAS PARKS & WILDLIFE
Community Fishing Lake
REGULATIONS
Fishing license required for all anglers 17 or older.
Pole and line fishing only. Limit 2 poles per angler.
DAILY BAG AND LENGTH LIMITS
5 fish (ALL SPECIES COMBINED), of which only 1 may be a black bass
No minimum length limits, except black bass, which must be 14 inches or greater
BLACK BASSES
COMMON FISH SPECIES IN TEXAS
Daily bag limits are per angler, not per lake.
To report fish and game violations, contact
Operation Game Thief at 800-792-GAME (4263)
Keep Our
Waterways
TANGLE FREE
Recycle Your
Fishing Line
RESPONSIBLY
MANSFIELD

Inspection

22.7 Inspection and Maintenance Requirements

Table 22.1 Typical Maintenance Activities for Ponds
(Source: WMI, 1997)

Activity	Schedule
• Clean and remove debris from inlet and outlet structures. • Mow side slopes. • Check visually for illegal dumping or other pollutants.	Monthly
• If wetland components are included, inspect for invasive vegetation.	Semiannual Inspection
• Inspect for damage, paying particular attention to the control structure. • Check for signs of eutrophic conditions. • Note signs of hydrocarbon build-up, and remove appropriately. • Monitor for sediment accumulation in the facility and forebay. • Examine to ensure that inlet and outlet devices are free of debris and operational. • Check all control gates, valves or other mechanical devices. • Check downstream face of dam for seepage (earth and concrete), settling (earth) and cracking (concrete).	Annual Inspection
• Repair undercut or eroded areas.	As Needed
• Perform wetland plant management and harvesting.	Annually (if needed)
• Remove sediment from the forebay.	5 to 7 years or after 50% of the total forebay capacity has been lost
• Monitor sediment accumulations, and remove sediment when the pool volume has become reduced significantly, or the pond becomes eutrophic.	10 to 20 years or after 25% of the permanent pool volume has been lost

Stormwater Wet Pond and Wetland Management Guidebook

Table 2.3: Maintenance Activities and Schedules

Category	Management Practice	Maintenance Activity	Schedule
Ponds	Extended detention ponds, wet ponds, multiple pond systems, "pocket" ponds	– Cleaning and removing debris after major storm events (>2" rainfall) – Harvesting of vegetation when a 50% reduction in the original open water surface area occurs – Repairing embankment and side slopes – Repairing control structure	Annual or as needed
		– Removing accumulated sediment from forebays or sediment storage areas when 60% of the original volume has been lost	5-year cycle
		– Removing accumulated sediment from main cells of pond once 50% of the original volume has been lost	20-year cycle

MANSFIELD TEXAS

City of Mansfield, TX

Water Quality Structure Inspection

Record: 91

Site Name	*Service Center Pond*
Address	*620 S Wisteria*
Responsible Party	*City of Mansfield*
Contact	*Howard Redfearn*
Inspection Date	*2022-06-02 14:58:00*
City Inspector	*Julian Holmes*
Structure Type	*Wet Pond/Water Quality Pond*
Location of Structure	
Is sediment present in forebay, catch basin, or pilot channel?	*Yes*
Are vegetative overgrowth or invasive species present?	*No*
Is appropriate wetland vegetation established on aquatic bench and within 6 inches of normal pool elevation?	*No*
Is pool at or near permanent pool elevation indicated on plans?	*Yes*
Are flotables, sediment, or debris present in trash rack or around structure?	*No*
Is outfall structure, weir, riser, or orifice clogged?	*No*
Notes	*Sediment depth in forebay taken at headwall to pile invert was 1.1 feet, taken with a depth rod.*
Maintenance Recommendations	*EPA Stormwater Wet Pond Guidebook recommends removing accumulated sediment from forebay when 60% of storage volume is lost or on a 5 year cycle.*
Photograph	

Two maintenance issues:

- Emergent vegetation
- Sediment in forebay

Maintenance

Pumping

Discharging

Forebay

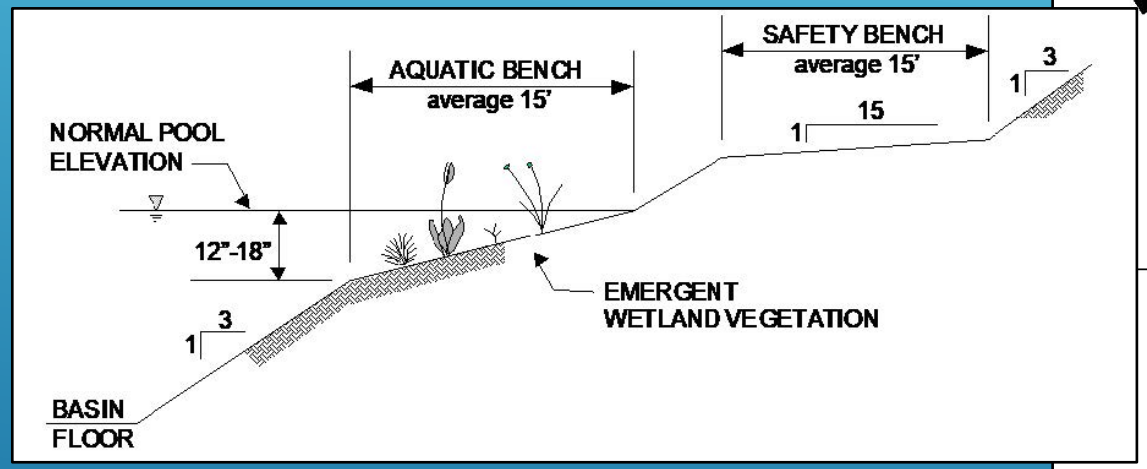
Time to hire a contractor...

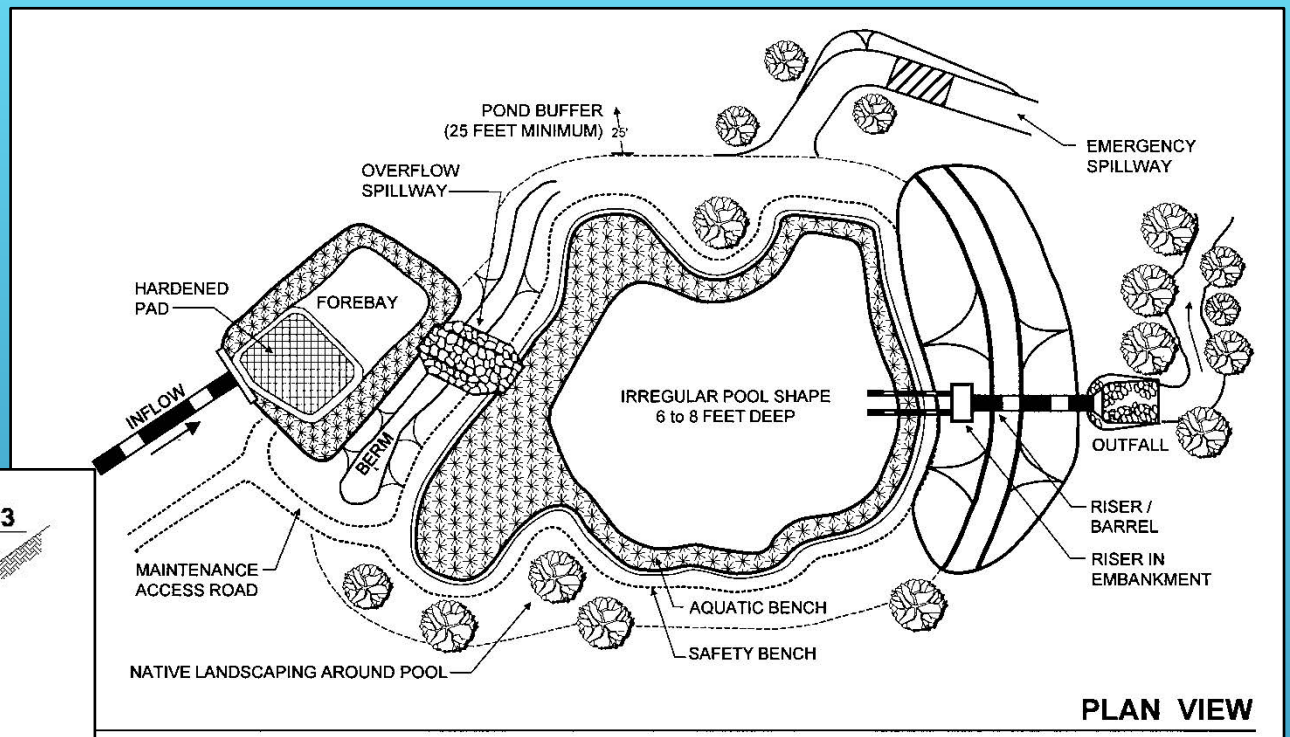

DEERE

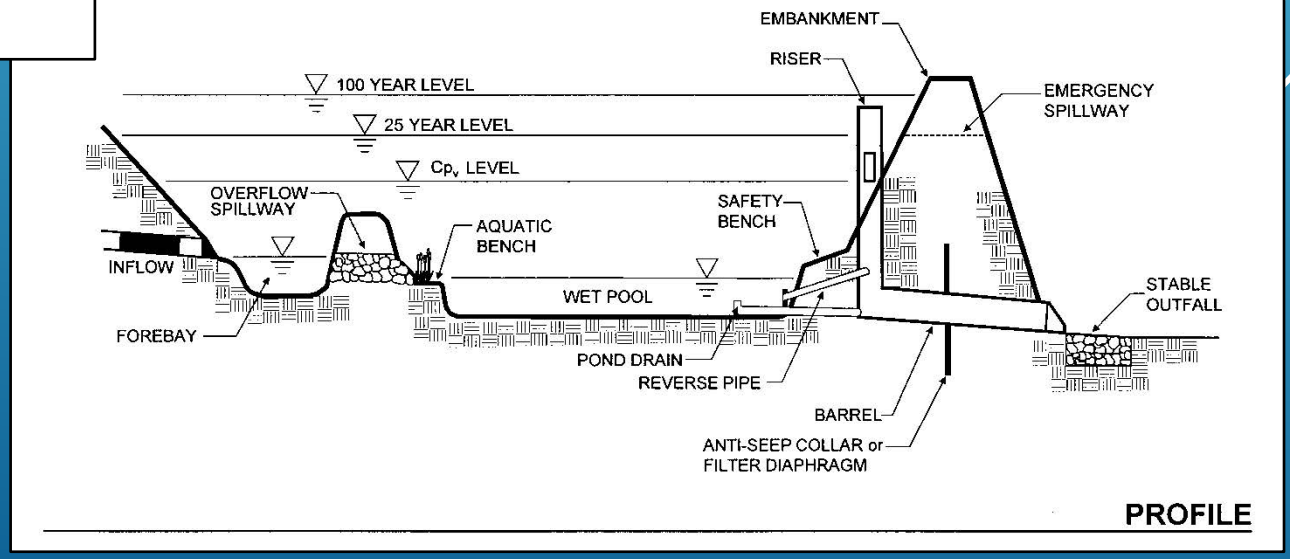
Hiring a contractor

#	Description	Qty	Rate	Amount
1	Scope of Service - Cleaning of 3185 sf forebay area in pond. Client to provide water. Final Invoice will reflect actual T&M; Buy Board 635-21 Contract Rates	1.00 Ea	0.00	0.00
2	10-17-22 Technician	8.00 Hr	75.00	600.00
3	10-17-22 Service Truck - Daily Rate	1.00 Day	150.00	150.00
4	10-18-22 Combo Truck (Vactor 100 gpm) (subject to 4 hr onsite minimum)	7.00 Hr	330.00	2,310.00
5	10-18-22 6" ADS Flex Hose - per 100' bulk roll -***If applicable***	1.00 Ea	300.00	300.00
6	10-18-22 Disposal-Non Manifest-Clean Fill-No Trash Only- Flat Rate for non-trash spoils - TBD	2.00 Ea	350.00	700.00
7	10-18-22 Technician x 2	14.00 Hr	75.00	1,050.00
8	10-18-22 Service Truck - Daily Rate	1.00 Day	150.00	150.00
9	10-19-22 Combo Truck (Vactor 100 gpm) (subject to 4 hr onsite minimum)	4.00 Hr	330.00	1,320.00
10	10-19-22 Technician x 2	8.00 Hr	75.00	600.00
11	10-19-22 Service Truck - Daily Rate	1.00 Day	150.00	150.00
			Sub Total	7,330.00

Vegetation requirements

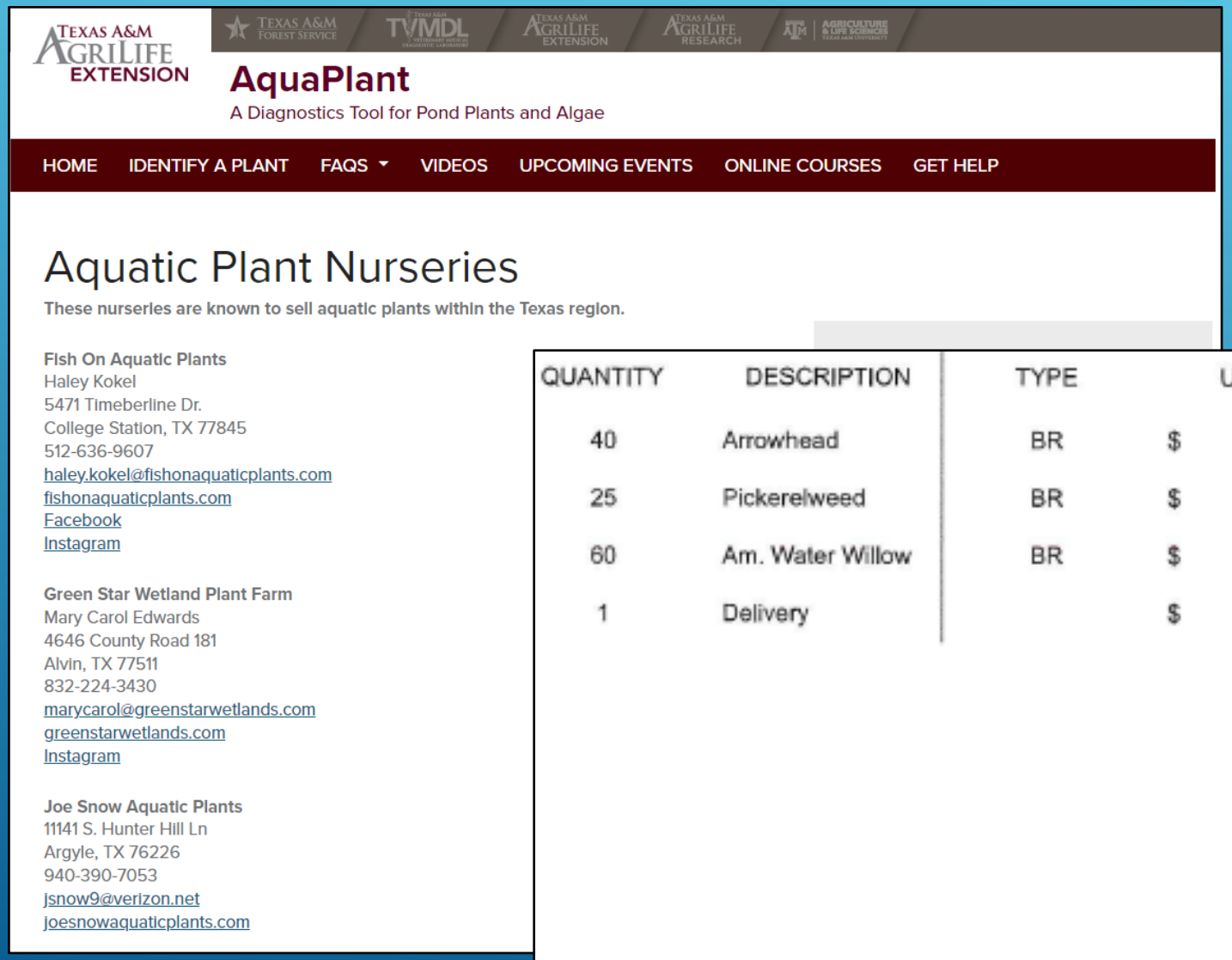






Finding plants

https://aquaplant.tamu.edu/aquatic-nurseries/



Texas A&M AgriLife Extension

Texas A&M Forest Service | TVMDL | Texas A&M AgriLife Extension | Texas A&M AgriLife Research | Agriculture & Life Sciences

AquaPlant

A Diagnostics Tool for Pond Plants and Algae

HOME | IDENTIFY A PLANT | FAQS | VIDEOS | UPCOMING EVENTS | ONLINE COURSES | GET HELP

Aquatic Plant Nurseries

These nurseries are known to sell aquatic plants within the Texas region.

Fish On Aquatic Plants
Haley Kokel
5471 Timeberline Dr.
College Station, TX 77845
512-636-9607
haley.kokel@fishonaquaticplants.com
fishonaquaticplants.com
Facebook
Instagram

Green Star Wetland Plant Farm
Mary Carol Edwards
4646 County Road 181
Alvin, TX 77511
832-224-3430
marycarol@greenstarwetlands.com
greenstarwetlands.com
Instagram

Joe Snow Aquatic Plants
11141 S. Hunter Hill Ln
Argyle, TX 76226
940-390-7053
jsnow9@verizon.net
joesnowaquaticplants.com

QUANTITY	DESCRIPTION	TYPE		UNIT PRICE	TAXABLE?		AMOUNT
40	Arrowhead	BR	$	4.75	N	$	190.00
25	Pickerelweed	BR	$	5.83	N	$	145.75
60	Am. Water Willow	BR	$	2.08	N	$	124.80
1	Delivery		$	749.83	N	$	749.83
					SUBTOTAL	$	1,210.38
					TAX RATE		8.25%
					SALES TAX	$	-
					Estimated Shipping		
					TOTAL	$	1,210.38

Arrowhead

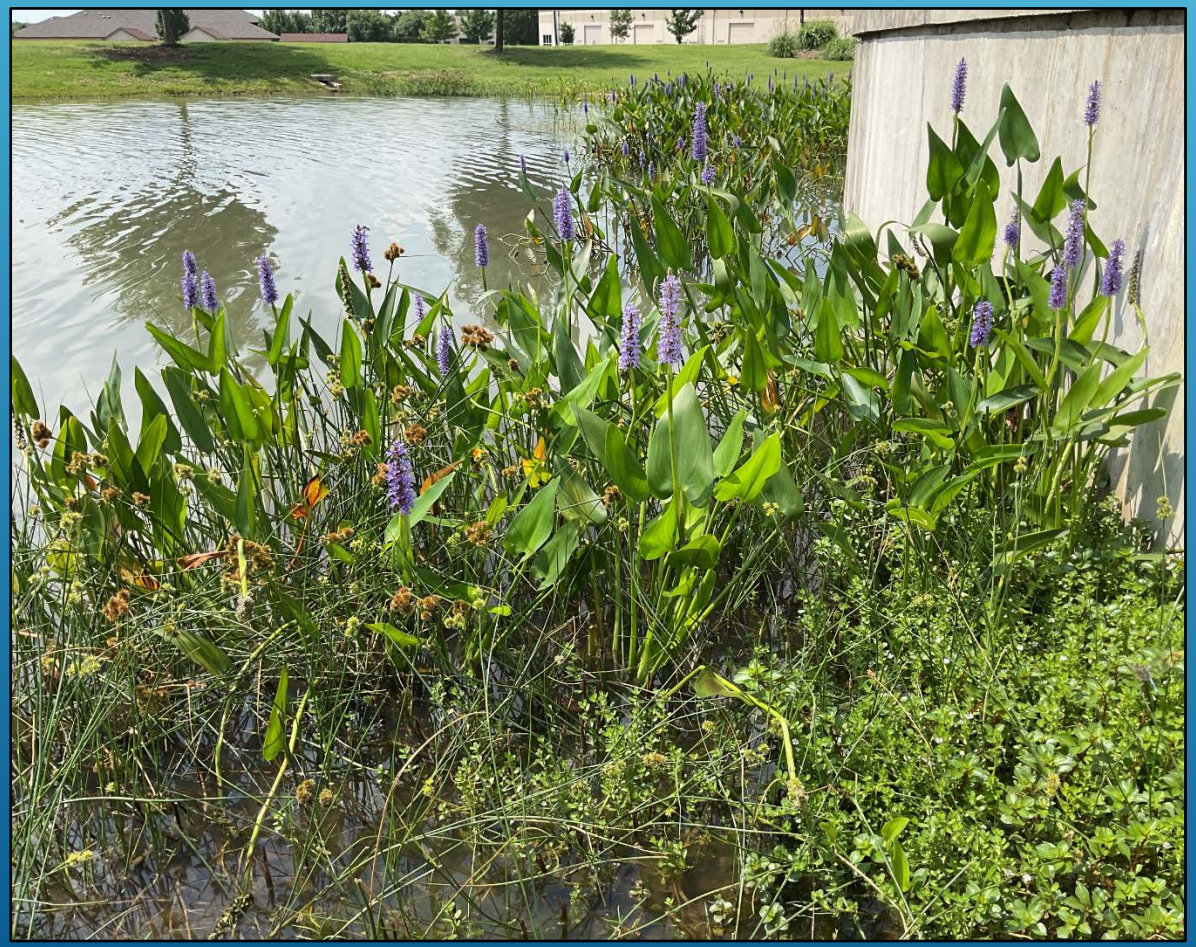
Exact species unclear

- *Attracts pollinators*
- *Seeds provides forage for wildlife*

Pickerelweed

Potedaria cordata

- *Attracts pollinators*
- *Seeds provides forage for wildlife*



American Water Willow

Justicia mericana

- Provides erosion control
- Fish habitat

Planting

June, 2024

MANSFIELD
ENVIRONMENTAL SERVICES

Cathy Matthews is a Senior Environmental Specialist with Water Quality in the City of Fort Worth. She has worked with Fort Worth for almost 16 years, and has many years experience in water quality monitoring in general and as well as for the MS4 monitoring requirements.

CATHY MATTHEWS

City of Fort Worth

North Central Texas Council of Governments

LAKE COMO LITTER CONTROL DEVICE-BANDALONG

Cathy Matthews

Sr. Environmental Specialist

Environmental Services Department

City of Fort Worth

WATERSHED AND PERMIT INFORMATION

- Lake Como is within the Lake Como-Clear Fork Trinity River watershed in south west Fort Worth.
- MS4 permit MCM 1- MS4 Maintenance Activities, reduce the discharge of floatables into the MS4.

North Central Texas Council of Governments

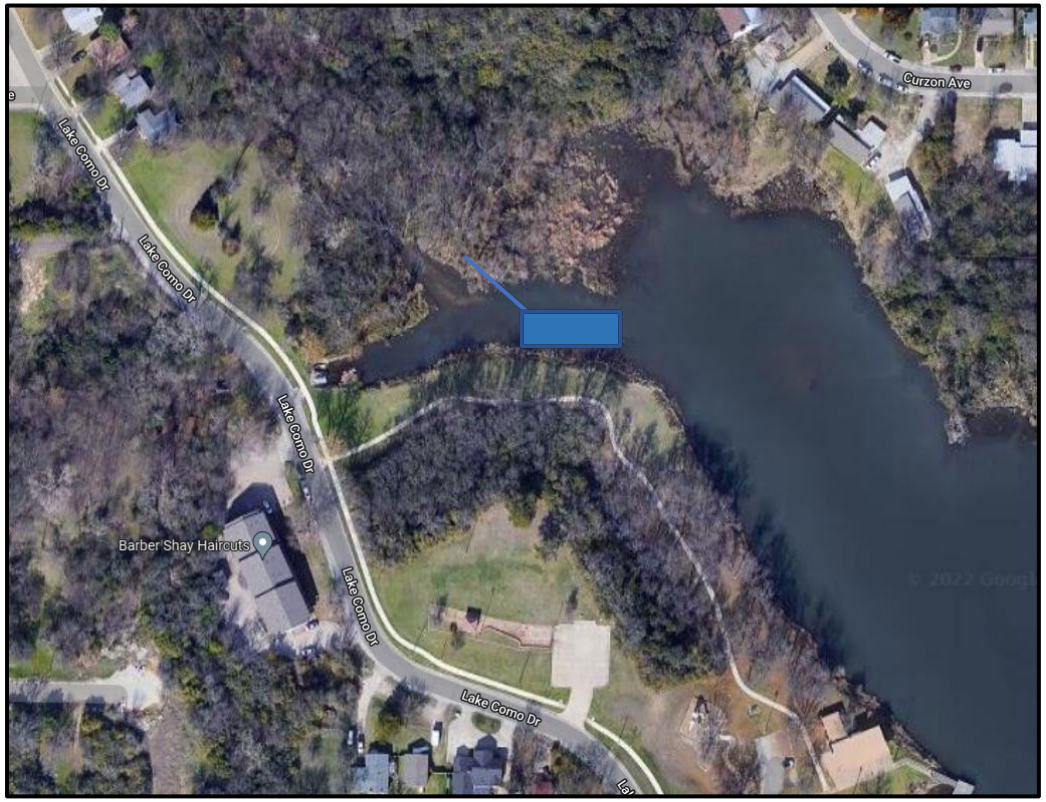
COMO NEIGHBORHOOD IMPROVEMENT PROJECT (NIP)

- As part of the NIP, a litter control assessment was completed on Lake Como.
- Six outfall potential sites were considered for device locations.
- Several different devices were assessed.

North Central Texas Council of Governments

PROPOSED LITTER CONTROL DEVICE

- It was determined the Bandalong was the best fit.
- The location decided on was the outfall on the northwest side of the lake.



Proposed Location at Lake Como

North Central Texas Council of Governments

LITTER CONTROL DEVICE

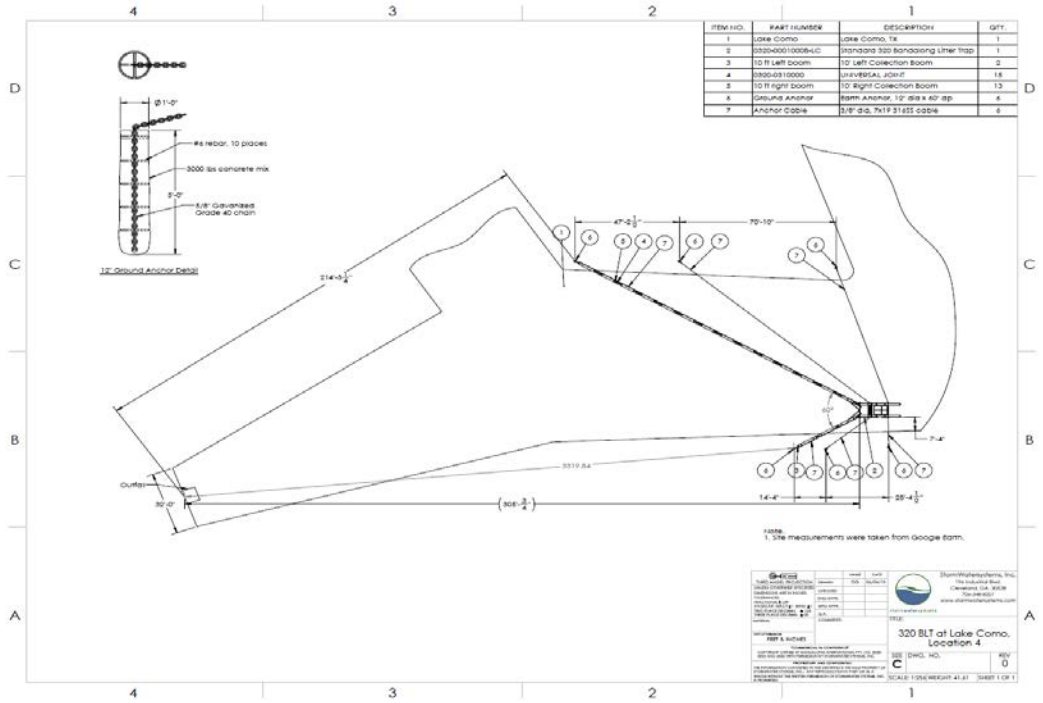
Bandalong 320 Device from Stormwater Systems

Site 4, Primary Outfall to Lake Como, Northwest Side

North Central Texas Council of Governments

BANDALONG COSTS, INSTALLATION AND DEVICE

- Total cost: $226,282.00



Schematic of device

North Central Texas Council of Governments

BEFORE INSTALLATION

North Central Texas Council of Governments

BEFORE INSTALLATION

North Central Texas Council of Governments

DURING INSTALLATION-SEPTEMBER 2023

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AFTER INSTALLATION

North Central Texas Council of Governments

LITTER COLLECTED FROM BANDALONG

- Five collection events to date
- 52 55-gallon bags of trash and waste collected
- 1,560 pounds of trash and waste collected

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BEFORE/AFTER PHOTOS

- June 2021

- May 2024

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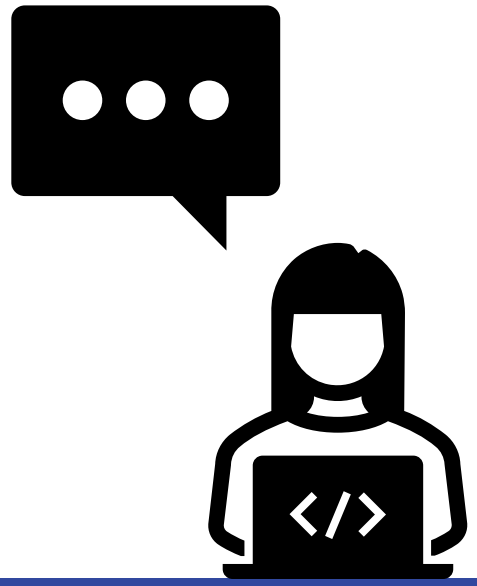
THANK YOU

Q&A ROUNDTABLE

- Have a question? Please unmute your line or place your question in the chat.



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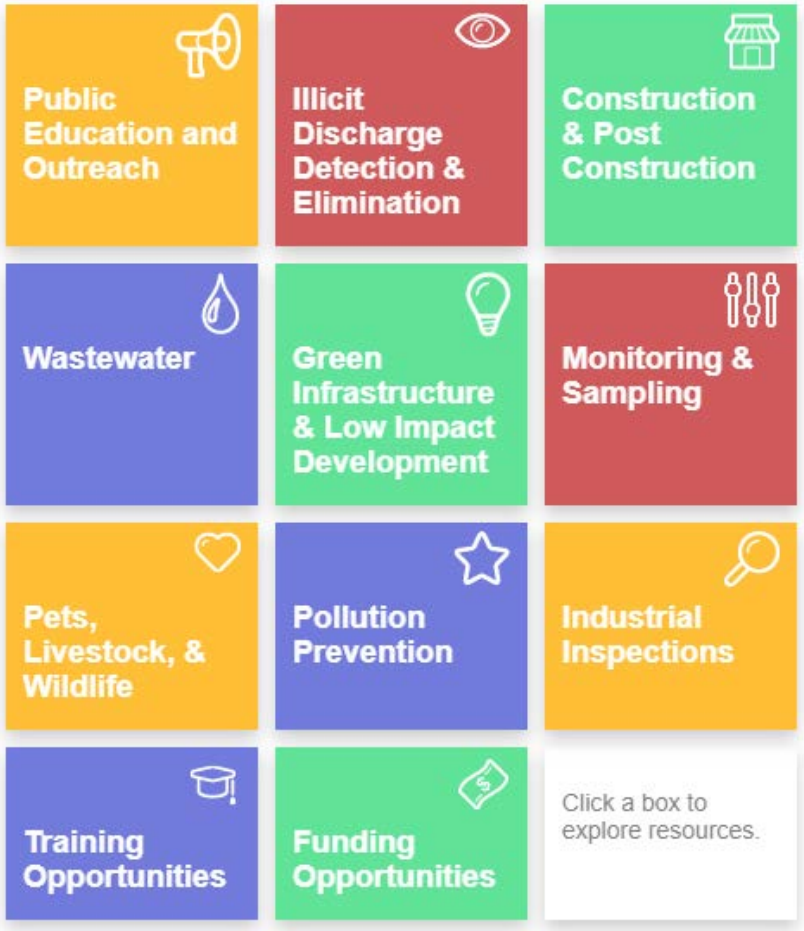
NCTCOG RESOURCES

NCTCOG RESOURCES

Stormwater BMP Library

- Organized by general topics
- Easy to search for specific items for your individual situation



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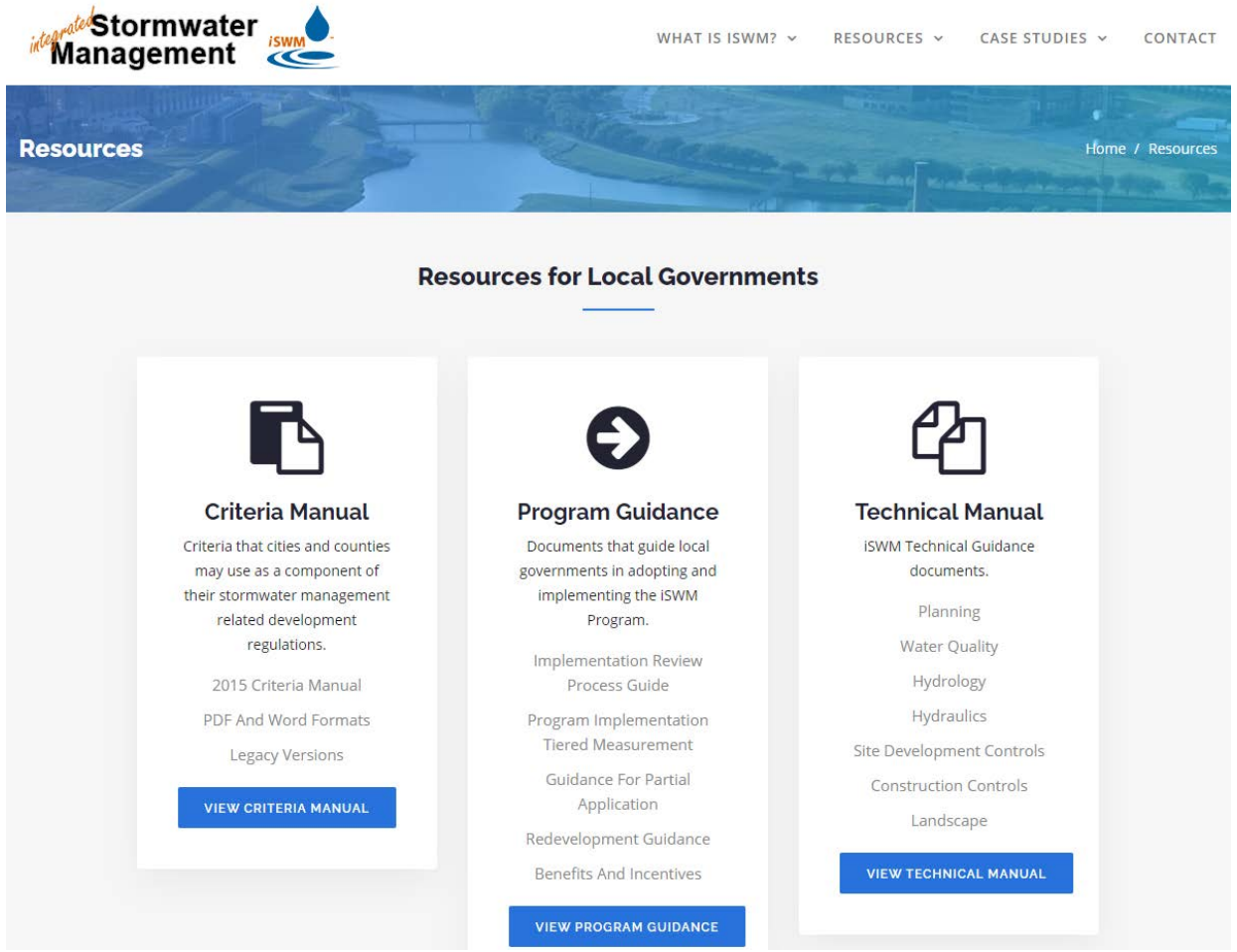
NCTCOG RESOURCES

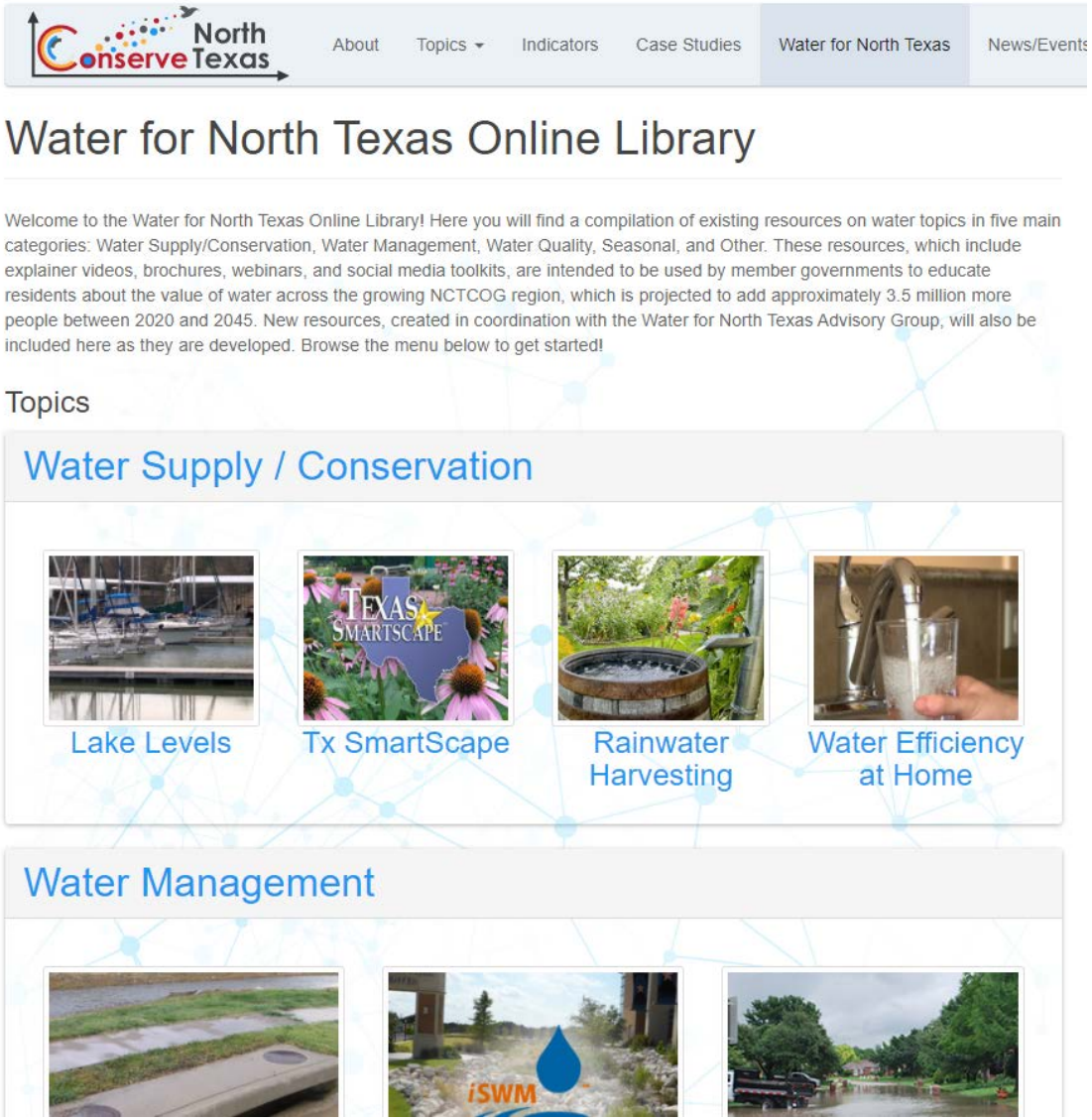
Integrated Stormwater Management (iSWM) Resources



NCTCOG RESOURCES

Go to Water for North Texas Online Library

- Contains resources on water topics on the regional, state, and national level.
  - Social media toolkits
  - Case studies from NCTCOG region
  - Educational pamphlets, videos, etc. to share



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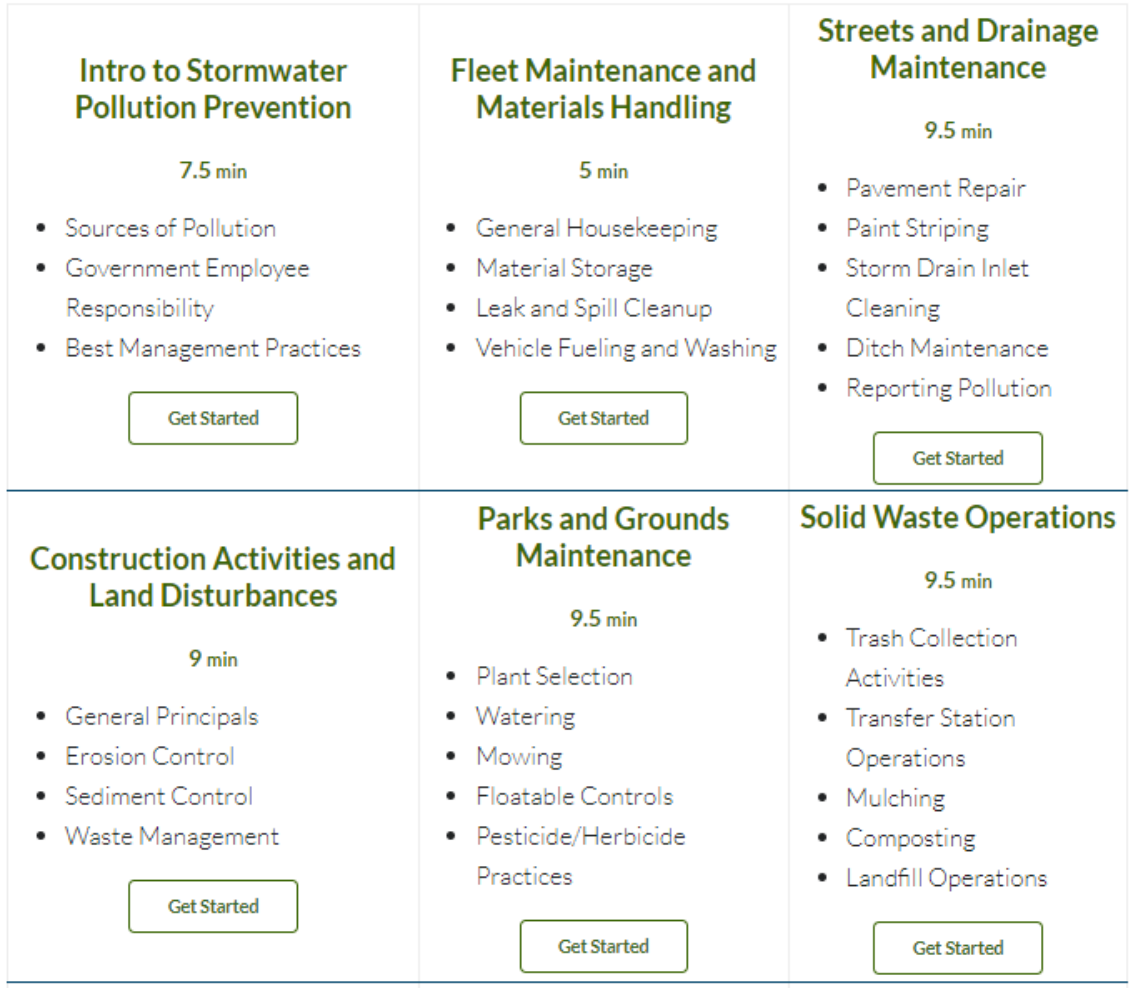
NCTCOG RESOURCES

- Stormwater Pollution Prevention Online Training Portal
- Monthly Pollution Prevention Reminder Messages w/ Infographics



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WEBINAR RECORDING AND PRESENTATION SLIDES

- Presentation Slides and Recording will be posted on NCTCOG's website here:

  www.nctcog.org/envir/watershed-management/stormwater/pollution-prevention

- Follow-up emails to come to all registrants.
  - Email Crysta Guzman, cguzman@nctcog.org if you did not register, but would like to be added to follow-up emails.

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THANK YOU!

****Information provided in this webinar and presentation regarding any specific commercial product by trade name, manufacture or otherwise does not constitute or imply its endorsement, recommendation or approval by the Regional Stormwater Management Coordinating Council (RSWMCC) or NCTCOG.****

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