

Storm Water Management Program 2013-2018

A Storm Water Management Program
For
NPDES I Compliance
Using MDNR Guidelines
& MPDES II Compliance
Using
Six Minimum Control Measure Best
Management Practices

Approved: July 24, 2014
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Mayor, City of Weatherby Lake

Introduction

The Storm Water Management Program (SWMP) was developed and structured to match the requirements of the State of Missouri Operating Permit, General Permit MO-R04000 draft and General Permit MO-R04000 dated June 13, 2008.

The program consists of the six minimum control measure Best Management Practices (BMPs) which incorporate the experience of the Weatherby Lake program over the last decade under Missouri State Operating Permit Water Pollution Control Program. Permit No.: MO – R040055

The City of Weatherby Lake is a Class IV municipality which consists entirely of single family residences and two areas of City facilities. There are no businesses or industrial or commercial property within the City limits. This eliminates many concerns that cities commonly address in their programs.

The City has a rather uncommon distinction regarding storm water runoff in that nearly the entire City drains into Weatherby Lake, which itself is entirely within the City boundary. There is only one storm water outfall from the lake of significance. The lake provides a high level of attraction to family home owners. The lake's size, depth, and motorboat horsepower limitations provide an exceptional quality of life living environment. Property values in the City tend to be somewhat higher than the surrounding area because of the lake. This provides a built in sensitivity to the lake water quality and thus the water that goes into the lake not only from the City but also the entire watershed (approximately 3 times the size of the City). The lake is a private lake owned by the Weatherby Lake Improvement Company and the shareholders of the company are comprised of nearly all of the residents of the City.

The SWMP relies heavily on this heightened sensitivity of the residents to the lake. For many years this sensitivity has been proven by the volunteer activities associated with the lake and maintenance of the quality of the water both in and entering the lake. The lake has greater than a 20 year history of outstanding water quality tests and is one of the cleanest lakes in Northern Missouri (per data from the Lakes of Missouri Volunteer Water Quality Program), and is classified as a "full use lake" by EPA. This plan will continue to maintain the water quality in the lake. Additionally, as a result, the outfall water quality will also be very good. The following plan is designed to reduce the discharge of pollutants into and out of our lake to the maximum extent practicable, and to protect our water quality.

4.2.1 MCM #1: Public Education and Outreach on Stormwater Impacts

4.2.1.1 Permit Requirements

Weatherby Lake will continue to expand and re-enforce our public education program by distributing educational materials to the community and conducting outreach activities. The focus of these efforts will be to educate the public with activities discussing the impact of storm water discharges on water bodies and the steps the public can take to reduce pollutants in storm water runoff.

4.2.1.1.1 Target Pollutant Sources

Weatherby Lake developed their storm water public education and outreach program in cooperation with other jurisdictions in the region, specifically Mid-America Regional Council (MARC) Regional Water Quality Education Program. The target pollutants were identified and prioritized. The actions that impact the target pollutants were identified. The public education program was designed to impact the actions identified.

The following is a prioritized list of the leading pollutants, experienced in the permitted area, that are carried by storm water runoff into water bodies. (1 = having most impact and 10 = having least impact).

- 5 Suspended Solids (sediment)
- 3 Pesticides & Fertilizers (nutrients)
- N/A Metals
- 2 Bacteria
- N/A Oxygen-Depleting Substances (BOD & other organics)
- 4 Oil, Gasoline and Grease.
- 8 Salinity (Salt)
- 8 Priority Toxic Organic Chemicals (Household Hazardous Waste, Detergents)
- 7 Habitat Alterations
- 9 Floatables
- N/A Temperature effects.
- 6 Pet Waste
- 8 Yard Waste
- 1 Invasive species (Zebra Mussels, Honeysuckle)
- 3 Litter and debris
- 5 Soil erosion

4.2.1.1.2 Identification of Target Audiences

Along with the development of the education program, Weatherby Lake identified the sources of storm water pollutants that needed to be reduced to improve

overall water quality. The target audiences were selected because changing their behavior could have a significant storm water quality impact on the target pollutants. The target audiences for the public education program include those within the City and those within the watershed that drains in to the City and are:

1. Citizens (Homeowners)
2. Apartment complex managers (upstream of the City)
3. Developers and Home Builders
4. Elected Officials
5. City Staff

4.2.1.1.3 Public Information Plan

Weatherby Lake plans to inform individuals and households in the community about the steps they can take to reduce storm water pollution. The program was developed with the Mid-America Regional Council (MARC). The topics for the brochures will in part reflect the topics in MARC’s seasonal campaign for public education. Additional topics will be included in the program, depending on the immediate needs of this and the surrounding communities. As residents move in and out of the community, and households change in makeup, many of the topics below that were presented to the community over past years will be re-emphasized.

	Year 1	Year 2	Year 3	Year 4	Year 5
Educational Materials:					
Post Information on Website	X	X	X	X	X
Maintain a Library of Storm water Educational Material	X	X	X	X	X
Post link to MARC brochures & ‘how-to’ videos in Weatherby Lake Living newsletter.	X	X	X	X	X
Distribute Brochures:					
10 Natives for the Kansas City Region	X				
Know Your Roots		X			
Making and Using Compost			X		
Use Lawn Chemicals Wisely				X	
Hazardous Waste Disposal					X
Pick Up After Your Pet			X		
Protect Our Streams	X				
Keep Sediment Out of Our Water		X			
Trash Management			X		
Oil and Water Don’t Mix				X	
Wash Your Car the Right Way					X
How to Build Your Own Rain Garden	X				

Conserve Your Water with Rain Barrels		X			
Know Your Soil			X		
Invasive species - Honeysuckle		X			X
Invasive species – Zebra mussels	X	X	X	X	X
Display Educational Materials at Community Events	X	X	X	X	X
Public Awareness:					
Post Information in City Newsletter	X	X	X	X	X
Distribute Storm water Information at annual Community meeting	X	X	X	X	X
Weatherby Lake Club Involvement:					
Fishing Club meet with MS4 Comrnittee member	X	X	X	X	X
Garden Club meet with MS4 Committee member	X	X	X	X	X
Sailing Club meet with MS4 Committee member	X	X	X	X	X
Stream Team meet with MS4 Committee member	X	X	X	X	X

4.2.1.1.4 How to Become Involved

Weatherby Lake informs individuals and groups on how to become involved in the storm water program by providing those instructions in all materials distributed to the public. The bi-monthly Weatherby Lake newsletter lists dates of city-wide, lake and stream cleanups, and is a vehicle to recruit adequate numbers of volunteers for the Stream Team. This is described in more detail in 4.2.2 Public Involvement/Participation.

4.2.1.1.5 Outreach Strategy & Partnerships

Weatherby Lake’s outreach strategy is to implement a variety of methods to reach a number of different target audiences multiple times. To change behavior, repetition is important. The mechanisms are described above in 4.2.1.1.3 of this permit application.

The strategy is to partner with other governmental and non-governmental entities to execute the public outreach strategy. The idea is to share information and resources so duplication of effort does not occur, but coverage is thorough. The following entities will be contacted to assist with the effort, listed in priority of support.

1. Regional Planning Organization (MARC)
2. Local Community Groups and problem specific specialists

3. Other Communities in the Region

The number of people targeted to be reached by the public education and outreach strategy is approximately 720 per year, which is an estimate based on providing information to at least one adult member to each City household.

Of the above entities MARC has been the most effective participant. Since 2003, MARC has convened a Water Quality Public Education Committee consisting of local/state/federal governments, non-profits, private sector businesses and citizens aimed at educating the public about non-point source pollution.

This committee uses a collaborative approach to implement a regional water quality based education plan aimed at reducing non-point source pollution through education and action. MARC provides valuable brochures and web based information and videos on preventing storm water pollution. Weatherby Lake will continue maintaining its membership in this organization.

4.2.1.1.6 Method for Evaluating Success

Weatherby Lake selected the measurable goals based on a review of the National Menu of Stormwater Best Management Practices, the need for program adjustments for effectiveness, and successful programs in the past. The goals selected were chosen because of the evidence that they will have a positive impact on the target pollutants identified (those ranked as #1 or 2 in Section 4.2.1.1.1 above) that are significant to Weatherby Lake. The public education and outreach goals were selected because many have been effective methods of communicating with the public for our community. The emphasis on the Good Housekeeping section (invasive species disturbing the land and water) is largely because both species have the potential for major disruption on water runoff (Honeysuckle choking local flora) and a healthy bio-diverse lake (Zebra Mussels).

The following are goals and criteria for success that will be applied each year during the permit period. The annual report will be used to provide the overall assessment of the MCM.

Activity	Goal	Criteria
Implement the public education plan per 4.2.1.1.3	Complete all items in the plan as scheduled	A. More than 90% of the items are completed on schedule B. Distribute brochures at yearly meeting; provide links in bi-monthly community newsletter.

Outreach participation with communities and organizations surrounding Weatherby Lake	A. Participate on MARC committees B. Participate in Kansas City and Platte county planning and zoning issues	A. Participate in at least 3 MARC water quality committee meetings. B. Participate in at least 1 event devoted to storm water quality.
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The City of Weatherby Lake is quite concerned about the invasive species, principally zebra mussels in the water and honeysuckle in our wooded areas. The principle aspect is to continue to educate the residents of the City. An extensive educational program, lake access rules and aggressive reinforcement of trespassing are all aimed at minimizing the risk of introducing Zebra Mussels. A new facility to wash and examine boats and other items introduced into the lake has been built. As the community matured, there has been a shift from building on remaining undeveloped land to re-construction on developed land. We will continue to advocate water quality for the entire watershed which comes into the City and lake. The City partners with the Weatherby Lake Improvement Company (WLIC) which owns the lake, to work with the surrounding communities to educate new land owners and participate in the planning process. By doing so effectively the lake water quality can be assured.

4.2.2 MCM #2: Public Involvement and Participation

4.2.2.1 Permit Requirements

Weatherby Lake will comply with State and Local public notice requirements when implementing the public involvement and participation program

4.2.2.1.1 SWMP Public Involvement

Weatherby Lake has involved the public in the development and submittal of the permit renewal application and storm water management program as follows:

1. A committee responsible to the City Council was formed that included members of the WLIC. These people drafted the original SWMP.
2. Subsequently, membership on the MS4 committee has and is drawn from the community at large via notices in the Weatherby Lake Newsletter and postings at City Hall.
3. All meetings of the MS4 committee are scheduled in advance, and e-mail notification and public posting in City Hall are made in accordance with Missouri open meeting laws.

4. Further input is obtained from members of Weatherby Lake Clubs, such as Gardening, Sailing, and Fishing clubs, and from the Stream Team.
5. The person responsible for overall management and implementation of the permittee's storm water public education and outreach program is the MAYOR. Others, such as City Council Alderpersons, WLIC, City staff, and editor of the local newsletter may be involved in the execution of each of the individual activities in the programs.
6. Expertise outside of the community may be obtained for specialized consultation - such as for methodology in controlling invasive species.

4.2.2.1.2 Target Audiences

The target audiences consisted of the Weatherby Lake residents who with few exceptions are also members of the WLIC. There are no ethnic, economic, religious, sexual orientation, gender, disability, marital status, political affiliation, genetic information, or age discriminations for becoming a resident of the City of Weatherby Lake, and by extension no such discrimination for membership on the MS4 committee. . Categories of our target audience include:

1. All Weatherby Lake citizens (Homeowners) including our local elected officials, youth, and retired persons
2. Contractors and Home Builders doing work in Weatherby Lake
3. Lawn care and landscaping services

4.2.2.1.3 Public Involvement Activities

Public involvement activities are organized by the Mayor along with the City Council and the WLIC based on the needs of the community. These activities may include:

1. Development of the SWMP
2. City wide clean-up
3. Lake clean-up
4. Volunteer monitoring of water entering the lake
5. Volunteer distribution of pertinent educational information
6. Participate in the Kansas City "Adopt A Street" program to clean debris in the northern section of the watershed that is not within the City of Weatherby Lake.

4.2.2.1.4 Involving the Public in Program Implementation

Weatherby Lake plans to actively involve the public in the development and implementation of the storm water program through existing effective methods developed over the years that best fit the community. Public Hearings will be held on all significant changes to the SWMP plan using the established Weatherby Lake procedures for conducting public hearings.

4.2.2.1.5 Method for Evaluating Success

Weatherby Lake selected the measurable goals based on a review of BMPs, need for program adjustments for effectiveness, and successful programs in the past. The following are goals and criteria that will be applied each year during the permit period. The annual report will be used to provide the overall assessment of the MCM.

Activity	Goal	Criteria
Volunteers participate in the development of the SWMP	Perform for permit application and any subsequent revisions	Volunteers participate in the application
Residents participate in city wide clean-up	Annual	1 or more conducted
Residents participate in lake clean-up	Annual	1 or more conducted
Volunteers monitor A. lake water B. incoming water	A. At least once/yr sample the lake for water quality B. At least one rain event per/yr sample incoming water	A. Water is checked for fecal Chloroform at least once/yr and participation in the "Lakes of Missouri Volunteer Program" or equivalent B. Samples of incoming water are checked for sediment during one or more rain events
Volunteers distribute educational materials	Annual	Materials are distributed at least once/yr

The City of Weatherby Lake is unique in that the storm water that enters the city goes into the lake which discharges to the only significant outfall from the City boundaries. The decision was to focus the public involvement on maintaining and potentially improving the lake water quality. By so doing the outfall is assured of having good quality water.

The person responsible for the overall management and implementation of the permittee's storm water public involvement/participation program is the **MAYOR**. Others, such as City Council Alderpersons, City staff, WLIC, editor of the local newsletter, and volunteers, may be involved in the execution of each of the individual activities in the programs.

4.2.3 MCM #3: Illicit Discharge Detection and Elimination

4.2.3.1 Permit Requirements Overview

Weatherby Lake is a city inside a watershed that includes Kansas City, Missouri and Platte County Missouri. Seventy five percent of the watershed is outside the jurisdiction of Weatherby Lake. Therefore, statistically most of the potential for illicit discharge originates outside of Weatherby Lake. The city is entirely residential with the exception of City Hall and the Clubhouse. There are no businesses, filling stations or industry. Weatherby Lake residents are very aware of the direct relationship between their property value and lake quality and of the potential for damage to lake water quality from illicit discharge. Hence, important in the detection and elimination actions are the vigilant residents who notify city officials. Shoreline is either private residence or owned by the Weatherby Lake Improvement Company (WLIC), and all shoreline and the lake are subject to the rules and regulations of the Weatherby Lake Improvement Company. All WLIC property is clearly marked with No Trespassing signs. Rules and Regulation state that all individuals on WLIC property must be accompanied by a resident and violators are subject to arrest. All WLIC launch sites are gated and locked and under video surveillance. Police protection is available 24/7 and managed by 5 full time police officers and variable 5-7 part time patrol officers. The water is boat patrolled by WLIC throughout the lake. WLIC also uses a "foot" patrol (walk, bike and vehicle) on WLIC property. City residents must have a City of Weatherby Lake decal on all their vehicles making it easier to spot non-resident vehicles. Boats are likewise identified making it easier to spot craft illegally launched from private property. The only thoroughfare near the Lake is NW Barry Road and its' principle contact is via a bridge that crosses over an intake stream (Rush Creek). The bridge has no public access road.

4.2.3.1.1 Storm Sewer Map

A map of Weatherby Lake is provided as Figure 1. The map shows the primary roads within the City limits and the outfall. There is only one significant outfall and that is the outlet of the lake. The majority of storm water flows via open grass/vegetation ditches and culverts at street crossings. A partially developed area on the north west side of the city and along a single road (Roberts Road) was graded and our only 41 storm sewers installed which drain into siltation retention ponds before the storm water reaches the lake. Storm water also flows

directly from lawns into the waters of the state. Rush Creek and Copper Creek are the primary source of storm water from outside Weatherby Lake.

4.2.3.1.2 Illicit Discharge Ordinance and Enforcement

Weatherby Lake has an ordinance, 210.210, for regulating illicit dumping within the city limits of Weatherby Lake that includes all pollutants. A summary of the ordinance is provided in Attachment 1.

4.2.3.1.3 Methods to Detect

An important means of detection of illicit discharges is the reporting of such discharges by the residents and the local Police Department. This applies to all types of illicit discharge. Direct dumping of visible trash is effectively curtailed by the inaccessibility to the lake as discussed in 4.2.3.1. Other significant threats are sewer spillage and chemical contamination.

There are two sewer systems within the City. Weatherby Lake has a closed sanitary sewer system. Leakage would most likely come to the ground surface. The second system is a Kansas City MO collector and transfer system. This system is located parallel to the shoreline of a portion of the lake. If this system would leak or overflow it would most likely come to the ground surface. On the surface it would follow the storm water flow into open ditches to the lake. The police department checks the alarm status of the Kansas City pump station once per shift (3 shifts/24 hours) and the alarm status each shift of all the residential grinder pumps servicing the City of Weatherby Lake. Dry weather testing also includes biologic and chemical testing. The lake was and is tested weekly for coliform bacterial counts between Memorial Day and Labor Day, and re-tested daily until cleared when elevated counts are obtained. At least 10 sites are sampled, with special attention towards tributaries and public access sites. If a sewer overflow occurs and the lake is contaminated, the lake is closed to all body contact functions. Water samples are tested for fecal coliform and the lake remains closed until the bacteria count is within State Health Department limits. Weatherby Lake residents are notified by an automatic phone system (and additionally by e-mail for those choosing that complementary notice) when the lake is closed and again when testing signifies health and safety standards are again met. Finally, signs are prominently posted at the swimming beach indicating lake closure.

Chemical detection is via participation in The Lakes of Missouri Volunteer Program. Samples are analyzed for nitrogen, phosphorus, chlorophyll, inorganic suspended solids and Secchi water clarity. A WLMS4 committee member has performed these analyses since 1994 roughly every 3 weeks from mid-April to the end of September.

Fish caught from the lake, both bottom feeders and predators were tested for mercury in 2007 and 2008 and it was determined after two sequential years of values falling within Federal guidelines for mercury, that every fifth year testing was appropriate. Last fall one bottom feeder (catfish) and one bass were tested, again with levels within Federal guidelines. Testing of at least four catfish from four different areas of the lake is planned, and if found to be within federal guideline, repeat mercury assessment will continue every four to five years. The Fishing Club monitors the lake weekly for zebra mussel infestation by visual inspection of PVC pipes deliberately submerged near public boat ramps for this purpose.

At present there is minimal new home or public work construction, but a Stream Team is established and has monitored lake intake and areas near construction following rainfall events of 1.5" or more for sediment. With the completion of the aforementioned bridge on Barry Road and completion of an associated bioswale and establishment of groundcover, Stream Team testing was suspended but can be re-activated should future significant ground disruption warrant monitoring.

Weatherby Lake utilizes the expertise of the Northland Hazardous Materials Team to handle chemical or petroleum spills.

All 41 storm water inlets are numbered and a check sheet developed (Stormwater Inlet Inspection Report). There is always a degree of randomness in inspecting the inlets, with factors increasing frequency such as nearby construction or following significant storms where debris may be present, so it is probable that some inlets will be inspected more frequently, though at least an inspection of each inlet will be performed once every three months. The inlets condition (wet or dry), reason for any abnormalities found and corrective action taken will be recorded.

4.2.3.1.3.1 Identify Priority Areas

The two sewer systems constitute two of the three primary concerns and both the City system and the Kansas City sewer collector system are well identified. Past Kansas City sewerage overflows with lake contamination have stopped since performing a pumping station upgrade and installation of an alarm system on the lift station, including both sound and light alarm systems. A generator on site guarantees continual pump activity in the event of power outages during storms. About 60% of older Weatherby Lake sewer lines have had epoxy lining installed and every 5-10 years are inspected by robot camera. The third potential serious threat to the water quality is the indirect biologic hazard of Zebra Mussel infestation. The apparent benefit of their ability to purify water (about a quart/day) is soon overshadowed by their unchecked proliferation (adult female may produce a million offspring/year) with subsequent depletion of water nutrients and microorganisms resulting in destruction of a lakes ecosystem.

4.2.3.1.3.2 Trace the Source

The procedure for tracing illicit discharge from sewer lines is both visual and olfactory identification with backup by biologic, chemical and turbidity testing as discussed above. The source for Zebra Mussels is contamination of the lake from infested craft and equipment used in contaminated bodies of water. Smithville Lake and Lake Lotawana are the closest significant contaminated lakes, and the Missouri is contaminated in Platte County.

4.2.3.1.3.3 Removal

Small spills within Weatherby Lake are sucked up using a portable pump and tank. The illicit discharge is then disposed of in accordance with the type material and disposal regulations. If a sewerage spill flows into the lake, the same procedure is followed as described in 4.2.3.1.3 wherein advisories about body contact with lake water are given, and the biohazard monitored until safe levels of coliform bacterial are reached. Macro debris in the lake and along the shoreline is picked up by the Fishing club, and there are twice yearly city wide volunteer trash pickup events. The Stream Team has adopted Barry Road in the Adopt-A-Highway program and pickup along the road is performed quarterly. Additional preventive methods used to decrease macro contamination include: covered waste containers at lake entrance points; yearly drives by Weatherby Lake to collect hazardous household waste; collection of residential recyclables along with routine trash collection; signs around the lake reminding residents to pick up after their pets; and the WLIC Fishing and Wildlife Committees monitor the geese population of the lake and the population is kept in check following both Federal and Humane Society guidelines. All of the Lake's launch areas are locked and gated so that entering watercraft can be visually inspected, the owner's questioned, and a vigorous protocol for boat and associated equipment cleansing is employed before their craft can be placed in the lake. A power wash station has been constructed so all boats introduced to our lake from outside waterways are washed with 150 degree heated water and quarantined in our storage lot for 7 – 30 days. Runoff is directed to the sewer system and meticulous care is taken to prevent any contamination of the storm water system. There is a dedicated pontoon trailer used only for taking boats in and out of the water.

4.2.3.1.3.4 Enforcement

Weatherby Lake has an ordinance for enforcement procedures and fines for illicit dumping within the city limits. All the land surrounding the Lake is privately held and there are no general public access areas. Resident access areas are now routinely patrolled due to Zebra Mussel monitoring, and vehicles require residential stickers. New craft introduction to the lake are controlled by locked

access, and boat inspection is necessary before launching. Rules and Regulations of WLIC specify "All Members, Permanent Registered Residents and Non-Owner Resident/Renters (age 14 and above) who are permitted to use the property of the WLIC shall complete the required zebra mussel training.... one adult member per household is required to take the test and sign the designation form. Once the member passes the test and signs the designation form, the household is eligible to receive lake use stickers for the current season, provided all other user fees/rules have been met. "Designation" stipulates that the watercraft and all equipment will not be used in any body of water outside of Weatherby Lake." Lake privileges can be removed for non-compliance of the Rules and Regulations.

4.2.3.1.3.5 Informing the Public

Brochures from various city, county, state, and national organizations (though principally from the Mid America Regional Council) explaining the hazards and environmental damage from illicit dumping, illicit household waste disposal and fertilizer runoff are on public display to all residents at the entrance to City Hall. Brochures on pesticides, fertilizers and car washing are distributed as per 4.2.1.1.3., including a booth of such materials at the annual WLIC resident meeting. Notification of coliform bacterial contamination is discussed above. An intensive educational program concerning prevention of Zebra Mussel infestation of the lake is underway. A dedicated website has been set up (<http://www.wlicinfocenter.org/>). It should be noted that engaging the residents in a focused program with established goals they must meet to enjoy lake privileges (Zebra Mussel training) indirectly increases awareness of the importance of maintaining lake quality and best management practices.

4.2.3.1.3.6 Program Evaluation and Assessment

Weatherby Lake annually evaluates the number, type and severity of illicit spills. The following are goals and criteria for success that will be applied each year during the permit period. The annual report will be used to provide the overall assessment of the MCM.

Activity	Goal	Criteria
Continue the Public Works 24 hour emergency response phone number	Assure there is always at least one person assigned to respond to an emergency call.	More than 98% of the time a person is assigned to the emergency call response.
Continue the Public outreach participation and outreach efforts per MCM # 1 and # 2 to report illicit discharges	See MCM # 1 and # 2	See MCM # 1 and # 2
Record the condition of the 41 storm sewers on a quarterly basis	Monitor sediment run-off and ensures un-obstructed flow to holding ponds	More than 95% documented evaluation of all storm sewers on a quarterly basis.

4.2.3.1.4 Non-Storm Water Discharges

Weatherby Lake has determined that the categories of non-storm water discharges listed in Missouri Operating permit section 4.2.3.1.4 are not a significant source of pollutants within the City boundaries. Weatherby Lake is a residential community with no commercial or industrial stores or facilities. The City of Weatherby Lake is approximately 95% developed and is entirely zoned as single family residential community. There is a good understanding about the importance of not polluting the lake. This strong community awareness is the primary defense against illicit discharges. The city maintains a 24 emergency phone line for the Public Works Department and it was judged that this number would be the best one to use for reporting illicit discharges as it is well publicized and it is the Public Works Department along with the Police Department that would respond to such a discharge or spill. The most likely source of an illicit discharge would be sewage and the City system, which is pressurized, is fully alarmed to alert the proper people within adequate time to prevent a major discharge into the lake. Kansas City MO also has a sewage lines in the City and the location of this collector system is well known and easily observed if there is a problem. The potential exists for a significant spill such as a tanker truck accident on Highway 152. Reliance is placed on the Kansas City Fire Department Hazardous Material Response Team and the Northland Hazardous Material Response Team to prevent such contamination. Illicit discharge is controlled by

Ordinance 210.210 and was updated in 2008 to cover the full range of pollutants.

4.2.3.1.5 Incidental Non-Storm Water Discharges

Sources of incidental occasional non-storm water discharges not considered a significant source of pollution to waters of the state would include the outdoor showers at the swimming beach and water for rinsing dust or mud off of water craft. Following swimming one may rise off under the open showers at the swimming beach where the water flows to the lake. However, individuals using the showers have just come from swimming in the lake and thus pollutants are not added. Likewise for the rinsing of craft where water hoses are present. Soaps or detergents are not supplied at these facilities and are not to be used in the cleansing of water craft.

4.2.3.1.6 Industries and Commercial Enterprises

There are no industries or commercial enterprises within the city limits.

The person responsible for overall management and implementation of the permittee's storm water illicit discharge elimination program is the MAYOR. Others, such as City Council Alderpersons, WLIC, City staff, editor of the local newsletter, and volunteers, may be involved in the execution of each of the individual activities in the programs.

4.2.4 MCM #4: Construction Site Storm Water Runoff Control

4.2.4.1 Permit Requirements

Weatherby Lake has developed, implemented and enforced a program to reduce pollutants in any storm water runoff from construction activities that result in a land disturbance greater than or equal to one acre. The program consists of implementation of the City of Weatherby Lake's City Code, the International Residential Code and the National Electric Code; permitting and inspection for compliance and legal enforcement.

4.2.4.1.1 Regulatory Mechanism

Weatherby Lake has several ordinances (see below) that address storm water concerns and taken together cover those activities that are required by the MO Operating Permit.

4.2.4.1.1.1 Erosion and Sediment Control

Weatherby Lake has a significant concern over erosion and sediment control. City Ordinance Section 500.060 addresses all aspects of erosion control on all disturbed land of 150 square feet or more. A summary of the ordinance is provided in Attachment 1.

4.2.4.1.1.2 Sanctions for Compliance

Penalties for failure to comply with storm water and erosion control measures are spelled out in City Ordinance Section 100.230 et seq. and are referenced in the erosion control ordinance stated in 4.2.4.1.1.1.

4.2.4.1.1.3 Additional Applicable Ordinances

The other ordinance that controls storm water is Section 410.340 that invokes the American Public Water Works Association Standard Specifications and Design Criteria Section 5600. A summary of the ordinance is provided in Attachment 1.

4.2.4.1.2 Construction Site Controls

Weatherby Lake requires that all building material waste to be hauled off site in a covered container as part of the process to grant a permit (ordinance 405.340). Waste includes discarded building material, concrete truck washout, chemical, litter and sanitary waste. New construction is required as part of the process to grant a permit to provide a portable toilet on site during construction.

4.2.4.1.3 Pre-Construction Review

Weatherby Lake requires review of all plans for storm water control per ordinances 500.160 and 410.340. All sediment and runoff controls must be installed, inspected and approved prior to site preparation.

4.2.4.1.4 Public Input Procedures

Public input procedures consist of a hot line to report potential problems, public posting all meetings of the MS4 Committee which oversees the permit and SWMP, and public posting all City Council meetings. All meetings are performed in accordance with the procedures established by state regulations which

encourage public participation. All reported potential problems are given to the Director of Public Works who investigates. Any violations follow the procedures established in the City Ordinances. Citizens are encouraged to attend the open forums of the MS4 Committee and monthly City Council meetings as well as volunteering for various water monitoring and protection programs such as the Stream Team.

4.2.4.1.5 Inspection Prioritization

Weatherby Lake inspects erosion control devices at various times during construction and after rain events. Ordinances are in place to issue citations as described in 4.2.4.1.1.2.

4.2.4.1.6 Compliance Plans

Weatherby Lake has ordinances in place and the authority to stop work orders as well as issue citations and levy fines for failure to comply described in 4.2.4.1.1.2.

4.2.4.1.7 Method for Evaluating Success

Weatherby Lake selected the measurable goals based on a review of the EPA BMPs, need for program adjustments for effectiveness, and successful programs in the past. The goals selected were chosen because of the evidence that they will have a positive impact the target pollutants. A significant target is erosion and sediment control. Weatherby Lake will measure success of the program by compliance and the number of citations either issued or not issued based on the number building permits issued.

The following are goals and criteria for success that will be applied each year during the permit period. The annual report will be used to provide the overall assessment of the MCM.

Activity	Goal	Criteria
Conduct compliance inspections	Prevent erosion and sediment discharge to the lake	More than 90% of the compliance inspections are completed as scheduled
Inspection findings are corrected with minimal impact to the lake	Citations corrected before the situation becomes a problem	More that 98% of the findings have documented corrections that are satisfactory

The City of Weatherby Lake remains concerned about sediment entering the lake. The threat has been considerably reduced with the completion of both the widening of NW Barry Road and construction of a new bridge over Rush Creek, the major inflow into the lake. Runoff from this increased non-porous construction has been countered by construction of a large bioretention and bioswale system. The Stream Team will continue to monitor this intake area during significant rain events as the system matures.

The person responsible for overall management and implementation of the permittee's storm water public education and outreach program is the **MAYOR**. The City engineer, Police Department and volunteers, may be involved in the execution of each of the individual activities in the programs.

4.2.5 MCM #5: Post-Construction Storm Water Management in New Development and Redevelopment.

4.2.5.1 Permit Requirements

Weatherby Lake has developed, implemented and enforced a program to address the quality of long-term storm water runoff from new development and redevelopment projects that disturb greater than or equal to 150 square feet.

4.2.5.1.1 Strategy to Maintain Quality Storm Water

The City of Weatherby Lake is approximately 95% built out. The strategy consists of enforcing existing ordinances that address storm water runoff and continue to maintain existing water courses.

4.2.5.1.2 Regulatory Mechanisms

Weatherby Lake has ordinances 410.340 and 500.160 in place to address post-construction runoff from new development and redevelopment projects.

4.2.5.1.3 Long Term Operation and Maintenance

A large portion of the storm water that flows into Weatherby Lake is from land outside the City boundaries and outside Weatherby Lake jurisdiction. Most storm water inflow is from property within the boundaries of Kansas City, Missouri and Platte County, Missouri. See MCM # 1. Also, contractors are informed of the requirements via the permit and development plan review process

4.2.5.1.4 Priority Areas

Ordinances are enforced on all projects; there are no priority areas

4.2.5.1.5 Nonstructural BMPs

The only area of the City left for development is essentially along Roberts Road. The developer has left green space in the regions between the homes and Westside drive above and beyond the land devoted to storm water silt retention ponds. The gardening club has sponsored several lectures on construction and use of rain barrels and water gardens and several of each were installed by residents. WLIC had kept some coves as riparian areas and there are no plans at present to enlarge the sea wall into those areas. The City maintains 8 parks and used grant monies from Platte County for building a 110 foot fabric and rip rap drainage ditch by Weatherby Woods Park to slow down storm water drainage. A new storm water drainage system consisting of rock rip rap was constructed at A2 cove and designed to slow down storm drainage. Docks are inspected by WLIC for structural integrity, and all dock floatation must be encapsulated or removed. All new dock construction must be approved by the Dock Committee and inspected before placement in the lake. A large bioswale was constructed when the bridge over Rush creek was built, and a large holding pond was built to diminish sediment from Rush Creek.

4.2.5.1.5.1 Policies and Ordinances

Weatherby Lake is a single family residential city with large building lot requirements. Only a small portion of the streets have curbs and gutters. The rest of the street system is grass ditches or depressed flat ditch areas which promote sheet flow. Since nearly all of the land in the City is privately owned, swales and wetlands are not very practical; however, rain gardens and rain barrels are encouraged. Weatherby Lake operates and maintains a number of small parks and recreation areas for the community.

4.2.5.1.5.2 Infill Development

This section does not apply to Weatherby Lake as the city is entirely zoned for single family housing other than the areas occupied by city facilities.

4.2.5.1.5.3 Education

The education of developers to minimize storm water impacts is through the permitting process. For public education see **MCM #1**. Storm water control is part

of the Weatherby Lake pre-approval process for a developer prior to issuance of a building permit.

4.2.5.1.5.4 Other Measures

Weatherby Lake is a single family residential city with large building lot requirements. Rain gardens and rain barrels are encouraged along with long grass buffer zones near at the water edge. Native plants are also encouraged.

4.2.5.1.6 Structural BMPs

Weatherby Lake through the planning and review process determines if structures such as retention/detention basins are needed. If so, these are then required as a condition of receiving a building permit.

4.2.5.1.6.1 Practices

The City promotes treed grass/vegetated yards. Rain gardens and rain barrels are encouraged along with long grass buffer zones near at the water edge. Native plants are also encouraged.

4.2.5.1.6.2 Not applicable

4.2.5.1.7 Method for Evaluating Success

The following are goals and criteria for success that will be applied each year during the permit period. The annual report will be used to provide the overall assessment of the MCM.

Activity	Goal	Criteria
Conduct periodic post-construction inspections	Assure post-construction requirements are met; any finding are promptly corrected	More than 95% of the inspection citations are satisfactorily corrected the first time
Continue participation in the Lakes of Missouri Volunteer water quality study	There is no deterioration in the water quality of the lake	New data show comparable or better than past data for the lake.
Conduct routine reviews	Identify and correct	Reviews are conducted

of City storm water runoff conditions.	maintenance problems affecting storm water runoff	periodically during rain events, maintenance actions are identified and promptly corrected.
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The City of Weatherby Lake is primarily concerned about the quality of water entering the lake. Post-Construction effects are primarily focused on the permanent coverage of disturbed areas. An equally important aspect is to correct maintenance problems that may have adverse effects. Both of these tasks are driven by the diligence of the residents to report problems and the City Public Works Department to perform the maintenance promptly and in a quality manner. By doing so effectively the lake water quality can be assured.

4.2.6 MCM #6: Pollution Prevention/Good Housekeeping for Municipal Operations

4.2.6.1 Permit Requirements

This SWMP develops and implements an operations and maintenance program that includes an employee training component and routine inspections for preventing or reducing pollutant runoff from municipal operations.

4.2.6.1.1 List of Municipal Operations Impacted by this Program

There are no industrial facilities that discharge to the City's MS4. The following is a list of City activities that are impacted by this program:

- Catch Basin Cleaning
- Street Sweeping
- Recycling Facilities
- Maintenance Facilities
- Animal Waste Disposal
- Fleet and Building Maintenance
- Snow Removal Operations (salt and sand)
- Water and Sewer Maintenance

4.2.6.1.2 Maintenance and Inspection Programs

The City has set up Best Management Practices (BMP) including maintenance and inspection procedures for all of the activities identified in the list of Municipal Operations in the prior paragraph. This program includes the following controls:

Floatables entering the lake after a rain storm are removed by volunteers from the Weatherby Lake Fishing Club using pontoon boats to collect floatables and then transport them to the City's disposal site.

Pollutants are identified by collecting water samples after a rain storm by Volunteers from the Weatherby Lake Improvement Company and then sending them to the State DNR for analysis.

4.2.6.1.3 Controls for Reducing or Eliminating Pollutant Discharges

By use of BMPs the City plans to reduce or eliminate pollutants that discharge from Municipal Operations listed above. A regular inspection schedule has been set up for City employees to observe and correct any sources of pollution

4.2.6.1.4 Controls for Municipal Facilities

4.2.6.1.4.1 Good house keeping practices are applied to all facilities including the maintenance shop and city offices. These facilities are routinely inspected by the Director of Public Works and the Mayor

4.2.6.1.4.2 Fueling capability is limited to Diesel fuel which is in an above ground tank with an integral catch basin for any leakage. The catch basin can contain the entire contents of the fuel tank. All other fueling is done at commercial supplier locations. Any spills are covered with dry absorbent materials, collected and properly disposed.

4.2.6.1.4.3 Weatherby Lake does not have areas that are governed by the Resource Conservation and Recovery Act (RCRA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

4.2.6.1.4.4 Paints, solvents, petroleum products and waste products are stored and effectively contained in a spacious concrete containment area with sealed flooring and generous raised lip. They are not exposed to storm water. The City contracts with MARC Household Hazardous Waste Disposal Site [4707 Deramus, Kansas City, MO] where compromised containers and outdated chemicals are disposed.

4.2.6.1.5 Procedures for Proper Disposal of Waste Materials

Waste materials such as sediments, floatables and other debris are transported to the City's storage yard and a certified waste disposal company hauls the material to a State approved landfill.

4.2.6.1.6 Flood Management

Procedures for assessing impacts on water quality by new and existing flood management projects will be incorporated the City's current regulations on flood management.

4.2.6.1.7 Training

The City of Weatherby Lake provides orientation training to new employees using materials available from EPA, State and other organizations to prevent and reduce storm water pollution from municipal activities listed in Section 4.2.6.1.1 above. The specific training and teaching materials currently are the CD based training manuals: 1) Storm Warnings, Every Day Best Management Practices; 2) Storm Water Pollution Prevention, A Drop in the Bucket; and 3) Ground Control, Stormwater Pollution Prevention for Construction Sites. All employees (full-time and part-time who have not had orientation training within the prior 12 months) whose work activities (at any time) are outdoors and/or involve handling of raw materials, products, intermediates or waste that could be exposed to storm water must review the CD on Storm Warnings, Every Day Best Management Practices and take the accompanying test within the first three months of each fiscal year. Those employees who only work indoors or who never handle any material or wastes that could be exposed to stormwater need not take the refresher course. Documentation of this corrective action will be their signed tests covering the material they have reviewed. The annual test results will be stored in a file at City Hall or transferred to digital media. Upgrades and/or replacements to the above teaching materials may change to stay abreast with trends and techniques required by appropriate BMP's.

4.2.6.1.8 Method of Evaluating Success

Weatherby Lake selected the measurable goals based on a review of EPA BMPs, need for program adjustments for effectiveness, and successful programs in the past. The goals selected were chosen because of the evidence that they will have a positive impact preventing pollution of storm water by municipal operations and maintenance.

The following are goals and criteria for success that will be applied each year during the permit period. The annual report will be used to provide the overall assessment of the MCM.

Activity	Goal	Criteria
Train employees on proper housekeeping	New employs are given a good housekeeping orientation within one week of starting employment	All employees receive this training within the first week of employment
Both municipal facilities and the city conduct routine cleanups	A. Both maintenance areas and office areas are consistently in a proper state of housekeeping B. The city and lake are kept free from trash and unsightly conditions	A. Routine inspections by the Director of Public Works and the Mayor confirm the goal is met. B. Routine inspections by the Mayor and President of the WLIC confirm the goal is met
Material procured shall be stored per the manufacturers requirements	All materials in the maintenance areas are properly stored	Inspection by the Director of Public Works and the Mayor confirm proper storage

The City of Weatherby Lake has limited capability to manage hazardous materials. As a result the approach regarding such materials is to limit the amount to that currently in use. Common commercial and industrial products are used where storage requirements are within the capability of the City maintenance and office areas. The City partners with the Weatherby Lake Improvement Company (WLIC) which owns the lake, to maintain an attractive community. On an as needed basis organized cleanups are conducted with volunteer groups and city employees as appropriate. By doing so effectively the lake water quality can be assured.

The person responsible for overall management and implementation of the permittee's storm water Pollution Prevention/Good Housekeeping for Municipal Operations is the **MAYOR**. Others, such as City Council Alderpersons, WLIC, City staff, editor of the local newsletter, and volunteers, may be involved in the execution of each of the individual activities in the programs.

4.3 Sharing Responsibility

There are no shared responsibilities with other entities.

OUTFALL #2
LAT 3914.14
LONG 9442.16

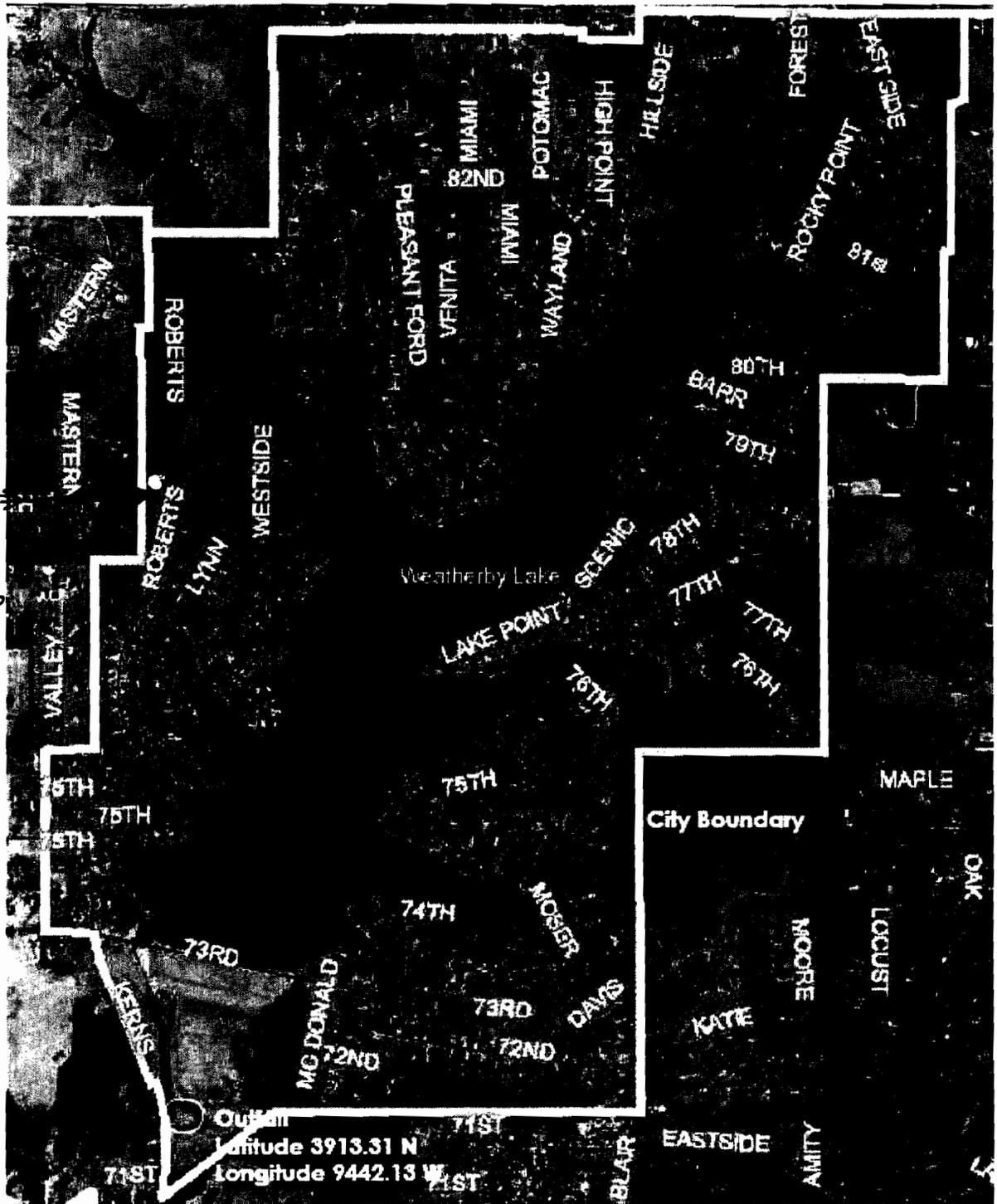


Figure 1. Outfall location for City of Weatherby Lake.

Attachment 1 Summary of Ordinances

Ordinance 100.230 Penalties

Conviction of violation of City ordinances will result in fines up to \$500.00 or imprisonment for up to 90 days or both.

Ordinance 210.210 Polluting Water

This ordinance prohibits putting trash, junk, refuse or any pollutant or hazardous or toxic substance into a stream, creek, pond or lake. It also prohibits the alteration of the natural flow of streams. Violation of the ordinance invokes Ordinance 100.230

Ordinance 405.340 Building Permit

All structures whether being erected or remove and any alteration of land use require approval or a permit from the Zoning Control Officer. Issuance of the permit requires an application that includes submittal of plans, survey, list of materials and erosion control plan. The permit must be approved by the Planning Commission. Inspections are specified and the Zoning Enforcement Officer is allowed to make any additional inspections to ascertain compliance.

Ordinance 410.340 Drainage and Storm Sewers

The Planning Commission can not recommend for approval by the City Council any plat that does not have adequate provision for stormwater. Furthermore, stormwater can not be put into the sewer system. The design of the stormwater conveyance system must be in accordance with the American Public Works Association (APWA) Standard Specification and Design Criteria Section 5600. Construction and materials are specified and shall use "natural" open channel systems. Construction used for such a system must meet APWA Section 2600. Both upstream and downstream affects are considered in the stormwater design. Where required, easements must be provided.

Ordinance 500.060 Erosion Control

An erosion control permit is required for any natural vegetation over 150 square feet is disturbed. All erosion control must be inspected and approved before any land disturbance takes place. The control is to remain in place until sufficient vegetation is well established after the project completion. Violation of the ordinance invokes Ordinance 100.230