Utility Services/Land Use/ Energy Development Committee

City of Arts & Innovation

TO: **UTILITY SERVICES / LAND USE / ENERGY DEVELOPMENT COMMITTEE MEMBERS** **DATE: DECEMBER 10, 2018**

FROM: **PUBLIC WORKS DEPARTMENT** **WARDS: ALL**

SUBJECT: **UPDATE ON TOTAL MAXIMUM DAILY LOADS AND STORMWATER QUALITY ISSUES IN THE CITY OF RIVERSIDE**

ISSUE:

Receive an update on Total Maximum Daily Loads and stormwater quality issues in the City of Riverside.

RECOMMENDATIONS:

That the Utility Services/Land Use/Energy Development Committee:

1. Receive an update on total maximum daily loads and stormwater quality issues; and

2. Provide direction/input on potential future actions.

BACKGROUND:

On September 10, 2018, the Utility Services/Land Use/Energy Development Committee met with Chair MacArthur, Vice Chair Soubirous, and Member Gardner present. At that meeting, Chair MacArthur requested an update on the water quality impairment mitigation of storm water runoff to the Santa Ana River and Greenbelt.

The City of Riverside is located in the Santa Ana Watershed. Within this watershed, there are sub-watersheds to which different areas of the city drain. While there are several outfalls throughout the City, there are three general waterbodies to which water runoff flows travel: Santa Ana River, Temescal Wash (via Arlington Channel), and Canyon Lake (via the Perris Valley Channel).

Throughout the years, these waterbodies have been subject to routine monitoring for a variety of pollutants. All of the water quality data collected is and compared to water quality objectives established by the Santa Ana Regional Water Quality Control Board (Regional Board) to identify areas where the beneficial uses of waterbodies are impaired. Recurring exceedances of a pollutant could lead the Regional Board to require development of a Total Maximum Daily Load (TMDL). A TMDL establishes the maximum amount of a pollutant that a waterbody can receive and still meet water quality objectives.

Following several years of monitoring, TMDLs for bacteria and nutrients were established for the Middle Santa Ana River and Canyon Lake/Lake Elsinore, respectively. Since the City of Riverside is within the watersheds of these waterbodies, the City was identified as a stakeholder in both TMDLs requiring action to be taken.

DISCUSSION:

Lake Elsinore/Canyon Lake Nutrient TMDL

In 2004, the Regional Board adopted the Nutrient TMDLs for Lake Elsinore and Canyon Lake, which became effective when the United States Environmental Protection Agency gave it final approval on September 30, 2005. The TMDL specified numeric targets for Dissolved Oxygen, Chlorophyll *a*, Ammonia, Total Phosphorus, and Total Nitrogen concentrations in both lakes. In 2005, stakeholders formed the Lake Elsinore and Canyon Lake TMDL Task Force (LE-CL Task Force) to coordinate and share the cost of all research and implementation efforts to address the TMDL. Members of the LE-CL Task Force include:

Table 1: Lake Elsinore-Canyon Lake TMDL Task Force Members	
1. California Department of Fish and Wildlife	15. Eastern Municipal Water District
2. California Department of Transportation	16. Elsinore Valley Municipal Water District
3. City of Beaumont	17. March Joint Powers Authority
4. City of Canyon Lake	18. Riverside County Flood Control and Water Conservation District
5. City of Hemet	
6. City of Lake Elsinore	19. Santa Ana Regional Water Quality Control Board
7. City of Menifee	
8. City of Moreno Valley	20. U.S. Air Force (March Air Reserve Base)
9. City of Murrieta	
10. City of Perris	21. Western Riverside County Agriculture Coalition (on behalf of the participating Dairy Operators and participating Agricultural Operators in the San Jacinto River Basin)
11. City of Riverside	
12. City of San Jacinto	
13. City of Wildomar	
14. County of Riverside	

The LE-CL Task Force relies heavily on lake experts and consultants to understand conditions at the lakes and how water quality can be improved. Together, the stakeholders created an implementation plan called the Comprehensive Nutrient Management Plan. This plan details a range of activities stakeholders could employ to improve water quality in the lakes. For Canyon Lake, stakeholders ultimately opted for applications of Alum, which binds to the nutrients and drags them to the bottom of the lake. By all accounts, these Alum applications have been beneficial for the lake. In Lake Elsinore, a combination of lake aeration and fishery management has helped the lake, but experts suggest additional water flows into the lake is necessary for long-term water quality improvements.

Over the years, the Task Force has produced numerous reports on the lakes and actions taken by stakeholders. After years of efforts, the Task Force determined that the numeric limits established in the 2004 TMDL were unachievable and set out to rewrite the TMDL. That effort commenced in 2016 and a final draft has been prepared and undergone multiple reviews.

The revised TMDL acknowledges Lake Elsinore as a dynamic lake that has historically gone

through dry periods and wet periods. This fact is taken into consideration with the revised compliance approach that accounts for periods when the lake may be in an unhealthy state due to low water levels. Canyon Lake, which overflows into Lake Elsinore, is also acknowledged as being significantly affected by periods of drought and has a compliance approach, which reflects that.

The revised TMDL also incorporates various compliance options of interest to the City of Riverside. One approach involves monitoring City flows in the area draining to Canyon Lake and demonstrating their compliance with the TMDL numeric targets. It is also an option for the City to continue working with the LE-CL Task Force as it has for over ten years. Within the past five years, costs associated with the Task Force have averaged approximately $29,000 annually with a high of $38,921 in FY16/17.

Potential Future Actions for the Lake Elsinore/Canyon Lake Nutrient TMDL

The revised TMDL still needs to be approved by the Regional Board and the Environmental Protection Agency. This approval process takes time and should be completed within a couple of years. At that point, the City may choose to:

1. Continue to participate in the LE-CL Task Force and pay its share of costs for monitoring and compliance actions. Future costs are unknown and will depend on the actions taken to improve the water quality of the lakes.

2. Monitor City outfalls that eventually make their way to Canyon Lake and demonstrate that their nutrient loads are insignificant or within the allocations granted by the TMDL. If flows have excessive nutrients, the City may implement Best Management Practices to reduce nutrient concentrations for compliance.

Middle Santa Ana River Bacteria TMDL

In 2004, the Regional Board adopted the Bacterial Indicator TMDLs for Middle Santa Ana River Watershed Waterbodies. The TMDL became effective when the United States Environmental Protection Agency gave it final approval on May 16, 2007. The TMDL established wasteload allocations for urban stormwater discharges and confined animal feeding operation discharges and load allocations for agricultural and natural sources. The wasteload and load allocations were established for both fecal coliform and *E. coli*. In January 2006, stakeholders formed the Middle Santa Ana River Watershed TMDL Task Force (MSAR Task Force) to coordinate and share the cost of all research and implementation efforts to address the TMDL. Members of the MSAR Task Force include:

Table 2: Middle Santa Ana River Watershed Task Force Members	
1. City of Claremont	8. County of Riverside
2. City of Corona	9. Agricultural Operators (represented by Chino Basin Watermaster)
3. City of Eastvale	10. Riverside County Flood Control and Water Conservation District
4. City of Jurupa Valley	11. San Bernardino County Flood Control District
5. City of Norco	12. Santa Ana Regional Water Quality Control Board
6. City of Pomona	13. Santa Ana Watershed Project Authority
7. City of Riverside	

In 2011, MSAR Task Force members created the Comprehensive Bacteria Reduction Plan as

our plan to reduce bacterial indicators. To better understand the origins of bacterial indicators in the Santa Ana River, stakeholders sampled 34 locations throughout the watershed with eight of those being located with the City of Riverside. Of those eight, four had no dry weather flows during the sampling period, three were classified as low priority (Phoenix, Magnolia Center, and Tequesquite Channel storm drains), and one as high priority (Hole Lake).

Since then, the City has participated in additional monitoring programs, investigated causes, and made efforts to eliminate sources. Questions of whether sources were controllable (e.g human origin) or uncontrollable (e.g. native animal origin) have led to photographic surveillance, special studies, and DNA analysis of urban runoff. In addition, contributions of bacterial indicators from homeless populations have been questioned and investigated. Throughout the watershed, stakeholder efforts have yielded moderate success but exceedances in the Santa Ana River persist. Within the past five years, costs associated with the Task Force have averaged approximately $14,500 annually with a high of $23,224 in FY15/16.

Middle Santa Ana River Bacteria TMDL – Arlington Greenbelt Area

Among the areas investigated by the City and the MSAR Task Force is the Arlington Greenbelt area. This area produces significant water runoff from flows related to agricultural activities. Much of these flows eventually make their way to Hole Lake, which has was deemed a High Priority site. Monitoring performed in the Arlington Greenbelt area has shown sporadic exceedances in bacterial indicators from one location to another with no discernable pattern or origin. This is a recurring theme in monitoring events experienced by many of the stakeholders throughout the watershed. In one location, there may be no detection of bacterial indicators, but a couple hundred feet downstream, there may be excessive levels with no visible reason for the variance.

For the Arlington Greenbelt area specifically, the City lacks legal jurisdiction over discharges from agricultural activities. The City and MSAR Task Force have conducted monitoring studies of these areas to understand sources of bacterial indicators and how they can be controlled in our local area.

Middle Santa Ana River Bacteria TMDL Audit

Between January and May of 2018, Regional Water Board staff conducted an audit of the MSAR Task Force and stakeholders' efforts to implement measures to identify and eliminate sources of bacteria. In particular, the audit focused on homeless encampments, their potential as a source of bacterial indicators, and actions taken to mitigate the water quality impacts originating from them. The Regional Board produced an audit report and stated they found no violations. They suggested each stakeholder should improve their internal coordination and communication between departments with respect to activities involving homeless encampments. In addition, they suggested that policies and procedures to address homeless encampments should be written, documented, and included in the implementation plans addressing water quality.

Potential Future Actions for the Middle Santa Ana River Bacteria TMDL

While reductions in bacterial indicators have been achieved over the years, there is still non-compliance with the bacterial indicator TMDL objectives throughout the watershed. In conversations with Regional Board staff, they have stated their expectation that the City have a plan of action going forward. The principal options available to the City are as follows:

1. Increased Monitoring and Source Elimination – Continuous monitoring and tracking of bacterial indicators to find sources and eliminate them.

2. Dry Weather Runoff Diversion to the Sanitary Sewer – Diverting dry weather runoff flows to the sanitary sewer system where they will travel to the City's Regional Water Quality Control Plant, be treated, and go out as plant effluent or used as recycled water. The City is currently working on such a project with the Riverside County Flood Control and Water Conservation District for the Phoenix Storm Drain. This project is currently in preliminary design stages. Other potential diversion locations include Hole Lake, Magnolia Center, and Tequesquite Channel.

3. Capture of Dry Weather Flows – Capturing dry weather runoff flows and retaining them in retention basins. Retrofitting of existing basins is being evaluated, but many of the basins being looked at are too upstream of the sites of interest. Creation of new basins would require having available land.

FISCAL IMPACT:

There is no fiscal impact associated with receiving and filing this report. Costs associated with implementation of any discussed future actions will be evaluated and presented as part of the budget process.

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Attachments: Presentation