

CITY OF **Reno**

Stormwater Funding Feasibility

Report / June 23, 2019





Ms. Kerri Lanza
Engineering Manager
City of Reno
1 East First Street
2nd Floor
Reno, NV 91362

Subject: Stormwater Feasibility Study Report

Dear Ms. Lanza,

Raftelis is pleased to provide this Stormwater Funding Feasibility Report containing our findings and recommendations for consideration by the City of Reno (City).

With respect to this project, the City is interested in the potential to form a stormwater utility to provide a predictable and sustainable stormwater funding source that is equitable to customers. The City engaged Raftelis to study the feasibility of the funding approach and to develop recommendations on a path forward. The process and results of our analysis and discussion are contained within this report.

It has been a pleasure working with you, and we thank you and City staff for the support provided during this study. We look forward to continuing to assist the City.

Sincerely,
RAFTELIS

Henrietta Locklear
Vice President

Katie Cromwell
Senior Consultant

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1. Executive Summary

1.1. Overview

The City of Reno (City) does not currently have a dedicated funding source for stormwater needs and has been funding and fulfilling stormwater infrastructure needs using multiple revenue sources. With respect to this, the City is interested in the potential to form a stormwater utility and implement a stormwater fee to provide a predictable and sustainable stormwater funding source that is equitable to customers. The City engaged Raftelis and Tri Sage Consulting to study the feasibility of the stormwater funding approach and to develop recommendations on a path forward. Based on Raftelis' study, a stormwater fee is feasible to implement to provide equitable, predictable, and sustainable funding for the stormwater program.

Raftelis completed several major tasks to assess the feasibility of a fee funding method for the City, and the process Raftelis followed and outcomes of the assessment are described in this feasibility report. They are:

- Program planning – collecting data on **the current level of service** and costs and projecting future costs and revenue requirements based on **future desired levels of service**. This assessment included developing **future costs for program administration** for a fee-funded program.
- Financial planning and modeling – developing and delivering a **financial plan and financial planning model** for use in assessing funding feasibility and for use by the City in future planning efforts.
- Rate structure and revenue generation assessment – developing an **estimate of revenue generation potential** under **alternative rate structures**, with a focus on an **impervious area rate structure**. The team developed impervious area data for a sample of single family residential properties so that a unit of charge – the equivalent residential unit (ERU) was determined. Raftelis also sampled a small subset of commercial, institutional, industrial, and multi-family properties so that the impacts upon sample properties could be assessed. Finally, Raftelis developed an estimate of the total impervious area in the City so that an estimated rate to fund the program plan could be generated. Raftelis then developed estimated rates.
- Peer cities comparison – surveying a group of peer cities as to their rate structures and rates, for which the results of the feasibility study can be assessed
- Recommendations and next steps – developing recommendations for the City on pursuing a funding strategy

1.2. Results

Based on the stormwater program needs and costs evaluation, approximately \$6.4 Million per year is needed in both the short term and over the next five to seven years to accomplish regular operations and maintenance, improvements to the stormwater system, flood alleviation, water quality controls, administration, and operating and emergency reserve funds. Several funding scenarios were assessed, the details of which are found in Appendix B.

The industry best practice is a rate structure of measured impervious area, and the vast majority (92%) of utilities use actual and/or effective impervious area as the basis of stormwater fees. Implementation of a stormwater fee

based on impervious area is a fair, equitable, and legally defensible stormwater rate structure. To fund the projected program, under a measured impervious area-based rate structure, Raftelis estimates rates between \$8.00 and \$10.00 per month for a typical single family house. Fees for non-single family residential properties such as commercial, industrial, institutional, and multi-family properties would be proportionally higher. Their fees would be calculated per equivalent residential unit (ERU) or part thereof. An ERU is equal to 3,536 square feet of impervious area. The rates will vary based on the capital funding scenario selected and whether additional stormwater program costs are captured in the revenue requirements. Typically, we also recommend that rates be smoothed and set as a flat rate for several years to allow customers to become accustomed to the new fee and to ensure a stable, sufficient revenue stream. Under the capital funding scenario of 100% of capital funded over 20 years using a mix of debt and pay go we estimate a five-year rate of \$8.00 to 10.00 per ERU per month. This rate incorporates inflation as well as anticipated collection rates. An assumption inherent in the rate is that the City would not exempt impervious area for selected entities like schools or non-profits, which is the most equitable approach. The rate also incorporates the assumption that the City would not charge itself or other agencies for public roadway impervious area, which functions as an integral part of the drainage system.

To better understand how the rates and rate structures being considered in this study align with other peer cities and utilities, the Raftelis team, working with the City, identified 14 peer utilities to compare rates and rate structures. The 14 peer utilities include the City of Sparks and Carson City in northern Nevada as well as other utilities located in the western portion of the country. The peer utilities selected represent a variety of rate structures. Within Nevada and among some of the older, most western jurisdictions selected for the comparison, we found rate structures for non-single family residential properties that are not based on measured impervious area, but rather sewer consumption, estimated impervious area based on land use, or floor space. It should be noted that the vast majority of utilities use actual and/or effective impervious area as the basis of stormwater fees. Comparing potential rates and rate structures against peer cities and utilities shows that the rates being considered are reasonable.

If the City decides to move forward with the fee, we recommend several next steps including defining the rate structure details, development of impervious area data, linking the stormwater billing data to the sewer billing system, and establishing enterprise and rate ordinances as necessary. In addition, updated stormwater financial data is currently being refined by the City and we would recommend updating the financial plan with this information once it becomes available.

2. Program Planning

The City of Reno does not currently have a dedicated funding source for stormwater needs and has been funding and fulfilling stormwater infrastructure using multiple revenue sources. Stormwater services are primarily contained under the Public Works Department (Maintenance and Operations Section and Engineering Section), Parks Maintenance Division, Community Development, and other supporting departments. Funding for these departments comes from multiple revenue sources. The Public Works Maintenance Division and Environmental Services Division together had almost \$2.4 Million in stormwater costs in fiscal year 2019. Activities such as catch basin cleaning, storm drain cleaning using vactor equipment, and annual illicit discharge inspections were performed by these two divisions. The multiple source of funding for Public Works went towards a variety of stormwater services and activities within the department. Because of competing department and fund priorities, stormwater funding has varied from year to year. In recent years, stormwater funding has ranged from approximately \$2.8 Million to \$3.4 Million annually, with at least one year of higher funding levels.

To evaluate funding feasibility, it is important to understand the revenue requirements for the stormwater program over a longer horizon. For the purposes of this study, a ten-year planning period was considered. This medium view horizon for the planning period allows the City a reasonable amount of time to address the current operational needs of the City, as well as some of the current and future capital needs.

Based on discussions with City staff, the stormwater program needs can be grouped into operations and maintenance, National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit requirements, capital needs, and program administration. The future stormwater program plan developed by Raftelis factors in reserve funding to ensure that the City can meet emergency stormwater (SW) capital needs.

2.1. Operations and Maintenance

As part of current operations and maintenance for the stormwater system, the City provides inlet and catch basin cleaning, and maintenance of drainage conveyances. The City also provides snow removal and winter maintenance services and street sweeping services, but these costs are allocated to street maintenance and not to the stormwater program. Street sweeping costs were about \$464,000 in FY 2016-2017 and snow removal and winter maintenance were about \$141,000 in FY 2016-2017. Practices among stormwater utilities with regard to allocating street sweeping and snow removal costs vary: while many allocate the costs to the stormwater program, it is not a universal practice.

Stormwater operations expenses pulled from budget documents provided by the City¹ are as follows:

The bulk of stormwater operations and maintenance activities centers on catch basin cleaning and maintenance of drainage conveyances. For the maintenance of catch basins, approximately 7,300 hours of staff time during FY 2016-2017 was spent on cleaning catch basins, detention basins, and other stormwater catchments and facilities. Staff time as well as maintenance to storm drain cleaning equipment was estimated at \$859,000 in FY2016-2017. The cleaning of stormwater conveyances includes staff time to clear drainage ditches, spray herbicides to remove noxious weeds, and the use of vactor trucks to clean drainage conveyances. The costs associated with drainage conveyance maintenance was about \$829,000 in FY 2016-2017.

Miscellaneous costs under \$1,000 are also allocated to stormwater under the operations and maintenance category. These costs are associated with irregular or unanticipated activities required for permit compliance.

Having a dedicated stormwater fund would allow the City to more effectively address stormwater operations and maintenance and capital needs. The City would be able to better schedule and consistently address maintenance issues. Many stormwater capital projects require several years for planning and funding to properly execute. Having a dedicated funding source would allow the City to effectively plan and complete these essential capital projects. Should the City move forward with a stormwater utility, as the utility matures, the City may consider expanding its operations and maintenance services under an increased level of service, or as may be required in the future pending NPDES MS4 permit revisions.

¹ Source: Stormwater Operation Expenses.xlsx – received August 20,2018

2.2. NPDES MS4 Permit

The City of Reno is a co-permittee and program manager of the Truckee Meadows Municipal Separate Storm Sewer (MS4) permit (NVS000001) issued by the State of Nevada jointly to the City of Reno, City of Sparks, and Washoe County. The agencies manage and address these responsibilities by way of an Interlocal Agreement forming the Truckee Meadows Stormwater Permit Coordinating Committee. The MS4 permit was issued in 2010 and expired in 2015. However, the permit has been administratively continued until a new MS4 permit can be written by the State agency. The City is still currently subject to all the requirements of the 2010 issued permit.

In accordance with the MS4 permit, the permittees developed the Truckee Meadows Storm Water Management Program (SWMP) which documents the stormwater related activities to be completed to maintain compliance with the MS4 permit. The SWMP was last updated in 2014 and guides the MS4 related activities completed by the City of Reno as well as the other permittees.

Costs associated with this stormwater permit include activities associated with the illicit discharge detection and elimination (IDDE) program, best management practices trainings for staff, project designers, developers, and contractors as specified in the Storm Water Management Program (SWMP) and the permit, tracking of fertilizer and pesticide usage, construction inspections, post-construction best management practice (BMP) plan review and inspection, and public outreach and trainings. Below are the FY16-17 costs associated with the City's MS4 program:

- Construction Program inspections and enforcement - \$127,000
- Post-construction BMP Plan Review - \$425,000
- Community Trainings and Presentations - \$5,000
- BMP trainings – \$2,000
- BMPs (river clean up, leaf removal allocation, curb and gutter cleaning) - \$17,000
- Fertilizer tracking - \$1,000
- IDDE - \$427,000

Total costs for FY16-17 for the City's MS4 program were \$1,004,000. There is uncertainty in both the timing of the issuance of the new MS4 permit and the content of the permit. As the Environmental Protection Agency (EPA) provides guidance and/or rules to the state agency, the City could be subject to additional requirements that would increase stormwater expenses, or the permit could be very similar to the current permit. Two alternatives are presented here: one alternative where the new permit is largely similar to the current permit, and another alternative that has significantly more requirements than the current permit.

Under the alternative where the new permit is largely similar to the current permit, we expect that MS4 related expenses will be similar to the expenses presented above for FY16-17. Under the alternative where the new permit has more requirements than the current permit, we would expect an increase in costs associated with all aspects of the MS4 program. Typically, with a new permit, requirements associated with the construction program inspections and enforcement, IDDE requirements, and BMP maintenance increase the most. Under the assumption that the new MS4 permit is substantially different, we have assumed a scenario where costs may increase by twenty five percent. Total costs associated with a new MS4 permit with more requirements would be estimated at approximately \$1.3 Million annually.

2.3. Capital

The City has identified a number of high priority capital projects. In addition, the City has a list of projects identified through the Truckee River Flood Management Authority (TRFMA).

In November 2018, Washoe County voters rejected a proposed property tax increase that would be used to fund TRFMA projects. Without this additional designated funding source, the TRFMA is not able to complete the identified capital projects along the Truckee River. As a result, the City may pursue some of the TRFMA-identified projects that are located within the City using revenue generated from the stormwater fee. Not including projects identified by the TRFMA or professional fees, the City has approximately \$160 Million in capital project needs. TRFMA capital projects located within the City are estimated at \$127 Million. Total capital projects within the City are approximately \$287 Million.

Based on the list of priority projects including the TRFMA projects, several capital funding scenarios were developed. Under one capital funding scenario, the City would allocate \$2 Million annually to capital projects and will save up for more expensive capital projects. Under another scenario, the City would fully fund all of the identified capital projects over a 20-year time frame. Of the \$287 Million, about \$127 Million would be scheduled for completion within the financial planning period from FY2019 to FY2028.

Additional staff will be required to effectively manage and ensure the completion of these capital projects. The level of staffing required will depend on the capital funding level. The costs associated with this additional engineering staff include the following:

- Project coordinator – 1 FTE at \$155,000
- Senior Civil Engineer – 1 FTE at \$198,000 per year
- Associate Civil Engineer – 1 to 2 FTEs at \$180,000
- Engineering Technicians – 1 to 2 FTEs at \$120,000

The total additional engineering staffing costs are estimated at approximately \$335,000 to \$953,000 annually depending on the capital funding level.

Capital funding scenarios are shown in Appendix A.

2.4. Utility Administration

The creation of a new stormwater fee will necessitate new utility administration costs. To determine the scope and extent of these costs, Raftelis met with City staff to review billing options, technology and software systems currently being used, and desired staffing levels. Based on these discussions, the utility administration costs can be grouped into billing and technology, customer service staff, data maintenance staff, and imagery. In addition, the City would incur implementation costs if the City moves forward with a fee. The costs for the fee and implementation costs are described in Section 5.

2.4.1. BILLING AND TECHNOLOGY

The stormwater fee would have a monthly fee schedule, but it is currently envisioned that the stormwater fee would be incorporated into the sewer bill that is billed quarterly. The City currently uses the Tyler Technologies New World System for sewer billing. It is Raftelis' recommendation that the stormwater fee would be a parcel-

based fee and the appropriate stormwater fee associated with the parcel must be associated with the sewer account located on that property. In addition, there are some parcels that do not receive sewer service and would not have an existing sewer account but would be charged a stormwater fee based on the parcel's demand on the City's stormwater system. For these "stormwater only" accounts, a new account will have to be loaded into the billing system and account characteristics such as ownership and mailing address will have to be developed and maintained. It is expected that the City will need an additional one full time equivalent (FTE) to assist with billing and technology related activities.

2.4.2. CUSTOMER SERVICE STAFF

With the implementation of a stormwater fee, customers will have multiple questions and other issues related to the stormwater fee. Customers will have inquiries on how their stormwater fee was calculated and how their fee can be reduced, as well as communicating changes to their property. Customer service staff will need to be able to address these issues with customers and may need to communicate with data maintenance staff to make appropriate changes to the data. The number of stormwater fee related inquiries will be high during the first few billing cycles after the fee goes live and will then level off to a lower level of customer inquiries. To assist with customer service stormwater related activities, it is expected that the City will need one additional FTE.

2.4.3. DATA MAINTENANCE STAFF

As it pertains to the implementation of a stormwater utility, there are several additional data maintenance related activities associated with conveying an accurate and up-to-date stormwater fee. Geographic information system (GIS) data is a key component in maintaining the impervious area data used to charge a stormwater fee. Based on discussions with City staff, the City currently has limited resources that are devoted to GIS, and what capacity they do have is divided among different departments. It is anticipated that the City will need at least one FTE to maintain the GIS data required to support a stormwater fee.

Changes to data that must be kept up-to-date include changes to impervious area, parcel address and ownership information, aggregation of parcels, credits, and customer account related changes. Having in place a process for maintaining this data and tracking any changes to the data is essential to ensure accuracy and customer confidence in the billing.

This "data maintenance" FTE will be responsible for bulk data updates when new parcel data or imagery becomes available. In addition, this person will be responsible for updating data when new construction or tear downs occur. This person would also assist customer service staff with responding to customer inquiries.

2.4.4. IMAGERY

Currently, the City is predominantly using 2016 imagery for a variety of purposes, while some departments may be using earlier imagery for certain applications. As the most recent available data, 2016 imagery was used for this feasibility study to digitize the impervious area samples. To ensure that the City has accurate and up-to-date data for charging a stormwater fee, the City will need to have access to new imagery on a regular schedule. The City is currently a member of the Regional Basemap Committee. The Regional Basemap Committee recently issued a request for proposals for a multi-year contract to have imagery flown every two years. The next flight for imagery is scheduled for spring 2019 and would be available to the City in late 2019. The next flights are scheduled for 2021 and 2023. Having accurate and up-to-date imagery and impervious area data are essential to ensuring customer confidence in the fee. As a member of the Regional Basemap Committee, the City pays \$10,000 per year to get access to the aerial imagery. It should be noted that the \$10,000 per year only includes access to the imagery and

does not include the development of an impervious area layer, which would be an additional cost. After the initial development of the impervious area layer, updates to the impervious area layer can be targeted rather than development of a completely new layer with each new imagery dataset.

2.4.5. SUMMARY

The costs associated with billing and technology, customer service staff, data maintenance staff, and imagery include the following:

- Billing and technology -1 FTE at \$100,000 per year
- Customer service staff – 1 FTE at \$100,000 per year
- Data maintenance staff – 1 FTE at \$100,000 per year
- Imagery - \$10,000

Total administrative costs are estimated at approximately \$310,000 annually.

3. Funding Assessment

Based on the stormwater program needs and costs evaluation, approximately \$6.4 Million per year is needed in both the short term and over the next five to seven years to accomplish regular operations and maintenance, improvements to the stormwater system, flood alleviation, water quality controls, and a buildup of operating, capital, and emergency reserve funds.

As discussed in Section 2, all City stormwater management activities are paid through a combination of multiple revenue sources. To provide a dedicated and reliable source of funding, the City could enact a stormwater utility fee that would be charged to every property based on the contribution of the property relative to the demand it places on the stormwater system.

Under this construct, the City would charge a stormwater utility fee to each property based on the characteristic(s) of the property that drive(s) demand for stormwater management services. The most commonly used metric to determine stormwater fees in the industry is impervious area.² Across the Country, stormwater utilities overwhelmingly use impervious area as the basis for stormwater fees.

Impervious surfaces are those covered by a hard material through which rainwater cannot pass, such as buildings and parking lots. The amount of impervious surface on a parcel is directly related to the quantity of stormwater to be handled by the drainage system. For bare soil and vegetated ground cover, some water will infiltrate into the ground—even during heavy rain—rather than run across the surface. For impervious surfaces, on the other hand, water cannot infiltrate into the ground, which causes the peak volume of runoff from a parcel of land to be higher than it would otherwise. Regardless of how the land is managed, runoff tends to gather nutrients and other potential pollutants. Because virtually none of this runoff (and the pollutants it carries) soaks into the ground, runoff from impervious surfaces direct a greater volume of harmful materials toward receiving waterbodies than do pervious surfaces.

² Black & Veatch Management Consulting, 2018 Stormwater Utility Study.
<https://www.bv.com/sites/default/files/18%20Stormwater%20Utility%20Survey%20Report%20WEB.pdf>

Gross area, or lot size, is another basis for a stormwater fee that some utilities consider. However, in most cases gross area is only considered as one component of a multi-component rate structure. For example, some utilities may have a rate structure that has an impervious area component as well as a gross area component with stormwater costs allocated to each component based on the driver for the cost. Gross area has the advantage of being easier to calculate and easier to maintain than impervious area since that information is already maintained for taxation purposes. As opposed to impervious area, gross area land area contributes proportionately more to water quality concerns and pollutants that stormwater runoff may pick up and less to the sheer volume of runoff to be managed. As a result, gross area is typically used as a rate structure component in more rural areas where water quality concerns are the primary driver behind the creation of the stormwater utility. As a standalone rate structure, gross area is rarely used and is not as legally defensible since the nexus between gross area and stormwater costs is relatively weak for many cost drivers compared with impervious area.

Because the City of Reno is an urban environment and water quantity and impervious surface are the main drivers for many stormwater program costs, the measured area of impervious surface on a parcel is recommended to be the foundation of the rate structure.

An impervious area-based fee is a fairer way to fund stormwater costs than either a sewer fee or property tax because properties pay based on the demand upon the stormwater system. Assessed value of a tax parcel does not reliably indicate how much stormwater it creates. Likewise, tax exempt parcels contribute to stormwater runoff, but typically do not pay property taxes into General Fund revenues. Likewise, sewer use does not correlate to impervious area. As the starkest example, a parking lot parcel that is nearly covered in impervious area may have no sewer consumptive use at all and thus contributes nothing to defraying stormwater costs (if they are paid for through sewer fees). Unlike property taxes or sewer fees, a stormwater utility fee would be assessed on every property with impervious surface in the City including government buildings, schools, churches and non-profits. This is best practice among stormwater utilities and aligns with the principles used by other utilities like the City's sewer utility fee, where users of all types pay. At times, stormwater utilities have incorporated exemptions for various types of properties into their rate structures owing to local circumstances. These exemptions might even be mandated by state enabling legislation or local charter requirements in some cities. Exemptions, however, generally weaken the nexus between customer demand for service and stormwater utility fees and may provide an opening for legal challenges to the fee.

One segment of impervious area that is often excluded from stormwater fees is public road impervious area. Public roads are excluded from the fee on the basis that they are designed, operated and maintained to convey stormwater and thus function as an integral component of the stormwater conveyance system. Public road design specifications generally require that the roads, curb and gutter be designed to carry a minimum amount of stormwater. Although a number of older, eastern US stormwater utilities included charges for public roads within their rate structures and generally reimbursed themselves for the charges through interfund transfers, this practice has fallen off in recent years. Few new utilities established over the past 10 years charge fees for public roads to themselves or other agencies and some older utilities that originally charged themselves for public roads have abandoned the practice.

Based on the outcome of the units of service estimate described below and the assumptions about exemptions described in this section, Raftelis developed draft rates between \$3.80 and \$12.95 per month for a typical single family house, or per ERU or part thereof for non-residential properties (an ERU is equal to 3,536 square feet of impervious area). The rates will vary based on the capital funding scenario selected and whether additional stormwater program costs are captured in the revenue requirements. Typically, we also recommend that rates be smoothed and set as a flat rate for several years to allow customers to become accustomed to the new fee and to ensure a stable, sufficient revenue stream. Under the capital funding scenario of 100% of capital funded over 20

years using a mix of debt and pay go we would recommend a five-year rate of between \$8.00 and \$10.00 per ERU per month. This rate incorporates inflation as well as anticipated collection rates.

Raftelis developed three other scenarios. The four scenarios and their rate ranges are:

- Scenario 1a: \$2M Capital funding per year and no significant additional MS4 costs
 - 5-year rate held steady at between \$3 and 4/per ERU per month
- Scenario 1b: \$2M Capital funding per year plus additional MS4 costs
 - 5-year rate held steady at between \$3.25 and 4.25/per ERU per month
- Scenario 2a: 100% of Capital funded over 25 years using pay go and no significant additional MS4 costs
 - Initial 5-year rate held steady at between \$8 and 9/per ERU month and
 - A second 5-year rate (years 6-10 of the program) held steady at between \$10 and 11 per ERU per month
- Scenario 2b: 100% of Capital funded over 25 years using pay go plus additional MS4 costs
 - Initial 5-year rate held steady at between \$8.25 and 9.25/per ERU month and
 - A second 5-year rate (years 6-10 of the program) held steady at between \$10.25 and 11.25 per ERU per month
- Scenario 3a: 100% of Capital funded over 20 years using a mix of debt and pay go and no significant additional MS4 costs
 - Initial 5-year rate held steady at between \$7 and 8/per ERU month and
 - A second 5-year rate (years 6-10 of the program) held steady at between \$12 and 13 per ERU per month
- Scenario 3b: 100% of Capital funded over 20 years using a mix of debt and pay go plus additional MS4 costs
 - Initial 5-year rate held steady at between \$7.25 and 8.25/per ERU month and
 - A second 5-year rate (years 6-10 of the program) held steady at between \$12.25 and 13.25 per ERU per month

Financial planning tables and rate calculations are provided in Appendix B.

4. Units of Service Estimate: developing impervious area data

4.1. Units of Service Estimation Process

As referenced in Section 3 above, stormwater rate structures commonly rely directly or indirectly on impervious surface for all or most rate components. The most common stormwater rate structure is an impervious area rate structure, with the units of charge being equivalent residential units, or ERUs. The Raftelis project team set out to estimate the units of service for this type of rate structure recognizing other options likely would relate to it.

To estimate the units of service that could support various potential stormwater rate structures, GIS data were utilized: parcel polygons and imagery data. A two-pronged approach was used to estimate impervious area and

units of service. Units of service and impervious area for non-single family residential properties were estimated using a visual approach while single family residential parcels were estimated by digitizing a sample of properties. Because single family residential properties are usually homogenous in their development patterns, splitting the approach into single family residential and non-single family residential, which includes multi-family, industrial, commercial, non-profits, schools, etc., is appropriate.

Property Type codes were utilized to identify the single family residential parcels and non-single family residential parcels.

To complete the estimate of non-single family residential units of service, a grid containing 500 cells was overlaid on the City parcels. Each grid cell was 9,000,000 square feet. Single family residential parcels and roads were blacked-out and the non-single family residential parcels remained visible. Then the percentage of impervious area visible within the grid cells was estimated. The estimate was performed by two individuals independently and the values for each of the grid cells were compared. An additional estimate was performed for all grid cells where the estimate differed by more than 11%. The percentage of non-single family residential impervious area was averaged for each of the grid cells. Figure 1 and 2 below shows City imagery and parcels with the grid overlay, with single family residential parcels and streets blocked-out.

Figure 1: City Imagery and Parcels with Grid Overlay

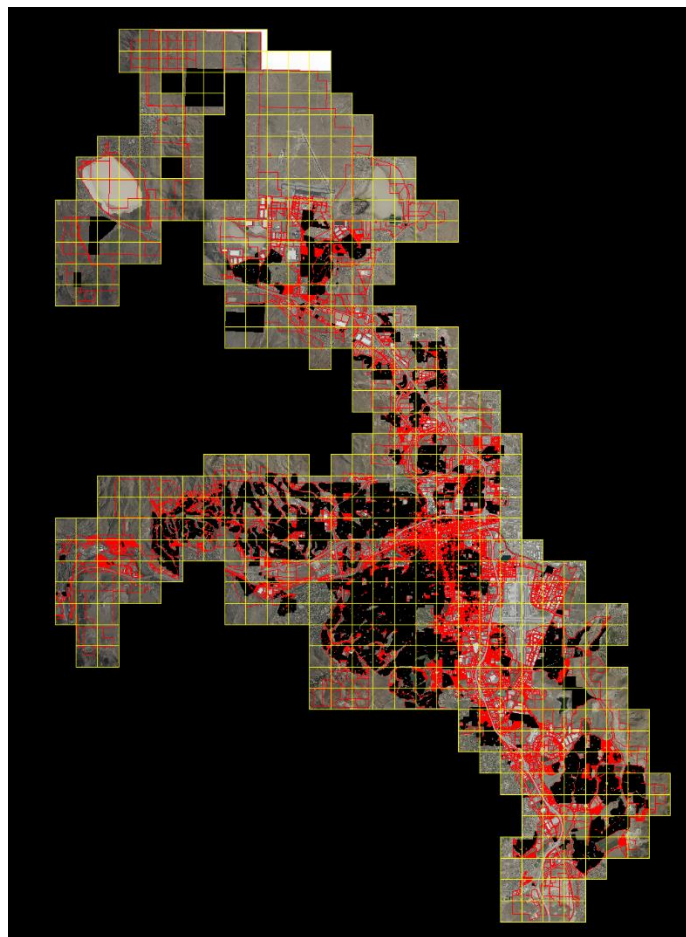
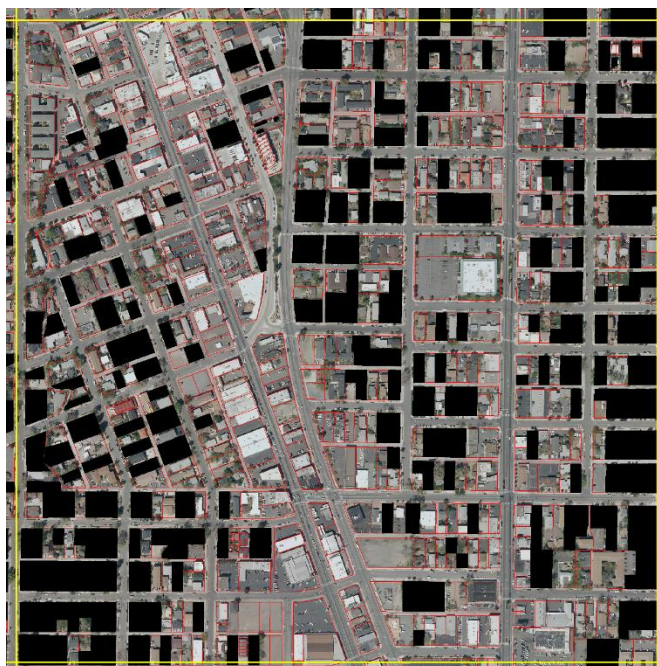


Figure 2: Single Grid Square with Parcels and Imagery



Many utilities implement a simplified charge or set of charges for all single family residential customers. Single family residential land parcels have similar characteristics, lending themselves to a simplified rate structure. They are also numerous and so it is also efficient, from an administrative viewpoint, to treat them the same. Since it is both equitable and efficient, many utilities adopt a single flat rate or a series of tiered rates for this property class. Under a flat residential rate, customers are charged the same amount regardless of size and amount of impervious area on an individual property. Typically, under this structure each single family residential property is charged for 1 equivalent residential unit (ERU), the amount of impervious area on a typical single family residential parcel.

To determine the ERU value and then determine the total ERUs, impervious area was measured for a sample of single family residential parcels. Impervious area was measured for a total of 400 single family residential parcels. Consideration was given to ensuring that single family residential parcels were sampled from a variety of locations in the City and that the sample encompassed different age of housing and thus, housing types represented in the City.

4.2. Units of Service Estimation Results

Using the visual estimation technique described above, impervious area in the City for non-single family residential parcels, which includes multi-family, industrial, commercial, schools, non-profits, etc., was estimated between 376 and 407 Million square feet. To further support the non-single family residential impervious area estimate and to better understand the potential impact of a stormwater fee on some of the large stakeholders, a sample of 10 multi-family parcels, 4 commercial/industrial parcels, 3 government parcels, and 5 institutional parcels were also digitized. Figures 3, 4, 5, and 6 below show a digitized multi-family parcel, commercial/industrial parcel, government parcel, and institutional parcel. The fee ranges for these properties and for the others sampled are provided in Table 1. Properties will experience widely varying impacts from the fee. As an example, Reno High School, which has about 280 times as much impervious area as a single family residential property, would have a

fee of about \$850 dollars a month under a \$3/per ERU rate, and a fee of over \$3,000 dollar a month under an \$11/per ERU rate. Our Lady of the Snows church, which has about 20 times as much impervious area as a typical single family residential property, would have a fee of about \$60 a month under a \$3/per ERU rate and a fee of over \$220 per month under an \$11/per ERU rate.

Figure 3: Impervious Area for a Multi-Family Property – 2141 Centennial Way



Figure 4: Impervious Area for a Commercial/Industrial Property – Smart Foodservice Warehouse Stores



Figure 5: Impervious Area for a Government Property – Reno Police Department



Figure 6: Impervious Area for an Institutional Property – Our Lady of the Snows Catholic Church

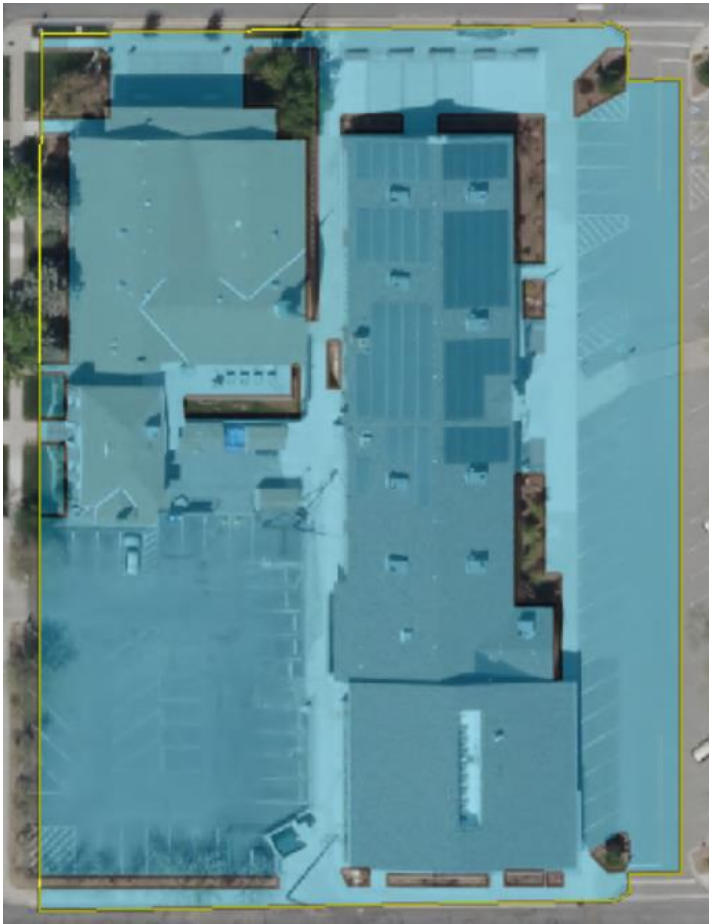


Table 1. Monthly Fee Ranges for Sampled Non-Single Family Residential Parcels

Property	Property Type	Impervious Area	ERUs	Scenario 1a, \$2M Capital/yr	Scenario 1b, \$2M Capital/yr + MS4 cost increase	Scenario 2a, 25 year Capital years 1-5	Scenario 2a, 25 year Capital, years 6-10	Scenario 2b, 25 year Capital + MS4 cost increase, years 1-5	Scenario 2b, 25 year Capital + MS4 cost increase, years 6-10	Scenario 3a, 20 year Capital, some debt, years 1-5	Scenario 3a, 20 year Capital, some debt, years 6-10	Scenario 3b, 20 year Capital, some debt + MS4 cost increase years 1-5	Scenario 3b, 20 year Capital, some debt + MS4 cost increase years 6-10		
				Rate Range	Rate Range	Rate Range	Rate Range	Rate Range	Rate Range	Rate Range	Rate Range	Rate Range	Rate Range	Rate Range	Rate Range
				\$3-4	\$3.25-4.25	\$8-9	\$10-11	\$8.25-9.25	\$10.25-11.25	\$7-8	\$12-13	\$7.25-8.25	\$12.25-13.25		
Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range		
All Points Towing	Commercial/Industrial	84,450	24	\$72 - \$96	\$78 - \$102	\$192 - \$216	\$240 - \$264	\$198 - \$222	\$246 - \$270	\$168 - \$192	\$288 - \$312	\$174 - \$198	\$294 - \$318		
Smart Foodservice Warehouse Stores	Commercial/Industrial	54,223	16	\$48 - \$64	\$52 - \$68	\$128 - \$144	\$160 - \$176	\$132 - \$148	\$164 - \$180	\$112 - \$128	\$192 - \$208	\$116 - \$132	\$196 - \$212		
Econo Lodge Near Reno-Sparks Convention Center	Commercial/Industrial	109,209	31	\$93 - \$124	\$100.75 - \$131.75	\$248 - \$279	\$310 - \$341	\$255.75 - \$286.75	\$317.75 - \$348.75	\$217 - \$248	\$372 - \$403	\$225 - \$256	\$380 - \$411		
Target Shopping Center	Commercial/Industrial	1,057,571	300	\$ 900 - \$ 1200	\$ 975 - \$ 1275	\$ 2400 - \$ 2700	\$ 3000 - \$ 3300	\$ 2475 - \$ 2775	\$ 3075 - \$ 3375	\$ 2,100 - \$ 2,400	\$ 3600 - \$ 3900	\$ 2175 - \$ 2475	\$ 3675 - \$ 3975		
Delicchi Lane Apartment	Multifamily	144,943	41	\$123 - \$164	\$133.25 - \$174.25	\$328 - \$369	\$410 - \$451	\$338.25 - \$379.25	\$420.25 - \$461.25	\$287 - \$328	\$492 - \$533	\$297.25 - \$338.25	\$502.25 - \$543.25		
Mobile Home Park - 2725 Lietzke Lane	Multifamily	152,507	44	\$132 - \$176	\$143 - \$187	\$352 - \$396	\$440 - \$484	\$363 - \$407	\$451 - \$495	\$308 - \$352	\$528 - \$572	\$319 - \$363	\$539 - \$583		

Property	Property Type	Impervious Area	ERUs	Scenario									
				Scenario 1a, \$2M Capital/yr	Scenario 1b, \$2M Capital/yr + MS4 cost increase	Scenario 2a, 25 year Capital years 1-5	Scenario 2a, 25 year Capital, years 6-10	Scenario 2b, 25 year Capital + MS4 cost increase, years 1-5	Scenario 2b, 25 year Capital + MS4 cost increase, years 6-10	Scenario 3a, 20 year Capital, some debt, years 1-5	Scenario 3a, 20 year Capital, some debt, years 6-10	Scenario 3b, 20 year Capital, some debt + MS4 cost increase years 1-5	Scenario 3b, 20 year Capital, some debt + MS4 cost increase years 6-10
				Rate Range	Rate Range	Rate Range	Rate Range	Rate Range	Rate Range	Rate Range	Rate Range	Rate Range	Rate Range
				\$3-4	\$3.25-4.25	\$8-9	\$10-11	\$8.25-9.25	\$10.25-11.25	\$7-8	\$12-13	\$7.25-8.25	\$12.25-13.25
Property	Property Type	Impervious Area	ERUs	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range
Multifamily 5 to 9 Units - 249 Linden Street	Multifamily	11,398	4	\$12 - \$16	\$13 - \$17	\$32 - \$36	\$40 - \$44	\$33 - \$37	\$41 - \$45	\$28 - \$32	\$48 - \$52	\$29 - \$33	\$49 - \$53
Multifamily 10 or more Units - 810 Mill Street	Multifamily	5,399	2	\$6 - \$8	\$6.50 - \$8.50	\$16 - \$18	\$20 - \$22	\$16.50 - \$18.50	\$20.50 - \$22.50	\$14 - \$16	\$24 - \$26	\$14.50 - \$16.50	\$24.50 - \$26.50
Multifamily 3 or 4 Units - 776 Aitken Street	Multifamily	3,157	1	\$3 - \$4	\$3.25 - \$4.25	\$8 - \$9	\$10 - \$11	\$8.25 - \$9.25	\$10.25 - \$11.25	\$7 - \$8	\$12 - \$13	\$7.25 - \$8.25	\$12.25 - \$13.25
Clearacre Garden 2 - 3900 Clear Acre Lane	Multifamily	122,999	35	\$105 - \$140	\$113.75 - \$148.75	\$280 - \$315	\$350 - \$385	\$288.75 - \$323.75	\$358.75 - \$393.75	\$245 - \$280	\$420 - \$455	\$253.75 - \$288.75	\$428.75 - \$463.75
Multifamily 10 or more Units - 2141 Centennial Way	Multifamily	62,677	18	\$54 - \$72	\$58.50 - \$76.50	\$144 - \$162	\$180 - \$198	\$148.50 - \$166.50	\$184.50 - \$202.50	\$126 - \$144	\$216 - \$234	\$130.50 - \$148.50	\$220.50 - \$238.50
Multifamily 10 or more units - 4050 Baker Lane	Multifamily	282,674	80	\$240 - \$320	\$260 - \$340	\$640 - \$720	\$800 - \$880	\$660 - \$740	\$820 - \$900	\$560 - \$640	\$960 - \$1,040	\$580 - \$660	\$980 - \$1,060

Property	Property Type	Impervious Area	ERUs	Scenario									
				Scenario 1a, \$2M Capital/yr	Scenario 1b, \$2M Capital/yr + MS4 cost increase	Scenario 2a, 25 year Capital years 1-5	Scenario 2a, 25 year Capital, years 6-10	Scenario 2b, 25 year Capital + MS4 cost increase, years 1-5	Scenario 2b, 25 year Capital + MS4 cost increase, years 6-10	Scenario 3a, 20 year Capital, some debt, years 1-5	Scenario 3a, 20 year Capital, some debt, years 6-10	Scenario 3b, 20 year Capital, some debt + MS4 cost increase years 1-5	Scenario 3b, 20 year Capital, some debt + MS4 cost increase years 6-10
				Rate Range	Rate Range	Rate Range	Rate Range	Rate Range	Rate Range	Rate Range	Rate Range	Rate Range	Rate Range
				\$3-4	\$3.25-4.25	\$8-9	\$10-11	\$8.25-9.25	\$10.25-11.25	\$7-8	\$12-13	\$7.25-8.25	\$12.25-13.25
Property	Property Type	Impervious Area	ERUs	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range
Multifamily 3 to 4 Units - 2520 Comstock Drive	Multifamily	8,990	3	\$9 - \$12	\$9.75 - \$12.75	\$24 - \$27	\$30 - \$33	\$24.75 - \$27.75	\$30.75 - \$33.75	\$21 - \$24	\$36 - \$39	\$21.75 - \$24.75	\$36.75 - \$39.75
Multifamily 5 to 9 Units - 645 Sadleir Way	Multifamily	19,139	6	\$18 - \$24	\$19.50 - \$25.50	\$48 - \$54	\$60 - \$66	\$49.50 - \$55.50	\$61.50 - \$67.50	\$42 - \$48	\$72 - \$78	\$43.50 - \$49.50	\$73.50 - \$79.50
Our Lady of the Snows Catholic Church	Institutional	73,199	21	\$63 - \$84	\$68.25 - \$89.25	\$168 - \$189	\$210 - \$231	\$173.25 - \$194.25	\$215.25 - \$236.25	\$147 - \$168	\$252 - \$273	\$152.25 - \$173.25	\$257.25 - \$278.25
Renown Regional Medical Center	Institutional	1,036,851	294	\$882 - \$1176	\$955.50 - \$1249.50	\$2352 - \$2646	\$2940 - \$3234	\$2425.50 - \$2719.50	\$3013.50 - \$3307.50	\$2058 - \$2352	\$3528 - \$3822	\$2131.50 - \$2425.50	\$3601.50 - \$3895.50
Reno High School	Institutional	995,624	282	\$846 - \$1128	\$916.50 - \$1198.50	\$2256 - \$2538	\$2820 - \$3102	\$2326.50 - \$2608.50	\$2890.50 - \$3172.50	\$1974 - \$2256	\$3,384 - \$3666	\$2044.50 - \$2326.50	\$3454.50 - \$3736.50
O'Brien Middle School	Institutional	539,338	153	\$ 459 - \$ 612	\$ 497.25 - \$ 650.25	\$ 1224 - \$ 1377	\$ 1530 - \$ 1683	\$ 1262.25 - \$ 1415.25	\$ 1568.25 - \$ 1721.25	\$ 1071 - \$ 1224	\$ 1836 - \$ 1989	\$ 1109.25 - \$ 1262.25	\$ 1874.25 - \$ 2027.25
Dodson Elementary School	Institutional	130,846	37	\$ 111 - \$ 148	\$ 120.25 - \$ 157.25	\$ 296 - \$ 333	\$ 370 - \$ 407	\$ 305.25 - \$ 342.25	\$ 379.25 - \$ 416.25	\$ 259 - \$ 296	\$ 444 - \$ 481	\$ 268.25 - \$ 305.25	\$ 453.25 - \$ 490.25

				Scenario 1a, \$2M Capital/yr	Scenario 1b, \$2M Capital/yr + MS4 cost increase	Scenario 2a, 25 year Capital years 1-5	Scenario 2a, 25 year Capital, years 6-10	Scenario 2b, 25 year Capital + MS4 cost increase, years 1-5	Scenario 2b, 25 year Capital + MS4 cost increase, years 6-10	Scenario 3a, 20 year Capital, some debt, years 1-5	Scenario 3a, 20 year Capital, some debt, years 6-10	Scenario 3b, 20 year Capital, some debt + MS4 cost increase years 1-5	Scenario 3b, 20 year Capital, some debt + MS4 cost increase years 6-10
				Rate Range	Rate Range	Rate Range	Rate Range	Rate Range	Rate Range	Rate Range	Rate Range	Rate Range	Rate Range
				\$3-4	\$3.25-4.25	\$8-9	\$10-11	\$8.25-9.25	\$10.25-11.25	\$7-8	\$12-13	\$7.25-8.25	\$12.25-13.25
Property	Property Type	Impervious Area	ERUs	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range	Parcel Fee Range
Reno Events Center	Government	119,506	34	\$102 - \$136	\$110.50 - \$144.50	\$272 - \$306	\$340 - \$374	\$280.50 - \$314.50	\$348.50 - \$382.50	\$238 - \$272	\$408 - \$442	\$246.50 - \$280.50	\$416.50 - \$450.50
Reno Police Department	Government	88,944	26	\$78 - \$104	\$84.50 - \$110.50	\$208 - \$234	\$260 - \$286	\$214.50 - \$240.50	\$266.50 - \$292.50	\$182 - \$208	\$312 - \$338	\$188.50 - \$214.50	\$318.50 - \$344.50
McKinley Arts and Cultural Center	Government	80,374	23	\$69 - \$92	\$74.75 - \$97.75	\$184 - \$207	\$230 - \$253	\$189.75 - \$212.75	\$235.75 - \$258.75	\$161 - \$184	\$276 - \$299	\$166.75 - \$189.75	\$281.75 - \$304.75

For the single family residential sample of digitized parcels, a frequency distribution and summary statistics were developed. Figure 7 below shows the frequency distribution of impervious area for the 400 sampled single family residential properties. Table 1 below shows the summary statistics for the sampled single family residential properties. The median impervious area for the single family residential parcels sampled was 3,536 square feet and that value was used as the ERU for the units of service and rate estimates that follow.

Figure 7: Frequency Distribution of Impervious Area for Sampled Single Family Residential Properties

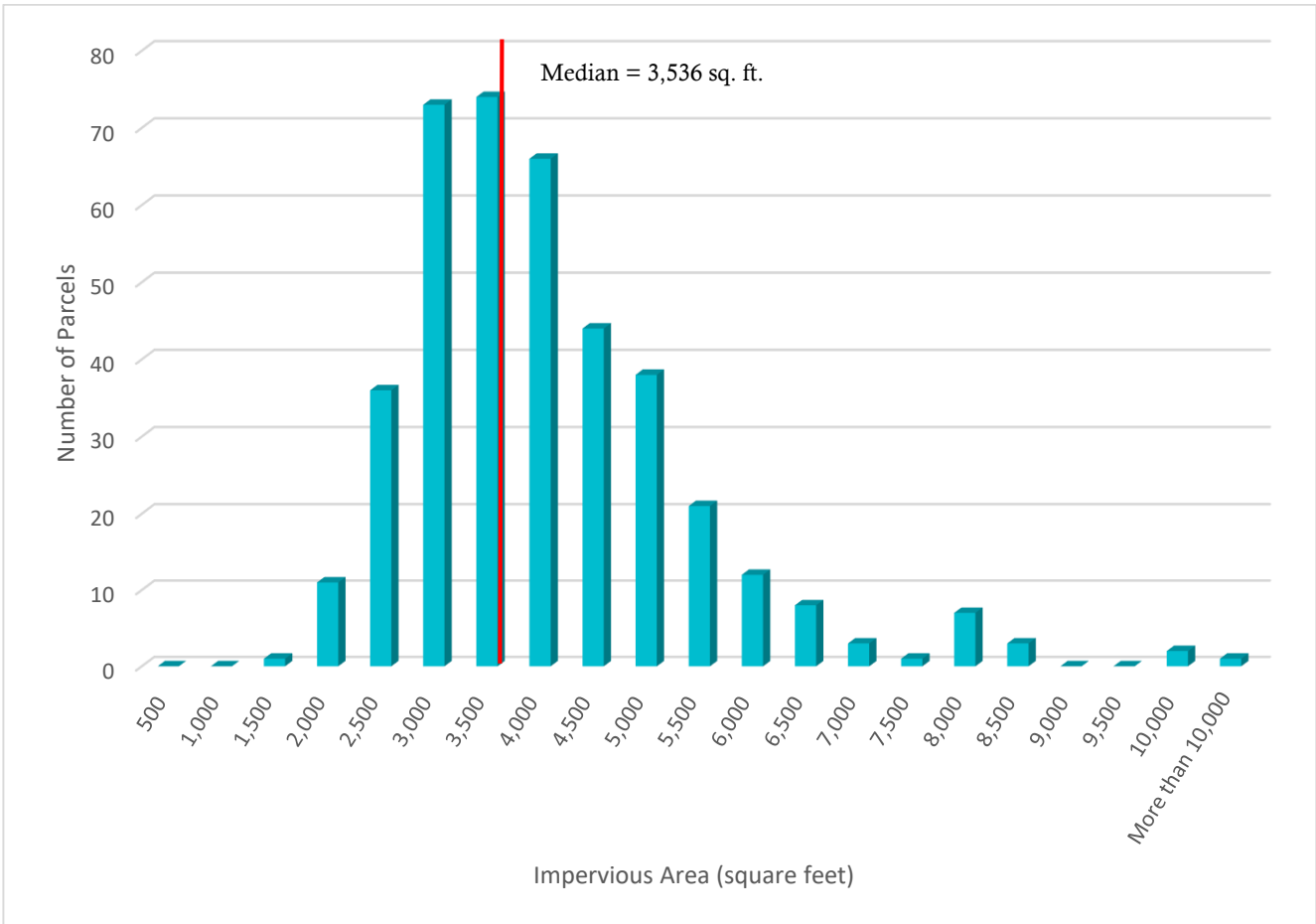


Table 2: Single Family Residential Sample Summary Statistics

	Impervious Area (square feet)
Median	3,536
Mean	3,826
Minimum	1,241

¹ This is a large single family residential property. The parcel with the second largest impervious area has 9,966 square feet of impervious area.

There are approximately 55,000 single family residential parcels in the City. Figure 8 below shows an example of the digitized impervious area for a single family residential property.

Figure 8: Impervious Area for a Single Family Residential Property



5. Stormwater Utility Implementation

If the City decides to move forward with a stormwater utility, more detailed data analysis and development will be required.

The major costs are for data development, billing system changes and fee integration and tools for data maintenance and customer service. These costs are estimated as follows:

- \$250,000 to \$350,000 for data development and quality control
- \$50,000 for billing system integration and
- \$50,000 to \$70,000 for tools and processes for customer service provision.

Additional costs, if contracted, would include assistance with finalizing the stormwater program, developing a final rate structure and rates based on measured data and a rate study, assistance with a public communications program, and other assistance with council and public presentations and assisting with ordinance process. The total for these tasks would range from \$150,000 to \$250,000.

These estimates cover costs associated with the effort required to establish the stormwater utility and begin collecting revenue. The costs associated with the ongoing effort to maintain the data required and to maintain customer service for the utility after go-live are captured in Section 2.4 Utility Administration and are included in the calculation of revenue requirements for the utility.

Total implementation costs for all tasks would range from \$500,000 to \$750,000.

6. Stormwater Rate Comparison

To better understand how the rates and rate structures being considered for a stormwater utility, the Raftelis team, working with the City, identified 14 peer utilities, to compare rates and rate structures. This comparison will allow the City to see how the rates and rate structures being considered by the City align with other peer cities and utilities. The 14 peer utilities include the City of Sparks and Carson City in northern Nevada as well as other utilities located in the western portion of the country. Comparing potential rates and rate structures against peer cities and utilities allows the City to gain comfort that the rates being considered are reasonable. Table 2 below shows the demographic and geographic characteristics of the selected peer cities.

The peer utilities selected represent a variety of rate structures. Within Nevada and among some of the older, most western jurisdictions selected for the comparison, we found rate structures for non-single family residential properties that are not based on measured impervious area, but rather sewer consumption, estimated impervious area based on land use, or floor space. It should be noted that the vast majority (92%) of utilities use actual and/or effective impervious area as the basis of stormwater fees. **The industry best practice is a rate structure of measured impervious area.** Regarding single family residential rate structures, the majority (54%) of utilities have a uniform flat rate for single family residential parcels and one-third of utilities employ a tiered residential rate structure.³

Table 3: Peer Cities Demographic and Geographic Characteristics

City	Population	Area (square miles)	Median Household Income
Dallas, TX	1,197,816	385.8	\$67,382
Washoe County, NV	460,587	6,302.37	\$58,595
Aurora, CO	366,623	154.73	\$58,343
Stockton, CA	310,496	61.67	\$48,396
Reno, NV	248,853⁴	105.9	\$46,489
Norfolk, VA	244,703	54.12	\$47,137
Irving, TX	240,373	67.02	\$58,196
Modesto, CA	214,221	36.87	\$54,024
Tacoma, WA	213,418	49.72	\$55,506
Salt Lake City, UT	200,544	111.11	\$54,009

³ Black & Veatch Management Consulting, 2018 Stormwater Utility Study.

<https://www.bv.com/sites/default/files/18%20Stormwater%20Utility%20Survey%20Report%20WEB.pdf>

⁴ US Census Bureau 2017 population estimate. <https://www.census.gov/quickfacts/renocitynevada>

City	Population	Area (square miles)	Median Household Income
City of Lakewood, CO	154,958	42.87	\$52,960
Boulder, CO	107,125	24.66	\$64,183
Sparks, NV	100,888	35.76	\$58,120
Carson City, NV	54,745	144.66	\$49,341
City of Louisville, CO	21,128	8.09	\$69,945

The rates and rate structures presented in Table 3, assumes a single family residential home on a 10,000 square foot lot with 4,000 impervious surface area. Additional information on residential rates and rate structures can be found in Appendix D.

Table 4: Peer Cities Residential Rate Structures and Rates

(Comparison fee based on developed single family residential property on a 10,000 square foot lot with 4,000 square feet of impervious area)

City	Rate Structure Type	Fixed Charge	Variable Charge	Average Monthly Bill
Dallas, TX	Tiered residential. 4 tiers - based on impervious area.	\$8.51	-	\$8.51
Washoe County, NV	Flat fee	\$9.31	-	\$9.31
Aurora, CO	Flat fee for Single family Residential, additional fee per dwelling unit for multi-family residential	\$10.46	-	\$10.46
Stockton, CA	ERU = 2,347 sq. ft. of IA. Flat rate of 1 ERU for all SFRs, multifamily units, and apartment residences	\$2.10	-	\$2.10
Norfolk, VA	Flat daily rate for SFR billed monthly, plus \$1.00 per account per month admin charge.	\$11.71	-	\$11.71
Irving, TX	Fee based on zoning codes and lot size. Manufactured Home or SFR on lot greater than 5,000 sq. ft.	\$4.00	-	\$4.00
Modesto, CA	Fee based on Residential lot size - greater than 7,000 sq. ft.	\$4.85	-	\$4.85
Tacoma, WA	Fee based on lot size and density of development. Moderate development - most single family homes with yards. Variable charge is per 500 square foot of lot size. Different rates if on waterfront	\$7.65	\$1.2054	\$31.76
Salt Lake City, UT	SFR and Duplex - flat fee for lot size less than 0.25 acres	\$4.94	-	\$4.94
City of Lakewood, CO	Flat fee for single family residential and multi-family residential	\$46.20	-	\$3.85
Boulder, CO	Three flat tiers based on parcel size plus service charge of \$2.50	\$18.11	-	\$18.11

City	Rate Structure Type	Fixed Charge	Variable Charge	Average Monthly Bill
Sparks, NV ⁵	Single family res, unit charge	\$14.15	-	\$14.15
Carson City, NV	Single family res, flat fee	\$5.69	-	\$5.69
City of Louisville, CO	Flat fee single family residential	\$4.40	-	\$4.40

The rates and rate structures presented in Table 4, assumes a developed commercial property on a 20,000 square foot lot with 12,000 square feet of impervious surface area. Additional information on non-residential rates and rate structures can be found in Appendix D.

Table 5: Peer Cities Non-Residential Rate Structures and Rates

(Comparison fee based on developed commercial property with 20,000 square foot lot, 12,000 square feet of impervious area, and 10,000 gallons of sewer use)

City	Rate Structure Type	Fixed Charge	Minimum Charge	Variable Charge	Average Monthly Bill
Dallas, TX	Fee per 1,000 sq. ft. of IA	-	\$5.49	\$1.92	\$23.04
Washoe County, NV	Flat fee	\$9.31	-	-	\$9.31
Aurora, CO	By Class, base residential rate for first 2,500 square feet (minimum charge) plus \$8.24 for each additional 2,500 square feet of floor space	\$10.46	-	\$8.24	\$43.42
Stockton, CA	Commercial Property assumed 90% density of development. ERU = 2,347 ft. of IA	-	-	\$2.10	\$16.11
Norfolk, VA	Daily rate per 2,000 sq. ft. of IA billed monthly, plus \$1.00 per account per month admin charge.	\$1.00	-	\$7.38	\$45.28
Irving, TX	Fee based on zoning codes and lot size. Commercial/Industrial 10,001 to 20,000 square foot lot	\$18.00	-	-	\$18.00
Modesto, CA	Fee based on property type. Per acre charge. Commercial	-	-	\$77.68	\$35.67
Tacoma, WA	Fee based on lot size and density of development. Heavy development - most commercial properties with parking lots and some vegetation. Variable charge is per 500 square foot of lot size. Different rates if on waterfront	\$7.65	-	\$1.7684	\$78.39
Salt Lake City, UT	ERU = 2,500	-	-	\$4.94	\$24.70
City of Lakewood, CO	Rate per 2,250 sq. ft. of impervious area	-	-	\$3.42226	\$20.53
Boulder, CO	Base charge plus an impervious square foot rate, subject to a minimum	\$2.50	\$15.61	\$0.0057	\$70.90

⁵ Note that the \$14.15 monthly charge is the “river protection charge” of \$5.41 plus \$8.74 of the monthly sewer and storm drain charge. Per telephone discussion with John Martini, City of Sparks, January 22, 2019.

City	Rate Structure Type	Fixed Charge	Minimum Charge	Variable Charge	Average Monthly Bill
Sparks, NV	River Protection Charge, .64 per 1,000 gallons of water usage + storm drain charge 1.03 1,000 gallons of water usage (assume 10,000 gallons)	\$	-	\$1.67-	\$16.70
Carson City, NV	Multifamily res, flat fee	\$29.33	-	-	\$29.33
City of Louisville, CO	Rate per 3,500 square feet of impervious area	-	-	\$4.23	\$16.92

7. Final Recommendations

Based on the stormwater program drivers, the projected stormwater revenue requirements, and the results of this study, the project team recommends the following:

1. Dedicated Stormwater Funding Source

The City does not currently have a dedicated funding source for stormwater needs and has been funding and fulfilling stormwater infrastructure needs using the sewer fund and several other smaller revenue sources. Having a dedicated stormwater funding source would provide the City with needed stability for the stormwater program. The City has significant stormwater infrastructure needs. Large stormwater infrastructure projects must be planned and executed on a consistent basis with predictable and stable funding. Having a dedicated funding source for stormwater would allow the City to provide consistent stormwater maintenance and would allow the City to complete stormwater infrastructure projects that they would otherwise not be able to pursue. Although stormwater is currently funded through a variety of sources, it is primarily funded through the sewer fund. The separation of sewer and stormwater expenses and the separate allocation to different funds would allow the City to modestly reduce sewer rates in conjunction with the implementation of a new stormwater fee.

2. Implementation of a Stormwater Fee based on Impervious Area

The industry best practice is a rate structure of measured impervious area and the clear majority (92%) of utilities use actual and/or effective impervious area as the basis of stormwater fees. Implementation of a stormwater fee based on impervious area is a fair, equitable, and legally defensible stormwater rate structure.

3. Moderate Initial Fee

It is recommended that the City implement a fee in the \$8-\$10 range. This fee range would allow the City to effectively complete necessary stormwater operations and maintenance and capital projects. A moderate fee level would allow the City to lower the sewer fee to reflect the reallocation of stormwater costs from the sewer utility to the stormwater utility.

This fee range would allow the City to minimize the impact on customers while allowing the City to make significant progress on stormwater program goals. In particular, a fee in the \$8-10 range would allow this City to shift its stormwater program from a reactive program to a proactive program. A fee in the \$8-\$10 range also aligns well with peer communities. As capital projects ramp up and as uncertain costs, like NPDES permit compliance costs, become more certain, the City may consider increasing rates later, if necessary, while still being aligned with peer communities.

4. Billing on the Sewer Bill

If possible, the City should bill for stormwater on the existing sewer bill. Billing for stormwater on an existing utility bill typically results in higher collection rates and is often easier to administer compared to other billing mechanisms.

5. Incorporate Administrative and Data Maintenance Costs

The creation of a new stormwater fee will necessitate new utility administration costs, including additional staffing. Proper administration of the stormwater fee is essential to maintain correct and accurate billing and to ensure customer confidence in the fee. Meter-based utility fees require significant investment in metering, testing, calibration, and data collection (reading meters or procuring reads) and similar though less significant investments in the administration and data maintenance of the stormwater fee must be made.

6. Consider Potential Future NPDES Costs

There is considerable uncertainty in future costs associated with NPDES compliance. A new permit is being developed and the City may have expanded requirements under this new permit. Having a dedicated stormwater funding source would allow the City to have a way to fund additional permit compliance costs if needed.

If the City decides to move forward with the fee, we would recommend several next steps including defining the rate structure details, development of impervious area data, linking the stormwater billing data to the sewer billing system, and establishing enterprise and rate ordinance as necessary. In addition, updated stormwater financial data is currently being refined by the City and we would recommend updating the financial plan with this information once it becomes available.