

4 Projects and Management Actions

The projects and management actions in this Chapter document potential actions that the SMBGSA could undertake in the event that the current understanding of the hydrogeologic conceptual model of the Subbasin, and the numerical groundwater modeling based on that conceptual model, have not sufficiently captured the long-term groundwater conditions in the Subbasin. Projects and management actions are not necessary to achieve sustainability in the Subbasin, which has experienced periods of both rising and declining groundwater levels historically but has not experienced undesirable results (see Sections 2.4.1 Groundwater Elevation Data and 2.4.2 Estimated Change in Storage). However, projects and management actions may be necessary to respond to changing conditions in the Subbasin. These projects and management actions are discussed in this chapter.

In order to maintain sustainable use of the groundwater resources in the Subbasin for current and future stakeholders, the City of Santa Monica has planned and implemented several projects designed to reduce water demand in the Subbasin, improve groundwater quality, and increase the reliability of groundwater supplies in the Subbasin. These projects, which are documented in components one and two of the City of Santa Monica 2018 Sustainable Water Master Plan Update, include increasing water conservation to achieve a 38% reduction in imported water purchases, increasing recycled water production from the Santa Monica Urban Runoff Recycling Facility (SMURRF), constructing a new advanced water treatment facility that would produce advanced treated recycled water to recharge local groundwater aquifers, and increasing production at the Arcadia Water Treatment Plant (WTP) by enhancing its production efficiency (City of Santa Monica 2018). The impacts on groundwater elevations and storage from these projects are incorporated in the future baseline scenarios (see Section 2.5.5.3 Quantification of Future Water Budget).

Of the projects and management actions discussed below, only increased recharge to local aquifers was explicitly incorporated into the future baseline scenarios (see Section 2.5.5.3 Quantification of Future Water Budget). The future baseline scenarios also included estimated future groundwater demands, which incorporate increased water conservation and treatment efficiency. Specific management actions were not modeled for this GSP. The results of the future baseline scenarios suggest that groundwater elevations in the Subbasin will remain above both the measurable objective and minimum threshold at every RMP throughout the 50-year planning and implementation horizon. In the event that changing conditions in the Subbasin necessitate implementation of the projects and management actions listed below, additional modeling may be conducted to evaluate their effectiveness.

4.1 Management Action #1 – Adjust Groundwater Production As-Needed to Meet Water Level and/or Seawater Intrusion Objectives

The City of Santa Monica is committed to environmental stewardship. This includes becoming carbon neutral by 2050 (City of Santa Monica 2018). As part of this effort the City of Santa Monica is committed to reducing the volume of imported water to the greatest extent possible. While the City of Santa Monica is implementing projects to reduce reliance on imported water, the City will maintain the two MWD turnouts that deliver water to the Subbasin to provide added water security in case groundwater production causes undesirable results in the Subbasin, or in case of a natural disaster or other emergency. This allows the City of Santa Monica to adjust the volume of groundwater produced in different geographic areas while maintaining the overall flow needed to meet anticipated consumer demand. If concentrations of chloride in groundwater begin to approach the minimum threshold at 6 of

10 seawater intrusion RMPs, the City of Santa Monica may need to adjust groundwater production to reverse the gradient and limit additional migration of seawater. Similarly, if groundwater elevations decline at a rate that exceeds the projected rate of decline and water levels begin to approach the minimum thresholds for groundwater elevation at one or more of the RMPs, the City of Santa Monica can shift production from one groundwater production area to another in order to allow groundwater elevations to recover in the impacted production area.

Additionally, if groundwater levels at five of the eight groundwater elevation RMPs fall below the minimum thresholds, the City of Santa Monica could reduce its overall groundwater production from the Subbasin, in order to allow groundwater elevations to recover. Historically, groundwater elevations have recovered in the Subbasin during times of reduced production (see Section 2.4.1 Groundwater Elevation), and undesirable results have not occurred in the Subbasin. During these times, groundwater was replaced with imported water. Given the City of Santa Monica's commitment to carbon neutrality, the City of Santa Monica and the SMBGSA will consider the potential climate and other environmental impacts of increased imported water use before implementing this management action.

4.1.1 Measurable Objective Expected to Benefit

The measurable objectives for chronic declines in groundwater levels, groundwater in storage, and seawater intrusion would benefit from implementation of this management action if implementation becomes necessary. Groundwater conditions in the Subbasin are currently above the measurable objectives, and the Subbasin is not currently experiencing undesirable results related to any of the sustainability indicators.

4.1.2 Expected Benefits and Evaluation

The volume of groundwater in storage would increase, chronic declines in groundwater elevation would be reversed, and seawater intrusion induced by groundwater production would cease or reverse with reduced groundwater production. Groundwater in storage will be measured using groundwater elevations as a proxy. If groundwater elevations stabilize or rise at the groundwater level RMPs, the management action will have succeeded in increasing the volume of groundwater in storage, preventing chronic declines in groundwater. Seawater intrusion will be measured using chloride concentration. If increasing trends in chloride concentration measured at the relevant RMPs are ceased or reversed, the management action will have succeeded in preventing further migration of seawater into the freshwater aquifers.

4.1.3 Circumstances for Implementation

This management action would be implemented if groundwater levels approach the minimum threshold groundwater elevation at five or more groundwater level RMPs, or if the concentration of chloride in six or more seawater intrusion RMPs approaches 500 mg/L.

4.1.4 Public Noticing

Public noticing is not required for this management action, which would be undertaken under the City of Santa Monica's authority to operate its groundwater production wells and water treatment facilities. Stakeholders would not be impacted by this management action because it does not impose restrictions on private groundwater producers in the Subbasin.

4.1.5 Permitting and Regulatory Process

No additional permitting or regulatory oversight is necessary to implement this management action, which would be undertaken under the City of Santa Monica’s authority to operate its groundwater production wells and water treatment facilities.

4.1.6 Implementation Schedule

There is no specific implementation schedule for this management action as future groundwater level projections currently suggest this management action will not be required. The City of Santa Monica has the ability to implement this management action within six months of determining that one of the criteria for implementation described in Section 4.1.3 has been met.

4.1.7 Legal Authority

The City of Santa Monica, as a water purveyor, already has the legal authority necessary to operate groundwater production and water treatment facilities in the Subbasin. No additional legal authority is required.

4.1.8 Estimated Costs

This management action could be incurred at no cost to the City of Santa Monica, or to its customers, if the total volume produced remains the same and the water quality is similar. In the event that groundwater production is reduced overall, additional cost may be incurred if groundwater is replaced by imported water.

4.2 Management Action #2 – Impose Replenishment or Imported Water Purchase/ Pumping Offset Fee

The City of Santa Monica is currently both the largest producer of groundwater and the sole producer of drinking water within the Subbasin. Since at least 1985, the combined groundwater extractions from the City of Santa Monica wells and private wells have not exceeded the sustainable yield of the Subbasin (See Section 2.5.5.1 Quantification of Historical Water Budget). Projected groundwater extractions from the City of Santa Monica were incorporated into the future baseline scenarios. These projected extractions are not anticipated to cause undesirable results in the Subbasin. Projected groundwater extractions are, however, anticipated to approximately equal the sustainable yield of the Subbasin. Therefore, new projects that rely on groundwater production, or that increase groundwater production rates from existing wells, would exceed the production rates modeled in the future baseline scenarios and may cause undesirable results in the Subbasin.

In the event that groundwater conditions within the Subbasin warrant additional management by the SMBGSA, the GSA may impose a replenishment fee, or a water purchase / pumping offset fee for groundwater users in the Subbasin. In the case of the replenishment fee, the fees would be used to develop and support projects that would increase recharge, and therefore increase the sustainable yield in the Subbasin. Alternatively, water purchase / pumping offset fees would be used to purchase additional imported water to meet the City of Santa Monica customer demands, while offsetting the City of Santa Monica groundwater use. It should be noted that the majority of the City of Santa Monica groundwater extraction wells are linked to regional efforts to improve groundwater

quality and restore beneficial uses of groundwater in the Subbasin. Therefore, while purchasing imported water may be an option to offset some the City of Santa Monica production, such a program could not interfere with the City of Santa Monica’s regulatory obligations to improve water quality in the Subbasin.

Furthermore, the City of Santa Monica is committed to achieving carbon neutrality by 2050. Therefore, the City of Santa Monica and the SMBGSA will consider the potential climate and other environmental impacts of increased imported water use before implementing this management action.

Potential projects that could be supported by a fee imposed on groundwater production would require additional feasibility studies before being implemented. The feasibility studies would assess whether suitable hydrogeologic conditions exist, the potential influence of the projects on existing groundwater quality in the Subbasin, as well as whether sufficient water can be obtained from suitable sources to support the project. Before the SMBGSA would impose a replenishment fee, the City of Santa Monica would undertake the necessary hydrogeologic studies to assess the feasibility of recharge within the Subbasin. Funding the feasibility study may require a fee imposed on groundwater extractions.

The feasibility of purchasing imported water in order to offset groundwater production is likely to be impacted by additional demands on imported water from groundwater basins across the State of California. While many GSAs, including the SMBGSA, are increasing groundwater production in order to develop a more drought-resistant water supply portfolio, several GSAs managing critically over-drafted basins are looking to increase purchases of imported water. The increased demand from these basins is likely to exceed the reduced demand from basins that have not been critically over-drafted. Therefore, the City of Santa Monica and the SMBGSA will have to investigate the volume of water that may be available for purchase, and whether that volume is sufficient to offset the overdraft conditions, before developing a fee structure to support purchase of additional imported water.

4.2.1 Measurable Objective Expected to Benefit

The measurable objectives for seawater intrusion, chronic declines in groundwater levels, and groundwater in storage would benefit from implementation of this management action.

4.2.2 Expected Benefits and Evaluation

Groundwater in storage would increase and chronic declines in groundwater would be reversed, and seawater intrusion induced by groundwater production would cease or reverse with reduced groundwater production resulting from implementing groundwater recharge projects in the Subbasin or purchasing imported water to offset groundwater production. Groundwater in storage will be measured using groundwater elevations as a proxy. If groundwater elevations stabilize or rise at the groundwater level RMPs, the management action will have succeeded in increasing the volume of groundwater in storage and preventing chronic declines in groundwater. If concentrations of chloride stabilize or decline at the seawater intrusion RMPs, the management action will have succeeded in eliminating the landward migration of a seawater intrusion front.

4.2.3 Circumstances for Implementation

This management action may be implemented if groundwater elevations fall below the measurable objective and approach the minimum threshold at five or more groundwater level RMPs as a result of increased production in wells that were not included in the future baseline scenarios. For example, if a new project that relies on

groundwater production is approved in the Subbasin, and that project will result in overdraft conditions in the Subbasin, this management action may be implemented. Similarly, if changes in groundwater use for private and municipal golf courses or other high water demand land uses, result in increased production from the Subbasin beyond that incorporated into the future baseline scenarios, thereby causing overdraft of the Subbasin, this management action may be implemented.

4.2.4 Public Noticing

Imposing a fee for groundwater recharge activities, or for the purchase of additional imported water, would require substantial public input and noticing. The SMBGSA would need public input to understand the potential impacts of imposing a fee on groundwater extractions, and the SMBGSA anticipates gathering public input using multiple methods, including multiple public meetings. In the event that the SMBGSA decides a fee would be necessary, per subdivision (a) of Section 6 of Article XIII D of the California Constitution, the SMBGSA will conduct a public hearing on the proposed fee no less than 45 days after mailing a notice of the proposed fee to the owners of each parcel upon which the fee is proposed. Published and written notice of the public hearing will be provided as required by the provisions of the Municipal Water District Law of 1911, specifically Sections 71632, 71638, 71638.4 and 71674 of the California Water Code (CWC).

4.2.5 Permitting and Regulatory Process

Imposing a fee for groundwater recharge activities, or for the purchase of additional imported water, would not require any permitting or regulatory oversight. This fee would have to comply with all applicable sections of the CWC and the California Constitution.

4.2.6 Implementation Schedule

There is no firm implementation schedule for this management action because it is not currently required in the Subbasin. Implementation would only be considered in the event that groundwater production volumes exceeding those accounted for in future baseline scenarios result in overdraft conditions in the Subbasin. In the event that this management action needs to be implemented, a schedule will be developed and changes or updates to the implementation schedule will be reported to DWR as part of the 5-year GSP evaluation process (CWC § 10733.8). It is anticipated that one to two years of planning and outreach would be required before this fee could be implemented.

4.2.7 Legal Authority

The SMBGSA has the authority to impose fees on the extraction of groundwater in order to fund costs of groundwater management in the Subbasin after it adopts this GSP (CWC §10730.2 (a)). The fees that would be imposed under this management action must be adopted by the GSA in accordance with subdivisions (a) and (b) of Section 6 of Article XIII D of the California Constitution (CWC §10730.2 (c)).

4.2.8 Estimated Costs

The costs associated with this management action have not yet been estimated. The cost to conduct the initial study and public outreach may require a one-time assessment on groundwater users in the Subbasin. Ongoing

administrative costs of this management action would be incorporated into the groundwater fee structure so that the program would be self-supporting.

4.3 Management Action #3 – Develop a Salt Nutrient Management Plan for the Subbasin

The Santa Monica Subbasin does not currently have a salt and nutrient management plan (SNMP) to address the use of advanced treated recycled water (e.g., groundwater augmentation via direct injection) in the Subbasin, and its potential impacts on groundwater quality. Recycled water may play an integral role in maintaining the sustainability of groundwater conditions in the Subbasin, as it could be used to replenish groundwater pumped in production areas, as a seawater injection barrier, or for other municipal and industrial uses. The SNMP for the Subbasin would be prepared by the relevant GSA member agencies, not by the SMBGSA itself, and the relevant member agencies would work in collaboration with Subbasin stakeholders and other interested parties, as well as LADPW, the Sanitation Districts of Los Angeles County, and any other relevant wastewater entities. The SNMP process was designated by the SWRCB as the appropriate way to address salt and nutrient issues and ensure attainment of water quality objectives and protection of beneficial uses.

The City of Santa Monica prepared a local Antidegradation Study for injection of advanced treated recycled water at the Olympic Wellfield (City of Santa Monica 2020). This study found that the proposed groundwater augmentation operations at the Olympic Wellfield are protective of beneficial uses of groundwater, consistent with the State of California Antidegradation Policy, and will improve water quality with respect to chloride, sulfate, and TDS. Boron and nitrate concentrations may increase with injection of advanced treated recycled water, but these increases are below 10% of the assimilative capacity and concentrations of boron and nitrate in the groundwater are projected to remain below the water quality objectives for the Subbasin (City of Santa Monica 2020).

A SNMP will provide a comprehensive evaluation of the assimilative capacity of the Subbasin and may allow for implementation of recharge projects not currently proposed in this GSP. Such projects, proposed and implemented after development of the SNMP, can provide additional operational flexibility to the Subbasin stakeholders while ensuring that any changes to concentrations of constituents in the groundwater are consistent with the maximum benefit to the people of the State.

4.3.1 Measurable Objective Expected to Benefit

The measurable objectives for chronic declines in groundwater levels, groundwater in storage, and seawater intrusion all have the potential to benefit from implementation of this management action.

4.3.2 Expected Benefits and Evaluation

Use of advanced treated recycled water in the Subbasin has the potential to reduce demand on groundwater production, replenish groundwater aquifers, and / or act as a barrier to seawater intrusion if such a barrier becomes necessary in the future. An adopted SNMP for the Subbasin will allow for appropriate use of advanced treated recycled water that maintains beneficial uses of groundwater. This management action will have been effective if a SNMP for the Subbasin is developed by the stakeholders and accepted by the RWQCB.

4.3.3 Circumstances for Implementation

This GSP recommends beginning the process to implement this management action within the first five years after adoption of the GSP. The SNMP development process can take many years and should be started before groundwater quality conditions in the Subbasin no longer have assimilative capacity. Therefore, implementation of this management action is recommended independently from groundwater condition triggers in the Subbasin.

4.3.4 Public Noticing

Developing a SNMP requires substantial public input. This would, however, be undertaken by the municipalities, and water and wastewater agencies participating in the development of the SNMP, rather than the SMBGSA. Scoping meetings for a basin plan amendment would be noticed and held by the RWQCB.

4.3.5 Permitting and Regulatory Process

The California Environmental Quality Act (CEQA) needs to be followed if the Basin Plan is amended as a result of the SNMP. The public agencies that participate in the process can be the lead agencies for CEQA and the RWQCB can act as the responsible agency when adopting a basin plan amendment. Alternatively, the RWQCB can act as the lead agency and request that stakeholders prepare the necessary documentation.

4.3.6 Implementation Schedule

There is no firm implementation schedule for this management action because it is not under the supervision of the SMBGSA. However, this GSP recommends beginning the SNMP development process in 2022.

4.3.7 Legal Authority

The SMBGSA does not assume legal authority to develop an SNMP, but recommends that relevant individual municipalities, who do have legal authority to develop an SNMP implement this management action.

4.3.8 Estimated Costs

The costs associated with this management action have not been estimated but would be borne by the relevant municipalities and participants developing the SNMP.

4.4 Management Action #4 – Develop a Groundwater Allocation for the Subbasin

Projected groundwater extractions from the City of Santa Monica and private pumpers are anticipated to approximately equal the sustainable yield of the Subbasin (see Sections 2.5.5.3 Quantification of Future Water Balance and 2.6 Sustainable Yield Estimate). Although these projected extractions are not anticipated to cause undesirable results, new projects that rely on groundwater production, or that increase groundwater production rates from existing wells, would exceed the production rates modeled in the future baseline scenarios. Production at rates higher than those modeled in the future simulations may lead to undesirable results.

In the event that groundwater production rates approximately equal or exceed the estimated sustainable yield of the Subbasin, the City of Santa Monica and SMBGSA may develop a groundwater allocation in the Subbasin. Any groundwater allocation would be developed in conjunction with the stakeholders in the Subbasin and is anticipated to incorporate historical groundwater production from existing stakeholders and the City of Santa Monica. After the groundwater allocation is developed, the SMBGSA will work to develop a fee structure for groundwater production in excess of the allocated amounts. This management action would be developed with stakeholder input after the GSP is adopted.

4.4.1 Measurable Objective Expected to Benefit

The measurable objectives for chronic declines in groundwater levels, groundwater in storage, and seawater intrusion would benefit from implementation of this management action.

4.4.2 Expected Benefits and Evaluation

Groundwater in storage would increase and chronic declines in groundwater elevation would cease or reverse with reduced groundwater production resulting from implementing a groundwater allocation because there would be a financial disincentive to produce groundwater in excess of the sustainable yield of the basin. Similarly, seawater intrusion that results from groundwater production could be stopped or reversed if groundwater production is reduced as part of this management action.

As an additional potential benefit of this management action, fees collected for groundwater produced in excess of the sustainable yield could be used to develop and implement groundwater replenishment projects or purchase imported water to offset groundwater production. Groundwater in storage will be measured using groundwater elevations as a proxy. If groundwater elevations stabilize or rise at the groundwater level RMPs, the management action will have succeeded in increasing the volume of groundwater in storage, preventing chronic declines in groundwater elevation. Chloride concentrations measured at the City of Santa Monica Production wells will be used to assess whether or not seawater intrusion is occurring in the Subbasin. If chloride concentrations stabilize or decline at the RMPs, the management action will have succeeded in eliminating landward progression of a seawater intrusion front.

4.4.3 Circumstances for Implementation

This management action may be implemented if groundwater production exceeds the estimated sustainable yield of the Subbasin and undesirable results are determined to be occurring or likely to occur.

4.4.4 Public Noticing

Developing a groundwater allocation would require substantial public input and noticing. The SMBGSA would require public input to understand the potential impacts of the allocation and the most appropriate method for developing the allocation. The SMBGSA anticipates gathering public input using multiple methods, including multiple public meetings. Published and written notice of the public hearing will be provided as required by the provisions of the Municipal Water District Law of 1911, specifically Sections 71632, 71638, 71638.4 and 71674 of the California Water Code (CWC).

4.4.5 Permitting and Regulatory Process

Developing a groundwater allocation would not require any permitting or regulatory oversight.

4.4.6 Implementation Schedule

There is no firm implementation schedule for this management action because it is not currently required in the Subbasin. Implementation would only be considered in the event that groundwater production volumes exceeding those accounted for in future baseline scenarios result in overdraft conditions in the Subbasin. In the event that this management action needs to be implemented, a schedule will be developed and changes or updates to the implementation schedule will be reported to DWR as part of the 5-year GSP evaluation process (CWC § 10733.8).

4.4.7 Legal Authority

The SMBGSA has the authority to develop a groundwater allocation after it adopts this GSP (CWC §10726.4 (a)(2)).

4.4.8 Estimated Costs

The costs associated with this management action have not yet been estimated. Ongoing administrative costs of this management action would be incorporated into the groundwater fee structure so that the program would be self-supporting.

4.5 Management Action #5 – Increase Water Conservation

The City of Santa Monica has successfully implemented water conservation measures that have reduced the average per capita water use to 103 gallons per capita per day (City of Santa Monica 2021). The City intends to continue to advance its efforts to increase water conservation through continuation of existing water saving programs and implementation of new incentives and programs (City of Santa Monica 2018). These programs include a marketing and messaging program for “conservation as a way of life” and potential drought resurgence, flow measuring and irrigation controller device incentives, water use consultations, rebate incentive programs for fixtures, and partnership program with Santa Monica Malibu Unified School District (City of Santa Monica 2021). Some of the new incentives and programs the City will implement to further reduce water use in the Subbasin moving forward include a partnership with the Discovery Science Center of Los Angeles to educate students and their families on water use efficiency and conservation, replacement of multi-family common area laundry machines with more efficient apparatus, and installation of City approved greywater systems at private residences and businesses to provide a cost-effective alternative water supply for irrigation and other non-potable uses (City of Santa Monica 2021). The existing and new incentives and programs will together save an estimated 764 acre-feet per year by 2025 and 1,952 acre-feet per year by 2040 (City of Santa Monica 2021).

4.5.1 Measurable Objective Expected to Benefit

The measurable objectives for chronic declines in groundwater levels, groundwater in storage and seawater intrusion are all expected benefit from implementation of this management action because the management action reduces demand for groundwater.

4.5.2 Expected Benefits and Evaluation

The primary expected benefit from this management action is a reduction in the demand for groundwater in the Santa Monica Subbasin. The success of this management action will be evaluated based on the aggregate volume of per capita water use by the City of Santa Monica.

4.5.3 Circumstances for Implementation

This management action is currently being implemented and future opportunities to increase water conservation will continue to be evaluated moving forward.

4.5.4 Public Noticing

Public noticing is not required for this management action, which would be undertaken under the City of Santa Monica's authority to incentivize water conservation. Stakeholders would not be impacted by this management action because it does not impose restrictions on private groundwater producers in the Subbasin.

4.5.5 Permitting and Regulatory Process

Implementing water conservation programs would not require any permitting or regulatory oversight.

4.5.6 Implementation Schedule

This management action is already being implemented. Over the next 3 years, the City of Santa Monica will continue to conduct programs that incentivize replacement of high water use landscaping, existing indoor water fixtures, and existing appliances (City of Santa Monica 2018). The City of Santa Monica will also continue to engage in public outreach and partnership programs that bring increased awareness of and participation in the program.

4.5.7 Legal Authority

The City of Santa Monica already has the legal authority necessary to implement water conservation programs in the Subbasin. No additional legal authority is required.

4.5.8 Estimated Costs

The costs associated with this management action are already factored into the City of Santa Monica's operating budget.

4.6 Project #1 – Increase Recycled Water Production for Non-Potable and Potable Reuse

The City of Santa Monica intends to reduce reliance on imported water and reduce demand for local groundwater by increasing production of recycled water at its SMURRF facility and constructing a new below-ground SWIP AWTF at the Civic Center Parking Lot (City of Santa Monica 2018). Recycled water production at the SMURRF, which has a maximum capacity of 560 AFY, has decreased in recent years to approximately 98 AFY in conjunction with the successful implementation of water conservation measures (City of Santa Monica 2018). In order to increase production at the SMURRF, the City is in the process of installing a containerized brackish/ saline reverse osmosis unit that will provide advance treatment for dry and wet weather runoff and brackish groundwater. This project, which is anticipated to be completed in 2022 will provide approximately 462 AFY additional supply for the City of Santa Monica’s non-potable system, as well as for groundwater recharge.

In addition to upgrading the SMURRF, the City of Santa Monica is also constructing a new below-ground SWIP AWTF at the Civic Center Parking Lot that will advance treat approximately 1,120 AFY of municipal wastewater for non-potable reuse and potable reuse – groundwater augmentation via direct injection (City of Santa Monica 2018). The City of Santa Monica is engaging in discussions with the necessary regulatory agencies to eventually permit advanced treated recycled water from the SWIP AWTF for groundwater recharge in adjacent to the Olympic Wellfield (City of Santa Monica 2018).

4.6.1 Measurable Objective Expected to Benefit

The measurable objectives for chronic declines in groundwater levels, groundwater in storage, and seawater intrusion would benefit from implementation of this project if recycled water production offsets groundwater production or, after proper permitting, is used for groundwater recharge.

4.6.2 Expected Benefits and Evaluation

The primary expected benefit from this project is a reduction in the demand for groundwater in the Santa Monica Subbasin. The success of this project will be evaluated based on the volume of water produced at the SMURRF and AWPF.

4.6.3 Circumstances for Implementation

This project is underway and expected to be completed in 2022.

4.6.4 Public Noticing

Public noticing is not required for this project, which would be undertaken under the City of Santa Monica’s authority to optimize water use within its jurisdiction. Stakeholders would not be impacted by this management action because it does not impose restrictions on private groundwater producers in the Subbasin.

4.6.5 Permitting and Regulatory Process

Use of recycled water to offset groundwater extractions for non-potable uses would require permitting and regulatory oversight by the SWRCB.

4.6.6 Implementation Schedule

This project is underway and expected to be completed in 2022.

4.6.7 Legal Authority

The City of Santa Monica has the authority to optimize use of water within its service area. No additional legal authority is needed.

4.6.8 Estimated Costs

The costs for this project have already been incorporated into the City of Santa Monica’s budget. Funding will come from state revolving fund loans, Wastewater Fund, and Stormwater Fund (City of Santa Monica 2018).

4.7 Project #2 – Recharge Local Groundwater Aquifers

As described in Section 4.5, the City of Santa Monica plans to construct a new SWIP AWTF and upgrade SMURRF which, after proper permitting, will provide advanced treated recycled water and diluent water to recharge groundwater aquifers adjacent to the Olympic Wellfield and offset imported water purchases by approximately 1,100 AFY (City of Santa Monica 2018). The new SWIP AWTF will include a proposed treatment system consisting of bioreactor membrane, reverse osmosis, and advance oxidation with ultraviolet disinfection and peroxide purification processes, and chlorine disinfection. The proposed design will provide advanced treated recycled water that meets or exceeds drinking water quality requirements (City of Santa Monica 2018). This project was included in the future groundwater model simulations used to assess the future water budget in the Subbasin (see Section 2.5.5.3 Quantification of Future Water Budget). Prior to implementation, however, this project will require permitting from RWQCB and DDW.

4.7.1 Measurable Objective Expected to Benefit

The measurable objectives for chronic declines in groundwater levels, groundwater in storage, and seawater intrusion would benefit from implementation of this project if aquifer recharge results in an increase in groundwater elevations and groundwater in storage.

4.7.2 Expected Benefits and Evaluation

Increased aquifer recharge would offset groundwater production and increase the sustainable yield of the Subbasin. If the project is implemented, the success of the project will be evaluated based on the volume of water that recharges the groundwater aquifers.

4.7.3 Circumstances for Implementation

This project is anticipated to be implemented after permits are obtained from DDW.

4.7.4 Public Noticing

Public noticing is not required for this project, which would be undertaken under the City of Santa Monica’s authority to optimize water use within its jurisdiction. Stakeholders would not be impacted by this management action because it does not impose restrictions on private groundwater producers in the Subbasin.

4.7.5 Permitting and Regulatory Process

Drilling and permitting new or existing artificial recharge well(s) would require permitting and regulatory oversight by the SWRCB DDW.

4.7.6 Implementation Schedule

The City of Santa Monica plans to implement this project following upgrade of the existing SMURRF and construction of the AWPf. The City would undertake the necessary hydrogeologic studies and modeling efforts to assess the feasibility of recharge within the Subbasin prior to implementation of this project.

4.7.7 Legal Authority

The City of Santa Monica has the legal authority to undertake this project after obtaining the necessary permits from the SWRCB to inject treated water into the aquifers of the Santa Monica Subbasin.

4.7.8 Estimated Costs

The costs for this project have already been incorporated into the City of Santa Monica’s budget. Funding will come from issuance of a water revenue bond, a contribution from the Wastewater Fund to the Water Fun, and from water-contamination settlement funds (City of Santa Monica 2018).

4.8 Project #3 – Production Efficiency Enhancement at Arcadia WTP

The City of Santa Monica Arcadia WTP is currently capable of producing approximately 9,900 AFY treated water, from 11,300 AFY of raw water (City of Santa Monica 2018). This equals an approximate recovery, or efficiency, rate of 82%. Improving the efficiency of the treatment process will yield additional treated water from the equivalent volume of raw groundwater, which will help reduce groundwater demand. The City of Santa Monica is in the process of upgrading the efficiency of the treatment process at the Arcadia WTP to approximately 90%, using high recovery reverse osmosis technology to extract additional treated water from the reverse osmosis concentrate stream. The upgraded efficiency is anticipated to yield approximately 1,200 AFY of treated water and reduce the volume of concentrate discharged from the Arcadia WTP to the sewer.

4.8.1 Measurable Objective Expected to Benefit

The measurable objectives for chronic declines in groundwater levels, groundwater in storage, and seawater intrusion would benefit from implementation of this project if enhanced production efficiency at the Arcadia WTP offsets groundwater production demand.

4.8.2 Expected Benefits and Evaluation

Increased production efficiency would result in a greater volume of treated water produced per gallon groundwater pumped and would reduce the volume of the reverse osmosis concentrate stream that is discharged to the sewer. The success of this project will be evaluated based on the increased efficiency achieved at the Arcadia WTP.

4.8.3 Circumstances for Implementation

This project is currently being evaluated for implementation.

4.8.4 Public Noticing

Public noticing is not required for this project, which would be undertaken under the City of Santa Monica's authority to maintain and improve its water treatment facilities. Stakeholders would not be impacted by this management action because it does not impose restrictions on other groundwater producers in the Subbasin.

4.8.5 Permitting and Regulatory Process

The City of Santa Monica will obtain any required permits for the efficiency upgrade to the Arcadia WTP.

4.8.6 Implementation Schedule

The City of Santa Monica is currently working to implement this project as a component of the City's Sustainable Water Master Plan, and it is anticipated to be completed in 2023 (City of Santa Monica 2018).

4.8.7 Legal Authority

The City of Santa Monica has the authority to maintain and improve its water treatment facilities.

4.8.8 Estimated Costs

The costs for this project have already been incorporated into the City of Santa Monica's budget. Funding will come from a loan from a \$10 million grant through the California Department of Water Resources' Water Desalination Program (via Proposition 1) and water revenue bonds.

4.9 Project #4 – Install Additional Monitoring Wells

The current hydrogeologic understanding of the Subbasin is based on extensive historical documentation and monitoring of groundwater conditions in the Subbasin. While the groundwater monitoring network is adequate to document conditions in the Subbasin, it could be improved by the addition of two wells in the area between Marina Del Rey and the Charnock wellfield. These wells could be used to help refine the understanding of the hydrostratigraphy and aquifer properties in this area and would be incorporated into the water level and seawater intrusion monitoring networks for the Subbasin. The City of Santa Monica and the SMBGSA will investigate potential partnership opportunities with DWR and the USGS to construct multi-port or nested monitoring wells that are capable of providing information at discrete depth intervals in the subsurface.

4.9.1 Measurable Objective Expected to Benefit

The measurable objectives for chronic declines in groundwater levels, groundwater in storage, and seawater intrusion may all benefit from the installation of additional monitoring wells as data gained from these wells can be used to refine the hydrogeologic conceptual model of the Subbasin.

4.9.2 Expected Benefits and Evaluation

The data from additional monitoring wells would be used to help refine the hydrogeologic conceptual model, provide additional warning of potential seawater intrusion related to groundwater production, and evaluate the effectiveness of the current measurable objectives and minimum thresholds at preventing undesirable results in the Subbasin.

4.9.3 Circumstances for Implementation

This project would be implemented if adequate funding and/or partner funding agencies are identified, and parcels suitable for monitoring wells can be obtained.

Public noticing is not required for this project, which would be undertaken under the City of Santa Monica's authority to maintain and improve its water treatment facilities. Stakeholders would not be impacted by this management action because it does not impose restrictions on other groundwater producers in the Subbasin.

4.9.5 Permitting and Regulatory Process

The City of Santa Monica and/or the SMBGSA will obtain any required permits for installing additional monitoring wells in the Subbasin.

4.9.6 Implementation Schedule

There is no firm implementation schedule for this management action because funding and partner agencies have not yet been identified. When the feasibility of implementing this project has been established, a schedule will be developed and changes or updates to the implementation schedule will be reported to DWR as part of the 5-year GSP evaluation process (CWC § 10733.8).

4.9.7 Legal Authority

The City of Santa Monica and the other SMBGSA member agencies have the authority to install monitoring wells in the Subbasin.

4.9.8 Estimated Costs

The preliminary estimated to install a single nested monitoring well in the Subbasin is approximately \$300,000. This cost could change depending on multiple factors including well construction, parcel availability, and subsurface conditions encountered.

4.10 Project #5 – Conduct Additional Investigations and/or Technical Studies

Projected groundwater elevations in the Subbasin are not expected to approach either the measurable objectives, or the minimum thresholds at any of the groundwater level RMPs during the 50-year planning and implementation horizon under the future baseline scenarios (see Section 2.5.5.3 Quantification of Future Water Budget). There is, however, uncertainty inherent in any numerical model projection and uncertainty in the hydrogeologic conceptual model that could be reduced in the future. Therefore, measured future groundwater conditions may differ from the projected conditions. If the management actions listed above fail to control groundwater level declines or increases in chloride concentration at the RMPs, the City of Santa Monica will conduct additional investigations and/or technical studies to fill in data gaps and improve the understanding of the primary controls on groundwater conditions in the Subbasin.

4.10.1 Measurable Objective Expected to Benefit

The measurable objectives for chronic declines in groundwater levels, groundwater in storage, and/or seawater intrusion would benefit from this project.

4.10.2 Expected Benefits and Evaluation

Identifying the potential pathways for seawater intrusion, and the linkages between groundwater production at the City of Santa Monica’s wellfields and seawater intrusion would benefit water quality management in the Subbasin. Additionally, reducing data gaps and identifying new projects and management actions that would improve control of groundwater elevations within the Subbasin would benefit groundwater storage management in the Subbasin.

Evaluation of the effectiveness of this project would be measured after additional infrastructure is constructed or additional management actions are implemented. If chloride concentrations stabilize, or decrease at the seawater intrusion RMPs, the newly implemented projects or management actions that were identified as part of this project will have been successful. If groundwater elevations, which would be used as a proxy for groundwater in storage, stabilize or rise at the groundwater level RMPs as a result of additional management actions or infrastructure identified as part of this project, this project will have been successful.

4.10.3 Circumstances for Implementation

This project would be implemented if groundwater levels approach the minimum threshold groundwater elevation at three or more groundwater elevation RMPs, or the concentration of chloride in three or more seawater intrusion RMPs approaches 500 mg/L, and other projects and management actions have failed to improve the groundwater conditions in the Subbasin.

4.10.4 Public Noticing

Public noticing is not required for this project, which would be undertaken under the City of Santa Monica’s authority to assess projects that may be needed to optimize use of the groundwater from its wellfields in the Subbasin. Stakeholders would not be impacted by this project, because it only authorizes the initiation of additional investigations and/or technical studies. In the event that the investigations and/or technical studies identify projects that are approved by the City of Santa Monica City Council, the City of Santa Monica would comply with all CEQA and public noticing requirements prior to and during project implementation.

4.10.5 Permitting and Regulatory Process

Additional investigations and/or technical studies may require permitting or regulatory oversight, depending on the nature of the investigation or technical study. The City of Santa Monica will comply with any permitting or regulatory requirements associated with the proposed investigation or technical study.

4.10.6 Implementation Schedule

There is no firm implementation schedule for this project because it is not anticipated to be necessary for sustainable management of the groundwater resources in the Subbasin. An implementation schedule will be developed in the event that groundwater conditions suggest this project may be necessary. Changes or updates to the implementation schedule will be reported to DWR as part of the 5-year GSP evaluation process.

4.10.7 Legal Authority

The City of Santa Monica has the authority to conduct investigations and technical studies within its service area.

4.10.8 Estimated Costs

The estimated cost of this project will depend on the type of investigation or technical study required. Cost estimates will be developed in the event that groundwater conditions suggest this project may be necessary. Changes or updates to the cost estimates and methods for funding will be reported to DWR as part of the 5-year GSP evaluation process.

4.11 Adaptive Management

The projects and management actions included in this Chapter are part of a broad portfolio of management strategies that the City of Santa Monica has successfully employed to sustainably manage groundwater conditions in the Subbasin to date. The City of Santa Monica and the SMBGSA have adopted an adaptive management strategy for the Subbasin. Because projects have been implemented to improve water quality in the Subbasin, the decision

to pursue or implement the projects and management actions in this Chapter will be based on an evaluation of potential impacts to future groundwater conditions, including groundwater quality, in the Subbasin. This allows for additional data to be collected, which will help reduce uncertainty and inform future decision-making.

Consistent with SGMA, the projects and management actions suggested in this GSP will be evaluated every five years, at a minimum. New projects or management actions may be proposed, and the current projects and management actions may be modified or eliminated during the 5-year evaluation process.

4.12 References Cited

California Water Code (CWC) Sections 10720 through 10736. Sustainable Groundwater Management Act and Related Provisions.

City of Santa Monica. 2018. Sustainable Water Master Plan Update. City of Santa Monica. December 2018.

City of Santa Monica. 2020. Antidegradation Study. Prepared by: Stantec Consulting Services Inc. and ICF. May 2020.