Water Quality Report for Southern California Edison, Santa Catalina Island Water System in Response to General Rate Case Application A.20-10-018

TABLE OF CONTENTS

ACRONYMS

CCR	Consumer Confidence Report
CDPH	California Department of Public Health
CPUC	California Public Utilities Commission
DBP	Disinfection Biproducts
DDW	Division of Drinking Water
DWR	Department of Water Resources
EPA	Environmental Protection Agency
GAC	Granular Activated Carbon
GPM	Gallons Per Minute
GRC	General Rate Case
MGT	Million Gallon Tank
PCB	Polychlorinated-Biphenyls
PHG	Public Health Goal
PVC	Polyvinyl Chloride
RO	Reverse Osmosis
SCE	Southern California Edison
SCIWS	Santa Catalina Island Water System
SMCL	Secondary Maximum Containment Levels
SOC	Synthetic Organic Compound
SWRCB	State Water Resources Control Board
TCP	Trichloropropane
TDS	Total Dissolved Solids
TOC	Total Organic Carbon
TSCA	Toxic Substances Control Act
TTHM	Total Trihalomethanes
VOC	Volatile Organic Compound
WD	Water Division

SUMMARY

This is the Water Division Water Quality Report for Southern California Edison (SCE) for the General Rate Case in A.20-10-018 that was filed on October 30, 2020. This report examines SCE's single water system on Santa Catalina Island for compliance with state and federal drinking water quality standards.

The review and investigation of SCE's compliance with the drinking water quality standards is primarily based on the following: sanitary surveys conducted by the Division of Drinking Water within the State Water Resources Control Board; Consumer Confidence Reports submitted by SCE to its customers and the California Public Utilities Commission (CPUC); the 2019 Annual Public Water Report; and proposed and completed projects related to water quality.

Overall, SCE has been found to be in compliance with all state and federal requirements for drinking water quality. SCE has received no citations by the Division of Drinking Water since the last General Rate Case. However, the most recent sanitary survey (August 2020), notes several deficiencies due to be fixed by the end of 2020. These deficiencies include wells past due for contaminant monitoring, facilities needing valve relocations and screen mesh coverings, and additional security around storage tanks.

The groundwater in certain wells on Santa Catalina Island is affected by iron and manganese. SCE has measured the contaminants in some locations where they have exceeded Secondary Maximum Contaminant Levels (SMCL). SCE has taken steps to including multiple capital projects to reduce these levels within their water system. SCE's system also has measured Total Trihalomethanes (TTHM) above the Maximum Contaminant Level (MCL). New treatment plants have been installed where these have been measured to reduce these levels as well.

SCE received a single customer complaint due to water color in 2019. The annual report notes that this complaint has been addressed and that no plant problems, process failures, major shutdowns, or significant modifications were experienced in 2019.

Since the last GRC, 24 capital projects have been completed and are used and useful. These include a new groundwater well, treatment for the groundwater well, the relocation of supply water mains away from sewer mains, and the removal of a coal-tar enamel lining known to contain polychlorinated-biphenyls from a storage tank. SCE is proposing upgrades to their Desalination plants as part of its application as well.

SECTION 1: INTRODUCTION

This report reviews water quality issues of note and the request for water quality related capital projects in SCE's General Rate Case (GRC) application A.20-10-018. Southern California Edison is an electrical utility, which owns and operates the Santa Catalina Island Water System (SCIWS) on Santa Catalina Island. SCE's previous GRC application A.10-11-009 was filed on November 15, 2010 and concluded in decision D.14-10-048 on October 20, 2014. SCE subsequently filed AL 94-W on December 24, 2014 in compliance with the D.14-10-048 to revise its tariffs. Presented below is water-quality-related information from the intervening years since the previous GRC application was filed.

Catalina Water Service

SCE's Santa Catalina Island Water System (SCIWS) is a Class C water utility with 1,942 active connections: 1425 single-family residential, 55 multi-family residential, 398 commercial, and 64 irrigation connections The utility serves a population of 4,096, 100 dedicated fire service customers, and has a seasonal maximum population of 460,000. CWS supplies water from 11 ground wells, and 2 seawater wells. The total supply capacity of the system is 1,923 gallons per minute (GPM); 31% of the source capacity is from the seawater wells, and 69% is from the groundwater wells. SCIWS also has 14 storage facilities including 1 raw water reservoir (343 million gallons), 1 lined and covered distribution reservoir (9.45 million gallons), and 12 steel water storage tanks (2.22 million gallons total).

SECTION 2: COMPLIANCE WITH DRINKING WATER STANDARDS

There are numerous federal and state statutes and regulations designed to ensure that drinking water is safe for human consumption. The Division of Drinking Water (DDW) under the State Water Resources Control Board (SWRCB) is responsible for regulating California's public drinking water systems. Prior to July 2014, the drinking water program was operated by the California Department of Public Health (CDPH).

Permits

SCE operates the SCIWS under a single Domestic Water Supply Permit, as it is a singular water system. These permits require: 1) that SCE comply with all state laws and regulations applicable to public water systems; 2) that all water supplied be treated as necessary to meet all California drinking water standards; 3) that appropriate

monitoring procedures are in place; 4) that treatment plant operators are certified at the appropriate level; and 5) that domestic water is protected against backflow in accordance with cross-connection regulations.

The SCIWS was originally permitted in 1968 and has been amended 12 times since then, most recently in September 2018 to include the Howlands Landing Well 3R and associated treatment plant, and granular activated carbon treatment system at Wrigley Reservoir.

Received Citations

According to the information submitted in A.20-10-018, SCE has complied with all requirements related to drinking water standards since the previous GRC. Since the previous GRC, SCE has received no citations and there have been no listed drinking water anomalies.

Sanitary Surveys

A sanitary survey is an on-site review of a public water system's water source, facilities, equipment, operation, and maintenance that is intended to assess the system's capability of supplying safe drinking water. They are supposed to be completed every three years but are often completed less frequently depending on staff availability at the DDW.

The most recent inspection of the SCIWS was performed on December 2 – 5, 2019. The DDW issued its report on August 31, 2020. The DDW found that SCE provides wholesome, potable water to its customers and the water system is maintained in a satisfactory condition.

Some deficiencies were noted in the report on the facilities including: data sheets not being submitted for certain facilities; air relief vents requiring screen mesh covers or needing to be turned to face downward; threaded hose bibbs upstream of the discharge pipe needing to be relocated; several well appurtenances requiring mesh screens or caps; and source monitoring results not being present in the DDW's water quality database.

There were 10 well locations which were past due for constituent monitoring.

1. Quarry Seawater Well 1 – thiobencarb, gross beta, arsenic, cyanide, fluoride, mercury, perchlorate, thallium, and nitrate monitoring.

2. Quarry Seawater Well 2 – thiobencarb, gross beta, arsenic, cyanide, fluoride, mercury, perchlorate, thallium, and nitrate monitoring.
3. Cottonwood Well 2 – iron, perchlorate, Volatile Organic Compounds (VOC), bentazon, carbofuran, chlordane, 2,4-D, DBCP, dinoseb, diquat, endothall, EDB, glyphosate, oxamyl, pentachlorophenol, and toxaphene monitoring.
4. Whites Landing Well – radium-226 and gross alpha monitoring.
5. Toyon Canyon Well 3 – cyanide, mercury, nitrate, nitrite, gross alpha, and radium-226 monitoring.
6. Blackjack Well 1 – radium-226 and gross alpha monitoring.
7. Howlands Landing Well 1 – iron, turbidity, perchlorate, nitrate, nitrite, 1,2-dichloroethane, 1,3-dichloropropene, benzene, carbon tetrachloride, cis-1,2-dichloroethylene, monochlorobenzene, trichlorotrifuoroethane (Freon 113), and 1,2,3-trichloropropane (1,2,3-TCP) monitoring.
8. Middleranch Well 1A – bentazon, 2,4-D, dinoseb, diquat, endothall, glyphosate, pentachlorophenol, and toxaphene monitoring.
9. Howlands Landing Well 3R – iron, manganese, tubidity, chloride, onductivity, TDS, cyanide, mercury, nitrate, nitrite, perchlorate, radionuclides, VOCs, Synthetic Organic Compounds (SOC), chlorate, and Total Organic Carbon (TOC) monitoring.
   This well currently has an oxidation-filtration treatment system installed to reduce iron levels.
10. Cottonwood Well 1A – bentazon, carbofuran, chlordane, 2,4-D, dibromochloropropane, dinoseb, diquat, endothall, ethylene dibromide, glyphosate, oxamyl, pentachlorophenol, and toxaphene monitoring.

Finally, the report requested that photographs of inaccessible locations, which were not observed during the 2019 sanitary survey, be submitted to the DDW, and recommended the installation of fencing around 8 storage tank locations.

SCE has acknowledged and agrees with the deficiencies noted in the sanitary survey. They have confirmed via email that the deficiencies have been corrected but they have yet to formally communicate the corrections back to the DDW.

Consumer Confidence Reports

California Health and Safety Code §116470 requires that every public water system provide an annual Consumer Confidence Report (CCR) to its customers. If any regulated contaminant is detected in drinking water supplied by the system in the past

year, the CCR displays the concentration detected alongside the corresponding drinking water standard and the Public Health Goal (PHG). The PHG is the concentration of a drinking water contaminant that poses no significant health risk if consumed for a lifetime, based on current risk assessment principles, practices, and methods.

Since the last GRC, SCE has submitted CCRs to its customers and to the CPUC annually from 2015 – 2019. CCRs over this time period indicate that water quality events were relatively isolated to particular locations.

Howlands Landing Well 3R

The Howlands Landing Well 3R is a groundwater well in bedrock with high mineral content. Over the last few years, testing has shown that it occasionally exceeds Secondary Maximum Containment Levels (SMCL) for Iron, Specific Conductance, and Total Dissolved Solids (TDS). SMCLs are standards that based on aesthetics of water and not considered to present a risk to human health. Since the last GRC, SCE has installed additional treatment to mitigate iron levels at the Howlands Landing Well 3R, and has seen some drop in iron levels since then.

Sweetwater Canyon Well

The Sweetwater Canyon Well exceeded SMCLs for Manganese and Specific Conductance in 2015 and 2016, but no cases have been reported since then.

Hamilton Cove

A sampling of Total Trihalomethanes (TTHM) exceeded the MCL in the supply water at Hamilton Cove in 2016 and 2017. TTHMs are Disinfection Biproducts (DBP) which form during the disinfection process. Some people who drink water containing TTHMs above the MCL over years may experience liver, kidney, or central nervous system problems, or have increased risk of getting cancer.

As part of Stage 2 Disinfection Byproducts Rule (DBPR) mandated by the Environmental Protection Agency (EPA), SCE was required to monitor and install mitigation measures at two locations within the drinking water system. In 2013, SCE installed Spray Aeration and Ventilation DBP mitigation projects at the Million Gallon Tank (MGT) and the Mt. Ada Tank, as they were identified as the two locations with the highest DBP concentrations. DDW then recommended that SCE install a 3rd mitigation measure at Hamilton Cove. By the end of 2017, an additional system had been procured

and tested. In 2018, TTHM levels continued to exceed the MCL at Pressure Reducing Station C, near Hamilton Cove. SCE reports that in response, a new treatment system was installed at Wrigley Reservoir to treat for DBPs and has resolved the issue.

Emerald Bay

At Emerald Bay, SMCLs for odor and color were exceeded in 2017 and 2019, respectively. Subsequent samples have indicated the water is below the SMCL.

Annual Public Water System Reports

All public water systems in California are required to file an annual report to the DDW, containing information about water supply, quality, sales, treatment customer inquiries, and other information regarding system operation. SCE provided the 2019 report to the Water Division (WD) upon request. Below are some highlights of the information found therein.

The Water Quality Section of the 2019 report indicated that the Emergency Notification plan was up to date, last updated May 1, 2018. The system utilizes Sodium Hypochlorate and Sodium Orthophosphate as direct additives for disinfection and anti-scaling, respectively. These chemicals are ANSI/NSF Standard 60 certified.

The report listed 1 customer complaint for the year of 2019. The complaint was regarding water color and was investigated by SCE. It is noted as likely due to hard water, causing a "white substance" on the surface of a customer tank. No specific corrective action is noted.

The report lists the three groundwater treatment plants (excluding chlorination treatment):

1. Howlands Landing Treatment: An oxidation reduction removing Iron
2. Pumphouse Aerator: An air stripper controlling corrosion
3. Wrigley GAC: A Granular Activated Carbon treatment removing DBPs

No plant problems, process failures, major shutdowns, or significant modifications have been reported for the year of 2019.

SECTION 3: PROPOSED CAPITAL IMPROVEMENT PROJECTS RELATED TO WATER QUALITY

SCE has completed 24 capital projects since the last GRC, that were not authorized to be added to their rate base in that decision. SCE requests authorization in A.20-10-018 to

add these completed projects, which are used and useful, to their rate base. Additionally, SCE forecasts 8 water system projects between 2020 and 2024, and seeks authorization to add these projects to their rate base as part of A.20-10-018.

Completed Capital Improvement Projects

The projects listed below are the capital improvement projects that have been completed since the previous GRC, and are related to water quality. Additional projects related to drought resiliency, regulatory and safety requirements, infrastructure replacement, and operational improvement have also been completed and are described in SCE Exhibit No. WPSCE-03 Part 01.

Howlands Landing Well 3R Treatment System

The Howlands Landing Well 1, originally constructed in the 1930s, experienced increased salinity in June 2014 as a result of seawater intrusion brought on by the on-going drought. In response, SCE constructed Howlands Landing Well 3R within the deeper fractured bedrock portion of the Howland Landing aquifer. The well became operational June 2015. During an analysis of the water quality at the newly constructed Howlands Landing Well 3R, it was discovered that levels of iron in the raw water exceeded the SMCL for drinking water. As a result, the water from the new well needed to be treated. SCE elected to install an oxidation-filtration system after consultation with the DDW. The completed well and treatment system currently serves as the primary source on the remote west end of the island. The system was commissioned in November 2017 and received final permitting in September 2018. The total project cost was $1.574 million.

Disinfection Byproduct Mitigation

SCE was required to monitor for DBPs as part of the Environmental Protection Agency's (EPA) Stage 2 Disinfectant Byproduct Rule. SCE identified Mt. Ada Tank and the Million Gallon Tank (MGT) as the locations with the highest DBP concentrations. Additionally, DDW required SCE to monitor and mitigate DBP concentrations at Hamilton Cove. After consideration of multiple mitigation methods, Granular Activated Carbon (GAC) was selected to remove the dissolved organic carbon in the water and thus reducing the TTHMs contributing to the higher DBP concentration. The GAC treatment system was installed within Pump House 2 at Wrigley Reservoir since it required no additional land acquisition to install the system and served Hamilton Cove. The DBP Mitigation project reduced DBP concentration at the Hamilton Cove

monitoring site as required by the EPA. The project was placed into service in May 2018. The total project cost was $754,439.

Wrigley Road Terrace Water Main Relocation

During the replacement of a sewer main, SCE found there was insufficient separation between the potable water main and sanitary sewer piping. SCE installed a new HDPE water pipeline with adequate separation from the sanitary system. The project was required to mitigate a potential threat to the freshwater distribution system and comply with California Waterworks Standards. The installation was completed April 2019. The total project cost was $82,714.

Vieudelou Water Main Relocation

During the replacement of a manhole, SCE found that sewer system piping laid directly above freshwater distribution system piping. The existing pipes were installed in the mid-1960s. To comply with California Waterworks Standards, a new HDPE water pipe was installed with adequate horizontal and vertical separation from the sanitary pipe. The project was required to mitigate a potential threat to the freshwater distribution system and comply with California Waterworks Standards. The construction was completed in August 2012. The total project cost was $41,368.

Million Gallon Tank Renovation and Rebuild

During an internal inspection of the MGT, it was discovered that the internal protective coating resulted in significant corrosion on the tank floor. The MGT has a coal-tar enamel lining known to contain polychlorinated-biphenyls (PCBs), which is regulated by the EPA under the Toxic Substances Control Act (TSCA). The interior of the tank was stripped of this lining prior to the application of the new coating. The MGT refurbishment was required to mitigate the environmental issue of the PCBs, as well as improve the structure of the tank and extend its service life. The MGT was removed from service in March 2015, and returned to service in December 2015, with final completion of the project in June 2016. The total project cost was $2.272 million.

Howlands Landing Well 3R Replacement and Pump Modification

After noticing the water quality and production of Howlands Landing Well 3R reduce considerably, an inspection showed that the casing was damaged, allowing sand filter pack and clay annular seal material to enter the well column. The well contractor

removed the debris from the well, and SCE elected to install a new 4-inch polyvinyl chloride (PVC) well pipe inside the existing 6.25-inch well casing. This was an alternative which salvaged the existing well, rather than requiring an entirely new replacement well. The project was required to maintain source capacity for the west end of the island. Construction was completed in February 2018 and was permitted in September 2018. The total project cost was $368,635.

Proposed Capital Improvement Project

The proposed project listed as part of this Water Quality Report is the capital improvement project that is proposed between 2020 and 2024 and related to water quality. Additional projects related to drought resiliency, regulatory and safety requirements, infrastructure replacement, and operational improvement are also proposed are described in SCE Exhibit No. WPSCE-03 Part 01.

Desalination Enhancements – Phase 1

Groundwater has been the primary production source on the island during non-drought periods, however, the recent drought has shown that seawater desalination becomes a more prominent source for water when drought conditions are present. The proposed project would increase the capacity of the desalination plants to withstand a seven-year drought period in the Middle Ranch-Avalon system. Currently the Middle Ranch-Avalon system is projected to withstand a four-year drought period. The proposed increase in capacity would result in additional pipeline capacity of 350 GPM for the two new saltwater wells, additional reverse osmosis (RO) system capacity of 500 GPM, and incremental storage capacity allowing for storage during low demand periods.

The added benefit of expanding desalination production is improved water quality. The RO process removes other impurities that groundwater has naturally occurring, due to the minerality of the source. Additionally, desalinated water does not require additional treatment for DBPs, as water treated from groundwater wells do. The project is expected to be completed no later than December 2022. The total proposed project cost is $2.710 million, after the application of a $10 million dollar grant offered by the California Department of Water Resources (DWR).

SECTION 4: CONCLUSION

The sanitary survey, CCRs, and annual public water report indicate that SCE provides reliable and adequate drinking water to its customers on Santa Catalina Island. Constituent levels are being monitored properly and addressed when they pass acceptable levels.

The water quality-related projects discussed in this report regarding Howlands Landing Well 3R and its associated Treatment System, and Replacement and Pump Modification appear to be used and useful and the WD recommends them to be added to the utility's rate base. The DBP Mitigation project was requested by DDW and appears to have reduced the TTHM levels at Hamilton Cove below the MCL, and so the WD also recommends this project to be incorporated into the utilities rate base. The Million Gallon Tank Renovation is used and is useful, and it has extended the life of a significant element of the utility's distribution system. The WD also recommends this project be added to the utility's rate base.

However, the Wrigley Road and Vieudelou Water Main relocations will require further investigation before the WD can recommend them to be added into the utility's rate base. The depreciation of the original pipe installation will need to be taken in to account, and the possibility that the pipes were originally installed in nonconformance will need to be looked in to.

The proposed Desalination Enhancements seem to be effective preemptive measures towards a 7-year drought, but a project of this size would significantly increase customer's already high rates. The WD recommends that the project be authorized under the following conditions: 1) SCE receives the $10 million DWR grant for the project, 2) the $2.71 million remaining be reviewed for reasonableness as part of this GRC proceeding, and 3) the portion of SCE's investment to be added to rate base for this proposed project should be capped at the requested $2.71 million that the Commission determines is reasonable.