Appendix H – TM 10.6

Groundwater Quality

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Technical Memorandum 10.6

Assessment of Groundwater Quality

for the Regional Groundwater Storage and Recovery Project

3 May 2012

Prepared for

San Francisco Public Utilities Commission
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K/J Project No. 0864001

Supplemental Explanation for Hydrographs - TM10.6

This supplemental explanation is prepared to address discrepancies on several graphs presented in TM 10.6.

First, the x-axis on several graphs showing model results was shifted. The x-axis is named Scenario Year which should correspond to a water year[1]. However, the graph template was plotted using a calendar year, so the intervals on the x-axis represent the period from January to December. The result is that the graph is shifted 3-months later relative to Scenario Year.

Second, the shaded area representing the Design Drought was added manually and because of this process, it was not presented consistently on the graphs. By definition per the PEIR, the 8.5-year Design Drought includes one Hold year before the 7.5-year Take period. In addition, the Design Drought needs to be shifted 3-months later for the x-axis issue to be consistent with the model output. The Design Drought should be shown as Scenario Years 35.5 to 44.0 on the shifted x-axis.

The following is a list of figures in TM 10.6 where the Design Drought shaded area is shown slightly different and does not match the correct display of the Design Drought. The figures should be viewed based on the correct representation of the Design Drought as explained above.

- Figure 10.6-6 has the shifted x-axis. The Design Drought should be shown as Scenario Years 35.5 to 44.0 on the shifted x-axis.
- Attachment 10.6-A graphs with model simulated groundwater levels have the shifted x-axis. The Design Drought should be shown as Scenario Years 35.5 to 44.0 on the shifted x-axis.

[1] A water year is October 1 of the previous year to September 30 of the current (named) year.

3 May 2012

Task 10.6 Technical Memorandum

San Francisco Public Utilities Commission

Assessment of Groundwater Quality for the Regional Groundwater Storage and Recovery Project

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1. Introduction

This Technical Memorandum (TM) was prepared to document work performed by Kennedy/Jenks Consultants (Kennedy/Jenks) pursuant to Task Order (TO) CUW30103-TO-1.14 authorized by the San Francisco Public Utilities Commission (SFPUC) under the Proposed Regional Groundwater Storage and Recovery (GSR) Project. This investigation is performed under the amended TO Pre-Design Investigation Task 10.6 Follow-up Engineering and Hydrogeological Support of the Environmental Phase. This project is funded by the SFPUC's Water System Improvement Program (WSIP).

1.1. Objective

Implementation of the GSR Project will influence groundwater levels within portions of the Westside Groundwater Basin (Westside Basin or Basin). Depending on the magnitude of the potential changes to groundwater levels, groundwater quality conditions may be influenced during the GSR Project operations. Evaluation of the potential groundwater quality effects is a management issue for the long-term sustainability of the groundwater resources in the Westside Basin. The GSR Project has installed numerous monitoring wells to collect data since 2009 for baseline conditions prerequisite of the construction of the proposed production wells. Groundwater samples are being tested for complete Title 22 parameters to ensure highest drinking water quality and results have shown no impact from any man-made activities (e.g., commercial or industrial processes).

This TM was prepared specifically to support the Environmental Impact Report (EIR) that is being prepared for the GSR Project. Associated with the EIR are several significance criteria related to groundwater and surface water conditions within the southern Westside Basin (referred to as South Westside Basin). The specific criterion to be considered by this TM for the assessment of water quality for the GSR Project is stated as follows:

> The GSR Project could potentially and "substantially" affect existing water quality conditions in the South Westside Basin.

> The GSR Project "effect" in the context of this analysis is defined as "mobilization of contaminants in groundwater as a result of pumping or increase in groundwater levels in the South Westside Basin."

Discussion of groundwater quality in this TM includes the evaluation of contaminants that are (1) currently in the groundwater flow system and are pre-existing to the GSR Project and (2) currently in soils that may be mobilized into groundwater from changes to groundwater levels and flow directions caused by the GSR Project operations. A 70 feet below ground surface (bgs) threshold depth was determined for this water quality assessment by canvassing the reported depths of contaminants in lists of active regulated sites from several state and local data sources (Section 5.1). The reported depths of contaminants were shallower than 50 feet bgs in nearly all the active and inactive regulated sites. An additional 20 feet was added as conservative buffer depth. The 70 feet bgs threshold depth can be compared to the model simulated depths to groundwater represented in the groundwater model as the uppermost layer (defined as Model Layer 1). In this water quality assessment, the groundwater model simulated depth to water was used to identify areas that might be within the 70-foot depth threshold from the ground surface and therefore might be most susceptible to groundwater quality effects (see Sections 4.3.3 and 5.2.1). More specifically, if groundwater levels rise to 70 feet bgs or shallower, then there is a potential for mobilization of existing contamination in the soil and/or shallow groundwater systems.

The overall purpose of this TM is to evaluate the potential groundwater quality issues that might result from the future operation of the GSR Project. These issues include the possible mobilization of contaminants or changes in shallow aquifer conditions due to increases in groundwater levels and storage in the South Westside Basin as a result of the GSR Project.

The specific objectives of this TM are as follows:

- To provide background information on the past and current physical setting of the GSR Project area with respect to groundwater flow and quality;
- To describe the controlling mechanisms for groundwater levels and flow conditions that could cause substantial degradation of water quality in the GSR Project area;
- To discuss groundwater flow model scenario results involving the GSR Project and the potential for water levels to rise to within 70 feet of the ground surface;
- To discuss the monitoring network currently in place with regard to the monitoring of groundwater quality; and
- To document the results of other analyses performed to assess the potential GSR Project effects on groundwater quality.

Assessment of groundwater quality effects from the GSR Project is limited to the geographic area of the GSR Project in the South Westside Basin (Figure 10.6-1) and the assessment therefore does not include any possible groundwater quality issues associated with the

proposed San Francisco Groundwater Supply (SFGW) Project. Seawater intrusion is also excluded from this TM but is discussed in detail in a separate TM[1].

1.2. General Approach

The general approach used for evaluating the potential effects on groundwater quality resulting from the GSR Project operations is based on a multi-pronged approach that consists of the following three methods:

- Conceptual understanding
- Groundwater flow model analysis
- Empirical analysis

Each of these three methods was developed and performed to provide an inspection-level (i.e., qualitative) analysis for identifying areas of potential concern with respect to changes in groundwater levels and quality caused by the GSR Project. Individually, each method addresses specific issues using relevant data associated with that specific issue. The three methods collectively support each other for the basin-wide (regional) assessment of potential project effects on groundwater quality conditions.

A detailed discussion of the three methods is presented in Section 2 (for the conceptual understanding), Section 4 (for the groundwater flow modeling analysis), and Section 5 (for the empirical analysis supported by the groundwater setting in Section 3).

This TM is part of a series of technical memoranda that address various aspects of the GSR Project. Two technical memoranda with relevant data and analyses that are used in this TM include:

- Task 8B Technical Memorandum No.1 - Hydrologic Setting of the Westside Basin (also referred to as TM#1) (LSCE, 2010); and
- Task 10.1 Technical Memorandum - Groundwater Modeling Analysis for the Regional Groundwater Storage and Recovery Project and San Francisco Groundwater Supply Project (also referred to as TM 10.1) (Kennedy/Jenks, 2012b).

1.3. GSR Project Overview

The GSR Project is a conjunctive use project that would allow for increased groundwater supplies in the South Westside Basin during periods of drought when SFPUC surface water supplies become limited (MWH, 2008). The GSR Project is sponsored by SFPUC in coordination with its Partner Agencies (PAs): the California Water Service Company (Cal

[1] Kennedy/Jenks, 2012c, Task 10.3 Technical Memorandum - Assessment of Potential Seawater Intrusion for the Regional Groundwater Storage and Recovery Project and the San Francisco Groundwater Supply Project, prepared for the San Francisco Public Utilities Commissions, April 2012.

Water), the City of Daly City (Daly City), and the City of San Bruno (San Bruno). Figure 10.6-2 shows the GSR Project area, locations of the PA wells, and the proposed GSR Project wells. The GSR project will be designed to provide up to 60,500 acre-feet (af) of stored water to meet SFPUC system demands during the last 7.5 years of SFPUC's Design Drought. The GSR Project plans to install 16 new production wells to pump stored groundwater during a drought.

Under the Draft GSR Operating Agreement, the SFPUC would "store" water in the South Westside Basin through the mechanism of in-lieu recharge by providing surface water as a substitute for groundwater pumping by the PAs. As a result of the in-lieu deliveries, up to 60,500 af of groundwater storage or "put" credits could accrue to the SFPUC Storage Account (SFPUC, 2007). During shortages of SFPUC system water due to drought, emergencies or scheduled maintenance, or if the SFPUC Storage Account is at its full capacity of 60,500 af, the PAs would return to pumping from their existing wells. In addition, the SFPUC and the PAs would extract groundwater from the SFPUC Storage Account using the new wells installed by the SFPUC. The SFPUC will not direct pumping during these "take" periods unless a positive balance exists in the SFPUC Storage Account and there is a drought.

The GSR Project modeling scenario (Scenario 2) and cumulative modeling scenario (Scenario 4, which includes the GSR Project) both require a "put/take/hold" sequence to simulate in-lieu groundwater recharge during wet years and groundwater extraction during dry years. Figure 10.6-3 illustrates conceptualization of changing water levels during put and take periods of the GSR Project operations. The upper graph represents the filling of the storage space with groundwater through the mechanism of in-lieu recharge during put periods where SFPUC would provide surface water as a substitute for groundwater pumping by the PAs. The lower graph represents the decline in storage during take periods where the SFPUC and the PAs would extract groundwater from the SFPUC Storage Account. This conceptualization of the GSR Project is illustrated in the context of water quality assessment and depicts the 70 feet bgs threshold depth that can be compared to the simulated depths to groundwater represented in the groundwater model uppermost layer (i.e., Model Layer 1).

The model assumptions for the GSR Project and the Cumulative Scenario are presented in TM 10.1 (Kennedy/Jenks, 2012b). Table 10.6-1 presents a summary of the model scenario pumping assumptions for five model scenarios, including the assumptions for the existing irrigation pumping. In the context of this TM, only Scenarios 1, 2, and 4 are evaluated. A detailed explanation of the model scenario pumping assumptions and the proposed put/take/hold sequence is presented in TM 10.1 (Kennedy/Jenks, 2012b).

2. Conceptual Understanding

The conceptual understanding provides the basic framework for delineating the potential mechanisms that are anticipated to affect groundwater quality as a result of possible changes in groundwater levels and flow directions during the GSR Project operations. This section also presents an overview of monitoring procedures undertaken to manage the possible GSR Project effects. Also included in this section are general descriptions of the major aquifers in the Westside Basin and the hydrogeologic processes and mechanisms that control the occurrence of groundwater flow and water quality conditions.

2.1. Aquifers in the Westside Basin

Groundwater development in the Westside Basin has occurred in various aquifer units in the Colma and Merced Formations from the Golden Gate Park area, through Daly City and South San Francisco, to San Bruno. The Merced Formation contains the primary water-producing aquifer in the Basin (LSCE, 2006). Within the two major water bearing zones in the Westside Basin, there are multiple smaller aquifer zones that are delineated vertically by different sand and clay layers within the Merced and Colma formations. The thickness and extent of these interbedded sand and clay layers vary spatially throughout the Westside Basin.

The aquifer units in the Westside Basin are informally designated as the Shallow Aquifer, the Primary Production Aquifer, and the Deep Aquifer. The Shallow Aquifer is in the northern part of the Basin, in the vicinity of Lake Merced and the southern portion of the Sunset-Richmond district of San Francisco. In the North Westside Basin, aquifer units are separated by two distinctive fine-grained units, known as the -100-foot clay and the W-clay (LSCE, 2004). The base of the Shallow Aquifer is defined to be the top of the “-100 foot clay”. The Primary Production Aquifer is present throughout the Basin, overlying the “W-clay” where it is present. Where the “W-clay” is not present in locations to the south, in the South San Francisco area, the Primary Production Aquifer is divided into shallow and deep units separated by a clay unit at approximately -300 feet mean sea level (msl). The Primary Production Aquifer in the San Bruno area is located 200 feet bgs, and it underlies a thick, surficial fine-grained unit comprised predominantly of clay and sandy clay (LSCE, 2006). The Deep Aquifer underlies the “W-clay”, and thus its extent is limited to the generally-known extent of that clay unit (LSCE, 2010).

Based on the recent water level measurements in November 2008 and January 2009 from the GSR Project monitoring wells located in Colma and South San Francisco areas (MW-CUP-19-180 in Colma and MW-CUP-22A-140 in South San Francisco), the upper portion of the Primary Production Aquifer at these locations is currently under dewatered conditions (Kennedy/Jenks, 2010). However, as discussed in Section 2.3.1, the GSR Project proposes to extract water from the deeper portion of the Primary Production Aquifer (at depths 300 feet or more below the land surface).

2.2. Potential Mechanisms Affecting Groundwater Quality Conditions

Pre-existing contamination at some existing regulated sites may have the potential to generate groundwater contaminant plumes, and ongoing activities at those sites may have the potential to further contaminate the subsurface. In the context of the operation of the GSR Project, there may potentially be the changes to water quality listed below.

For purpose of discussions throughout this TM, the phrase “water table” in these analyses generally refers to the upper surface of groundwater or the top of the saturated zone and the phrase “piezometric surface” generally denotes hydraulic heads in the deeper, confined production aquifer.

- During put periods of the GSR Project operations, groundwater levels will rise in the Primary Production Aquifer. It is possible that the water table may also rise in the unconfined Shallow Aquifer during these periods. Such water table rises could potentially mobilize contaminants trapped in the unsaturated zone, which could cause the movement and spreading of possible pre-existing contaminant plumes or exacerbate future contaminant releases.

- During extended GSR Project recovery or take periods, changes in groundwater flow directions are anticipated to occur in the Primary Production Aquifer. If the response to deeper pumping propagates to the unconfined Shallow Aquifer, this may result in changes to flow directions in the Shallow Aquifer. In turn, this could have an effect on existing groundwater remediation projects. Conceptually, pump-and-treat systems in existing remediation sites could be less effective because lowered water levels and changes in flow directions, resulting in decreased flow/mass removal and reduced groundwater plume capture, prolonging time of cleanup, and in the extreme case, causing them to go dry.

2.3. Potential Areas of Concern during GSR Project Operations

The following is a description of potential areas of concern in the context of the groundwater setting.

2.3.1. Pumping Areas

Areas containing the PA municipal wells, GSR Project wells, and other existing irrigation wells are primary areas of concerns for the groundwater quality assessment described herein. Figure 10.6-3 shows the GSR Project area, locations of the PA wells and the proposed GSR Project wells. The groundwater model scenarios analyzed in this TM account for the existing irrigation pumping, as shown in Table 10.6-1.

During put periods, the effect of rising groundwater levels and possible induced changes in flow directions in the Primary Production Aquifer would likely occur in the vicinity of the PA wells. This is because of reduced PA pumping with the associated increased use of surface water.

During take periods, both the PA and the SFPUC GSR Project wells would extract water. Thus, declining groundwater levels and induced changes in flow directions can occur around both the PA wells and the GSR Project wells.

It is important to note that the GSR Project would extract water from the Primary Production Aquifer, which is approximately 300 feet or more below the land surface. Therefore, changes in the Basin from in-lieu recharge during put periods and from pumping during take periods are likely and primarily to affect the Primary Production Aquifer.

Given the proposed well screen intervals, the GSR Project wells would extract water from 340 feet to 700 feet bgs, except for CUP-M-1 where the proposed screen is from 240 feet to 410 feet bgs. Cal Water production wells as part of the PA wells have screens from 370 feet to 580 feet bgs; San Bruno production wells have screens from 260 feet to 600 feet bgs; and Daly City production wells have screens from 260 feet to 825 feet bgs.

2.3.2. Mechanisms of Transport

Potential effects of the GSR Project on existing subsurface contamination, other anthropogenic effects, and existing remedial systems (e.g., pump-and-treat) depend greatly on the degree of *physical separation* between the occurrences of perched water bearing zones, unconfined Shallow Aquifer, and the deeper pumping zone in the Primary Production Aquifer. The two mechanisms of transport are explained below. The nature of perched groundwater is further explained in Section 2.6.2.

First, aquifer materials between perched water bearing zones and shallow groundwater can be comprised of thin and discontinuous fine-grain impermeable to low permeable materials. Aquifer materials between the shallow unconfined and deeper production aquifers can be comprised of (1) thick aquifer materials of interstitial clay in sedimentary sands and (2) thick sequences of intervening clay lenses that are considered to be aquitards (i.e., confining units) in some portions of the South Westside Basin. The effect of this hydrostratigraphic arrangement of aquifers and aquitards is that shallow groundwater is shielded from the pumping effects in the deeper production aquifers by thick sequences of fine grained materials at varying depths, which minimizes the movement of downward groundwater flow in the shallow groundwater (including perched water bearing zones) during take periods and dampens the effects of rising water levels during put periods.

Second, and less specific to the GSR Project, the interstitial clays and contiguous confining units between the shallow and deep groundwater zones could retard the transport of highly mobile as well as less-mobile contaminants. Specifically, travel time between the shallow and deep groundwater zones is very long. Furthermore, natural attenuation of dissolved constituents generally occurs due to dispersion and dilution. Hence, the effect of the clay-rich materials is equivalent to a physical barrier that isolates shallow contaminant point sources from the GSR Project effects that occur in the deeper production aquifers. This mechanism is only relevant during take periods, when the drawdown due to the GSR Project wells may induce increased

downward gradients and changes in local horizontal gradients and flow directions that might have otherwise resulted in migration of contaminants in shallow groundwater. This secondary mechanism may limit the impact of the cause (i.e., deep aquifer pumping) and effect of reactivating shallow groundwater contamination sources.

In addition to water quality issues in shallow groundwater, the primary nonpoint source constituent of interest is isolated pre-existing nitrate occurrence in the Shallow Aquifer and the upper portion of the Primary Production Aquifer, as described in Section 3.2.2.

2.4. Potential Effects on Groundwater Quality

This section briefly describes the most common issues that are encountered with respect to groundwater quality as a result of variable pumping conditions. The intent of this section is to conceptually introduce the most common issues in broad terms, not with respect to the specific GSR Project operations. Water quality issues that could result from the GSR Project operations are further discussed and evaluated in Sections 4 and 5.

In general, the magnitude of effects would vary depending on pumping implementation (pumping amount, location, frequency, duration, and pumping depth) and the hydrogeologic setting. In many instances, depending on the magnitude of resulting changes in groundwater levels and flow directions, existing and planned beneficial uses of groundwater (for drinking water and/or agricultural use) could be affected. For example, in areas with a shallow water table, the most common effects from reduced pumping (or in the context of this analysis “in-lieu” recharge during put periods of the GSR Project operations) may include a rise in the water table or fluctuations that could potentially reactivate contaminants residing in the unsaturated zone and perched water bearing zones or result in remobilization and potential movement and spread of possible contaminating plumes and activities. This situation is of particular interest in areas with existing active regulated sites with possible contaminant plumes and release activities and in areas where pesticides and fertilizers have been applied on the ground.

In the case of increased pumping (or in the context of this analysis pumping during take periods of the GSR Project operations), conceptually lowered water levels are anticipated within cones of drawdown in the vicinities of the pumping areas (i.e., GSR Project and the PA municipal pumping wells). It is noted that conceptually pump-and-treat systems in areas with a shallow water table could be less effective because lowered water levels would result in decreased yields in remediation wells and, in the extreme case, could cause them to go dry, decreased flow/mass removal, and prolonging time of cleanup. Conversely, pump-and-treat systems could be less effective because of reduced groundwater plume capture as a remediation well’s capture zone is narrowed due to higher groundwater levels and flow.

2.5. Typical Monitoring Procedures

Routine monitoring of groundwater levels and quality at a network of groundwater monitoring wells is essential for planning and implementing strategies to reduce the risk of groundwater quality effects caused by variable pumping conditions. Analysis of data collected from routine monitoring can help investigators to understand the response of the groundwater basin to variable pumping conditions and to identify short-term or long-term potential effects from reduced or increased pumping. Monitoring data can help identify where and when groundwater quality issues may arise. Therefore, it is helpful to implement adequate contingency plans and to streamline decision-making in response to crisis situations.

Depth-discrete multilevel monitoring systems are particularly important to characterize hydraulic head and water quality variations with depth. Groundwater elevation data from multi-level completion wells and aquifer pumping tests can provide evidence for the extent of the hydraulic connection among various aquifer depths. Analysis of measured data can help identify the relative direction of vertical flow between different aquifer units under reduced and increased pumping conditions. Data can be used to assess the horizontal zones of influence of pumping and the vertical effect of deep aquifer pumping on the water table.

Environmental isotopes, such as tritium, deuterium, and oxygen-18, have proven useful in various types of hydrogeologic settings to (1) track the movement of water between different groundwater systems, (2) estimate travel times, (3) determine potential contamination processes, and (4) estimate aquifer vulnerability to groundwater contamination. Groundwater systems that are not in communication with each other often have distinctly different geochemical signatures. On the other hand, groundwater systems that are in hydraulic connection have similar chemical signatures or show a mixing trend. Similar geochemical signatures of groundwater can help characterize the extent of penetration of the same origin water into various groundwater zones.

2.6. Physical Processes Affecting Groundwater Quality

For the purpose of this analysis, potential groundwater quality effects from the GSR Project operations were evaluated conceptually and qualitatively with respect to general hydrogeological conditions and physical processes that can control groundwater flow and quality. The general hydrogeological conditions listed below, and described briefly in the following subsections, may influence the GSR Project's effects on water quality.

- Recharge mechanisms and shallow groundwater contaminants;
- Vadose zone, perched groundwater, and aquifer hydraulic connections; and
- Aquifer types and hydrologic conditions;
- Aquifer hydraulic connections; and
- The occurrence and nature of subsurface contaminants.

2.6.1. Recharge Mechanisms and Shallow Groundwater Contaminants

Groundwater recharge is considered one of the most important factors influencing groundwater vulnerability to contaminating activities on the ground or shallow subsurface because recharge is the primary vehicle by which a contaminant is transported from the ground surface to groundwater. In general, groundwater recharge to an unconfined aquifer is a result of deep percolation into groundwater derived from precipitation and runoff. Recharge to a confined aquifer is complex and dependent on the proximity of the aquifer to the recharge zone, adjacent groundwater zones, confining layers, vertical gradients, and groundwater pumping effects.

From the GSR Project perspective, the predominant inflow component for the Westside Basin (and the South Westside Basin) is from percolating rain and irrigation water, which are the primary recharge mechanisms. Much of the GSR Project area supports commercial and residential land uses and hence surfaces are paved. Direct recharge of precipitation to the ground surface and the shallow unconfined aquifer can be a secondary contributor to the groundwater in the aquifers in developed areas; hence, primary recharging ground waters beneath the GSR Project area flow horizontally from aquifer zones peripheral to the GSR Project area. Due to frequently occurring fine-grained materials separating the upper Shallow Aquifer system from the Primary Production Aquifer (Section 2.3), contaminants in shallow groundwater zones are not likely to affect water quality in the Primary Production and Deep Aquifers. Based on the historical data, there is no evidence for the occurrence of shallow contaminants (i.e., volatile organic compounds, or VOCs) in the drinking water supply aquifers (Primary Production and the Deep Aquifers). If the migration of VOCs were to occur in the future, under natural recharge conditions, it would require a very long time (on the order of decades) for shallow contaminants to migrate if at all down to the Primary Production and the Deep Aquifer at very low concentrations given sufficient time for natural attenuation.

As mentioned above, the GSR Project involves the storage of groundwater through in-lieu recharge into the semi-confined and confined aquifers at depths greater than 300 feet bgs (Section 2.3), which could indirectly lead to higher water levels in the Shallow Aquifer. During put periods, water levels in the Primary Production Aquifer (under confined to semi-confined conditions) would be expected to experience larger fluctuations than would those in the shallow unconfined aquifers. Since groundwater would be recovered from the same Primary Production Aquifer during dry years (take periods), the deeper aquifer system would readily experience declining water levels as a result of pumping by the PA municipal wells and SFPUC GSR Project wells, and the Shallow Aquifer would likely experience negligible water level changes due to their unconfined condition (as suggested by the model results for Model Layer 1 in Section 4). Moreover, the underlying fine grained aquifer materials would minimize the effects of in-lieu recharge on shallow water levels.

2.6.2. Vadose Zone and Perched Groundwater

The lithology of the unsaturated zone and the presence of perched water bearing zones under the land surface are important with respect to groundwater vulnerability to shallow releases of contaminants and plumes. The thickness and soil types in the vadose zone control the degree

to which a contaminant can be attenuated prior to reaching groundwater. In general, subsurface media comprised of fine-grained materials (silts, clays) would create lower susceptibility to groundwater contamination while coarse-grained materials (sands and gravels) would create higher susceptibility. The type of soil media in the vadose zone (e.g., clay versus sand) affects the rate at which a contaminant can travel within the vadose zone and from the surface, where most contaminants reside, to groundwater.

The presence of perched groundwater can also control the movement of constituents released into the vadose zone and their continued downward path of migration into groundwater aquifer. By definition, a perched water bearing zone is an unconfined groundwater body supported or underlain by impermeable or slowly permeable materials. The existence of a low-permeability clay layer in a high-permeability sand formation can lead to the formation of a discontinuous saturated lense, with unsaturated conditions existing both above and below (Freeze and Cherry, 1979). The majority of the contaminant release activities canvassed in this evaluation have constituents detected in groundwater in the perched water bearing zones. The depths to perched water bearing zones are on the order of 30 feet to 50 feet bgs beneath which groundwater can be classified as the Shallow Aquifer. The perched water bearing zones and the Shallow Aquifer are separated by low permeability fine-grained materials.

2.6.3. Aquifer Types and Hydrologic Conditions

Aquifer types and conditions play a significant role controlling groundwater occurrence and the effects on the subsurface from potential contaminating activities. It is necessary to understand conceptually the circumstances under which the GSR Project operations would lead to rising or declining water levels and changing groundwater flow directions in the Shallow Aquifer, and how these changes could affect contamination in the unsaturated zone and the Shallow Aquifer.

By definition, unconfined aquifers are directly beneath the unsaturated zone and the water table forms the upper boundary of unconfined aquifers (Freeze and Cherry, 1979). The mechanism that causes rising water levels in unconfined aquifers is the filling of soil porosity with water. In an unconfined aquifer, water released from storage during pumping is derived from the dewatering of these pore spaces. Pumping from an unconfined aquifer lowers the water table (i.e., the hydraulic head) around the wells and produces a water table in the shape of a downward-pointing, curved cone, called the cone of depression or drawdown cone. Drawdown locally alters the general groundwater flow rate and direction, and a contaminant plume in the vicinity of the pumping well can be drawn towards the well. These physical factors make the unconfined aquifer more vulnerable to human activities on the land surface, as water levels in the unconfined aquifer may experience localized fluctuations over a short period of time due to rapid changes in recharge and pumping. Thus, direct recharge to the water table, such as percolating rain during storm events or irrigation, would tend to have direct influence on contaminant plumes.

In confined and semi-confined aquifers, on the other hand, the mechanism of rising groundwater levels during in-lieu recharge (put periods) is different than in the unconfined aquifer. Pressure in the production zone would rebound toward pre-pumping conditions in response to reduced

pumping, contrasting with a physical rise in the water table surface in unconfined aquifers. Confined aquifers, by definition, remain saturated during pumping. A volume of water removed from the confined aquifer by a well is released in response to a water-pressure drop that causes aquifer compaction and pore-water expansion, not a dewatering of pore spaces as in the unconfined aquifer.

The aquifer units in the Westside Basin are informally designated as the Shallow Aquifer, the Primary Production Aquifer, and the Deep Aquifer, as described in Section 2.1. In the GSR Project area, both the GSR Project wells and the PA wells would pump from the Merced Formation under confined/semi-confined conditions. Currently, groundwater elevations in the Primary Production Aquifer in the South Westside Basin are substantially lower than water levels in the overlying Shallow Aquifer Colma Formation, suggesting a general downward vertical gradient. The downward gradient is of general interest, as constituents in the upper zone could migrate into the lower production zone. The multilevel monitoring well clusters in the GSR Project area can be used to observe inter-aquifer changes in water quality conditions. However, in regard to the GSR Project, the lack of a downward vertical gradient is also of interest because that could increase the likelihood of a rise in water levels during in-lieu recharge or put periods.

Even though in-lieu recharge is anticipated to increase water levels (pressure heads) in the Primary Production Aquifer, the likelihood of the apparent downward gradient reversing upwards due to the GSR Project operations is uncertain given the anticipated future municipal pumping in the production zone. However, a reduction in vertical gradient by in-lieu recharge would reduce the downward flow of groundwater. With the same argument, reduction of the vertical gradient could potentially cause a rise in the shallow groundwater table.

2.6.4. Aquifer Hydraulic Connections

The degree of hydraulic connection between different aquifer systems (perched, shallow, and deep) is important with respect to groundwater vulnerability to contaminating activities because it controls whether the effects of pumping in the “deep” Primary Production Aquifer can propagate to shallow aquifer systems and cause changes in flow conditions in a manner that would induce groundwater quality effects. The hydraulic connection also defines the possible flow paths a contaminant could travel and the potential for attenuation once it reaches the aquifer.

In the context of hydraulic connections in the subsurface, the presence of fine-grained aquifer materials in the subsurface above pumping zones is critical as these confining materials exert controls on the occurrence and flow of groundwater between the upper and lower aquifer systems. The aggregate occurrences of aquitards and intervening fine grained units could restrict vertical migration of contaminants from the shallow to the deep groundwater zones, and isolate the pumping effects in the deep production aquifer.

The generalized regional cross-sections in the Westside Basin were updated in 2010 based on the new subsurface lithological data obtained from recently installed monitoring wells for the

GSR Project (LSCE, 2010). Based on interpretation of the subsurface, the regional cross-section that extends from north (Golden Gate Park) to south (San Francisco International Airport) and several regional cross-sections that stretch from west to east along the Daly City, South San Francisco, and San Bruno areas provide insight on the presence of fine-grained layers overlying the Primary Production Aquifer and the potential for confined to semi-confined conditions in the Primary Production Aquifer.

Local stratigraphy and recently obtained groundwater level data suggest that in the Daly City, South San Francisco, and San Bruno areas, the Primary Production Aquifer is under semi-confined to confined conditions. In the North Westside Basin area away from Daly City, the presence of the -100 foot clay clearly separates the Primary Production Aquifer from the overlying Shallow Aquifer.

It is noted that the -100 foot clay is no longer present beneath the Daly City area and thus the split between the Shallow Aquifer and deeper Primary Production Aquifer is not formally defined in this portion of the Basin. However, cross-section F-F' in TM# 1 (LSCE, 2010) oriented north-south through the Basin indicates that from Daly City south to South San Francisco, the Primary Production Aquifer is isolated from shallow groundwater by 50 feet to 100 feet aggregate thickness of intervening clay and sand deposits. The aggregate thicknesses of these materials make up discontinuous low permeability zones that reduce the possibility for vertical migration of contaminants. These relatively low-permeability shallow sediments in the Daly City to South San Francisco area are markedly different than the higher-permeability shallow sands found in the North Westside Basin. South of Daly City, from South San Francisco to San Bruno, the presence of thick surficial Bay Mud deposits of even lower relative permeability likely provides an even greater degree of isolation to the Primary Production Aquifer in that area.

Additional evidence for isolation of the Primary Production Aquifer beneath the cities of Colma and Millbrae is apparent from relative groundwater elevations measured in multilevel GSR Project monitoring well clusters installed in 2008 and 2009. At each monitoring well location, there are three or four separate wells installed at discrete depths. The completion depths for these wells generally correspond to the Primary Production Aquifer and the Deep Aquifer, and an apparent equivalent to the Shallow Aquifer in the North Westside Basin is identified, although it is not formally recognized in this area.

Differences in groundwater levels measured in the GSR Project monitoring wells suggest likely hydraulic separations of these three aquifers in the central and southern portions of the South Westside Basin. For instance, at the monitoring well cluster MW-CUP-18-490 and MW-CUP-18-660 installed in Colma, groundwater levels in the Primary Production Aquifer well (490 feet deep) are typically 31 feet higher than levels in the next deeper well (660 feet deep), installed in the Deep Aquifer. An even greater difference exists in groundwater levels between the 250-foot deep well and the next deepest well, at 500-foot depth, at the monitoring well site CUP-10A. Similar differences in groundwater levels exist for the Shallow Aquifer and Primary Production Aquifer well completions for the other GSR Project monitoring well groupings between Daly City and San Bruno. At the monitoring well MW-CUP-44-1 in northern San Bruno, groundwater levels in the shallowest well completion (190 feet deep) are typically about 10 to 15 feet higher

than levels in the intermediate-depth well (300 feet deep). As with conditions in the North Westside Basin, these relative groundwater level differences in the South Westside Basin suggest a similar degree of isolation of the Primary Production Aquifer.

2.6.5. Occurrence and Nature of Contaminants in the Subsurface

For the purpose of this analysis, and consistent with the California Department of Public Health (CDPH) definition, possible contaminating activities (PCAs) are activities, industries, or land uses considered to be potential origins of contamination of the hydrologic environment. These activities may include transporting, storing, manufacturing, producing, using, or disposing of industrial chemical, agricultural chemicals or other potential contaminants. PCAs may include petroleum releases, land disposal of solid wastes, and land-applied chemicals from agricultural practices that may pose a threat to the drinking water supply, by causing the release of contaminants. The locations, status, and groundwater conditions of PCAs were evaluated as part of the water quality assessment to determine potential effects from the GSR Project operations. The inventory of the existing PCAs and their effects on the GSR Project operations are discussed in Section 5.

With respect to the GSR Project operations, potential effects on nitrate conditions may occur, including mobility such as redistribution of nitrate mass in the lower portion of the Shallow Aquifer mainly due to potential changes in flow directions, resulting from the GSR Project pumping conditions.

Nitrate (as NO_3) concentrations historically exceed the drinking water standard primary maximum contaminant level (MCL) of 45 milligrams per liter (mg/l) in some locations (LSCE, 2010), as discussed in Section 3.2.2. Nitrogen, in the form of nitrate, commonly affects water quality beneath agricultural lands (Harter et al., 2012). The extent of nitrate detected in groundwater is mainly attributed to past fertilizer applications and possible confined animal facilities that are not related to the GSR Project conditions. Whether or not the GSR Project is implemented, the occurrence of nitrate in native groundwater is considered a pre-existing condition due to past land use practices. The effect of the GSR Project on nitrate concentrations in the vadose zone or native shallow groundwater depends greatly on the potential for the GSR Project to cause changes in shallow groundwater levels. As explained in Section 2.6.1, fluctuations of shallow groundwater levels due to GSR Project storage and recovery are likely negligible because of the Shallow Aquifer and its hydraulic isolation from the deep aquifers that the GSR Project would extract from.

The primary concern with respect to landfills and other land disposal of solid wastes is leaching by percolating water from rain. Since the GSR Project will use in-lieu recharge rather than surface spreading, it would not directly induce changes in the current conditions of land disposal sites.

In situations where leaks at underground storage tank (UST) sites move through the unsaturated zone, downward movement of hydrocarbons typically ceases when the seepage front reaches the water table. Except for small amounts of hydrocarbons that go into solution,

petroleum hydrocarbons do not penetrate below the water table because they are less dense than water and immiscible in water. As a result of this characteristic, oil and gasoline from leaky tanks migrate almost exclusively in the capillary fringe, directly above the water table (Freeze and Cherry, 1979). Dense non-aqueous phase chemicals, on the other hand, can migrate great distances after reaching groundwater, given their densities, which are greater than that of water. However, the downward migration of chemicals denser than water is typically limited by the presence of confining layers.

3. Groundwater Setting

This section provides an overview of the regional geology and hydrogeology of the GSR Project area most relevant to the water quality analysis. The geology and hydrogeology of the Westside Basin have been described previously (LSCE, 2005; DWR, 2003; Yates et al., 1990), and will not be extensively described in this section.

For the assessment of groundwater quality changes from the GSR Project, the South Westside Basin is considered to be the general project area that would be subject to changes in groundwater levels and storage from the GSR Project operations. Contaminant plumes and release activities that are known to be located in the GSR Project area are briefly introduced in this section and further evaluated as part of the empirical analysis in Section 5.

3.1. Westside Groundwater Basin

The groundwater basin beneath the western part of San Francisco from the vicinity of Golden Gate Park and extending southeasterly into San Mateo County is identified in the California Department of Water Resources (DWR) Bulletin 118 as both the Merced Valley Basin and the Westside Basin (DWR, 2003). Since it is more commonly known as the Westside Basin, this designation is used in this TM. Figure 10.6-1 shows the boundary of the Westside Basin and the northern and southern portions of the Basin.

Relevant to this discussion, the Westside Basin has been divided into northern and southern portions at the San Francisco County-San Mateo County line. This subdivision is a political division, which is not representative of a physical boundary, and it is not meant to imply that there is any restriction of groundwater flow between the two areas. The portion of the Basin that lies within San Francisco County is referred to as the North Westside Basin and the portion of the Basin that lies within San Mateo County is referred to as the South Westside Basin. Figure 10.6-1 shows the boundary of the North and South Westside basins. The GSR Project would be located in the South Westside Basin, which has an area of about 25 square miles. The proposed SFGW Project would be located in the North Westside Basin, which has an area of about 15 square miles. Aquifers in the GSR Project area are described earlier in Section 2.1.

3.1.1. Groundwater Flow Conditions

Groundwater levels and general direction of flow vary in the Westside Basin. In the portion of the North Westside Basin north of Lake Merced, groundwater in the Shallow and Primary Production Aquifers tends to flow in a westerly direction towards the Pacific Ocean. Groundwater in this area, from near Lake Merced north to Stern Grove and Golden Gate Park, is encountered at relatively shallow depths, ranging from approximately 5 feet to 60 feet bgs (LSCE, 2006). The Shallow Aquifer beneath Lake Merced also has a generally westward groundwater flow direction.

Near Lake Merced and immediately southward, the groundwater direction in the Primary Production Aquifer is to the south and southeast towards Daly City (the Shallow Aquifer as

defined previously is no longer present in the Daly City area). In these areas and further south the depth to piezometric head can exceed 300 feet bgs, due largely to the effects of long-term municipal pumping beneath the Colma and South San Francisco areas. The groundwater depressions caused by concentrated areas of long-term pumping induce flow locally towards those depressions.

In the portion of the Basin from Daly City northward, groundwater elevations have generally exhibited a flat (Shallow Aquifer) to decreasing (Primary Production Aquifer) trend over the past two to three years, as compared to an upward trend from 2002 to 2006. The slight downward trend in the Primary Production Aquifer appears to be caused by resumption of groundwater pumping by Daly City during this period (LSCE, 2010).

From South San Francisco southward to Burlingame in the vicinity of San Francisco Bay (Bay), groundwater within the shallow units overlying the Primary Production Aquifer generally flows east towards the Bay (Rogge, 2003; Yates, 2003). Throughout this portion of the Basin, groundwater flow in the Deep Aquifer is generally east towards the Bay. In the vicinity of San Bruno, groundwater extraction has created a local depression in the water table (City of San Bruno, 2007). A flow divide near the south end of the San Francisco Airport separates the area where groundwater flows toward the pumping depression in San Bruno from the area where groundwater flows toward the Bay (Yates, 2003). The divide trends southwest from near the Millbrae exit on Highway 101, and groundwater northwest of the divide is captured by the San Bruno wells (Yates, 2003).

Groundwater elevations in areas south of South San Francisco are highly variable, depending largely on proximity to pumping wells and depths in the aquifer where water levels are measured. In areas near South San Francisco and San Bruno, the groundwater in the Primary Production Aquifer is typically at elevations ranging from -100 to -200 feet msl (or 130 feet to 230 feet bgs). However, in areas closer to the Bay, groundwater elevations are in the range of approximately 10 to -30 feet msl, with the lower levels corresponding to measurements made in deeper monitoring wells.

3.1.2. Pumping in the Westside Groundwater Basin

Groundwater pumping in the Westside Basin consists primarily of pumping for municipal (potable) supply by Daly City, Cal Water (serving South San Francisco), and San Bruno. Groundwater is also used for irrigation and other non-potable uses, most notably on golf courses around Lake Merced, cemeteries in Colma, at the San Francisco Zoo, and at Golden Gate Park (LSCE, 2006). Groundwater is pumped primarily from deeper, semi-confined portions of the aquifers within the Basin (SFPUC, 2009a). Historical trends and current pumping conditions for municipal and irrigation pumping are described extensively in TM#1 (LSCE, 2010).

3.1.3. Existing Groundwater Quality Monitoring and Reporting Activities

Groundwater quality in the Westside Basin is monitored in a network of production and monitoring wells as part of the semi-annual monitoring program that was initiated throughout the Basin in 2000. Figure 10.6-4 shows the locations of wells monitored by SFPUC in the South Westside Basin. Results of the most recent groundwater quality monitoring were reported in the 2010 Annual Groundwater Monitoring Report Westside Basin, prepared by the SFPUC in coordination with the City of Daly City, San Bruno, and the Cal Water (SFPUC, 2011).

3.2. Groundwater Quality Conditions

This section summarizes general water quality conditions particularly in the South Westside Basin based on the review of available and relevant reports, documents, and data from the ongoing monitoring activities in the Basin, particularly those from sampling events in 2009 (Kennedy/Jenks, 2009 and 2010), and the review of water quality in 2011 (Kennedy/Jenks, 2012a). Since the GSR Project would be implemented in the Daly City, South San Francisco, and San Bruno areas, monitored water quality in these areas is expected to represent the nature of water quality that would be produced during the GSR Project operations. Therefore, water quality conditions are discussed with respect to these general pumping areas based on data at selected key monitoring locations.

Data sources were reviewed for all Title 22 water quality indicators, VOCs, and radiological to note general trends and to identify elevated concentrations and the localized areas where those concentrations exceed the drinking water standards. Data primarily come from four sources listed below:

- Hydrogeologic Conditions in the Westside Basin (LSCE, 2006)
- 2008 and 2010 SFPUC Annual Groundwater Monitoring Reports (SFPUC, 2009a, 2011)
- GSR Phase 1 and 2 Monitoring Well Installation Technical Memoranda (Kennedy/Jenks, 2009 and 2010)
- Review of Water Quality, Treatment, and Operations for Future SFPUC Groundwater Supply Final Draft, October 2011 (Kennedy/Jenks, 2012a).

In addition to these sources, groundwater quality conditions in the Westside Basin are also described as part of TM#1 (LSCE, 2010); thus, references were made to TM#1 as needed for detailed information on basin groundwater quality.

Based on evaluating groundwater quality conditions alone, groundwater quality generally meets the MCLs of the primary and secondary drinking water standards set by the CDPH and SFPUC water quality criteria, with the exception of nitrate in selected areas (see below), fluoride, and other select secondary constituents in selected areas (i.e., pH, color, hardness, turbidity,

conductivity, total dissolved solids (TDS), sulfate, chloride, manganese, and iron). For most constituents, SFPUC water quality standards are more stringent than regulatory drinking water standards (i.e., MCLs). Blending analysis of groundwater-surface water was conducted for compliance with the primary and secondary drinking water standards and SFPUC criteria and to determine blending and treatment requirements that will address water quality issues (Kennedy/Jenks, 2012a). Based on the future blended groundwater and surface water supply that will be delivered to SFPUC drinking water customers, predicted blended water quality for the SFPUC GSR Project wells meets regulatory and SFPUC criteria for the constituents listed above, except for hardness, iron, manganese, turbidity, and fluoride (Kennedy/Jenks, 2012a). Turbidity levels are anticipated to be addressed by well operations. Exceedances for iron and manganese indicate that treatment will be required. Fluoride and hardness will be addressed by blending. While there are localized areas with naturally occurring manganese and iron concentrations that exceed the secondary drinking water standards, these issues will be addressed by treatments during the GSR Project implementation. It should also be noted that this TM primarily focuses on the potential effects the GSR Project on existing anthropogenic pollution, not water quality issues associated with naturally occurring conditions.

Other water quality parameters are not necessarily of concern, but are noted below based on long-term data available at key locations in the South Westside Basin. All water quality parameters vary by locations and depths of groundwater. The GSR Project proposes locations and aquifers that are expected to provide the best available water quality for groundwater production.

3.2.1. General Minerals

Data from recently installed monitoring wells by SFPUC as part of the GSR Project showed several sites with elevated levels for the following constituents: hardness, specific conductance (EC), TDS, turbidity, color, iron, manganese, sulfate, and aluminum. In addition, pH for groundwater is in the range of 7-8 units and will have to be raised to meet water quality standard through treatment and/or blending (Kennedy/Jenks 2012a). Concentrations of these constituents may need to be lowered to meet the primary and secondary MCLs, and/or water quality targets developed by SFPUC and the PAs. It is anticipated that potential blending/treatment may be necessary to reduce concentrations. In terms of the relevance of monitoring data collected from the monitoring wells, it is important to note that these results are informative but not fully representative of the raw water quality that would be pumped from the GSR Project production wells. As reported in the Phase 1 and 2 Monitoring Well Installation Technical Memoranda, recommendations were made for design and construction of the 16 GSR Project production wells with potential test well design parameters and noted water quality effects (Kennedy/Jenks, 2009 and 2010). Groundwater quality conditions with respect to general minerals are further described below by the general pumping areas in Daly City, South San Francisco, and San Bruno.

Daly City Area - Long-term historical data extending back to the mid-1970s (DC-2 Westlake) suggest an increase in mineral concentrations (EC, TDS, and chloride) as of 2000, but data are too sporadic to conclude that there are any current trends or changes. More recent data (since 2000) show that TDS has fluctuated, but EC and chloride concentrations are similar to 2000 conditions (Figure 21 in TM#1, LSCE, 2010).

South San Francisco Area - A Cal Water well (SS1-14) has the longest period of record in the Basin, dating back to the 1950s (Figure 22 in TM#1, LSCE, 2010). Chloride concentrations have remained around 120 mg/l to 130 mg/l for the entire period. Concentrations of EC and TDS fluctuated more than chloride and appeared to exhibit a generally upward trend since the 2000 monitoring event. During the 2008 sampling event, total and dissolved manganese concentrations exceeded the secondary MCL of 0.05 mg/l at the South San Francisco Linear Park wells (MW-120, 220, 220, 440, and 520). At this well cluster, detected concentrations ranged from 0.147 mg/l to 0.825 mg/l for total manganese.

San Bruno Area - Available data extending back to 2000 suggest fairly constant conditions and generally lower concentrations than elsewhere in the Basin. TDS concentrations have been around 300 mg/l, and chloride concentrations are consistently low at around 60 mg/l. The 2008 sampling results remained within historical ranges for EC, TDS, and chloride (Figure 23 in TM#1, LSCE, 2010). As part of the City of San Bruno's Bay monitoring program, the two well clusters installed in 2006 (Burlingame-S, M, D and SFO-S-D) show chloride concentrations less than 350 mg/l in the shallow well Burlingame-S, and less than 140 mg/l in both the medium (Burlingame-M) and deep well (Burlingame-D).

3.2.2. Nitrate

Among the general water quality parameters, trends in nitrate in the GSR Project area are discussed separately due to elevated concentrations that exceed drinking water standards in localized areas. Historical data are available at the selected key monitoring locations in the PA pumping areas, as summarized below (Figure 24 in TM#1, LSCE, 2010). In this analysis, observed nitrate is described in terms of nitrate as nitrate (NO_3) and all nitrate values are reported in terms of nitrate (as NO_3). Data are compared relative to the primary MCL of 45 mg/l for nitrate as NO_3 (the primary MCL for nitrate as nitrogen (N) is 10 mg/l).

Nitrate (as NO_3) concentrations reported in groundwater sampled in 2008 and 2009 are shown in Figure 10.6-5 based on observed data from the PA wells and the GSR Project monitoring wells. The following is a description of nitrate distribution by the general areas of Daly City, Colma, South San Francisco, Golden Gate National Cemetery, and San Bruno. In general, data indicate isolated occurrences of elevated nitrate levels above the primary MCL of 45 mg/l for nitrate in portions of Daly City and South San Francisco. Ongoing monitoring will continue to examine trends and help delineate whether the recent data are indicative of changing, temporary, or anomalous conditions with respect to nitrate in the Daly City and South San Francisco areas.

Daly City Area – During the spring 2008 sampling, detected nitrate concentrations in four wells sampled ranged from 10 mg/l in the Jefferson to 131 mg/l in inactive Daly City A Street well, which exceeds the primary MCL of 45 mg/l. Historical data available since 2000 from DC 2 and Vale wells show nitrate concentrations ranging mostly from 20 to 40 mg/l. Detected nitrate concentrations in three of the four wells sampled in 2008 decreased slightly compared to 2007, with the exception of the Jefferson well, which remained relatively the same (9.4 mg/l in 2007 and 10 mg/l in 2008).

Nitrate concentrations reported at the GSR Project monitoring well MW-10A in Daly City were elevated, ranging from about 36 mg/l from MW-10A-160 and MW-10A-250 to 49.5 mg/l from MW-10A-500. Nitrate from the 645-foot screen in MW-CUP-10A-710 was about 0.9 mg/l. The Park Plaza monitoring well had nitrate concentrations of 26.5 mg/l in the primary production zone depth (i.e., Primary Production Aquifer) and a much lower concentration of 0.6 mg/l in the deeper zone (i.e., Deep Aquifer).

City of Colma Area – The GSR Project monitoring well MW-CUP-18 located in Colma had nitrate concentrations ranging from 6.6 mg/l from MW-CUP-18-230 to 14.85 mg/l from MW-CUP-18-425 mg/l and a much lower concentration of 0.63 mg/l from MW-CUP-18-660 in the deeper zone. Nitrate was not detected from the GSR Project monitoring well MW-CUP-19 sampled at three different depths (475 feet, 600 feet, and 690 feet bgs).

South San Francisco Area – Detected nitrate concentrations in raw groundwater during the 2008 sampling were 47 mg/l in SS1-19, which is slightly above the primary MCL of 45 mg/l, and 35 mg/l in SS1-20 (Note that groundwater from these Cal Water wells is blended with SFPUC surface water prior to distribution and the resulting blend fully meets all drinking water standards). The inactive SS1-14 well, with historical data dating back to the late 1950s, was offline during the 2008 sampling; data show concentrations increased slightly from the 1950s to 1990s, while remaining below 40 mg/l. Nitrate concentrations from 2000 to 2007 in SS1-14 fluctuated considerably with the highest concentration of 120 mg/l measured in spring 2001. Recent measurements since 2004 have been approximately 80 mg/l. Since 2001, nitrate concentrations remained near 80 mg/l, based on the data reported in the SFPUC's 2010 Annual Groundwater Monitoring Reports (SFPUC, 2011). Detected nitrate concentration was 0.5 mg/l in the SSF Linear Park MW-220 and non-detect at other depths.

Data are also available from three multi-level monitoring wells installed by SFPUC in the South San Francisco as part of the GSR Project. Nitrate from the GSR Project monitoring well MW-CUP-22A-290 was about 43 mg/l, which is close to the primary MCL of 45 mg/l. At greater depths, nitrate concentrations at this location were much lower, about 1.1 mg/l from MW-CUP-22A-440 and 2.4 mg/l from MW-CUP-22A-545. Nitrate concentration of 64.9 mg/l was reported at the GSR Project monitoring well MW-CUP-23-230 in September 2009. Nitrate concentrations in MW-CUP-23 from deeper depths were lower and below the primary MCL: 29 mg/l in MW-CUP-23-600, 21.3 mg/l in MW-CUP-23-440, and non-detect in MW-CUP-23-515. MW-CUP-36 had nitrate concentration of about 32 mg/l at the shallowest depth (160 feet bgs) and much

lower concentration of about 6.8 mg/l at the 270-foot screen and no nitrate detections from deeper depths.

Golden Gate National Cemetery – Nitrate concentrations reported at the GSR Project monitoring well MW-CUP-44-1-190 and MW-CUP-44-1-300 were 37 and 32.8 mg/l, respectively. Nitrate was not detected in MW-CUP-44-1-460 and MW-CUP-44-1-580.

San Bruno Area – Nitrate concentrations reported in 2008 were 5.5 mg/l in SB-17 and 1 mg/l in SB-20. Historical data available for SB-17 since 2000 show measured nitrate concentrations of 3.5 mg/l to 6 mg/l, which are well below the primary MCL of 45 mg/l. Similarly, data from SB-20 since 2004 showed very low nitrate concentrations, less than 2 mg/l, at this location. MW-CUP-M-1 located in Millbrae had relatively low nitrate at 12.1 mg/l.

3.2.3. Organic Compounds

A few trace organic compounds were detected in the monitoring wells for the GSR Project during sampling in 2008 and 2009, but these are not necessarily of concern because detected concentrations were near their respective reporting limits, which are well below the respective MCLs.

During the December 2008 and January 2009 sampling, acetone was detected in low concentrations in groundwater samples from the Phase 1 wells, including the existing SFPUC Park Plaza monitoring well cluster (MW135, MW195, MW460, and MW620). To assess the validity of acetone presence in the native groundwater, Phase 1 wells MW-CUP-18-230 and MW-CUP-18-490 were re-sampled in October 2009 and acetone was not detected. The previously detected acetone concentrations were not repeatable and are not considered to be representative of regional water quality conditions (Kennedy/Jenks, 2009 and 2010).

As found in numerous studies in the State and in particular the “California Aquifer Susceptibility” study by the Lawrence Livermore National Laboratory (Moran et al., 2004), the Westside Basin wells with deeper screens draw an older groundwater component, and are free of VOCs and other contaminants residence in the shallow groundwater zones. In this Basin, vulnerability of groundwater is largely controlled by depth, and wells that tap deeper aquifers are apparently protected from VOC contamination that may be present in shallow groundwater zones.

3.2.4. Groundwater Quality Near Cemeteries

Cemeteries in the GSR Project area were evaluated by SFPUC for potential groundwater quality concerns. Based on the recent groundwater sampling conducted by SFPUC from five monitoring wells (MW-CUP-18, MW-CUP-19, MW-CUP-22A, MW-CUP-44-1, and the Linear Park monitoring well) located in the vicinity of the cemeteries, there is no apparent groundwater contamination from cemeteries (Kennedy/Jenks, 2010, see also Section 5.4). The ongoing SFPUC monitoring at the monitoring wells for the GSR Project will continue to evaluate groundwater quality conditions in the vicinity of the cemeteries.

The initial samples were taken in September, October, and November 2009 at three different monitoring locations near the cemeteries. Samples were analyzed for aldehydes, including formaldehyde (a chemical used for embalming) and acetaldehyde (most likely a natural microbial degradation byproduct in the aquifer sediments and unrelated to cemeteries or embalming). Locations sampled included a multi-level monitoring well MW-CUP-44-1 (screened at five depths from 190 feet to 580 feet bgs and each depth sampled) located in the Golden Gate National Cemetery, MW-CUP-18 (two depths sampled at 230 feet and 490 feet bgs) located near Cypress Lawn Cemetery, and the Linear Park multi-level monitoring wells (screened at four depths from 120 feet to 530 feet bgs and each depth sampled). All samples had concentrations of non-detect below the reporting limit for formaldehyde (less than 5 micrograms per liter(μg/l)), with the exception of the reported concentration of 26 μg/l measured from the Linear Park monitoring well at 440 feet bgs (Kennedy/Jenks, 2009 and 2010). This detection is below the notification level of 100 μg/l for formaldehyde. It is important to note that this detection was flagged by the laboratory as being received past the holding time and not considered acceptable for regulatory compliance. The 2009 samples were also analyzed for acetaldehyde (most likely a natural microbial degradation byproduct). For acetaldehyde, only two samples were reported to be 1.0 and 2.0 μg/l, which are slightly above the reporting limit of 1.0 μg/l (no reported MCL or notification level for acetaldehyde). It is possible that the acetaldehyde detections are due to natural background or sample contamination.

SFPUC conducted a subsequent re-sampling for formaldehyde in 2010 at five monitoring well locations including the Linear Park well and re-sampling did not confirm the presence of formaldehyde where the samples were all below the detection limit (less than 5 μg/l). The subsequent sampling was conducted in May, October, and December 2010 and included the following well locations: MW-CUP-18 (three depths sampled at 230 feet, 425 feet, and 490 feet bgs) and MW-CUP-22A (two depths sampled at 290 feet and 545 feet bgs), MW-CUP-19 (sampled at 475 feet bgs) and the Linear Park monitoring well (re-sampled at four depths from 120 feet to 520 feet bgs).

3.3. Existing Regulated Sites

Possible groundwater contamination from human activities at the ground surface is an important aspect of groundwater quality assessment. The PCAs from existing regulated sites warrant special considerations because of their potential to pose notable risk to groundwater quality during the GSR Project operations. Records of known PCAs were compiled from the following sources. Locations of these sites were mapped and are further discussed in Section 5.2.4. The inventory of the existing PCAs was previously compiled and evaluated as part of the CDPH Drinking Water Source Assessment Program (DWSAP) documentation as discussed in Section 5.2.3.

- **State Water Resources Control Board (SWRCB) GeoTracker Database** – The GeoTracker database (compiled in March 2012 at http://geotracker.swrcb.ca.gov/), contains a total of 1,560 regulated sites within San Mateo County (SWRCB, 2012). Each of these sites is identified with a status of "closed" or "open"2. Among these, the majority of them (1,155) were closed under regulatory oversight. Among the 405 open sites, 49 were reported to be inactive and the remaining 356 sites are leaking underground storage tank (LUST) sites or other cleanup sites currently undergoing active investigation, monitoring, and/or soil/groundwater remediation. There is no military LUST site (closed or open) in the South Westside Basin. There is one Military cleanup site listed in San Mateo County located in Half Moon Bay, but the site was reported to be inactive.

- **California Solid Waste Information System (SWIS) Database** – This contains solid waste facilities, operations, and disposal sites (compiled in January 2010 at http://www.calrecycle.ca.gov/SWFacilities/). According to the SWIS database, among 33 land disposal sites/transfer stations in San Mateo County, 14 sites were located in the general GSR Project area (CalRecycle, 2010). Among the 14 sites, one (1) site is closed, one (1) site in the process of closing, and 12 sites were reported to be active.

- **San Francisco Bay Regional Water Quality Control (RWQCB) Board Spills, Leaks, Investigations, and Cleanup (SLIC) Database** – According to the SLIC database, there are 145 sites reported in the San Mateo County (compiled in May 2010 at http://www.waterboards.ca.gov/sanfranciscobay/publications_forms/avail_doc.shtml). Among these, 15 sites are reported in the general area of the GSR Project in the South Westside Basin (RWQCB, 2010).

- **California Department of Toxic Substances Control (DTSC) Database** – Facilities and sites that are regulated by the California Department of Toxic Substances Control (DTSC) were searched through the Envirostor database website (compiled in May 2010 at http://www.envirostor.dtsc.ca.gov/public/) that allows a search for properties where extensive investigation and/or cleanup actions are planned or have been completed at permitted facilities and clean-up sites (DTSC, 2010). In the compiled database, 15 sites were reported in the general area of the GSR Project in the South Westside Basin.

[2] Open sites include sites that are currently active with site assessments or remediation activities. These sites are likely to have verification monitoring requirements. Closed sites have a status of completed closed cases. A case closed site qualifies to receive a "no further action" (closure) letter once the owner or operator meets all appropriate corrective action requirements. After this occurs, a closure letter or other formal closure decision document is issued for the site to indicate no further work is required.

4. Groundwater Model Analysis

Groundwater models are useful tools that can help quantify the changes in groundwater conditions associated with future project activities. This section presents the current modeling analysis conducted to evaluate the GSR Project effects on groundwater quality using the latest Westside Basin Groundwater Flow Model (HydroFocus, 2011). Presented in this section is a summary of the modeling scenario results related specifically to the potential effects on groundwater quality from Scenario 2 for the GSR Project and Scenario 4 for the Cumulative Scenario.

4.1. MODFLOW Model

The existing Westside Basin Groundwater Flow Model was developed over a period of time from 2002 to 2011 by HydroFocus (HydroFocus, 2007, 2009, and 2011). The model development has been a collaborative effort sponsored by Daly City with review by SFPUC, Cal Water, San Bruno, and their respective consultants.

The existing Westside Basin Groundwater Flow Model was used to simulate future model scenarios to evaluate potential effects from the GSR Project. The model scenario development and assumptions, including modifications made to the existing model, are discussed in Task 10.1 TM (Kennedy/Jenks, 2012b).

For the assessment of groundwater quality effects from the GSR Project, the model results were used to demonstrate general trends as they pertain to changes in groundwater levels at the regional-scale. The assessment also identifies general areas with a shallow water table that might be susceptible to remobilization of existing contaminants and/or plumes as a result of fluctuation in the water levels in the shallow water bearing zones.

4.2. Model Scenario Summary

The numerical groundwater model discussed in the Task 10.1 TM was used as a predictive tool for simulating the basin conditions under various management scenarios associated with the GSR Project. A detailed description of the model setup and assumptions of these scenarios, including amounts and distribution of pumping, is provided in the Task 10.1 TM (Kennedy/Jenks, 2012b). Among the five modeling scenarios developed, the following three scenarios are applicable to analyzing the GSR Project effects on groundwater quality:

- **Scenario 1 – Existing Conditions** – Scenario 1 represents the Existing Conditions and does not include the SFPUC Projects. Groundwater pumping by the PAs and irrigation pumping are representative of the existing pumping conditions (as of June 2009).
- **Scenario 2 – GSR Project** – Scenario 2 represents the implementation of the GSR Project and the PA pumping rates as designated by the GSR Project operations. The PA

and GSR Project pumping occur according to the put/take/hold sequence described in TM 10.1. Irrigation pumping remains the same as in Scenario 1.

- **Scenario 4 – Cumulative Scenario** – Scenario 4 represents the implementation of both the GSR Project (Scenario 2) and the SFGW Project (Scenario 3b) along with other foreseeable projects, such as the Daly City Vista Grande Drainage Area Improvements Project (which increases stormwater diversions into Lake Merced). Irrigation pumping remains the same as Scenario 1, except with minor variations such as the planned build-out at Holy Cross cemetery.

4.3. Use of Model Results

The results of modeling scenarios are analyzed to determine general areas in the South Westside Basin where the GSR Project could affect groundwater quality. This analysis was conducted at the regional scale and was by necessity, fairly qualitative. The assessment focused on the Full SFPUC Storage Account and the Design Drought. This is because these aspects of the GSR Project may play an important role in the GSR Project's possible effects on groundwater levels and storage. All of the model scenarios start with the initial condition of June 2009 groundwater levels. The June 2009 SFPUC Storage Account value is approximately 20,000 af. In order to achieve a "Full" SFPUC Storage Account value of 60,500 af in both Scenarios 2 and 4, the first 6.5 years of the model simulation are put years. The 60,500 af that represents the Full SFPUC Storage Account is 40,500 af larger than the June 2009 initial condition of 20,000 af. It is therefore very likely that groundwater levels in the South Westside Basin are higher under the Full SFPUC Storage Account than under the Existing Conditions of Scenario 1.

For the GSR Project water quality assessment, the results of the modeling analysis are presented as model estimated basin-wide change in groundwater storage (Section 4.3.1 and Figure 10.6-6), water level hydrographs at selected locations (Section 4.3.2 and Attachment 10.6-A), estimated basin-wide depth to water contour maps (Section 4.3.3 and Figures 10.6-7 through 10.6-11), and groundwater flow directions in the shallow groundwater (Section 4.3.4 and Figures 10.6-12 through 10.6.17).

HydroFocus (2007) suggests the strongest predictive ability of the model is in relative changes over time rather than the absolute predictions of water levels. However, in this analysis, it is also important to assess the estimated absolute depths to water table. Therefore, the results are presented for Scenarios 1, 2 and 4 for both the absolute and relative differences from Scenario 1.

4.3.1. Change in Groundwater Basin Storage

Model estimated change in groundwater basin storage is presented in Figure 10.6-6 for each of the five scenarios separately over the simulation period. Unlike groundwater levels, the model-simulated groundwater storage values are not relied upon in this analysis. Instead, the results of

the Full SFPUC Storage Account condition are assumed to represent the highest water levels and are used as a reference for the water quality assessment.

4.3.2. Water Levels

Model-simulated water levels for each of the five model scenarios and relative to the Existing Conditions are presented in Attachment 10.6-A. However, as described previously, only Scenarios 1, 2 and 4 are considered in this TM.

The existing groundwater model includes the capability of monitoring head at 125 different monitoring points. This section examines the results for 11 selected monitoring points (Figure 10.6-2). These well locations were selected within the general extent of the pumping areas in the South Westside Basin and within the vicinity of the GSR Project wells and the PA production wells. As discussed previously, historical groundwater pumping has been relatively intense and focused within the South Westside Basin. Furthermore, most GSR Project wells would be located in these general pumping areas, with one GSR Project well (CUP-M-1) planned to the south, in the City of Millbrae. Therefore, the model-simulated effects on groundwater levels would be most evident in the PA pumping areas and the GSR Project pumping areas.

As per TM 10.1, in this analysis, hydrograph representations for each of the monitoring points are presented for Model Layer 1 (which includes the shallow unconfined aquifer) and for Model Layer 4 (which represents the Primary Production Aquifer). TM 10.1 also presents groundwater model-simulated hydrographs for selected locations from all five model layers. The results for Model Layer 1 are of particular interest for assessing water quality effects associated with rising water levels (such as the potential mobilization of contaminants).

In each hydrograph in Attachment 10.6-A, the model-simulated water levels are expressed as feet of elevation (datum NGVD29) and the time axis is in scenario years. The total duration of each hydrograph corresponds to the total length of time for each model simulation (47.25 years).

4.3.3. Depth to Water

Depth to water contour maps were generated for Scenarios 1, 2, and 4 based on the model-simulated water levels in Model Layer 1 as a representation of the shallow aquifer conditions (Figures 10.6-7, 10.6-8, and 10.6-10). For the purpose of evaluating the GSR Project effects, the changes in depth to water for Scenarios 2 and 4 were also contoured relative to the Existing Conditions (Figures 10.6-9 and 10.6-11). On Figures 10.6-9 and 10.6-11, a positive sign indicates a rise in water table elevation relative to Scenario 1. In this analysis, the relative difference contour maps were used to identify general areas that would be most susceptible to rising water levels as a result of the GSR Project operations under Scenarios 2 and 4. The absolute depth-to-water contour maps were used to identify areas that might be within the 70-foot depth threshold (Section 1.1) from the ground surface under the Existing Conditions and therefore might be most susceptible to groundwater quality effects. This approach was taken

because, generally speaking, areas with a shallow water table (less than 70 feet bgs) are considered most sensitive to changes in water quality. As discussed in Section 1.1, in this water quality assessment, the 70-foot depth threshold is considered conservative and was determined by canvassing the reported depths of contaminants in lists of active regulated sites from several State and local data sources. As a conservative approach, all depth to water table contours were prepared and evaluated at the time period that corresponds to the Full SFPUC Storage Account condition (or Scenario year 7).

4.3.4. Groundwater Flow Directions

During the GSR Project recharge and recovery periods, changes in groundwater flow directions would be anticipated to occur as a result of changes in the Production Aquifer zone pumping conditions. If the response to deeper pumping propagates to the unconfined Shallow Aquifer, this may result in changes in flow directions due to changes in the shallow aquifer hydraulic gradient.

Model estimated flow directions in Model Layer 1 were used to evaluate general basin-wide flow directions and to identify areas that may be subject to changes in flow directions due to the GSR Project operations. This is a qualitative comparison performed at the basin scale. Maps with arrows indicating flow directions (Figures 10.6-12 through 10.6-17) were prepared for Scenarios 1, 2 and 4 and the results of Scenarios 2 and 4 were compared to those of Scenario 1 visually in order to identify potential changes relative to the Existing Conditions.

For the purpose of comparative analysis, the model estimated flow directions were mapped at the simulation periods that would represent the most conservative conditions. In Scenarios 2 and 4, these conditions are associated with the Full SFPUC Storage Account (for the maximum rise in water levels) and at the end of the Design Drought (for the maximum drawdown).

4.4. Scenario 2 - GSR Project Analysis

The possible effects of the GSR Project upon groundwater levels and associated groundwater quality issues are considered in this section for Scenario 2.

4.4.1. Water Levels

In the South Westside Basin, the groundwater model results for water levels are evaluated for the following 11 locations: DC-A St, DC-3, DC-8, DC-2-Westlake, Cypress Lawn No. 02, SSF-2, SSF-18, SB-12, SB-13, SB-15, and SB-16. Hydrographs corresponding to these locations for Model Layer 1 and Model Layer 4 are presented in Attachment 10.6-A, both based on the absolute water levels and relative to the Existing Conditions (Scenario 1).

Scenario 2 typically produces groundwater levels higher than Scenario 1 in the South Westside Basin. The Full SFPUC Storage Account generally reflects the maximum rise in groundwater levels. The maximum drawdown in groundwater levels generally corresponds to the end of the

Design Drought. This is mainly due to the aggregate effects of pumping by the PAs, GSR Project and the background irrigation pumping.

For the water quality assessment, Model Layer 1 results are of particular interest as they represent changes in water table conditions in response to the GSR Project operations. Among the major pumping areas, the changes in groundwater level in Model Layer 1 associated with the GSR Project vary from the largest changes in the Daly City and Colma areas, to somewhat medium changes in South San Francisco, and minor changes in the San Bruno area. The largest changes in water table conditions (both declines and increases) in the Daly City area appear to coincide with areas with large depth to water table under the Existing Conditions. In the Daly City area, water levels in Model Layer 1 generally remain above Scenario 1 conditions, ranging from a net increase of 80 feet at the Full SFPUC Storage Account to a net decline of about 55 feet at the end of the Design Drought. In the South San Francisco area, the model-simulated water levels are higher in Scenario 2 relative to Scenario 1, except at the end of the simulation period, but the relative changes remain within 20 feet of Scenario 1. In the San Bruno area, the water levels in Scenario 2 are consistently higher than in Scenario 1 throughout the entire simulation period. However, the maximum increase is about 8 feet, which represents a smaller effect compared to the Daly City and Cal Water pumping areas.

Results from Model Layer 4 for Scenario 2 relative to the Existing Conditions are briefly discussed, as they represent conditions in the Primary Production Aquifer and are not directly related to the assessment of water quality in the Shallow Aquifer. In Model Layer 4, water levels show large fluctuations controlled mainly by the GSR Project put/take/hold sequence. These particular trends in predicted groundwater levels for Scenario 2 are clearly evident on all of the hydrographs. At the end of the Design Drought, groundwater levels under Scenario 2 are projected to decline, relative to Scenario 1 levels from approximately 60 feet to 120 feet in the Daly City and Colma pumping areas (DC-2-Westlake, DC-3, DC-8, DC-A-St, and Cypress Lawn No.2), about 130 feet in the Cal Water area (SSF-2 and SSF-18), and from about 80 feet to 100 feet in the San Bruno area (SB-12, SB-13, SB-15, and SB-16).

4.4.2. Depth to Water

Figures 10.6-7 and 10.6-8 show depth to water contour maps for Scenario 1 and 2, respectively, at the time period corresponding to the Full SFPUC Storage Account. Based on the Existing Conditions, the estimated depth to the water table is largest near Daly City and becomes shallow further south toward San Bruno and Millbrae. Overall, the depth to water table ranges from 200 feet to 300 feet bgs in the Daly City area, within 50 feet to 100 feet in the Cal Water area, and mostly within 50 feet in the San Bruno area (Figure 10.6-7). In general, both Scenario 1 and Scenario 2 show similar ranges of depth to water tables in these major pumping areas, but each scenario shows different spatial variations.

Figure 10.6-8 shows the difference in depth to water table conditions from Scenario 2 relative to Scenario 1. Consistent with the results from the water level hydrographs in Model Layer 1, the largest rise in water table resulting from the GSR Project is seen in the vicinity of the Daly City area, ranging from 40 feet to 80 feet (Figure 10.6-8). While the overall rise in water table is

large, the resulting depth to water table from the GSR Project would be well below the 70-foot depth threshold, given the large depth to water table (200 feet to 300 feet bgs) without the GSR Project. At the Full SFPUC Storage Account, increase in water table would be around 5 feet in the South San Francisco area and less than 3 feet in the San Bruno area. In the San Bruno and South San Francisco areas, the maximum increase in depth to water table from the GSR Project is estimated to be less than 10 feet. While the existing depths to water table in these areas are shallower compared to Daly City, the overall rise in water table resulting from the GSR Project is relatively small.

4.4.3. Groundwater Flow Directions

Model estimated groundwater flow directions are presented for Scenarios 1, 2, and 4 in Figures 10.6-12 through 10.6-17. Groundwater flow directions are presented in Model Layer 1 at two selected time periods that correspond to the Full SFPUC Storage Account and the end of the Design Drought.

At the Full SFPUC Storage Account, flow directions in Scenario 2 tend to follow trends similar to Scenario 1, with the most notable changes apparent in the Daly City area (as shown by comparing Figures 10.6-12 and 10.6-14). Scenario 1 demonstrates flow directions in the Daly City area that are primarily towards the pumping center around the Daly City municipal wells; while Scenarios 2 shows continued flow to slightly further south of Day City towards the Colma area, as a result of the large rise in water table conditions from the GSR Project. San Bruno and Cal Water pumping areas show no appreciable changes in flow directions relative to Scenario 1, both at the Full SFPUC Storage Account and the end of the Design Drought.

In light of the large depth to water table conditions in the Daly City area, changes in flow conditions resulting from the GSR Project would occur well below the 70-foot depth threshold. Therefore, these changes are not anticipated to affect the conditions of contaminants and plumes residing in the soil above 70 feet bgs. See also discussion on nitrate in Section 5.6.5.

4.4.4. Evaluation

The groundwater model results show that at the regional scale, groundwater levels and storage at the Full SFPUC Storage Account represent the highest water levels. However, the increase in water levels and storage as a result of the Full SFPUC Storage Account relative to Scenario 1 does not appear to be sufficient to result in a substantial rise in the water table (or shallow aquifer water levels) above the 70-foot depth threshold associated with the potential mobilization of shallow contaminants.

In general, Model Layer 1 results show that the maximum rise in water table (40 feet to 80 feet rise) would occur primarily in the Daly City area, where large depths to the water table (200 feet to 300 feet bgs) exist before the GSR Project. Therefore, the rise in the water table of up to 80 feet from the GSR Project would not cause water levels to rise to within the 70 feet bgs threshold and would not be anticipated to cause mobilization of contaminants in soil or shallow aquifer conditions.

At the Full SFPUC Storage Account condition, the overall rise in water tables resulting from the GSR Project is less than 5 feet in the South San Francisco and San Bruno areas. However, as shown in Attachment 10.6-A, the maximum rise in water table could reach locally to about 20 feet in the South San Francisco area and 10 feet in the San Bruno area. These changes are smaller compared to those in the Daly City area and should be viewed in the context of the shallow depth to water table conditions (less than 100 feet bgs) and the locations of the PCAs, which are pre-existing conditions. As further discussed in Section 5, the maximum rise in water tables resulting from the GSR Project does not appear to affect areas with existing contaminants that are located in the soil and/or in the shallow depths of water. Therefore, this small increase in water levels from the GSR Project operations in these areas does not appear to be an issue with respect to the mobilization of contaminants.

Changes in flow directions in Model Layer 1 are apparent in response to the GSR Project. However, the effect of change in flow directions is not anticipated to affect the existing contaminants and plumes because of their geographic locations and/or depths (e.g., Model Layer 1 groundwater levels in the Daly City area are projected to remain well below 70 feet bgs threshold depth under Scenario 2) (Section 5).

4.5. Scenario 4 - Cumulative Scenario Analysis

Scenario 4 includes the proposed operation of both the GSR and SFGW Projects, projected pumping for the PAs and third party pumpers such as irrigation pumping, and other foreseeable projects. Reasonably foreseeable projects that are considered under the cumulative scenarios include Daly City's Vista Grande Drainage Area Improvements Project and Holy Cross cemetery future build-out. A detailed description of the model assumptions used for Scenario 4 is presented in the Task 10.1 TM (Kennedy/Jenks, 2012b).

4.5.1. Water Levels

Hydrographs corresponding to the selected 11 locations for Model Layer 1 and Model Layer 4 are presented in Appendix 10.6-A. Results from Scenario 4 in the South Westside Basin are similar to those from Scenario 2. The combined effects of the two SFPUC Projects are most notable in the Daly City area due to the proximity to SFGW Project operations in the North Westside Basin. In the South San Francisco and San Bruno areas, there is no appreciable difference between Scenario 4 and Scenario 2 with the GSR Project. Therefore, the findings presented in Section 4.4 for Scenario 2 are applicable to Scenario 4.

Similar to Scenario 2, the lowest groundwater levels predicted in the South Westside Basin for Scenario 4 correspond to the Design Drought. Recovery of groundwater levels, relative to simulated Scenario 1 conditions, is expected to be similarly discrete during the GSR Project put periods, as shown in hydrographs in Attachment 10.6-A. During hold periods, the PAs would return to their designated pumping, which is essentially the same as the pumping under Scenario 1. The trends seen in groundwater levels during hold periods in Scenario 4 therefore tend to follow trends seen in Scenario 1.

4.5.2. Depth to Water

Figure 10.6-10 shows the depth to water contour map generated for Scenario 4 to represent conditions at the Full SFPUC Storage Account. Under Scenario 4, the combined effects of the GSR and the SFGW Projects in the northern portions of the South Westside Basin result in depth to water table conditions very similar to Scenario 2 at the Full SFPUC Storage Account condition (Scenario Year 7). However, there are slight spatial variations in the depth to water between Scenario 4 and Scenario 2. These can be attributed to the effects of the SFGW Project and very minor modifications in the PA pumping assumptions, primarily for the Daly City and Cal Water municipal wells. In general, the Scenario 2 results are more conservative than the Scenario 4 results with respect to rising water table conditions. This is because the SFGW Project is absent from Scenario 2. Under Scenario 4, only slightly higher depths to water table are experienced than in Scenario 2. These are located primarily in the Daly City area and occur as a result of shifting a portion of the Daly City pumping under the Existing Conditions to the proposed DC-A Replacement well under the Cumulative Scenario (which is located on the west side of Daly City, further away from the well locations under the Existing Conditions).

4.5.3. Groundwater Flow Directions

Model estimated groundwater flow directions in Model Layer 1 for Scenarios 1 and 4 are presented in Figures 10.6-12 and 10.6-16 for the Full SFPUC Storage Account and in Figures 10.6.13 and 10.6-17 at the end of the Design Drought. The effects of the Cumulative Scenario in the South Westside Basin are very similar to those of Scenario 2 for the GSR Project because the SFGW Project under the Cumulative Scenario is concentrated in the North Westside Basin.

At the end of the Design Drought, Scenarios 1 and 4 show strong flow directions towards the Daly City, Colma and South San Francisco areas of the Basin where the majority of pumping would occur (Figures 10.6-13 and 10.6-17). Similar to Scenario 2, the most notable difference for Scenario 4 compared to Scenario 1 is the increased pumping in the Daly City area. As a result of this change, the overall flow direction south of Daly City appears to be primarily towards Daly City.

At the Full SFPUC Storage Account, the flow directions in Scenario 4 tend to be similar to those of Scenario 1, but slight changes are apparent in the Daly City area where the flow direction changes from toward the pumping area under Scenario 1 to a more southwesterly flow direction under Scenario 4.

4.5.4. Evaluation

The effects of Scenario 4 in the South Westside Basin are similar to those of Scenario 2. Because the SFGW Project operates solely in the North Westside Basin, the majority of the SFGW Project effects are limited to the general extent of that area. Therefore, the general model findings for Scenario 2 are also applicable for the Cumulative Scenario with respect to water quality effects.

In summary, the model analysis results suggest that the Cumulative Scenario would not cause mobilization of contaminants in soil or shallow aquifer zones as a result of increases in groundwater levels and storage in the South Westside Basin. The model results show that at the regional scale, the groundwater levels and storage associated with the Full SFPUC Storage Account condition represent the highest levels. However, the increase in water levels and storage as a result of the Full SFPUC Storage Account under the Cumulative Scenario relative to Scenario 1 does not appear to result in a substantial rise in the water table (or the water levels in the shallow aquifer) (Figure 10.6-10). Therefore, increases in water levels and storage from the Cumulative Scenario do not appear to be an issue with respect to the mobilization of shallow contaminants and plumes. Changes in flow directions in Model Layer 1 are apparent under Scenario 4 and similar to those conditions anticipated for Scenario 2. Therefore, general findings presented in Section 4.4.4 for Scenario 2 would be applicable for the Cumulative Scenario with respect to the effects of changes in flow directions on water quality.

5. Empirical Analysis

This section describes the empirical analysis for evaluating the effects of potential changes in groundwater quality as a result of the possible changes in groundwater levels and storage associated with the GSR Project operations. The focus is on existing and open regulated cleanup sites, referred to as possible contaminating activities or PCAs. Records of known PCAs were compiled from the following sources and relevant sites were included in Preliminary DWSAPs submitted to the CDPH. These sites were mapped and are further discussed in Section 5.2.3 as part of the CDPH DWSAP documentation and analysis of groundwater protection zones.

The main criterion to be addressed with respect to groundwater quality is the potential mobilization of contaminants in groundwater and soil as a result of possible increases in shallow groundwater levels from the GSR Project operations. In addition, the potential change to the shallow groundwater flow direction is also considered as this may influence existing contaminant plumes. This assessment also evaluates groundwater quality effects based on historical land use such as localized nitrate distribution and assessment of potential contamination from cemeteries.

5.1. Data Sources

As noted in Section 3.3, data sources listed below were compiled and evaluated at the basin-wide scale and in the vicinity of the pumping areas for the GSR Project.

- Records of known contaminating activities from GeoTracker (SWRCB, 2012);
- Records of known historical land disposal sites (SWIS, 2010);
- Records of DTSC sites (California DTSC, 2010);
- Records of SLIC sites (San Francisco Bay RWQCB Spills, Leaks, Investigations, and Cleanup, 2010); and
- Recent 2008 nitrate measurements in the South Westside Basin.

The databases used for the analysis were mapped in a Geographic Information System (GIS). Data compiled for the existing regulated sites, including the GeoTracker, SWIS, DTSC, and SLIC databases, are available in electronic format and can be provided upon request.

5.2. Approach and Methodology

An inspection level assessment was conducted using a comprehensive mapping of listed PCAs in the GSR Project area. It was the main intent of this qualitative assessment to investigate basin-wide soil and groundwater contamination activities. The approach included a basin-wide

compilation and review of known contaminant sites at the regional scale. First, a basin-wide screening was applied to identify known existing open regulated sites across the entire GSR Project area in the South Westside Basin. Figure 10.6-18 is an index figure to Figures 10.6-19 through 10.6-23 that show the open regulated site locations and recorded depths to groundwater (also in Plate B-1). Listings of open and closed sites are included in Table B-1 in Attachment 10.6-B. Table B-1 lists open and closed regulated sites within the 2,000 feet groundwater protection zones and the South Westside Basin boundary. The relevant databases were sorted based on salient themes such as the type of cleanup site, regulatory status (e.g., open or closed), and the potential media affected (e.g., soil, drinking water aquifer). GIS maps were created to show locations of the existing PCAs with respect to these themes over the entire South Westside Basin. These maps are represented as Figures 10.6-19 through 10.6-23 for the open regulated sites.

To assess the potential for water quality changes related to rising groundwater levels associated with the GSR Project, the areas that may be most susceptible to groundwater quality effects were identified. This identification was based on four key components that were evaluated jointly in order to determine the vulnerability of specific portions of the groundwater basin. The four key components are:

1. Depth to water in the perched water bearing zone or in the Shallow Aquifer;

2. Presence of confining layers in the subsurface;

3. Groundwater protection zones around the GSR Project pumping centers; and

4. Status and spatial distributions of PCAs in the GSR Project area.

5.2.1. Depth to Water

Depth to water is considered an important parameter with respect to groundwater vulnerability, because it represents the distance a contaminant must travel through the unsaturated zone before reaching the water table (or top of the Shallow Aquifer) and affecting quality of water supply. It is noted that perched water bearing zones occur and are considered to be overlying the Shallow Aquifer in the Basin. According to the GeoTracker database, contaminants from PCAs in the GSR Project area are mostly characterized as occurring in soil and in the perched zones above the primary or drinking water supply aquifers.

In general, shallow contaminants below ground are more likely to affect unsaturated and perched water bearing zones in areas with a shallow water table in the Shallow Aquifer. Hence, areas with shallow water levels have a higher risk of groundwater contamination, while areas with a deep water table would present a lower risk to groundwater quality. Thus, depth to water table was analyzed in conjunction with the locations and status of the existing PCAs.

Based on groundwater model results, the depth to water contour maps for Scenario 1 (Figure 10.6-7) and Scenarios 2 and 4 (Figures 10.6-8 and 10.6-10) are compared to evaluate the potential for higher water levels in the Shallow Aquifer (Model Layer 1) due to the GSR Project in-lieu recharge operations. For the GSR Project, the Full SFPUC Storage Account, which represents 60,500 af of in-lieu recharge, generally has the highest water levels in the South Westside Basin. Therefore, the depths to water contour maps for Scenarios 1, 2 and 4 were prepared at the time period that corresponds to the Full SFPUC Storage Account (Scenario Year 7).

Depths to the water table in Model Layer 1 in Scenarios 2 and 4 were compared relative to Scenario 1 to demonstrate the effect of GSR Project operations on water levels, as shown in Figure 10.6-9 for Scenario 2 and Figure 10.6-11 for Scenario 4. Results of the modeling analysis presented in Section 4 demonstrate that GSR Project operations in the production depths (Primary Production Aquifer) would result in about 80 feet of water level rise in Model Layer 1, which generally represents conditions in the Shallow Aquifer. The largest rise in water levels is naturally centered on the portion of the groundwater basin with the historically lowest water levels under pre-GSR Project conditions – i.e., beneath Daly City (Figures 10.6-9 and 10.6-11). Water depths in the Shallow Aquifer are further evaluated in Section 5.6.1.

5.2.2. Presence of Confining Layers In the Subsurface

The presence of confining layers comprised of fine grained sediments above the GSR Project pumping zones is critical for assessing potential groundwater quality changes from the GSR Project operations. Confining layers exert controls on the groundwater flow and direction. Confining strata of fine grained aquifer material, when encountered in the subsurface between the PCAs and the deep pumping aquifer, could restrict flow from the shallow zone to the production zone (Primary Production Aquifer) and isolate the pumping effects in the deep production aquifer. The following describes the main geographic areas of significance in the Westside Basin:

- In the North Westside Basin away from Daly City, the presence of the -100-foot clay clearly separates the Primary Production Aquifer from the overlying Shallow Aquifer.
- The -100-foot clay is not encountered beneath Golden Gate Park and differences in groundwater levels between the two aquifers indicate that the Shallow Aquifer is unconfined and the Primary Production Aquifer is semi-confined, with a downward component of groundwater flow.
- Local stratigraphy and recently-obtained groundwater level data suggest that in the Daly City, South San Francisco, and San Bruno areas, the Primary Production Aquifer is confined to semi-confined. The -100-foot clay is no longer present beginning in the Daly City area, and thus the Shallow Aquifer is also not formally defined for this area.

- Nonetheless, from South San Francisco to San Bruno, the presence of thick surficial Bay Mud deposits of even lower relative permeability likely provides an even greater degree of confinement to the Primary Production Aquifer in that area.

5.2.3. Groundwater Protection Zones

The concept of groundwater protection zones that was developed by the CDPH, formerly Department of Health Services, for the DWSAP was applied in this analysis as the basis for defining the anticipated area of influence around each pumping (existing or proposed) well. The overall objective of the DWSAP is to ensure the quality of drinking water sources is protected. Permitting of a new water supply well requires that a DWSAP assessment be completed as part of the permit process and submitted to CDPH. Compliance with the CDPH requirements is a key part of groundwater quality protection.

Groundwater protection zones as defined by the CDPH for DWSAP represent approximate areas from which groundwater may be withdrawn by the pumping well in two, five, and ten years of pumping. Groundwater protection zones associated with two, five, and ten years of travel time for groundwater are known as Zone A, Zone B5, and Zone B10, respectively. These zones also represent the area in which contaminants released to groundwater could migrate and potentially affect the groundwater extracted by wells located within the designated zones. The size of each zone is determined by the pumping rate of the well, interval of pumping, and local hydrogeologic conditions. The CDPH requires a minimum radius for each protection zone: 600 feet for Zone A, 1,000 feet for Zone B5, and 1,500 feet for Zone B10. If the calculated radii of the protection zones are less than the CDPH minimums, the minimum values are used instead. DWSAP includes the preparation of an inventory of PCAs that can show the release of contaminants within the protection zones, similar to the empirical analysis presented in this section.

For this analysis, 2,000-foot groundwater protection zones delineated by the DWSAP as illustrated in Figure 10.6-18 (also in Plate B-1) were considered as areas of influence around a pumping well(s) during take period pumping by the GSR Project and PAs. The 10-year time period, or Zone B10, was considered to represent a conservative groundwater protection zone around the pumping wells - given that the take period pumping during the Design Drought would occur over 7.5 years for Scenarios 2 and 4.

For the GSR Project, preliminary DWSAP groundwater protection zones were prepared for the 16 proposed production well sites (Figure 10.6-2). Estimated groundwater protection zone for the 10-year travel time for these well sites ranged from the minimum CDPH requirement of 1,500 feet to approximately 1,900 feet. For this analysis, a more conservative approach was taken, assigning a groundwater protection zone of 2,000 feet around each of the PA wells and the GSR Project wells. Consistent with DWSAP, the assigned groundwater protection zone serves as a search radius around the wells to identify PCAs that may be most affected by the GSR Project operations. Based on the above, contaminants released to groundwater could

migrate downward and potentially affect groundwater extracted by the GSR Project wells. Additionally, contaminants within or in proximity to the GSR Project anticipated areas of influence can also be affected but may not be captured by groundwater extraction.

The inventory of PCAs was evaluated for all 16 proposed GSR Project well sites and included in the Preliminary DWSAPs. DWSAPs for seven of the 16 proposed wells were submitted to the CDPH in 2009. SFPUC received a letter from the CDPH for the approval of the seven well sites and CDPH did not place any restrictions or special conditions on well design or construction (CDPH, 2009). DWSAP documentation for the remaining nine well sites has not been submitted to CDPH since these wells will not be constructed until 2014.

5.2.4. Possible Contaminating Activities (PCAs) Analysis

For this study, PCAs are defined as human activities at the ground surface that are actual or possible sources of contamination for groundwater. PCAs include sources of chemical contaminants that could have adverse effects upon human health. Risk of groundwater contamination is directly related to specific land uses that entail handling of hazardous materials or waste (e.g., dry cleaners, solid waste facilities, gas stations and other facilities with underground tanks storing hazardous materials).

The objective of the PCA analysis is to compile a comprehensive database of PCAs in the GSR Project area and to develop a technically-sound and scientifically-defensible methodology to identify areas with PCAs that may be affected by the GSR Project due to rising water levels or change of flow directions. The PCA analysis was conducted at different scales, beginning from a regional scale to a more local scale in the vicinity of the PA municipal wells and GSR Project wells. A basin-wide map of the locations of known existing regulated sites was prepared to evaluate spatial distribution of all PCAs. PCAs were tabulated, grouped, and reviewed in appropriate categories (e.g., case status, case types, potential media affected) to characterize their status.

In the next level of inspection, the primary focus was on areas in the vicinity of the existing PA municipal wells and GSR Project wells. Locations of reported PCAs were mapped within the groundwater protection zones identified around the wells.

At the local scale, GIS maps were prepared to illustrate areas that would be most vulnerable with respect to groundwater quality because of the presence of PCAs within groundwater protection zones. This analysis focused only on open sites within the groundwater protection zones. PCA sites that are reported to be closed under regulatory oversight were screened out because the presence of closed sites is not anticipated to pose a groundwater quality risk. At this scale, PCAs were tabulated and grouped with their identification to further characterize the open PCAs with respect to their risk to groundwater quality. These sites were considered a risk to groundwater quality and their status was analyzed with respect to the potential affected media (soil, groundwater, or drinking water aquifer). Within each groundwater protection zone,

pertinent information relating to the type of PCA record, type of land use activity, leaking underground storage tank information and other hazardous material information at the existing regulated site was noted and tabulated in summary tables. Sites with notable or possible contamination concerns were highlighted for further discussion in Sections 5.5.1 and 5.6.4.

5.3. Nitrate

As part of the groundwater quality assessment, the current condition of nitrate in the South Westside Basin was reviewed to identify general areas that may be affected by nitrate from historical land use applications. As discussed in Section 3, elevated nitrate concentrations, exceeding the drinking water standards, are known to exist in certain areas in the Basin such as Daly City. The nitrate measurements taken between April 2008 and September 2008 from the existing monitoring wells and the multiple nested monitoring wells installed by the SFPUC as part of the GSR Project (SFPUC, 2009a; Kennedy/Jenks, 2010) were compiled. Nitrate data are sampled in wells screened in the Shallow, Primary Production, and Deep Aquifers. Figure 10.6-5 presents data collected from groundwater wells at different aquifer depths and depicts the overall nitrate distribution in the Basin. To differentiate a nitrate-depth relationship and to identify localized areas with high nitrate levels, nitrate data measured at different depths were plotted together at the multi-level monitoring well locations.

5.4. Cemeteries

As discussed in Section 3.2.4, cemeteries in the GSR Project area were evaluated by SFPUC for potential groundwater quality concerns because cemeteries are in the vicinity of some of the GSR Project monitoring wells and the GSR Project production wells. Data were used to address potential regulatory issues and support the Preliminary DWSAP submittal to the CDPH.

Based on the recent groundwater sampling conducted in 2009 and 2010 by SFPUC, there is no apparent groundwater contamination from cemeteries (Kennedy/Jenks, 2010), supported by data from five monitoring wells (MW-CUP-18, MW-CUP-19, MW-CUP-22A, MW-CUP-44-1, and the Linear Park monitoring well) located in the vicinity of the cemeteries.

In a study of six cemetery sites in Ontario, Canada (Soo et al., 1992), the analysis of groundwater samples collected at wells located downgradient of the cemeteries indicated that the cemeteries are not a significant source of groundwater contamination. In the same study, the calculated loading estimates for formaldehyde and nitrates being released from cemeteries supports a low potential for groundwater contamination. For comparison to the existing PCAs, the CDPH considers cemeteries as a “medium” risk with respect to water quality concerns as compared to auto service stations, which are assigned a risk ranking of “very high”.

It is also important to note that the GSR Project wells will draw groundwater from the deep Primary Production Aquifer, typically below 350 feet to 600 feet bgs and are generally protected from shallow aquifer contaminants such as possible releases from cemeteries. The upper

portion of the GSR Project wells will be sealed to a depth of at least 300 feet to prevent shallow surface pollution from entering the well. This exceeds the state well sealing requirement of 50 feet.

The GSR Project is not anticipated to mobilize related constituents in groundwater because of the depth of pumping. Because of the very shallow nature of constituents from the existing cemeteries, the rise in water levels in the lower portion of the Shallow Aquifer during GSR Project put periods is not likely to mobilize these shallow constituents in the soil. Moreover, groundwater quality effects from cemeteries are controlled by land use activities unrelated to GSR Project operations. In addition, the ongoing SFPUC monitoring at the monitoring wells for the GSR Project will continue to evaluate groundwater quality conditions in the vicinity of the cemeteries.

5.5. Results of Empirical Analysis

The complete PCA database that includes maps and PCA site inventory-listing is presented in Figures 10.6-19 through 10.6-23. Attachment 10.6-B shows the locations of the reported PCAs in the GeoTracker (Plate B-1), SWIS (Figure B-1), DTSC (Figure B-2), and SLIC (Figure B-3) databases. Plate B-1 shows locations of open regulated PCA sites based on the GeoTracker database. The inventory of the GeoTracker database for closed and open sites is listed in Table B-1 in Attachment 10.6-B.

5.5.1. GeoTracker Database

Regulated sites reported in the GeoTracker database were mapped based on case status, case type, and potential media affected, as shown on the GISs maps on Figures 10.6-19 through 10.6-23 and in Plate B-1 in Attachment 10.6-B. General findings based on the evaluation of the sites are as follows:

- Among the 1,560 sites reported in the GeoTracker database in San Mateo County, 514 sites are located in the GSR Project Area while the remaining are located outside of the GSR Project area (see the inventory list in Attachment 10.6-B, Table B-1).

- Out of the 514 sites identified in the GSR Project Area, 135 sites are identified with a status of open.

- A total of 153 sites closed and open are identified within the groundwater protection zones around the pumping wells. These are evaluated in Section 5.6.

- Out of the 153 sites located within the groundwater protection zones, 51 sites are reported to be open and the remaining 102 sites are reported closed under regulatory oversight.

An inventory is presented in Attachment 10.6-B with a listing of 514 closed and open sites located in the South Westside Basin. Figure 10.6-18 and Plate B-1 (Attachment 10.6-B) illustrate the locations of regulated sites classified as open and within the South Westside Basin and the vicinity. Figures 10.6-19 through 10.6-23 present small scale site maps with the locations of PCAs for the general pumping areas (e.g., Daly City, Colma, South San Francisco, San Bruno, and Millbrae) based on the reported potential media affected for each PCA. For clarity, PCA sites are posted with only their global ID numbers and recorded depths to water based on records from the GeoTracker. They can be cross referenced with site names listed in Table B-1.

Among the 51 sites identified within the groundwater protection zones in the GSR Project area (Figures 10.6-19 through 10.6-23), several PCA sites are reported to have affected soil with no groundwater contamination or plume. The majority of the remaining sites are LUST cleanup sites related to soil and shallow groundwater contamination.

Five sites in the GeoTracker database are identified in the groundwater protection zones and characterized in GeoTracker with the "*potential media affected as aquifer used for drinking water supply*", with the exception of one site (Olympic Service Station) that is not identified as affecting the drinking water, but included and briefly discussed below due to its proximity to the proposed GSR Project well CUP-M-1. Two of the five sites are recently listed as case closed. One of the five sites is located in the San Bruno area, three sites are located in the Daly City area, and one site is in the Millbrae area. Based on the review of the most recent information available at the GeoTracker database, general findings for these five sites are summarized as follows:

- **Arco #0465 (T0608100027)** – This is an active ARCO gasoline station with underlying soil and shallow/perched groundwater affected with petroleum hydrocarbons. This site is located on the southern corner of the intersection of Southgate Avenue and Lake Merced Boulevard in Daly City. The site is about 700 feet northeast of the Daly City Westlake production well and about 1,000 feet northwest of the GSR Project well cluster site (CUP-05, CUP-06, and CUP-07) (Figure 10.6-19). Based on the 2009 monitoring report available at GeoTracker website, on-site monitoring wells were screened from 39 feet to 70 feet bgs. Data available at the GeoTracker website indicate a shallow depth to water table at approximately 56 feet bgs (Figure 10.6-19), based on data measured in 2002, as reported by the GeoTracker records.

  A deep on-site monitoring well installed to a depth of 220 feet bgs (below an approximate 10-foot-thick clayey silt to silt clay zone) observes water levels at much lower depths at approximately 154 feet bgs, which may represent the intermediate regional drinking water aquifer. (i.e., Primary Production Aquifer). Groundwater sampling conducted in 2009 at the intermediate on-site monitoring well and off-site shallow monitoring well (screened from 39 feet to 49 feet bgs) detected no petroleum hydrocarbons. On-site shallow monitoring

wells showed plume concentrations to be either stable or declining over time, with the contaminant plumes being contained on site.

- **Chevron 9-5584 (T0608179897)** – This was a former Chevron station. Currently, a strip mall and parking lot occupy the site. It is located on the northeastern corner of the intersection of El Camino Real and San Benito Avenue, about 1,700 feet south of the San Bruno production well No.17 (Figure 10.6-22). Site monitoring data indicate shallow depth to water, with water levels ranging from about 20 feet to 60 feet bgs. This is consistent with data available at the GeoTracker website indicating a shallow depth to water table at approximately 34 feet bgs (Figure 10.6-22), based on data measured in 2003, as reported by the GeoTracker records. The site has both soil vapor and groundwater extraction wells. The most recent monitoring event in March 2010 shows a benzene and TPH plume mostly contained on site.

- **Olympic Service Station (T0608121993)** – This is an existing service station located about 980 feet upgradient of the GSR Project proposed well CUP-M-1 (Figure 10.6-23). During the course of aquifer tests at monitoring well MW-CUP-M-1, the water level in a shallow monitoring well (Olympian MW-3, located at the Olympic Service Station) about 950 feet west of MW-CUP-M-1 was monitored. This was done to determine whether the pumping at MW-CUP-M-1 would affect any surrounding wells in the Shallow Aquifer. The pumping at M-1 resulted in no discernible effects on the water levels at the Olympic Service Station monitoring wells even after the removal of barometric pressure.

  Based on the review of the Pangea Environmental Services, Inc. 2008 Groundwater Monitoring Report (Pangea Environmental Services, Inc., 2008) (downloaded from the GeoTracker website), concentrations of total petroleum hydrocarbons as gasoline (TPHg) and benzene detected in on-site monitoring wells are on long-term declining trends, while total petroleum hydrocarbons as diesel (TPHd) have been generally stable. No MTBE was detected in the easternmost downgradient monitoring well (MW-3), which is the closest well, at a distance of 950 feet from CUP-M-1. Soil grab sampling indicates that MTBE attenuated to a concentration of ~0.88 parts per billion (ppb) with depth. An abstract of this conclusion is also included in the Categorical Exemption for the proposed GSR Project well CUP-M-1 (SFPUC, 2009b).

  The compounds detected at the Olympic Service Station release are isolated in the shallow groundwater zones, based on data from the well log CUP-M-1 and cross-section H-H' in the TM#1 (LSCE, 2010). This is also supported by depth to water data available at the GeoTracker website indicating shallow depth to water table conditions at approximately 17.5 feet bgs (Figure 10.6-23), based on data measured in 2003. The shallow water bearing zone is underlain by clay/Bay Deposits (Qbd) from about 100 feet to 170 feet bgs.

- **Gas and Wash Partners (T10000003031)** – This is a LUST cleanup site. Contamination at this site was discovered in February 2011, when the current property owner conducted sampling beneath three underground storage tanks that were proposed to be converted to use for storage of recycled water (TEC, 2011). Sampling indicated a historical release of gasoline, benzene, toluene and xylene from two of the three storage tanks and one of the fuel dispensers. Based on the particular contaminants encountered in the sampling, TEC (2011) speculated that the petroleum hydrocarbon release occurred before the introduction of oxygenated gasoline in the late 1970s to late 1980s; the fuel storage tanks were lined in early 1999. The investigation was limited to soil sampling, and did not sample deeper than just below the USTs; groundwater was not encountered or sampled. The detected concentrations of petroleum hydrocarbons were above the Environmental Screening Levels (ESLs) mandated for shallow soil at a commercial property over a potential drinking water source. TEC (2011) noted that a nearby LUST site (approximately 500 feet to the east) had groundwater depths no shallower than 160 feet below the ground surface. Based on the current information available from the site investigation report, there is no supporting data indicating this site has affected the drinking water supply aquifer.

  As of May 20, 2011, the Gas and Wash Partners site is listed as open-site assessment for the site characterization and investigation. The site is located east of well cluster CUP-05, CUP-06 and CUP-07, and north of Daly City Well No. 4 (Figure 10.6-19). This site is approximately 1,900 feet from CUP-07 and 470 feet from Daly City No.4.

- **Chevron 9-6982 (T0608100148) Classified as "Completed - Case Closed" 12/27/2011** – This is a Chevron service station with underlying soil and shallow/perched groundwater affected with gasoline. The site is located on the north side of John Daly Boulevard, about 2,000 feet north of the Daly City Westlake production well (Attachment 10.6-B, Table B-1). This site is just outside of the 2,000-foot search radius around the Daly City Westlake well, but due to its proximity, it was considered for evaluation.

  The site contains an underlying aquitard at a depth of approximately 30 feet bgs, as reported by the GeoTracker website and three different shallow water bearing zones to depths at 80 feet bgs. Based on the 2010 monitoring report available at the GeoTracker website, depth to the water table ranges from 26 feet to 35 feet bgs in the shallowest zone and at approximately 74 feet bgs in the deep zone. No total petroleum hydrocarbons as diesel (TPHd) were detected in soil samples collected during monitoring well installation to a depth of 35 feet bgs.

  Depth to water table at the site is relatively shallow, ranging from 63 feet to 74 feet bgs. The site is closed given that the extent of hydrocarbons in soil and groundwater are adequately defined, the sources of MTBE were removed in 1997, and the soil has residual hydrocarbon concentrations below the ESL.

5.5.2. SWIS Database

Locations of reported land disposal sites are shown in Attachment 10.6-B, Figure B-1 based on grouping by case type (i.e., closed, closing, and active) and facility type (i.e., disposal, composting, and transfer station). Fourteen (14) disposal/composting/transfer sites were identified in northern San Mateo County; of these, six sites are located in the South Westside Basin. However, as shown in Figure B-1, five sites out of the six are too far away from the GSR Project pumping areas and located near the Bay or the Pacific Ocean.

Based on the above analysis, there is only one land disposal site within the vicinity of the GSR Project wells. This site is the closed Junipero Serra Solid Waste Disposal Site, located in Colma about 1,700 feet southwest of CUP-18 and 2,500 feet west of CUP-19. This landfill was a solid waste disposal site that began operations in the year 1956 and accepted primarily commercial solid wastes. After site closure in 1983, the site was ultimately developed for commercial land uses, collectively known as the Metro Center. There are no current water quality issues reported on this closed landfill site.

5.5.3. DTSC Database

Locations of the sites reported by California DTSC are shown in Attachment 10.6-B, Figure B-2. Fifteen (15) sites were reported in the South Westside Basin and the majority of these sites are concentrated in South San Francisco, Daly City, and City of Brisbane away from the general pumping areas.

5.5.4. SLIC Database

Locations of the reported SLIC sites are shown in Attachment 10.6-B, Figure B-3 based on status type (i.e., inactive and active). Fifteen (15) sites were reported in the South Westside Basin. Similar to the findings with the DTSC database, the majority of these SLIC sites are located in South San Francisco away from the general pumping areas. The closest distance of existing SLIC site is approximately 1,100 feet to the proposed Cal Water municipal well SSF1-24 (shown as 41S0154 on Figure B-3) and 1,400 feet to the proposed GSR Project well CUP-41-4 (shown as 41S0048 on Figure B-3). As noted in TM 10.1, the Cal Water proposed well SSF1-24 is considered redundant and no pumping was assigned to this well in the groundwater modeling analysis.

5.6. Evaluation

The following evaluation is based on the approach introduced in Section 5.2 of combining the four key components of the GSR Project conditions and supporting data.

5.6.1. Depth to Water in the Shallow Aquifer

Based on the evaluation of the regulated PCAs reported in the GeoTracker database (Section 5.5.1), GSR Project operations under Scenarios 2 and 4 are not anticipated to

influence sites with soil contamination located within the anticipated area of influence of the GSR Project. This is based on comparing the depth to water contours of Scenario 1 to Scenarios 2 and 4 (Figures 10.6-7, 10.6-8, and 10.6-10).

The intent of Figures 10.6-7, 10.6-8, and 10.6-10 is simply to show that shallow depths - of less than 70 feet - to groundwater as predicted in Model Layer 1 for the Shallow Aquifer primarily occur on the fringes of the GSR Project area, both with and without the GSR Project operations. It is noted that depths to water estimated by the groundwater model for Model Layer 1 do not distinguish multiple water bearing zones such as perched groundwater.

Scenarios 1, 2 and 4 show that the shallowest estimated occurrence of groundwater is beneath the City of Millbrae, San Francisco International Airport, and vicinity. The model results suggest that groundwater detected at and east of the GSR Project well CUP-M-1 could occur at depths of less than 50 feet (green and blue contours). However, the PCAs mapped for this particular area are all reported to have depths to water at less than 10 feet south of CUP-M-1 and depths of less than 17.3 feet between CUP-M-1 and north to SB No.16, as shown in Figures 10.6-22 and 10.6-23, which depict measured depth to water at the PCA sites based on the GeoTracker database. Therefore, rising water levels in Model Layer 1 during the GSR Project operations would not pose a risk of remobilizing existing contamination in the soil and/or shallow groundwater systems.

Other shallow depths to groundwater simulated by Scenarios 1 and 2 are beneath the east side of the City of South San Francisco. PCA sites mapped for this particular area have reported depths to water between 6 feet to 45 feet within the anticipated groundwater protection zones of CUP-36-1 and CUP-41-4 in this area (Figures 10.6-21). The PCAs located east the GSR Project well CUP-41-4 are all reported to have depths to water of less than 13 feet. Beneath the areas of Daly City and Colma, groundwater model estimated water levels are maintained low between 200 feet to 300 feet bgs. This can be generalized to the entire GSR Project area with water levels estimated to be at 200 feet to 400 feet bgs under the Full SFPUC Storage Account.

The lack of notable changes in water levels is apparent on the fringes of the GSR Project area (dark colored contours on Figures 10.6-7, 10.6-8, and 10.6-10). It is concluded that the shallow water levels encountered in these areas represent pre-project conditions and hence are not subject to further evaluation in regards to the GSR Project and its effect on existing shallow PCA releases.

Relative Changes in Water Levels

To further illustrate the model-simulated rise in water levels as related to PCA sites, the changes in shallow depth to water levels relative to Scenario 1 are quantified and illustrated as contours in Figure 10.6-9 for Scenario 2 with the GSR Project and Figure 10.6-11 for Scenario 4 with the combined GSR and SFGW Projects under the Cumulative Scenario. The greatest change in water levels is anticipated to be in the historically deepest ground waters in the South

Westside Basin – i.e., City of Daly City. However, the changes in water levels from the GSR Project operations under Scenarios 2 and 4 did not produce notable rise of water levels in the Shallow Aquifer that could influence the remobilization of shallow contaminants above the 70 feet bgs. This is shown by the relative changes in depth to water contours in Figure 10.6-9 for Scenario 2 and in Figure 10.6-11 for Scenario 4.

Changes in water level contours for Scenarios 2 and 4 are also shown in close-up views with PCA sites and their reported depths to water in Figures 10.6-19 to 10.6-23. These figures illustrate that the model simulated rise in water levels from Scenarios 2 and 4 relative to Scenario 1 are similar, with minor to no variations between the two model scenarios; thus, the findings for the effects of Scenarios 2 and 4 with respect to rise in water levels, and resulting effects on the existing PCA sites are essentially the same.

5.6.2. Presence of Confining Layers In the Subsurface

The aggregate occurrences of aquitards and intervening fine grained units between shallow contaminants and the groundwater production zones could restrict vertical migration of contaminants to the deep groundwater zones; hence, isolating the pumping effects in the Primary Production Aquifer.

As discussed in Section 2.6.4, additional evidence of the confinement of the Primary Production Aquifer beneath the cities of Colma and Millbrae is apparent from relative groundwater elevations measured in the multilevel GSR Project monitoring well clusters installed by SFPUC in 2008 and 2009 (Kennedy/Jenks, 2009 and 2010). At each monitoring well location, there are three or four separate wells installed at discrete depths. The completion depths for these wells generally correspond to the Primary Production Aquifer and the Deep Aquifer, and although it is not formally recognized in this area, an apparent equivalent to the Shallow Aquifer as defined in the North Westside Basin. Differences in groundwater levels measured in the GSR Project monitoring wells – or the lack of neutral vertical gradients – suggest likely hydraulic separations of these three aquifers in the central and south basin area.

5.6.3. Groundwater Protection Zones around GSR Project and PA Municipal Wells

The intent of this discussion is to characterize potential groundwater effects of the 51 PCA sites that are listed as open and that are located within the groundwater protection zones of the GSR Project and the PA municipal wells (See Section 5.2.3). The focus is to evaluate the likelihood of the GSR Project operations to draw down contaminants from PCA sites in the shallow zone into the Primary Production Aquifer and into the supply wells.

Contaminants as reported in PCA sites in soil, shallow or perched groundwater zones within the GSR Project area (Figures 10.6-19 to 10.6-23) are not anticipated to be mobilized due to the GSR Project operations. This conclusion is based on the reported shallow nature of these cleanup sites (Section 5.6.4) and intervening clay and other fine grained aquifer materials,

suggesting varying degree of hydraulic separation between PCAs and the Primary Production Aquifer (Section 5.6.2).

5.6.4. PCA Status and Spatial Distribution of PCAs in the GSR Project Area

Out of the 51 PCAs identified in the GSR Project groundwater protection zones, four PCA sites (Arco #0465, Chevron 9-5584, Gas and Wash Partners, and Chevron 9-6982), were reported to have listed potential media affected as *"aquifer used for drinking water supply*" within the groundwater protection zone of 2,000 feet (see Figure 10.6-18 for the basin-wide view and Figures 10.6-19 through 10.6-23 for the small scale site maps). Only two open PCAs are within the GSR Project groundwater protection zones: Arco #0465 and Gas and Wash Partners are within the GSR Project well cluster CUP-5, 6, and 7 (Figure 10.6-19). Only one open PCA (Chevron 9-5584) is within the PA groundwater protection zones (Figure 10.6-23). The remaining PCA site Chevron 9-6982 is case closed (see Section 5.5.1 for details).

Given the current status of these sites with contained, stable, or declining concentrations over time, and the shallow nature of the contaminant plumes and the ongoing cleanup activities, the GSR Project is not anticipated to mobilize contaminants at the three open sites (Arco #0465, Chevron 9-5584, and Gas and Wash Partners). Therefore, the potential for the GSR Project to cause water quality effects at these PCA sites is low, further supported by the underlying fine grained deposits including the Bay-Mud.

5.6.5. Nitrate

Occurrence of elevated nitrate levels in the Basin is localized and present in the Shallow Aquifer and the upper part of the Primary Production Zone. Elevated nitrate concentrations in the Primary Production Aquifer are limited in extent to isolated areas of groundwater beneath Daly City, such as the inactive Daly City A Street production well and the nearby GSR Project monitoring well MW-CUP-10A-500 (Figure 10.6-5).

The GSR Project monitoring well MW-CUP-23-230 located in South San Francisco has a reported nitrate concentration of 64.9 mg/l. Also in South San Francisco where Cal Water pumping occurs, the detected nitrate concentration was 47 mg/l in SS1-19, which is slightly above the primary MCL of 45 mg/l, and 35 mg/l in SS1-20 (Note that groundwater from these Cal Water wells is blended with SFPUC surface water prior to distribution and the resulting blend fully meets all drinking water standards).

In light of findings from the modeling analysis, as suggested by the model results presented in Section 4, the GSR Project operations could have an effect on the current elevated nitrate conditions reported at depths in the Basin, mainly as a result of the potential rise in water levels in the lower portions of the South Westside Basin and changes in flow directions. The potential rise in water levels in the lower portions of the Shallow Aquifer could mobilize nitrate in groundwater. Conversely, it is likely that an increase in groundwater volume could result in a

decrease in overall nitrate concentrations in the Primary Production Aquifer as a function of dilution – see Section 6.1 for more discussion.

5.6.6. Cemeteries

The recent groundwater sampling conducted by the SFPUC from five monitoring wells located in the vicinity of the cemeteries demonstrated no groundwater contamination from cemeteries. The GSR Project is not anticipated to mobilize related constituents in groundwater because of the depth of pumping. Because of the very shallow sources, the rise in water levels in the lower portion of the Shallow Aquifer during GSR put periods is not likely to mobilize these shallow constituents in the soil; moreover, groundwater quality effects from cemeteries are controlled by land use activities unrelated to the GRS Project operations.

6. Summary

This section summarizes the findings from the numerical groundwater model and empirical analyses.

6.1. Scenario 2 - GSR Project

The MODFLOW model results indicate that most of the changes relevant to the GSR Project are in the South Westside Basin. Changes in groundwater levels are most notable in the vicinity of the GSR Project wells (Figures 10.6-9 and 10.6-11), including the wells operated by the SFPUC and the PAs. This is because of in-lieu recharge during put periods and extraction of groundwater during take periods. More specifically for the GSR Project, the issues evaluated in this TM focused on the potential mobilization of contaminants in groundwater as a result of pumping or increase in groundwater levels and storage in the South Westside Basin. These higher water levels could occur under the Full SFPUC Storage Account of 60,500 af. This value represents an additional 40,500 af above the initial (June 2009) condition of 20,000 af.

The model results show that water levels are generally higher at the Full SFPUC Storage Account than at other times during the 47.25 years of simulation. In other words, at the basin-scale, the Full SFPUC Storage Account would be the most conservative with respect to higher groundwater levels that may occur due to the GSR Project operation. The modeling analysis further demonstrates that the GSR Project would generally produce higher groundwater levels in the South Westside Basin relative to Scenario 1 during the majority of the 47.25 year simulation period. Simulated water levels for the GSR Project tend to rise during the long put periods and decline during the long take periods (e.g., during the Design Drought) compared to Scenario 1. As shown by the model estimates, the water levels during the hold periods tend to follow the trends seen in Scenario 1. This occurs because during the hold periods both Scenarios 1 and 2 have similar pumping for the PA municipal wells (6.84 million gallons per day (mgd) under Scenario 1 and 6.9 mgd under Scenario 2). Trends vary by locations and show negligible to moderate declining water levels in response to the continued PA pumping during the hold periods.

However, the simulated depth to water (represented by water levels in Model Layer 1) in Scenario 2 during the Full SFPUC Storage Account condition shows deep water levels in most portions of the Basin. This suggests that the response of Model Layer 1 to changes in pumping conditions in deeper layers (e.g., Model Layer 4) is small, especially relative to the substantial depth to water in the Shallow Aquifer in the center of the Basin (Figures 10.6-7, 10.6-8, and 10.6-10). Therefore, rising water levels in Model Layer 1 during the GSR Project operations are expected to stay between 200 feet to 300 feet deep and are not anticipated to rise near the 70-foot threshold depth that is the indicator for risk of remobilization of existing contamination in the soil and/or shallow groundwater systems.

Based on the location and status of regulated existing cleanup sites in the GSR Project area, it is anticipated that the reported sites with contaminated soil and/or shallow unconfined/perched water bearing zones within the anticipated area of influence of the GSR Project would not be affected by the GSR Project pumping operations. Furthermore, the GSR Project is not expected to have an effect on existing groundwater remediation projects. This conclusion is based on the shallow nature of these reported cleanup sites and the aggregate thicknesses of intervening clay and sand layers between the shallow aquifer and deep pumping aquifer, from which the GSR Project would pump.

In light of the findings from the modeling analysis, as suggested by the model results presented in Section 4, the GSR Project operations could have an effect on the current isolated nitrate conditions reported at depths in the Basin, mainly as a result of the potential rise in water table in the lower portions of the Shallow Aquifer and changes in flow directions. It is likely that an increase in groundwater volume could result in the decrease in overall isolated nitrate concentrations in the Primary Production Aquifer as a function of dilution. While the occurrence and extent of nitrate in groundwater are mainly due to historical land use and natural recharge processes that are not related to the GSR Project operations, the effect of the GSR Project on nitrate distribution (lateral or vertical extents by spreading of nitrate in groundwater) is uncertain and the location of reported nitrate detections may change as more extraction wells come online. Therefore, the GSR Project effect on pre-Project nitrate conditions will require continued water quality monitoring to assess changes in nitrate distribution and concentration trends when the GSR Project production wells are commissioned.

With respect to water quality concerns near the cemeteries, the recent groundwater sampling conducted by the SFPUC from five monitoring wells located in the vicinity of the cemeteries demonstrates no existing groundwater contamination from cemeteries.

6.2. Scenario 4 - Cumulative Scenario

The Cumulative Scenario assumes the combined operations of the GSR Project and SFGW Project and other future projects that can operate concurrently. The MODFLOW simulation results under Scenario 4 show that groundwater levels in the South Westside Basin are similar to Scenario 2. Because the SFGW Project is focused in the North Westside Basin, the overall effect of the SFGW Project on the South Westside Basin is minimal. Model-simulated groundwater levels for the combined GSR and SFGW Projects south of Lake Merced and near Daly City primarily show the effects of the GSR Project, but show slightly lower water levels than the GSR Project due to the combined pumping effects of the two projects. This difference is attributed to the SFGW Project extracting and intercepting groundwater that would otherwise flow from the North Westside Basin south into the Daly City area. Groundwater levels from the Cumulative Scenario mimic the trends seen in the GSR Project in the remainder of the South Westside Basin. Near South San Francisco and San Bruno, the effects of the SFGW Project are minimal; the groundwater levels reflect conditions similar to the GSR Project Scenario.

Overall, with respect to changes in groundwater levels, depths to water, and groundwater storage, the effects of the Cumulative Scenario on the South Westside Basin are similar to Scenario 2. Therefore, the general findings discussed above for the GSR Project Scenario are essentially the same for the Cumulative Scenario.

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Figure List

Table List

Attachment List

Figures

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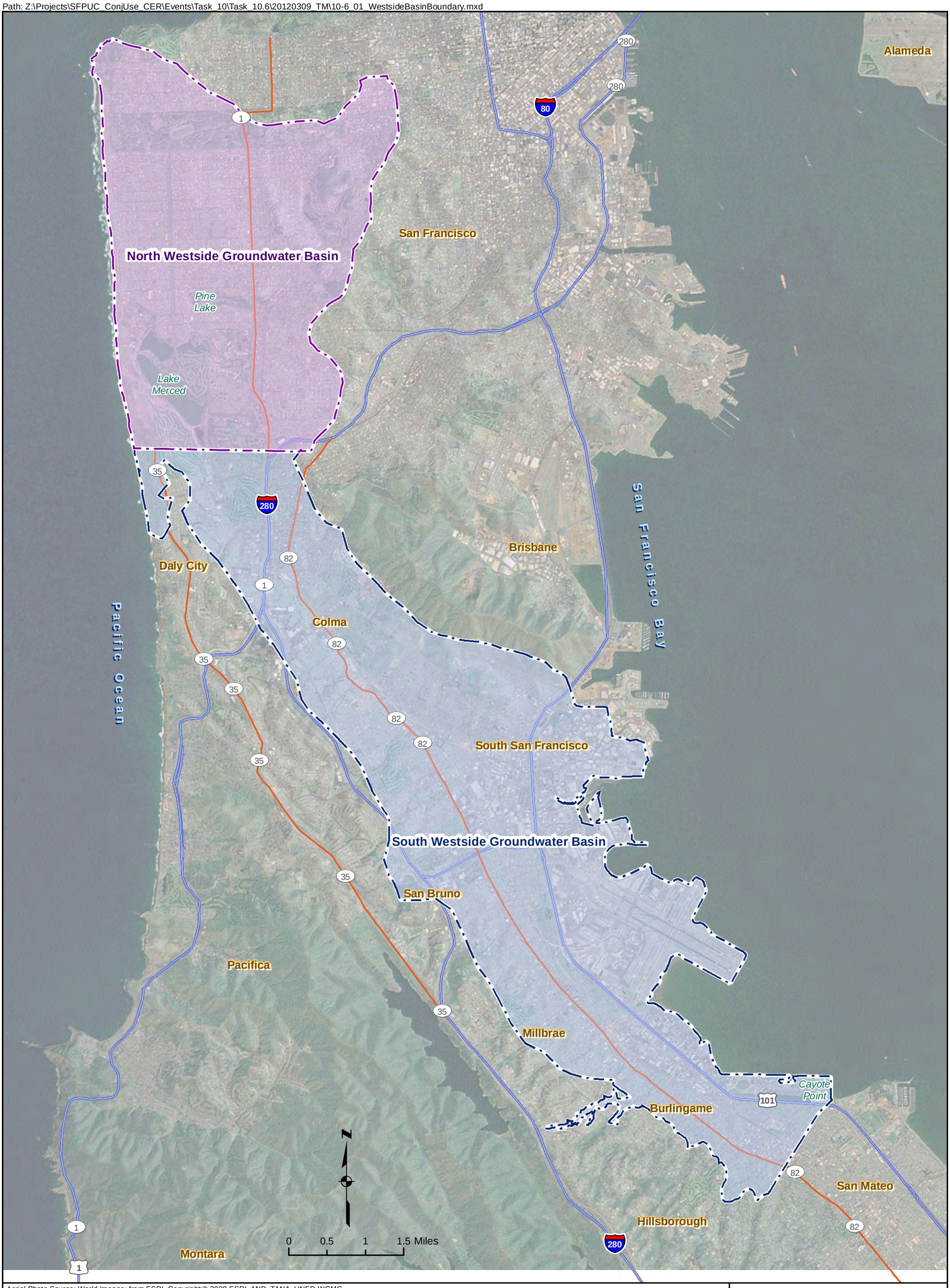

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WESTSIDE GROUNDWATER BASIN BOUNDARY NORTH AND SOUTH WESTSIDE BASINS

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San Francisco, CA 94107

Figure **10.6-1**

Regional Groundwater Storage and Recovery Project

Date April 2012

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Legend

- GSR Project Proposed Municipal Wells
- Cal Water Municipal Wells
- Daly City Municipal Wells
- San Bruno Municipal Wells
- Selected Monitoring Wells with Model Results
- South Westside Groundwater Basin
- North Westside Groundwater Basin

CITY AND COUNTY OF SAN FRANCISCO
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LOCATIONS OF PARTNER AGENCY WELLS, PROPOSED GSR PROJECT WELLS, AND SELECTED REPRESENTATIVE MONITORING WELLS

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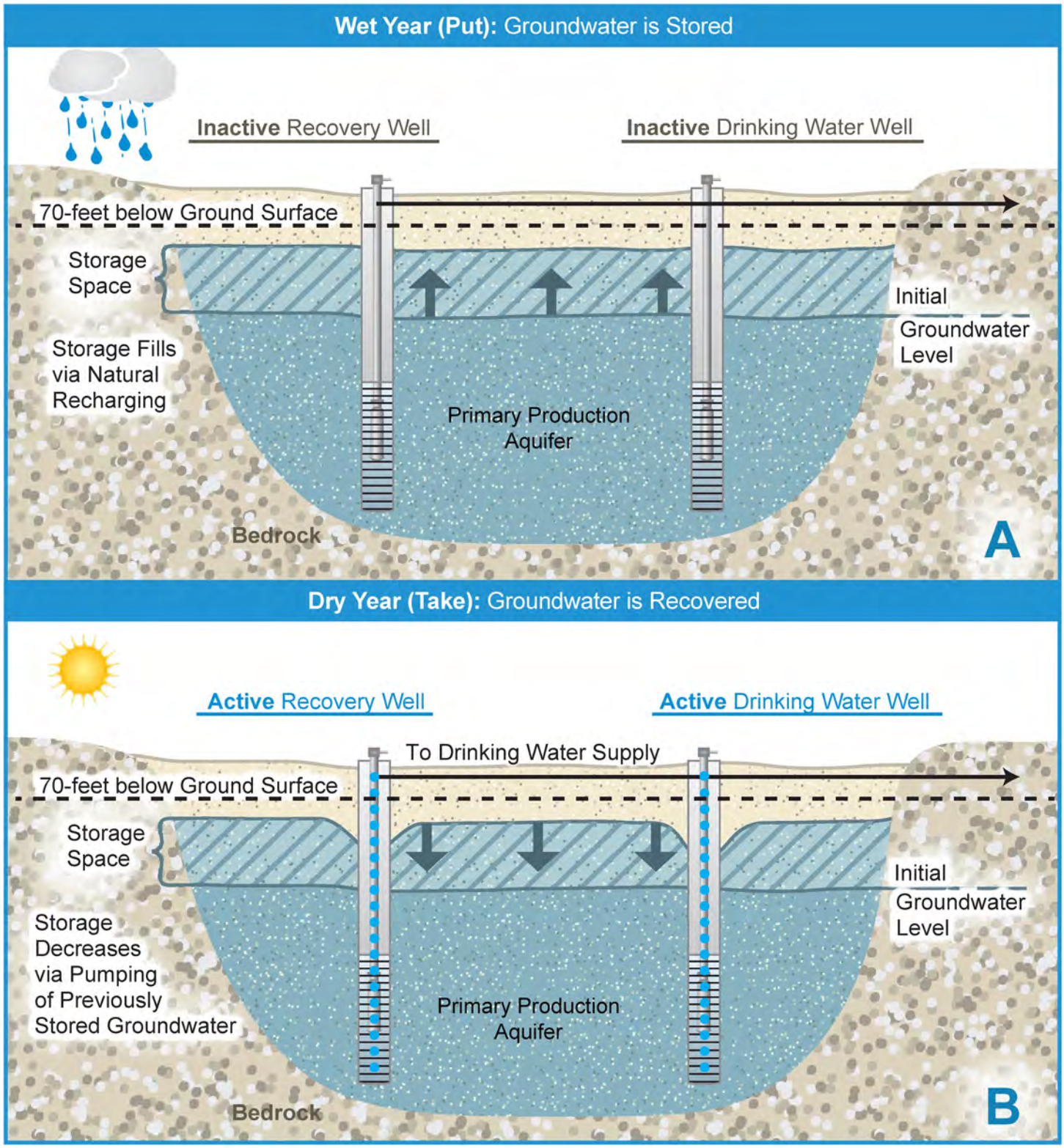
San Francisco, CA 94107

Figure **10.6-2**

Regional Groundwater Storage and Recovery Project

Date April 2012



Note:

In illustration (A), the upward arrows represent the filling of the storage space with groundwater during wet years; while in illustration (B) the downward arrows represent the decline in stored water during dry years.

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Regional Groundwater Storage and Recovery Project

San Francisco Public Utilities Commission
Engineering Management Bureau

Conceptualization of Changing Water Levels GSR Project Operations

K/J 0864001
April 2012
Figure 10.6-3

Source:
Hetch Hetchy Regional Water System - Services of the San Francisco Public Utilities Commission
Regional Groundwater Storage and Recovery Project
Water System Improvement Program, Winter 2012

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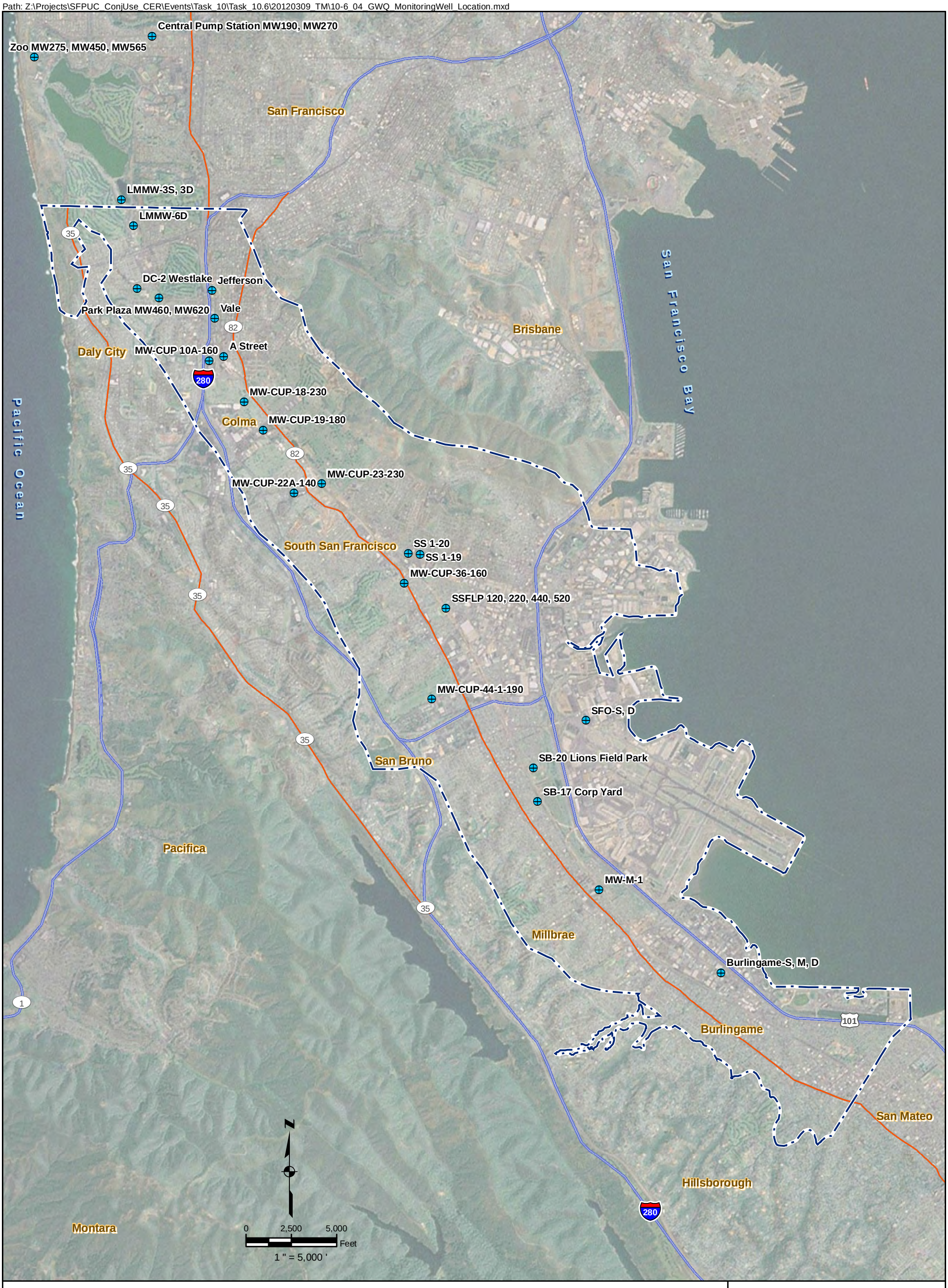

Legend

- Ground Water Quality Monitoring Well
- South Westside Groundwater Basin

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ENGINEERING MANAGEMENT BUREAU

GROUNDWATER QUALITY MONITORING WELL NETWORK

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San Francisco, CA 94107

Figure **10.6-4**

Regional Groundwater Storage and Recovery Project

Date April 2012

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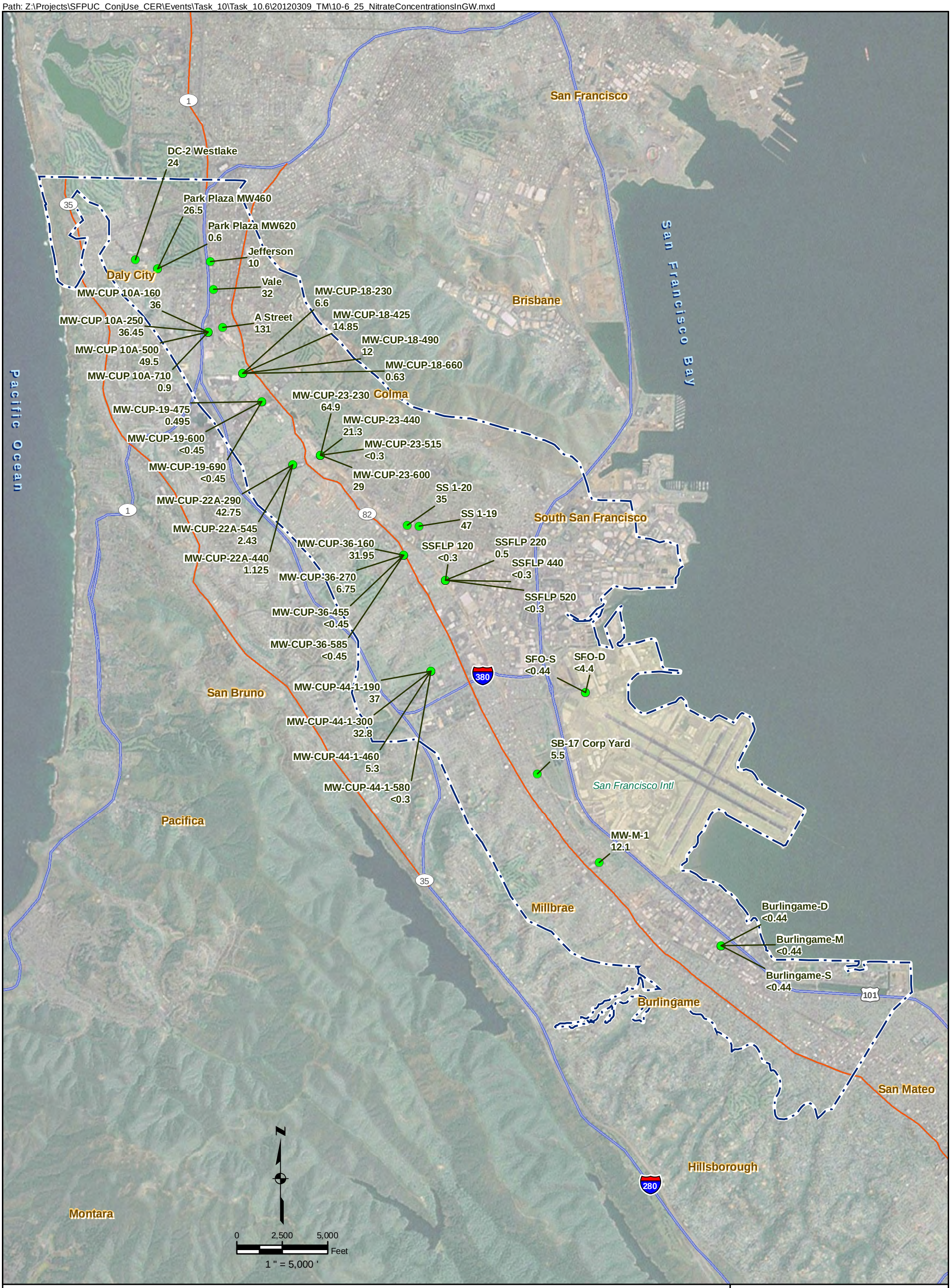


Legend

DC-2 Westlake = Monitoring Well Name
24: = Nitrate as NO3 (mg/l)

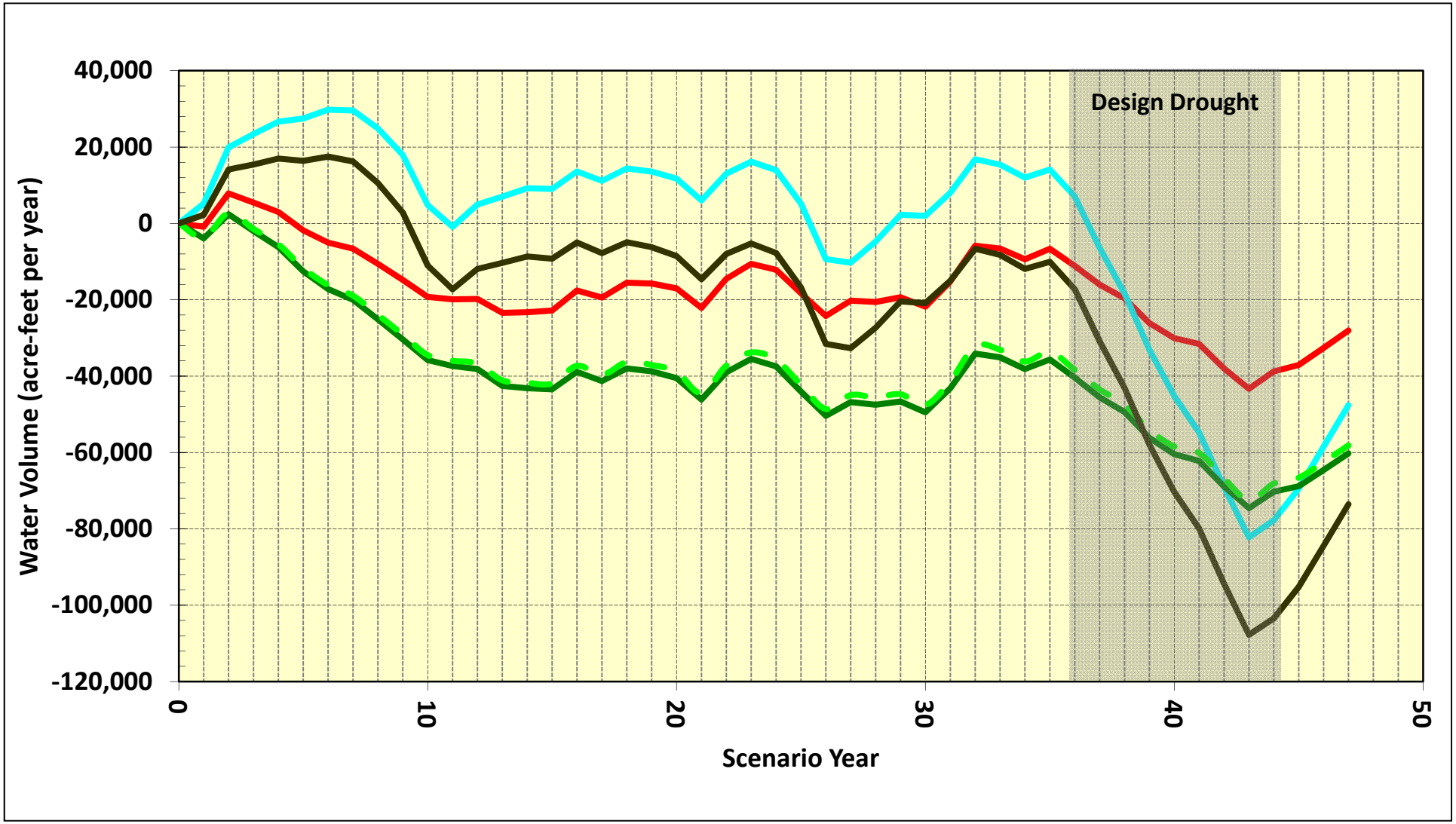
South Westside Groundwater Basin

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
ENGINEERING MANAGEMENT BUREAU

Nitrate Concentrations in Groundwater (as NO3, mg/l)

April 2008 and September 2009

Kennedy/Jenks Consultants 303 Second Street, Suite 300 South San Francisco, CA 94107	Figure **10.6-5**
Regional Groundwater Storage and Recovery Project	Date April 2012



Aggregate Storages:

Scenario 1 — Scenario 2 — Scenario 3a

Scenario 3b — Scenario 4

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Regional Groundwater Storage and Recovery Project
and San Francisco Groundwater Supply Project
San Francisco Public Utilities Commission

Groundwater Model-Simulated Aggregate Change in Groundwater Storage

K/J 0864001
April 2012

Figure 10.6-6

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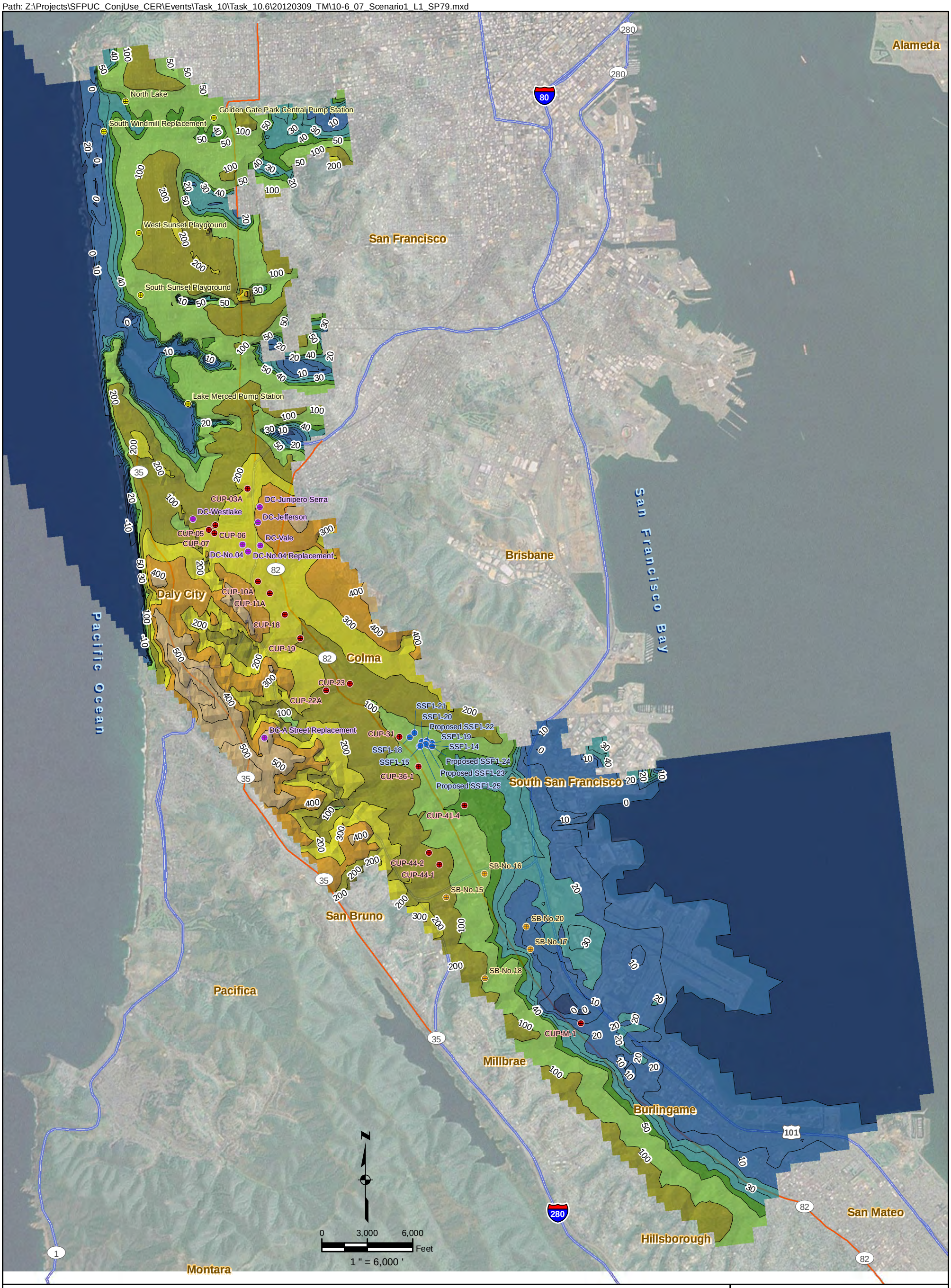

Legend

GSR Project Proposed Municipal Wells

SFGW Project Proposed Municipal Wells

San Bruno Municipal Wells

Daly City Municipal Wells

Cal Water Municipal Wells

Depth To Water (feet)

Model Simulated Depth To Water (feet)

400 - 594

300 - 400

200 - 300

100 - 200

50 - 100

40 - 50

20 - 40

0 - 20

-22 - 0

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SCENARIO 1, LAYER 1
Model Simulated Depth to Water Contour Map

(Model Scenario Year 7)

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Figure **10.6-7**

Regional Groundwater Storage and Recovery Project

Date April 2012

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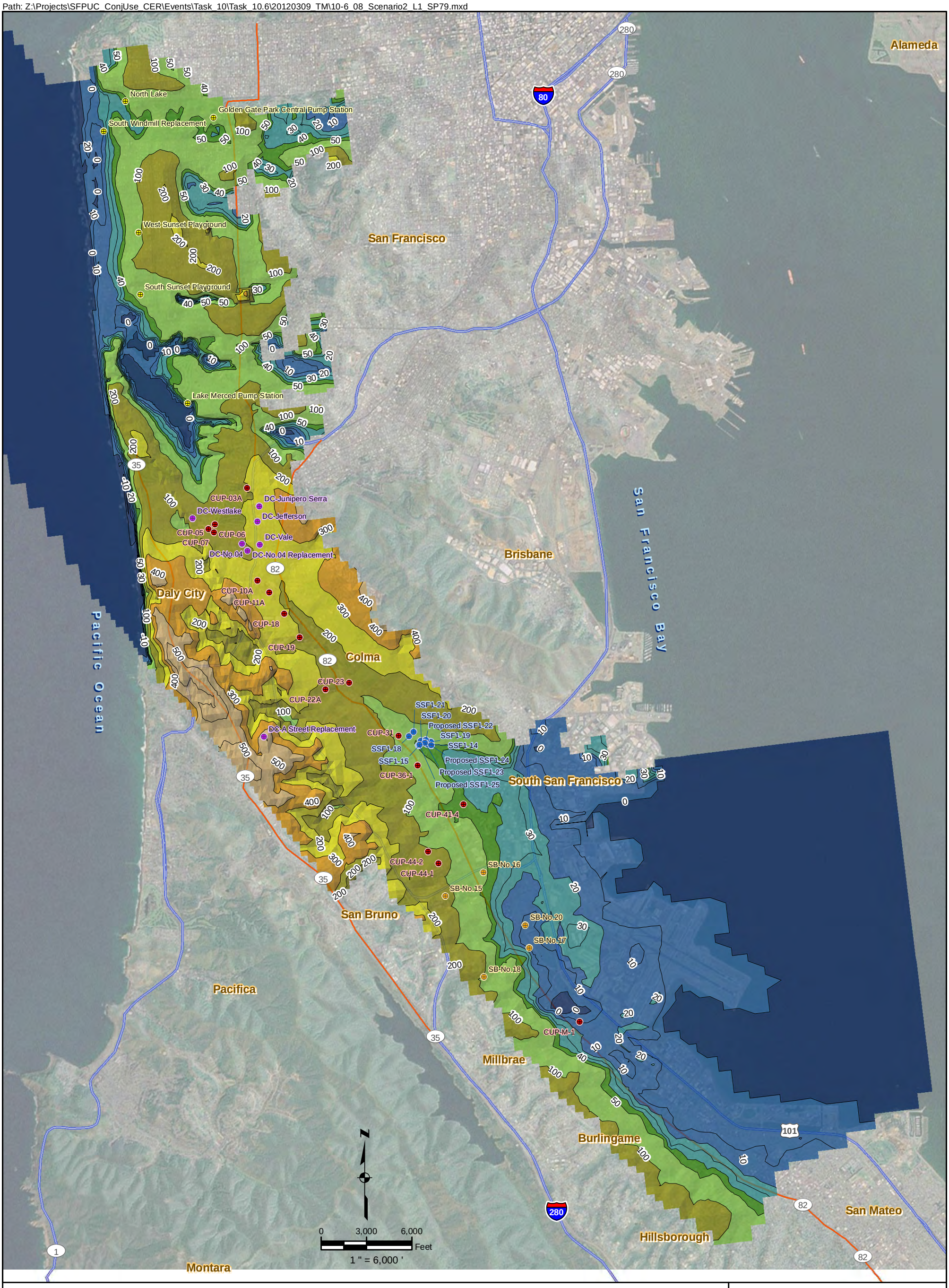

Legend

- GSR Project Proposed Municipal Wells
- SFGW Project Proposed Municipal Wells
- San Bruno Municipal Wells
- Daly City Municipal Wells
- Cal Water Municipal Wells
- Depth To Water (feet)

Model Simulated Depth To Water (feet)

- 400 - 651
- 300 - 400
- 200 - 300
- 100 - 200
- 50 - 100
- 40 - 50
- 20 - 40
- 0 - 20
- -22 - 0

CITY AND COUNTY OF SAN FRANCISCO
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SCENARIO 2, LAYER 1
Model Simulated Depth to Water Contour Map
Full SFPUC Storage Account

(Model Scenario Year 7)

Kennedy/Jenks Consultants 303 Second Street, Suite 300 South San Francisco, CA 94107	Figure **10.6-8**
Regional Groundwater Storage and Recovery Project	Date April 2012

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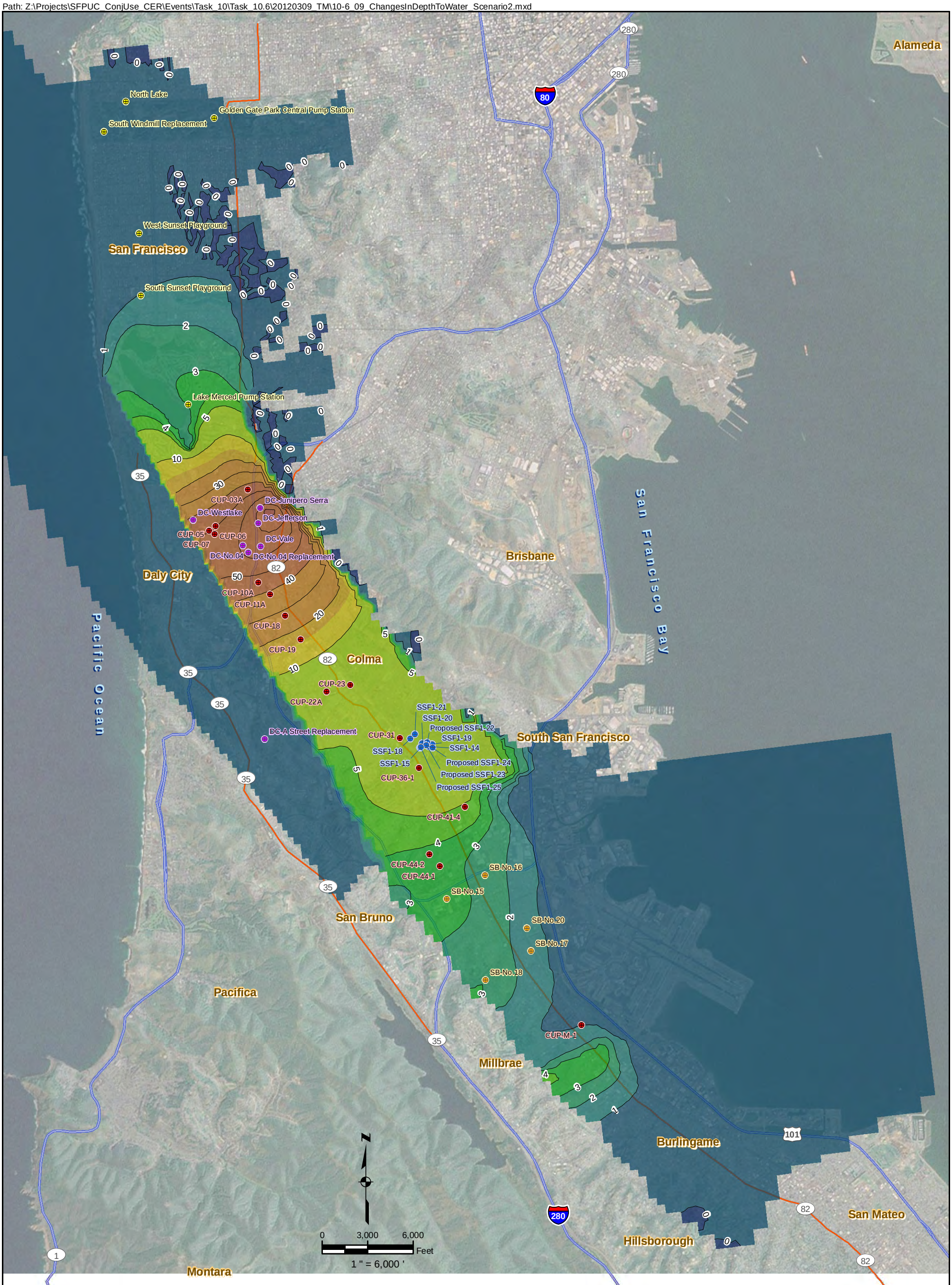

Legend

- GSR Project Proposed Municipal Wells
- SFGW Project Proposed Municipal Wells
- San Bruno Municipal Wells
- Daly City Municipal Wells
- Cal Water Municipal Wells
- Changes in Depth to Water (feet)

Model Simulated Depth To Water (Feet)

- 0 - -0.5
- 1 - 0
- 2 - 1
- 3 - 2
- 4 - 3
- 5 - 4
- 10 - 5
- 15 - 10
- 20 - 15
- 40 - 20
- 80 - 40
- 84 - 80

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PUBLIC UTILITIES COMMISSION
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SCENARIO 2, LAYER 1
Model Simulated Changes in Depth to Water Relative to Scenario 1
Full SFPUC Storage Account

(Model Scenario Year 7)

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Figure **10.6-9**

Regional Groundwater Storage and Recovery Project

Date April 2012

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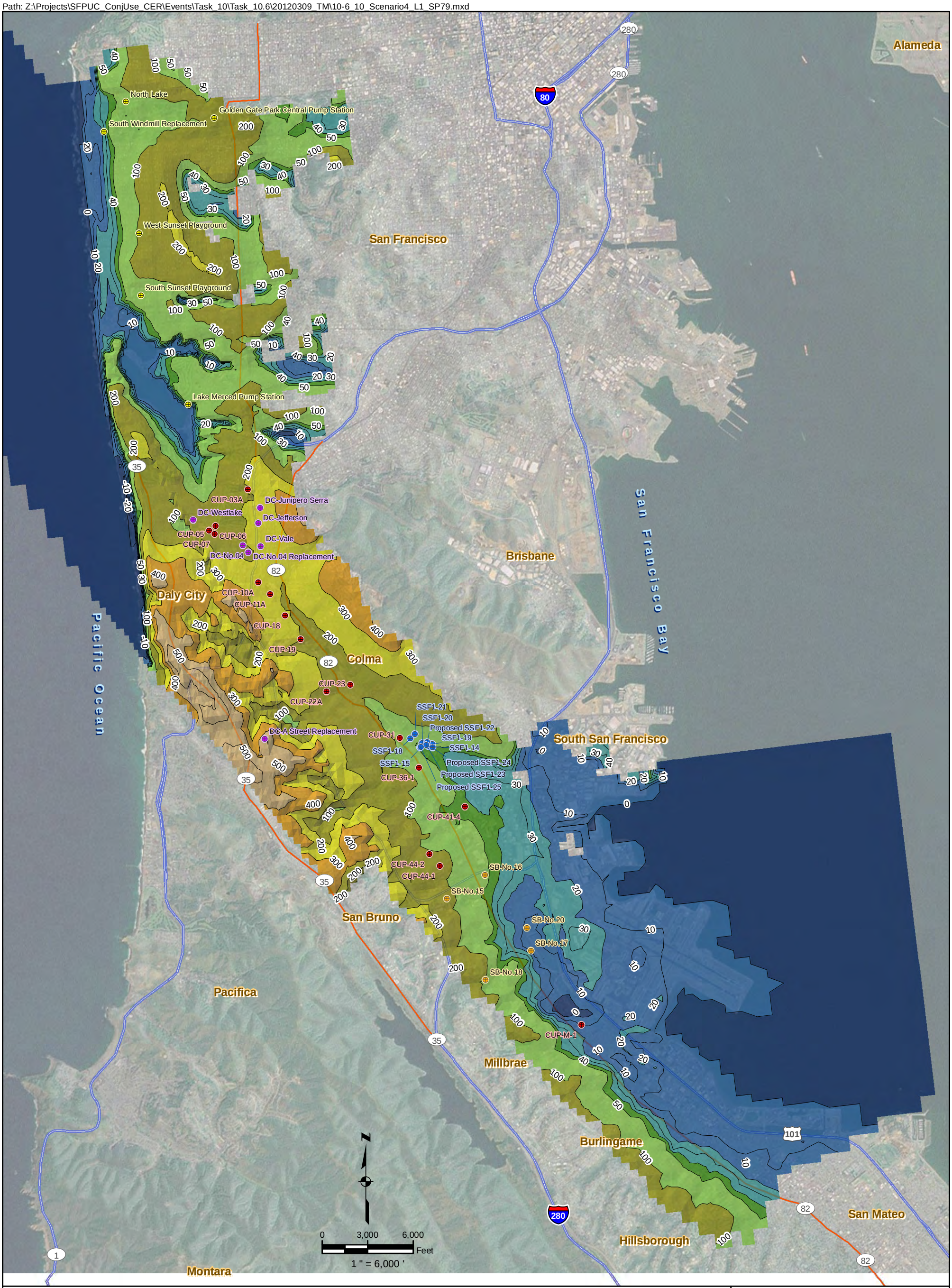

Legend

- GSR Project Proposed Municipal Wells
- SFGW Project Proposed Municipal Wells
- San Bruno Municipal Wells
- Daly City Municipal Wells
- Cal Water Municipal Wells
- Depth To Water (feet)

Model Simulated Depth To Water (feet)

- 400 - 594
- 300 - 400
- 200 - 300
- 100 - 200
- 50 - 100
- 40 - 50
- 20 - 40
- 0 - 20
- -22 - 0

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SCENARIO 4, LAYER 1
Model Simulated Depth to Water Contour Map
Full SFPUC Storage Account

(Model Scenario Year 7)

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Figure **10.6-10**

Regional Groundwater Storage and Recovery Project

Date April 2012

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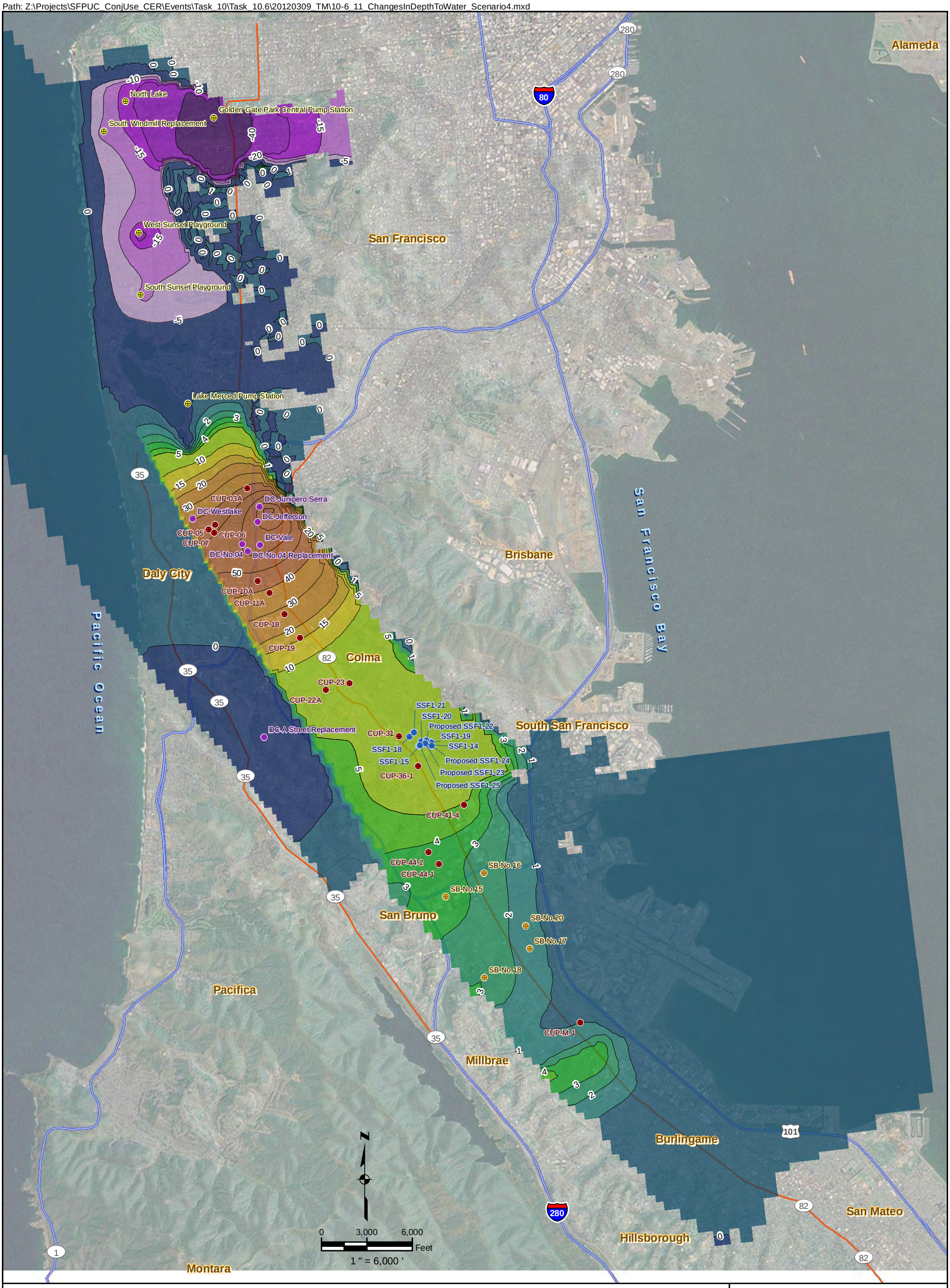

Legend

- GSR Project Proposed Municipal Wells
- SFGW Project Proposed Municipal Wells
- San Bruno Municipal Wells
- Daly City Municipal Wells
- Cal Water Municipal Wells
- Changes in Depth to Water (feet)

Model Simulated Depth To Water (Feet)

-40 - -80	-5 - -10	4 - 3
-20 - -40	0 - -5	5 - 4
-15 - -20	1 - 0	10 - 5
-10 - -15	2 - 1	15 - 10
	3 - 2	20 - 15
		40 - 20
		80 - 40
		84 - 80

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SCENARIO 4, LAYER 1
Model Simulated Changes in Depth to Water Relative to Scenario 1
Full SFPUC Storage Account

(Model Scenario Year 7)

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San Francisco, CA 94107

Figure **10.6-11**

Regional Groundwater Storage and Recovery Project

Date April 2012

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South Sunset Playground
Lake Merced Pump Station
San Francisco
Daly City
Colma
South San Francisco
Brisbane
San Bruno
Pacifica
Millbrae
Burlingame
San Mateo
Hillsborough
Montara
Pacific Ocean
San Francisco Bay
CUP-03A
DC-Junipero Serra
DC-Westlake
DC-Jefferson
CUP-05
CUP-06
CUP-07
DC-Vale
DC-No.04
DC-No.04 Replacement
CUP-10A
CUP-11A
CUP-18
CUP-19
CUP-23
CUP-22A
DC-A Street Replacement
CUP-31
SSF1-21
SSF1-20
Proposed SSF1-22
SSF1-19
SSF1-14
SSF1-18
SSF1-15
Proposed SSF1-24
CUP-36-1
Proposed SSF1-23
Proposed SSF1-25
CUP-41-4
CUP-44-2
CUP-44-1
SB-No.16
SB-No.15
SB-No.20
SB-No.17
SB-No.18
CUP-M-1
1
35
82
101
280
N
0 2,500 5,000 Feet
1 " = 5,000 '

Legend

- GSR Project Proposed Municipal Wells
- SFGW Project Proposed Municipal Wells
- San Bruno Municipal Wells
- Daly City Municipal Wells
- Cal Water Municipal Wells
- Model Estimated Flow Direction
- South Westside Groundwater Basin
- North Westside Groundwater Basin

CITY AND COUNTY OF SAN FRANCISCO
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SCENARIO 1, LAYER 1
Model Estimated Flow Directions
Full SFPUC Storage Account

(Model Scenario Year 7)

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Figure **10.6-12**

Regional Groundwater Storage and Recovery Project

Date April 2012

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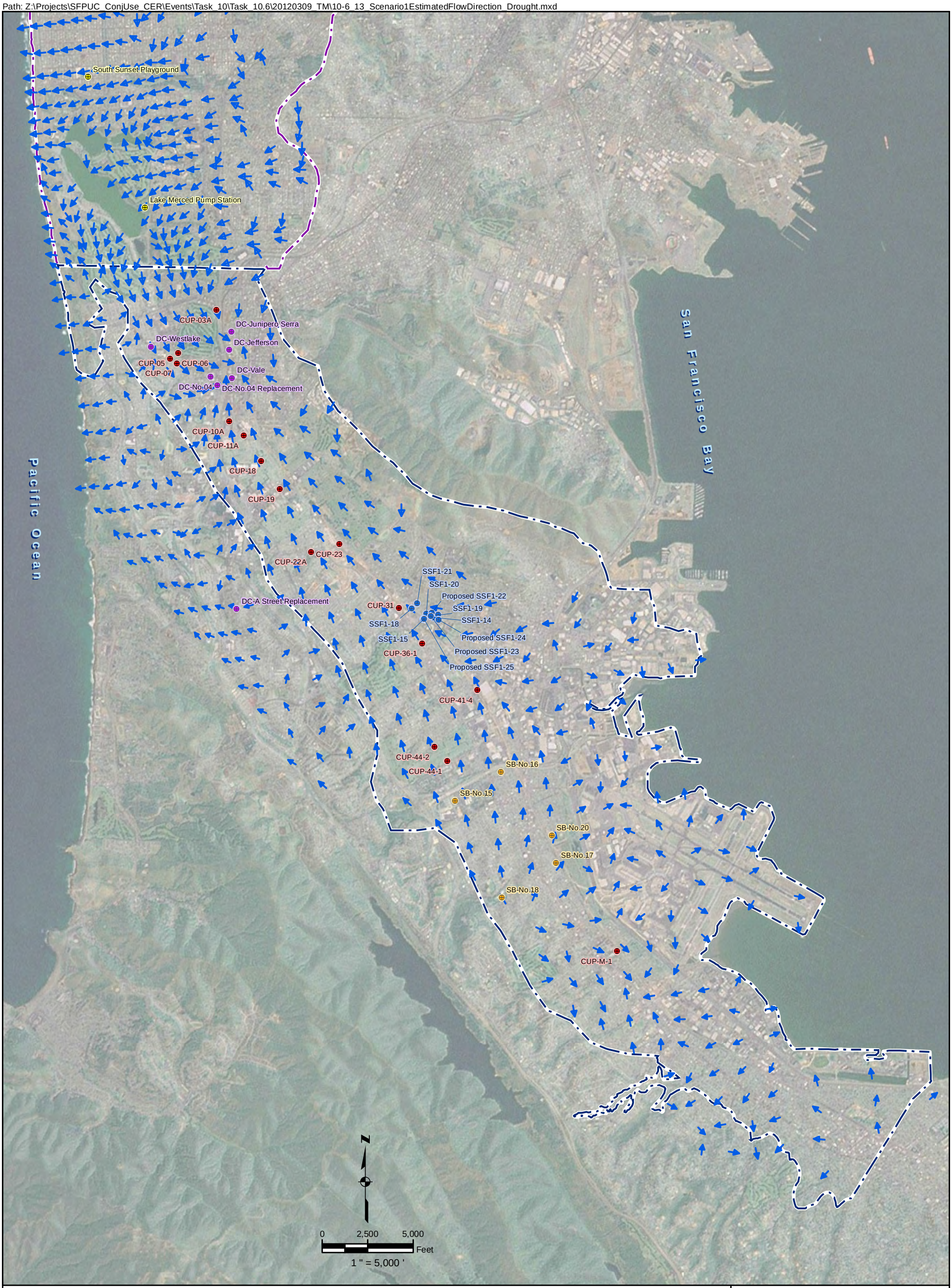

Legend

- GSR Project Proposed Municipal Wells
- SFGW Project Proposed Municipal Wells
- San Bruno Municipal Wells
- Daly City Municipal Wells
- Cal Water Municipal Wells
- Model Estimated Flow Direction
- South Westside Groundwater Basin
- North Westside Groundwater Basin

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
ENGINEERING MANAGEMENT BUREAU

SCENARIO 1, LAYER 1
Model Estimated Flow Directions
End of Design Drought

(Model Scenario Year 44)

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San Francisco, CA 94107

Figure **10.6-13**

Regional Groundwater Storage and Recovery Project

Date April 2012

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South Sunset Playground
Lake Merced Pump Station
San Francisco
Brisbane
San Francisco Bay
Pacific Ocean
Daly City
Colma
South San Francisco
San Bruno
Pacifica
Millbrae
Burlingame
San Mateo
Hillsborough
Montara
CUP-03A
DC-Junipero Serra
DC-Westlake
DC-Jefferson
CUP-05
CUP-06
CUP-07
DC-Vale
DC-No.04
DC-No.04 Replacement
CUP-10A
CUP-11A
CUP-18
CUP-19
CUP-23
CUP-22A
DC-A Street Replacement
SSF1-21
SSF1-20
Proposed SSF1-22
SSF1-19
SSF1-14
CUP-31
SSF1-18
SSF1-15
Proposed SSF1-24
Proposed SSF1-23
CUP-36-1
Proposed SSF1-25
CUP-41-4
CUP-44-2
CUP-44-1
SB-No.16
SB-No.15
SB-No.20
SB-No.17
SB-No.18
CUP-M-1
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Feet
1 " = 5,000 '

Legend

- GSR Project Proposed Municipal Wells
- SFGW Project Proposed Municipal Wells
- San Bruno Municipal Wells
- Daly City Municipal Wells
- Cal Water Municipal Wells
- Model Estimated Flow Direction
- South Westside Groundwater Basin
- North Westside Groundwater Basin

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
ENGINEERING MANAGEMENT BUREAU

SCENARIO 2, LAYER 1
Model Estimated Flow Directions
Full SFPUC Storage Account

(Model Scenario Year 7)

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San Francisco, CA 94107

Figure **10.6-14**

Regional Groundwater Storage and Recovery Project

Date April 2012

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South Sunset Playground
Lake Merced Pump Station
San Francisco
Daly City
Colma
South San Francisco
San Bruno
Brisbane
Millbrae
Burlingame
San Mateo
Hillsborough
Pacifica
Montara
Pacific Ocean
San Francisco Bay
CUP-03A
DC-Junipero Serra
DC-Westlake
DC-Jefferson
CUP-05
CUP-06
CUP-07
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SSF1-14
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SSF1-18
SSF1-15
Proposed SSF1-24
CUP-36-1
Proposed SSF1-23
Proposed SSF1-25
CUP-41-4
CUP-44-2
CUP-44-1
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Legend

- GSR Project Proposed Municipal Wells
- SFGW Project Proposed Municipal Wells
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- Cal Water Municipal Wells
- Model Estimated Flow Direction
- South Westside Groundwater Basin
- North Westside Groundwater Basin

CITY AND COUNTY OF SAN FRANCISCO
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SCENARIO 2, LAYER 1
Model Estimated Flow Directions
End of Design Drought

(Model Scenario Year 44)

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San Francisco, CA 94107

Figure **10.6-15**

Regional Groundwater Storage and Recovery Project

Date April 2012

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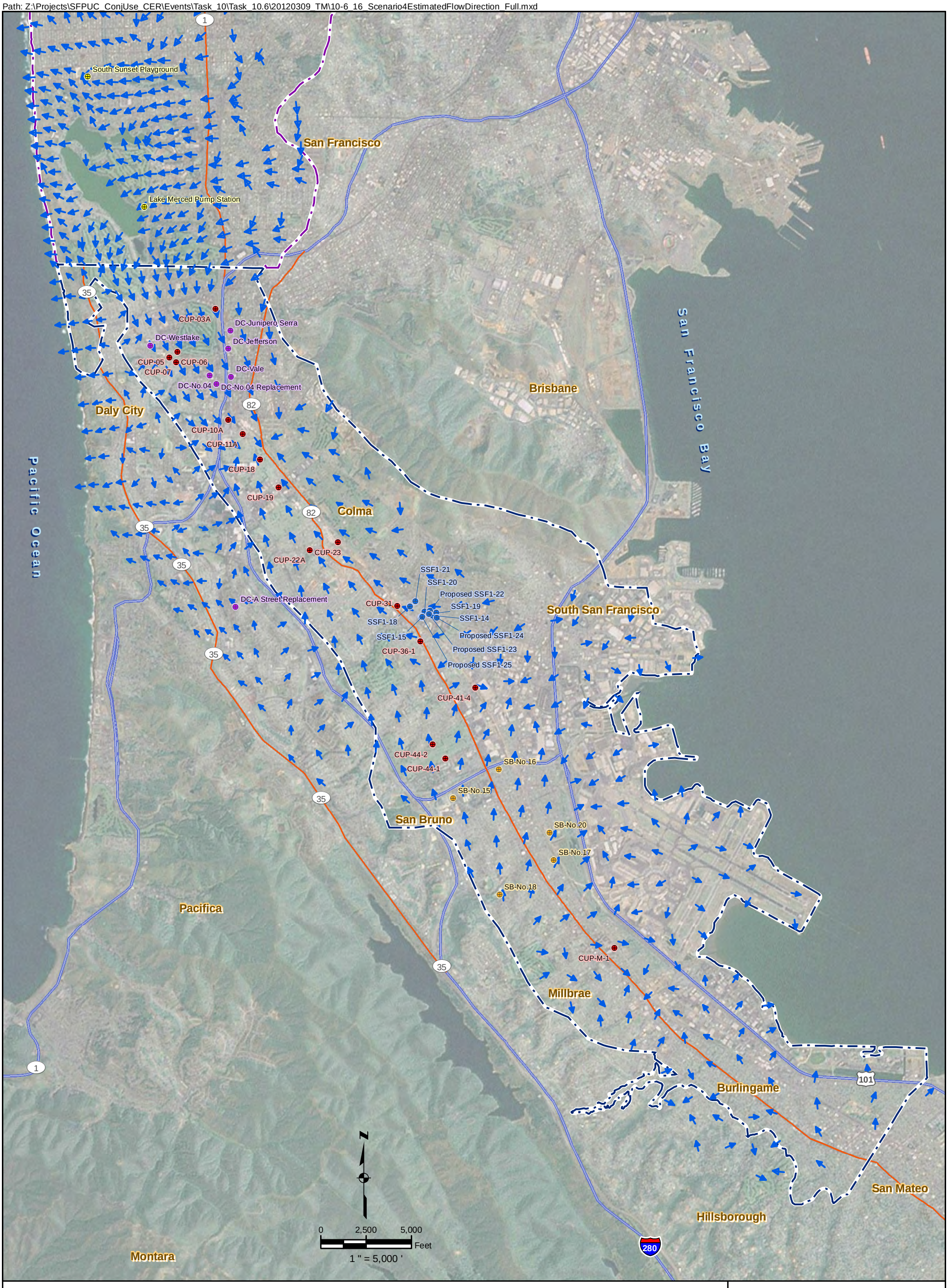

Legend

- GSR Project Proposed Municipal Wells
- SFGW Project Proposed Municipal Wells
- San Bruno Municipal Wells
- Daly City Municipal Wells
- Cal Water Municipal Wells
- Model Estimated Flow Direction
- South Westside Groundwater Basin
- North Westside Groundwater Basin

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
ENGINEERING MANAGEMENT BUREAU

SCENARIO 4, LAYER 1
Model Estimated Flow Directions
Full SFPUC Storage Account

(Model Scenario Year 7)

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San Francisco, CA 94107

Figure **10.6-16**

Regional Groundwater Storage and Recovery Project

Date April 2012

Path: Z:\Projects\SFPUC_ConjUse_CER\Events\Task_10\Task_10.6\20120309_TM\10-6_17_Scenario4EstimatedFlowDirection_Drought.mxd

South Sunset Playground
Lake Merced Pump Station
San Francisco
Daly City
Colma
South San Francisco
San Bruno
Brisbane
Millbrae
Burlingame
San Mateo
Hillsborough
Pacifica
Montara
Pacific Ocean
San Francisco Bay
CUP-03A
DC-Junipero Serra
DC-Westlake
DC-Jefferson
CUP-05
CUP-06
CUP-07
DC-Vale
DC-No.04
DC-No.04 Replacement
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DC-A Street Replacement
SSF1-21
SSF1-20
Proposed SSF1-22
SSF1-19
SSF1-14
CUP-31
SSF1-18
SSF1-15
Proposed SSF1-24
CUP-36-1
Proposed SSF1-23
Proposed SSF1-25
CUP-41-4
CUP-44-2
CUP-44-1
SB-No.16
SB-No.15
SB-No.20
SB-No.17
SB-No.18
CUP-M-1
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Feet
1 " = 5,000 '

Legend

- GSR Project Proposed Municipal Wells
- SFGW Project Proposed Municipal Wells
- San Bruno Municipal Wells
- Daly City Municipal Wells
- Cal Water Municipal Wells
- Model Estimated Flow Direction
- South Westside Groundwater Basin
- North Westside Groundwater Basin

CITY AND COUNTY OF SAN FRANCISCO
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SCENARIO 4, LAYER 1
Model Estimated Flow Directions
End of Design Drought

(Model Scenario Year 44)

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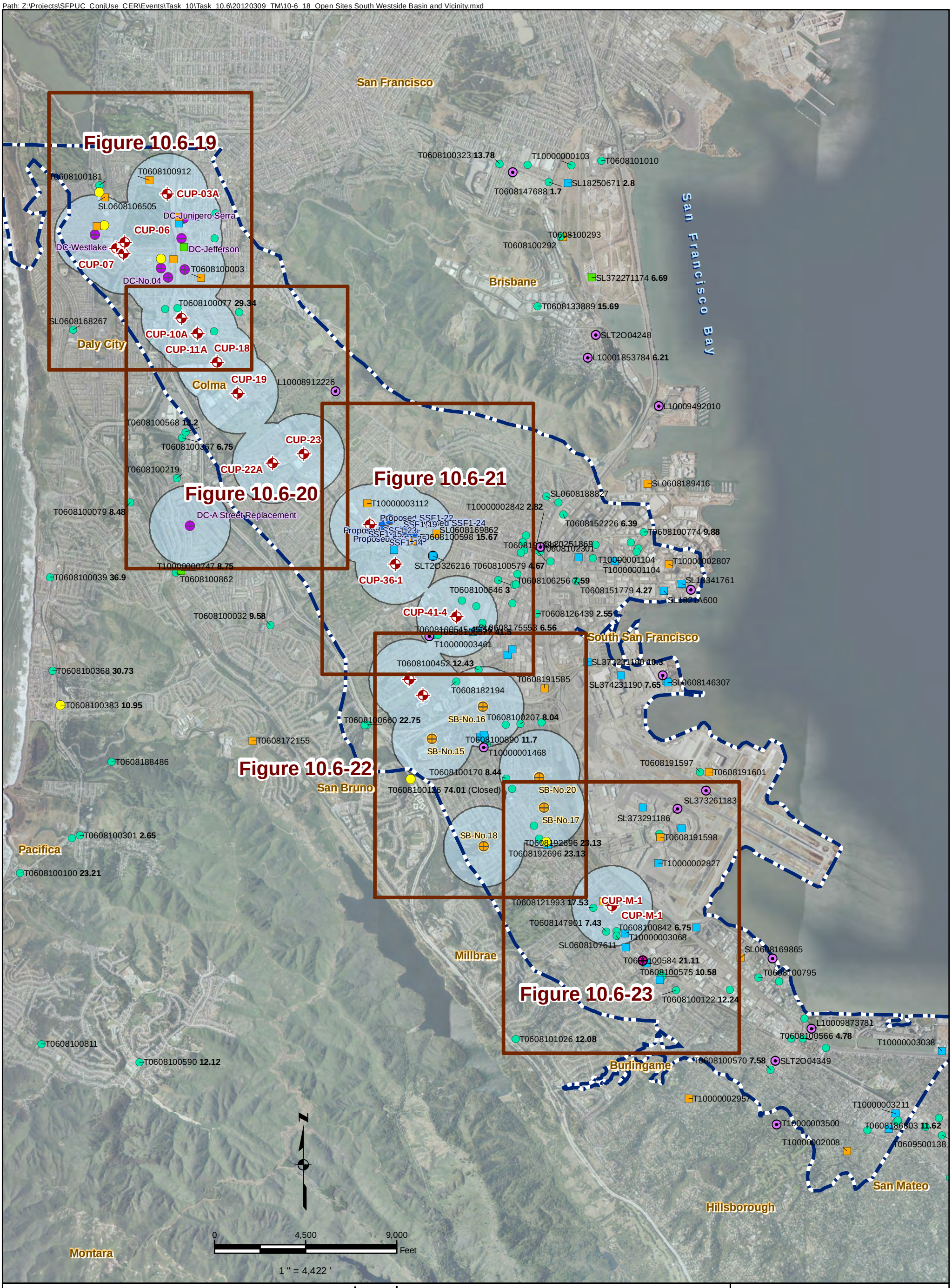
Figure **10.6-17**

Regional Groundwater Storage and Recovery Project

Date April 2012

Path: Z:\Projects\SFPUC_ConjUse_CER\Events\Task_10\Task_10.6\20120309_TM\10-6_18_Open Sites South Westside Basin and Vicinity.mxd



Legend

Potential Media Affected Near Project Area

- Other Groundwater (uses other than drinking water)
- Soil
- Soil/Other Groundwater (uses other than drinking water)
- Soil/Other Groundwater (uses other than drinking water)/Aquifer or Well used for drinking water supply
- Soil/Aquifer used for drinking water supply
- Well used for drinking water supply
- Aquifer used for drinking water supply
- Under Investigation
- Unknown

T0608194016 | 21.8
Global ID | Depth to Water (feet)

- GSR Project Proposed Municipal Wells
- San Bruno Municipal Wells
- Daly City Municipal Wells
- Cal Water Municipal Wells
- South Westside Groundwater Basin
- 2000 feet Radius Buffer

CITY AND COUNTY OF SAN FRANCISCO
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"OPEN" REGULATED SITES IN THE SOUTH WESTSIDE BASIN AND VICINITY WITH RECORDED DEPTHS TO WATER (See Also Plate B-1)

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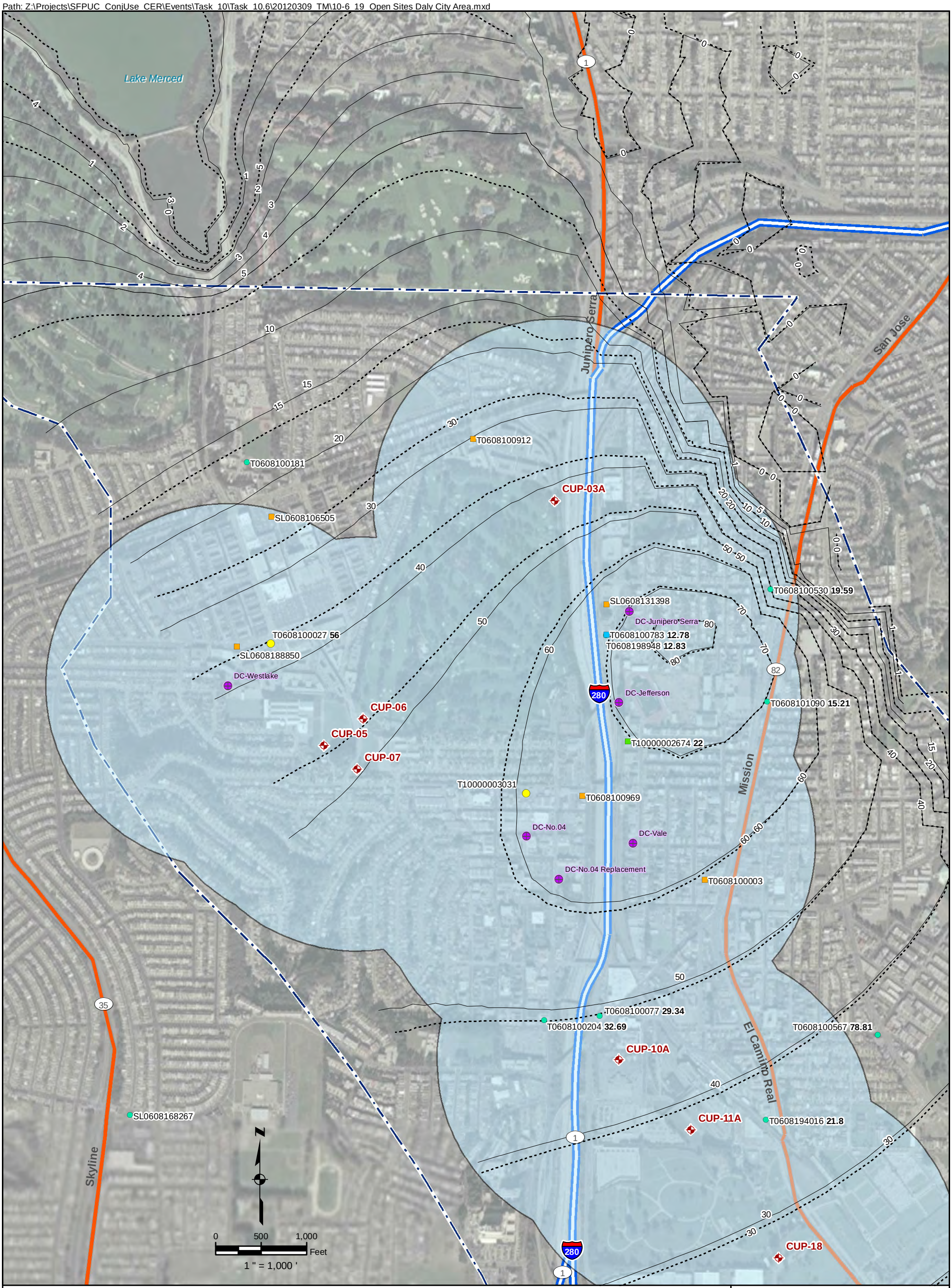
Figure **10.6-18**

Regional Groundwater Storage and Recovery Project

Date April 2012

Path: Z:\Projects\SFPUC_ConjUse_CER\Events\Task_10\Task_10.6\20120309_TM\10-6_19_Open Sites Daly City Area.mxd



Legend

Potential Media Affected Near Project Area

- Other Groundwater (uses other than drinking water)
- Soil
- Soil/Other Groundwater (uses other than drinking water)
- Soil/Other Groundwater (uses other than drinking water)/Aquifer or Well used for drinking water supply
- Soil/Aquifer used for drinking water supply
- Aquifer used for drinking water supply
- Well used for drinking water supply
- Under Investigation
- Unknown

T0608194016 **21.8**
Global ID Depth to Water (feet)

- GSR Project Proposed Municipal Wells
- San Bruno Municipal Wells
- Daly City Municipal Wells
- Cal Water Municipal Wells
- Changes in Depth to Water (feet) Scenario 2
- Changes in Depth to Water (feet) Scenario 4
- 2000 feet Radius Buffer
- South Westside Groundwater Basin

CITY AND COUNTY OF SAN FRANCISCO
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"OPEN" REGULATED SITES WITH RECORDED DEPTHS TO WATER NEAR PUMPING WELLS IN THE DALY CITY AREA

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Figure **10.6-19**

Regional Groundwater Storage and Recovery Project

Date April 2012

Path: Z:\Projects\SFPUC_ConjUse_CER\Events\Task_10\Task_10.6\20120309_TM\10-6_20_Open Sites Colma Area.mxd

T0608100077 **29.34**
T0608100204 **32.69**
T0608100567 **78.81**
T0608194016 **21.8**
T0608100568 **13.2**
T0608100367 **6.75**
T0608100219
T10000000747 **8.75**
T0608100862
L10008912226
DC-A Street Replacement

CUP-10A
CUP-11A
CUP-18
CUP-19
CUP-23
CUP-22A

El Camino Real
Skyline
280
82
1
35

0 500 1,000 Feet
1 " = 1,000 '

Legend

Potential Media Affected Near Project Area

- Other Groundwater (uses other than drinking water)
- Soil
- Soil/Other Groundwater (uses other than drinking water)
- Soil/Other Groundwater (uses other than drinking water)/Aquifer or Well used for drinking water supply
- Soil/Aquifer used for drinking water supply
- Aquifer used for drinking water supply
- Well used for drinking water supply
- Under Investigation
- Unknown

T0608194016 **21.8**
Global ID Depth to Water (feet)

- GSR Project Proposed Municipal Wells
- San Bruno Municipal Wells
- Daly City Municipal Wells
- Cal Water Municipal Wells
- Changes in Depth to Water (feet) Scenario 2
- Changes in Depth to Water (feet) Scenario 4
- 2000 feet Radius Buffer
- South Westside Groundwater Basin

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"OPEN" REGULATED SITES WITH RECORDED DEPTHS TO WATER NEAR PUMPING WELLS IN THE COLMA AREA

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Figure **10.6-20**

Regional Groundwater Storage and Recovery Project

Date April 2012

Path: Z:\Projects\SFPUC_ConjUse_CER\Events\Task_10\Task_10.6\20120309_TM\10-6_21_Open Sites S San Francisco Area.mxd

T10000003112
SSF1-21
SSF1-18
CUP-31
SSF1-20
SSF1-19
Proposed SSF1-23
SSF1-14
Proposed SSF1-25
Proposed SSF1-24
SSF1-15
SL0608169862
T0608100598 **15.67**
T10000002366
SL0608123509 **30.58**
SLT2O326216
CUP-36-1
El Camino Real
T0608100369 **12.49**
T0608175868 **10.79**
T0608100579 **4.67**
T10000002842 **2.82**
T0608191588
T0608100461 **2.11**
T0608100558 **8.25**
T0608100646 **3**
T0608106256 **7.59**
T0608100005 **8.9**
T0608100512 **8.52**
T0608191592 **7.19**
SL0608137279 **6.02**
T0608126439 **2.55**
CUP-41-4
T0608100884 **10.27**
SL0608101503
SL0608175553 **6.56**
T0608100545 **45.56**
T0608100577 **41.5**
T10000003461
T10000002006
SL0608187730 **4.93**
T0608100452 **12.43**
0 500 1,000 Feet
1 " = 1,000 '

Legend

Potential Media Affected Near Project Area

- Other Groundwater (uses other than drinking water)
- Soil
- Soil/Other Groundwater (uses other than drinking water)
- Soil/Other Groundwater (uses other than drinking water)/Aquifer or Well used for drinking water supply
- Soil/Aquifer used for drinking water supply
- Aquifer used for drinking water supply
- Well used for drinking water supply
- Under Investigation
- Unknown

T0608194016 **21.8**
Global ID Depth to Water (feet)

- GSR Project Proposed Municipal Wells
- San Bruno Municipal Wells
- Daly City Municipal Wells
- Cal Water Municipal Wells
- Changes in Depth to Water (feet) Scenario 2
- Changes in Depth to Water (feet) Scenario 4
- 2000 feet Radius Buffer
- South Westside Groundwater Basin

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"OPEN" REGULATED SITES WITH RECORDED DEPTHS TO WATER NEAR PUMPING WELLS IN THE SOUTH SAN FRANCISCO AREA

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Figure **10.6-21**

Regional Groundwater Storage and Recovery Project

Date April 2012

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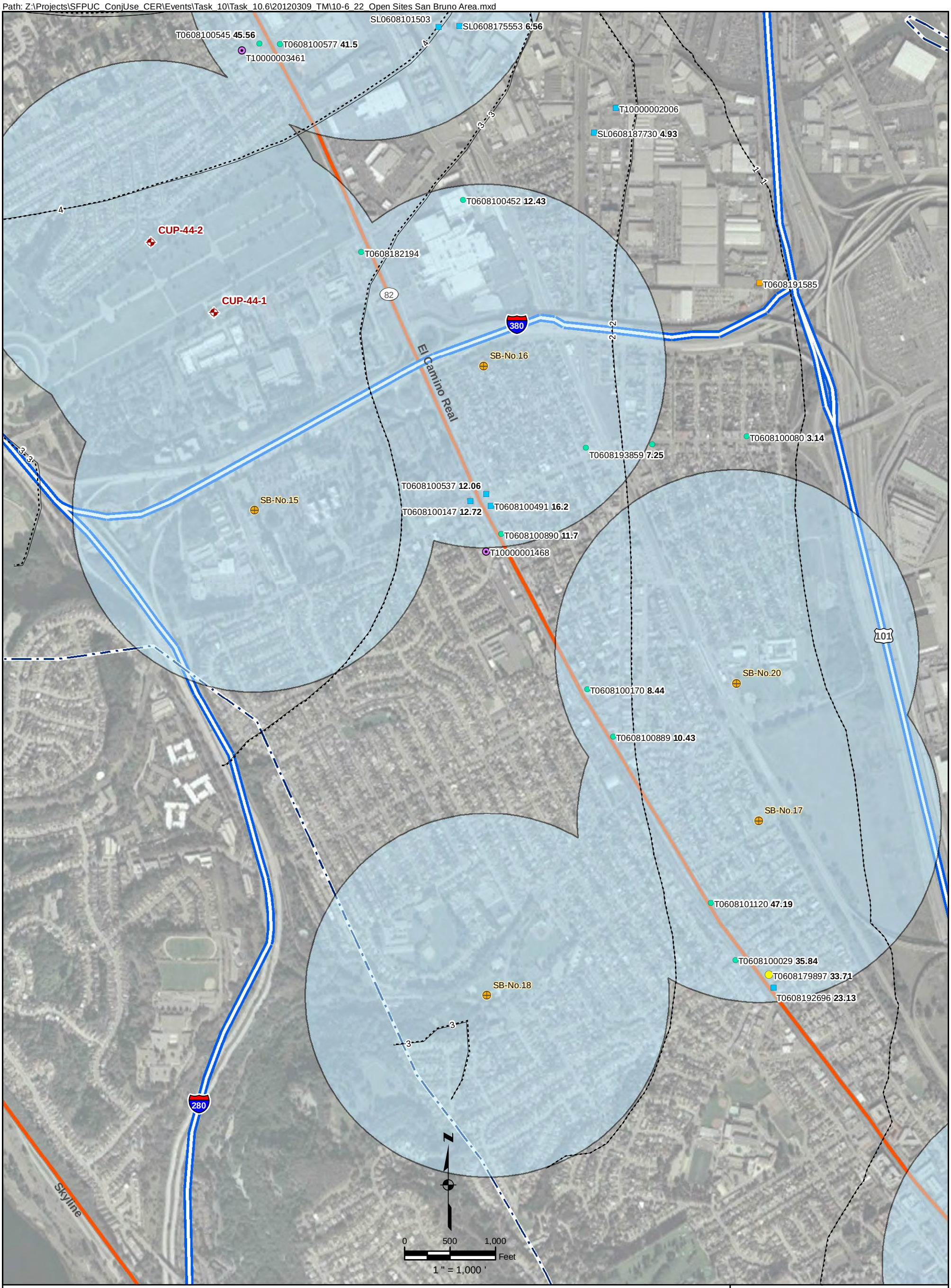

Legend

Potential Media Affected Near Project Area

- Other Groundwater (uses other than drinking water)
- Soil
- Soil/Other Groundwater (uses other than drinking water)
- Soil/Other Groundwater (uses other than drinking water)/Aquifer or Well used for drinking water supply
- Soil/Aquifer used for drinking water supply
- Aquifer used for drinking water supply
- Well used for drinking water supply
- Under Investigation
- Unknown

T0608194016 **21.8**
Global ID Depth to Water (feet)

- GSR Project Proposed Municipal Wells
- San Bruno Municipal Wells
- Daly City Municipal Wells
- Cal Water Municipal Wells
- Changes in Depth to Water (feet) Scenario 2
- Changes in Depth to Water (feet) Scenario 4
- 2000 feet Radius Buffer
- South Westside Groundwater Basin

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
ENGINEERING MANAGEMENT BUREAU

"OPEN" REGULATED SITES WITH RECORDED DEPTHS TO WATER NEAR PUMPING WELLS IN THE SAN BRUNO AREA

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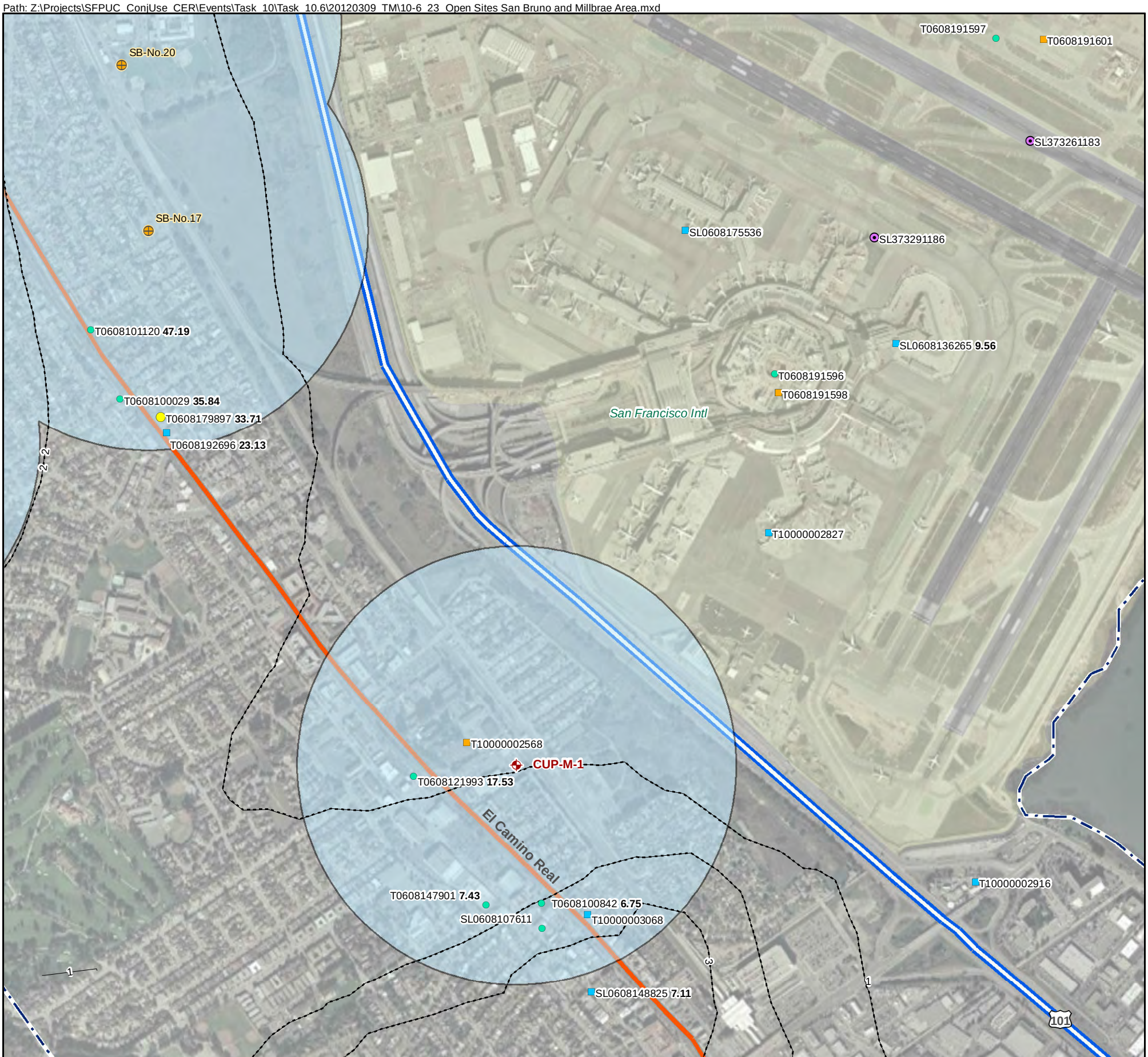
Figure **10.6-22**

Regional Groundwater Storage and Recovery Project

Date April 2012

Path: Z:\Projects\SFPUC_ConjUse_CER\Events\Task_10\Task_10.6\20120309_TM\10-6_23_Open Sites San Bruno and Millbrae Area.mxd



Legend

Potential Media Affected Near Project Area

- Other Groundwater (uses other than drinking water)
- Soil
- Soil/Other Groundwater (uses other than drinking water)
- Soil/Other Groundwater (uses other than drinking water)/Aquifer or Well used for drinking water supply
- Soil/Aquifer used for drinking water supply
- Aquifer used for drinking water supply
- Well used for drinking water supply
- Under Investigation
- Unknown

T0608194016 **21.8**
Global ID Depth to Water (feet)

- GSR Project Proposed Municipal Wells
- San Bruno Municipal Wells
- Daly City Municipal Wells
- Cal Water Municipal Wells
- Changes in Depth to Water (feet) Scenario 2
- Changes in Depth to Water (feet) Scenario 4
- 2000 feet Radius Buffer
- South Westside Groundwater Basin

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
ENGINEERING MANAGEMENT BUREAU

"OPEN" REGULATED SITES WITH RECORDED DEPTHS TO WATER NEAR PUMPING WELLS IN THE SAN BRUNO/MILLBRAE AREA

Kennedy/Jenks Consultants
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San Francisco, CA 94107

Figure **10.6-23**

Regional Groundwater Storage and Recovery Project

Date April 2012

Table

Table 10.6-1: Summary of Model Scenario Pumping Assumptions

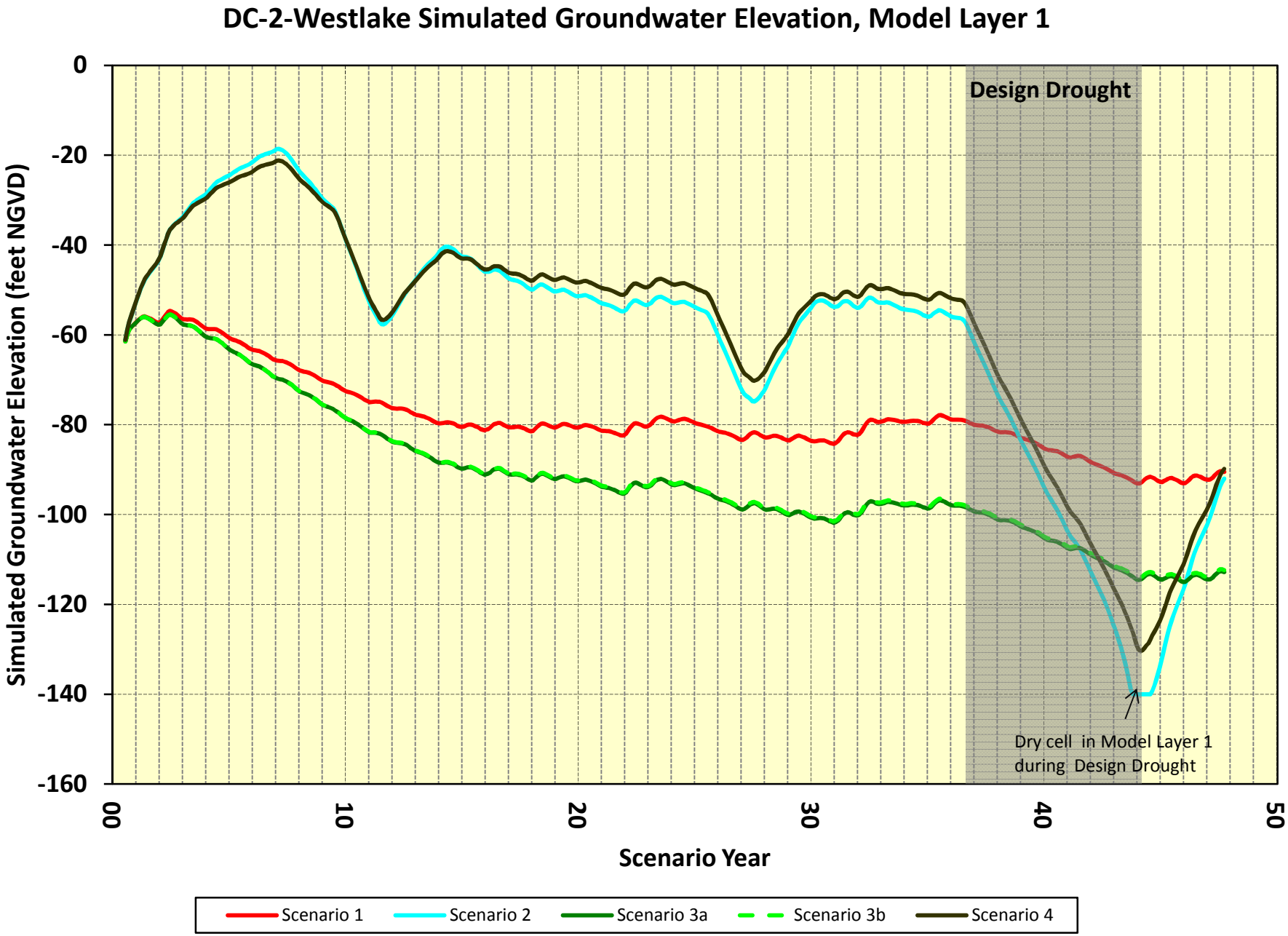
Model Scenarios		Scenario 1 Existing Conditions	Scenario 2 GSR	Scenario 3a SFGW	Scenario 3b SFGW	Scenario 4 Cumulative
Establish Initial Conditions		Hydrologic Sequence	Hydrologic Sequence	Hydrologic Sequence	Hydrologic Sequence	Hydrologic Sequence
June 2009 Condition		√	√	√	√	√
Model Scenario Simulation Period						
47.25 years (including Design Drought) Hydrologic Sequence: July 1996 to September 2003 ->> October 1958 to November 1992 ->> December 1975 to June 1978 ->> July 2003 - September 2006			√	√	√	√
Pumping Assumptions for Municipal Use						
PA Municipal Wells (mgd)						
"Take" Periods		6.84	6.90	6.84	6.84	6.90
"Put" Periods		6.84	1.38	6.84	6.84	1.38
"Hold" Periods		6.84	6.90	6.84	6.84	6.90
GSR Project Proposed Municipal Wells (mgd)						
"Take" Periods		0.0	7.23	0.0	0.0	7.23
"Put" Periods		0.0	0.04	0.0	0.0	0.04
"Hold" Periods		0.0	0.04	0.0	0.0	0.04
SFGW Project Proposed Municipal Wells (mgd)						
Year-Round Pumping		0.0	0.0	3.0	4.0	4.0
Total Municipal Pumping (PA + GSR + SFGW)						
"Take" Periods		***6.84***	***14.13***	***9.84***	***10.84***	***18.13***
"Put" Periods		***6.84***	***1.42***	***9.84***	***10.84***	***5.42***
"Hold" Periods		***6.84***	***6.94***	***9.84***	***10.84***	***10.94***
Irrigation and Other Non-Potable Pumping Assumptions (mgd)[1]						
Golden Gate Park	Elk Glen (GGP)	0.081	0.081	0.081	0.000	0.000
	South Windmill (GGP)	0.498	0.498	0.498	0.000	0.000
	North Lake (GGP)	0.563	0.563	0.563	0.000	0.000
	Sub-Total	***1.142***	***1.142***	***1.142***	***0.000***	***0.000***
Golf Courses	Burlingame Golf Club	0.150	0.150	0.150	0.150	0.150
	California Golf No. 02	0.192	0.192	0.192	0.192	0.192
	Green Hills No. 05	0.099	0.099	0.099	0.099	0.099
	Lake Merced Golf No. 01	0.004	0.004	0.004	0.004	0.004
	Lake Merced Golf No. 02	0.004	0.004	0.004	0.004	0.004
	Lake Merced Golf No. 03	0.010	0.010	0.010	0.010	0.010
	Olympic Club No. 09[2]	0.002	0.002	0.002	0.002	0.002
	SF Golf West	0.035	0.035	0.035	0.035	0.035
	Sub-Total	***0.495***	***0.495***	***0.495***	***0.495***	***0.495***
Cemeteries	Cypress Lawn No. 02	0.020	0.020	0.020	0.020	0.020
	Cypress Lawn No. 03	0.144	0.144	0.144	0.144	0.144
	Eternal Home	0.013	0.013	0.013	0.013	0.013
	Hills of Eternity No. 02	0.020	0.020	0.020	0.020	0.020
	Holy Cross No. 03[3]	0.190	0.190	0.190	0.190	0.230
	Home of Peace No. 02	0.039	0.039	0.039	0.039	0.039
	Italian Cemetery	0.033	0.033	0.033	0.033	0.033
	Olivet	0.098	0.098	0.098	0.098	0.098
	Woodlawn No. 02	0.085	0.085	0.085	0.085	0.085
	Sub-Total	***0.641***	***0.641***	***0.641***	***0.641***	***0.681***
Other	Hillsborough Residents No. 1-12	0.291	0.291	0.291	0.291	0.291
	Edgewood Development Ctr.	0.009	0.009	0.009	0.009	0.009
	Zoo No.05	0.321	0.321	0.321	0.321	0.321
	Stern Grove	0.004	0.004	0.012	0.013	0.013
	Sub-Total	***0.626***	***0.626***	***0.634***	***0.635***	***0.635***
Total Irrigation and Other Non-Potable Pumping		***2.90***	***2.90***	***2.91***	***1.77***	***1.81***

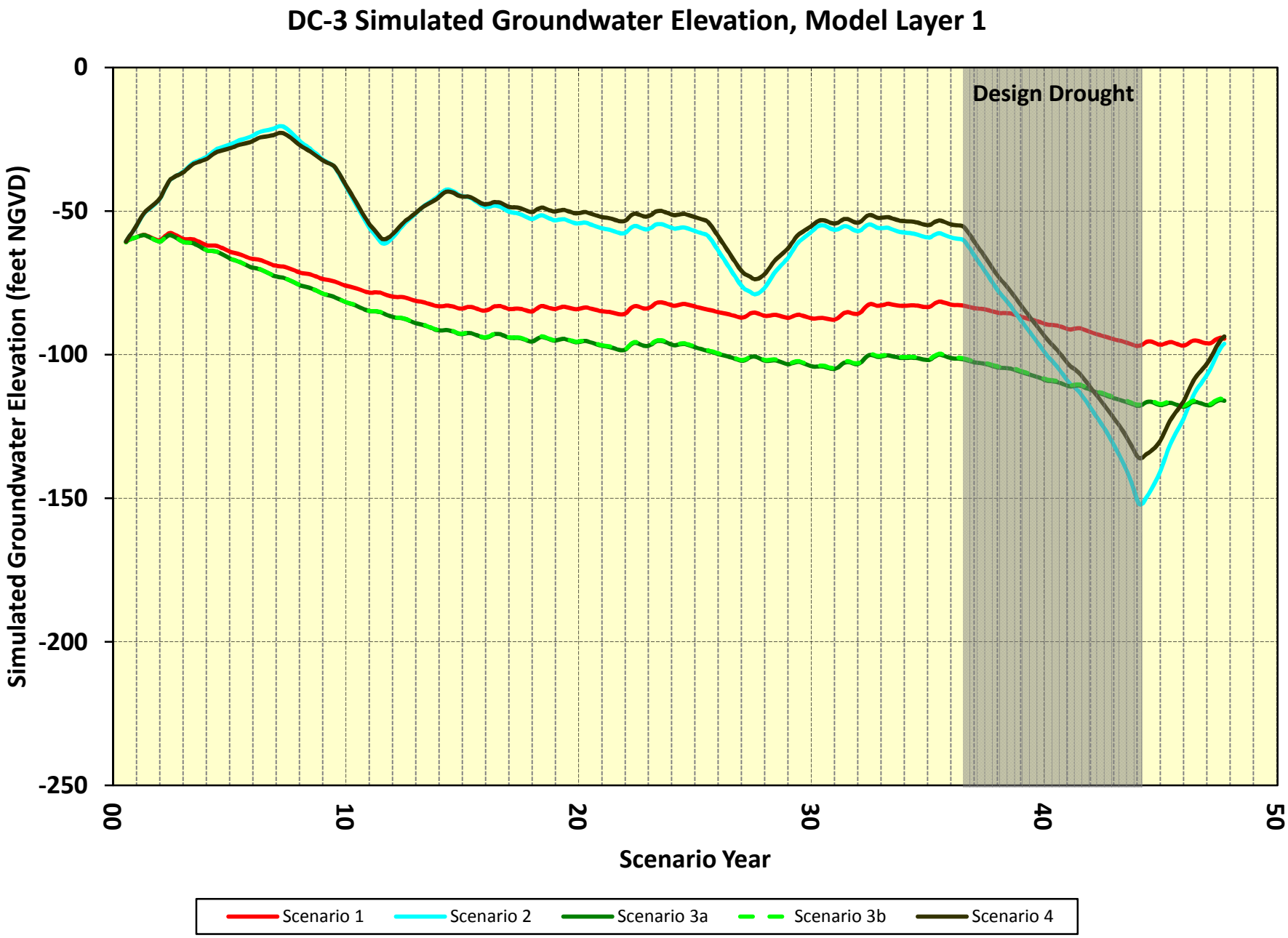
Key:
afy - acre-feet per year
mgd - million gallons per day
PA - Partner Agencies
GGP - Golden Gate Park
GSR - Regional Groundwater Storage and Recovery
SFGW - San Francisco Groundwater Supply
SFPUC - San Francisco Public Utilities Commission

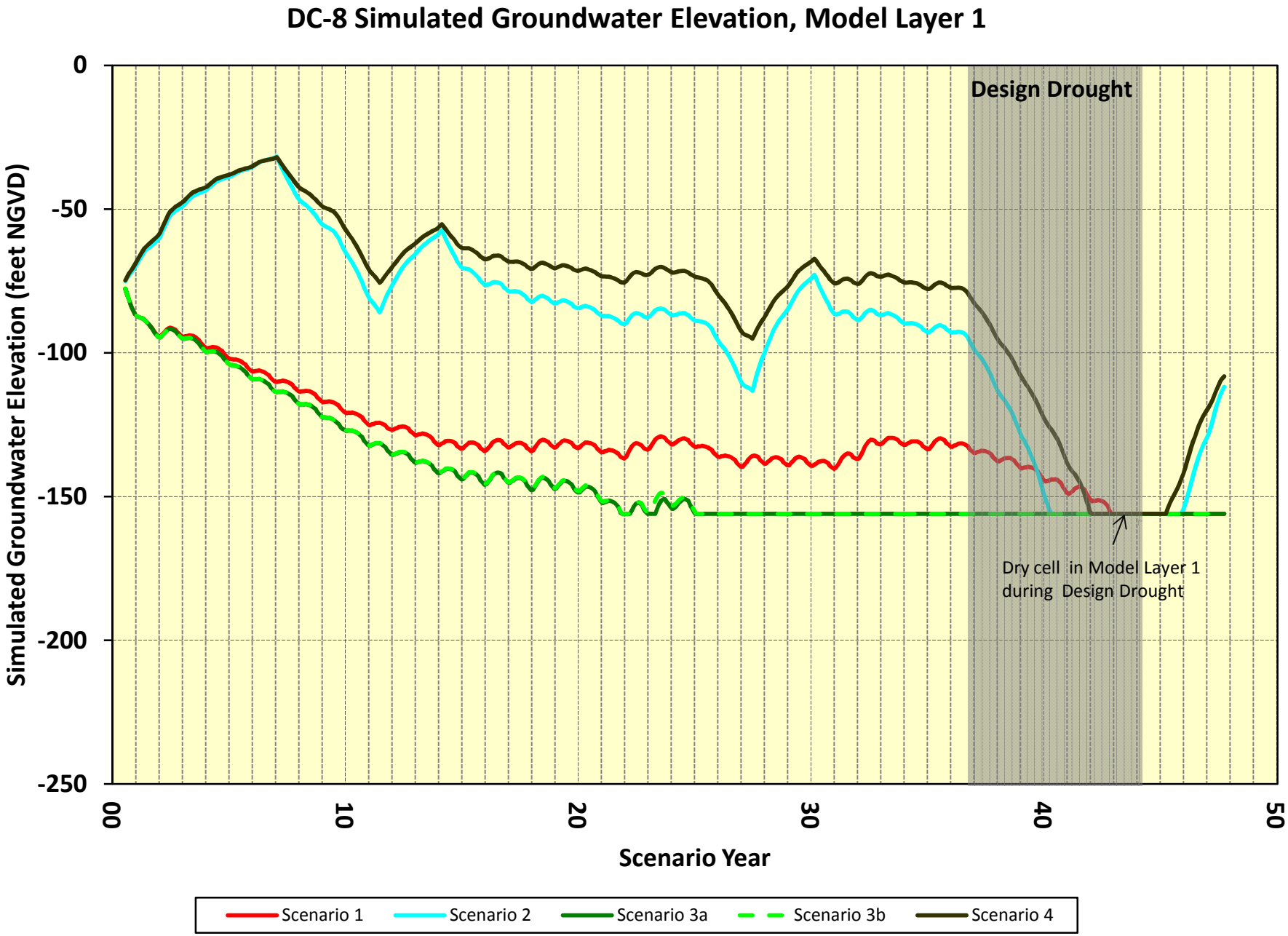
Notes:
(1) Pumping wells that are listed identify the wells in the model scenarios whose pumping assumptions were modified compared to the 2008 No-Project Scenario by HydroFocus (May, 2011, ver. 3.1), as a result of revised Soil Moisture Budget (SMB). Pumping rates for the three wells in the GGP, California Golf No. 02, Edgewood Development Center, Zoo No. 05, and Stern Grove wells were further modified compared to the results of revised SMB.
(2) Olympic Club No. 09 values include pumping for both Olympic Golf Club wells.
(3) Holy Cross No. 3 well irrigation pumping for Scenarios 1, 2, 3a, and 3b is based on the results of revised SMB. Based on the projected future build-out at the Holy Cross cemetery, an additional pumping of 0.04 mgd (45 afy) was estimated to occur under Scenario 4 (Cumulative).

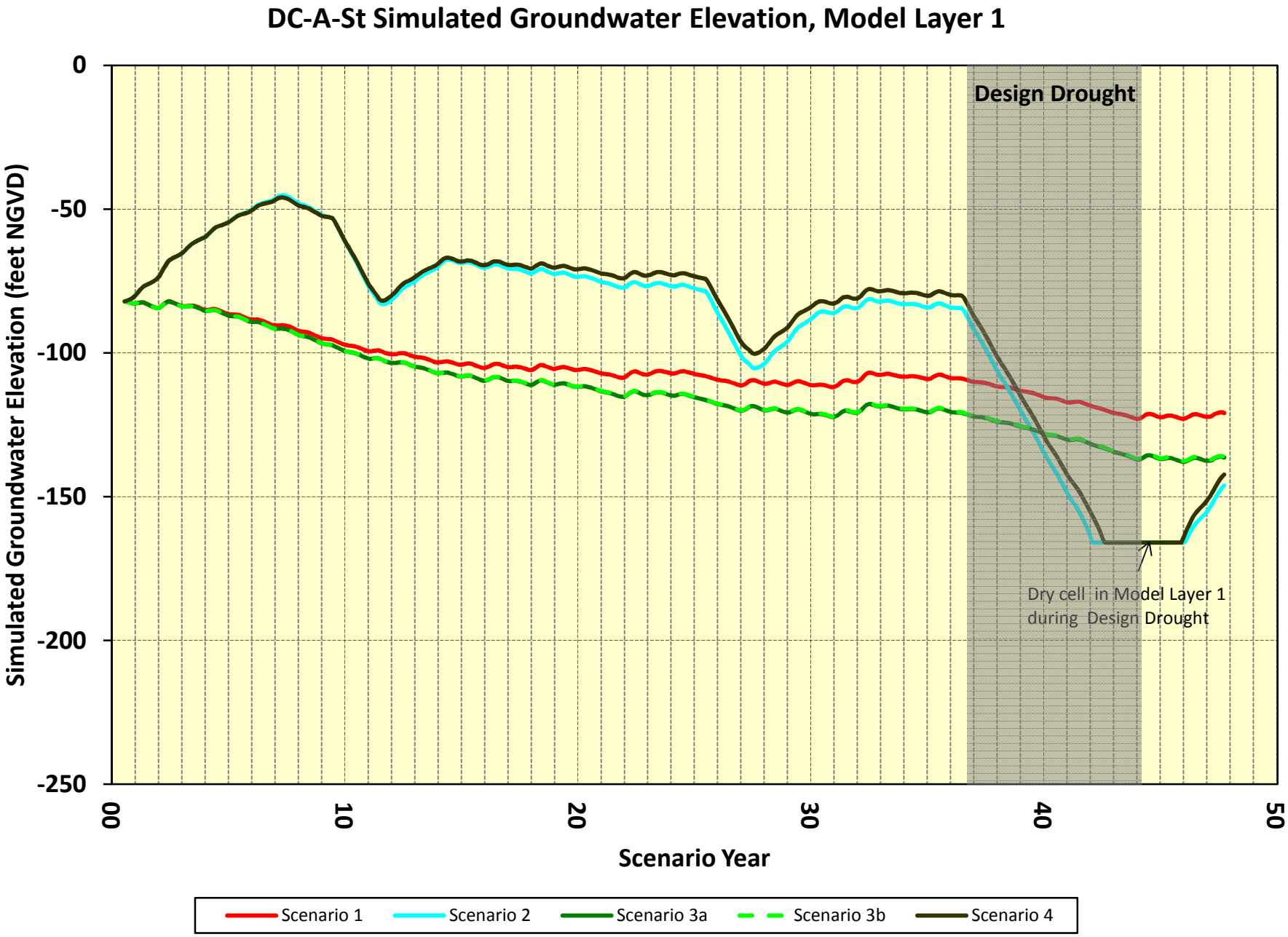
Attachment 10.6-A

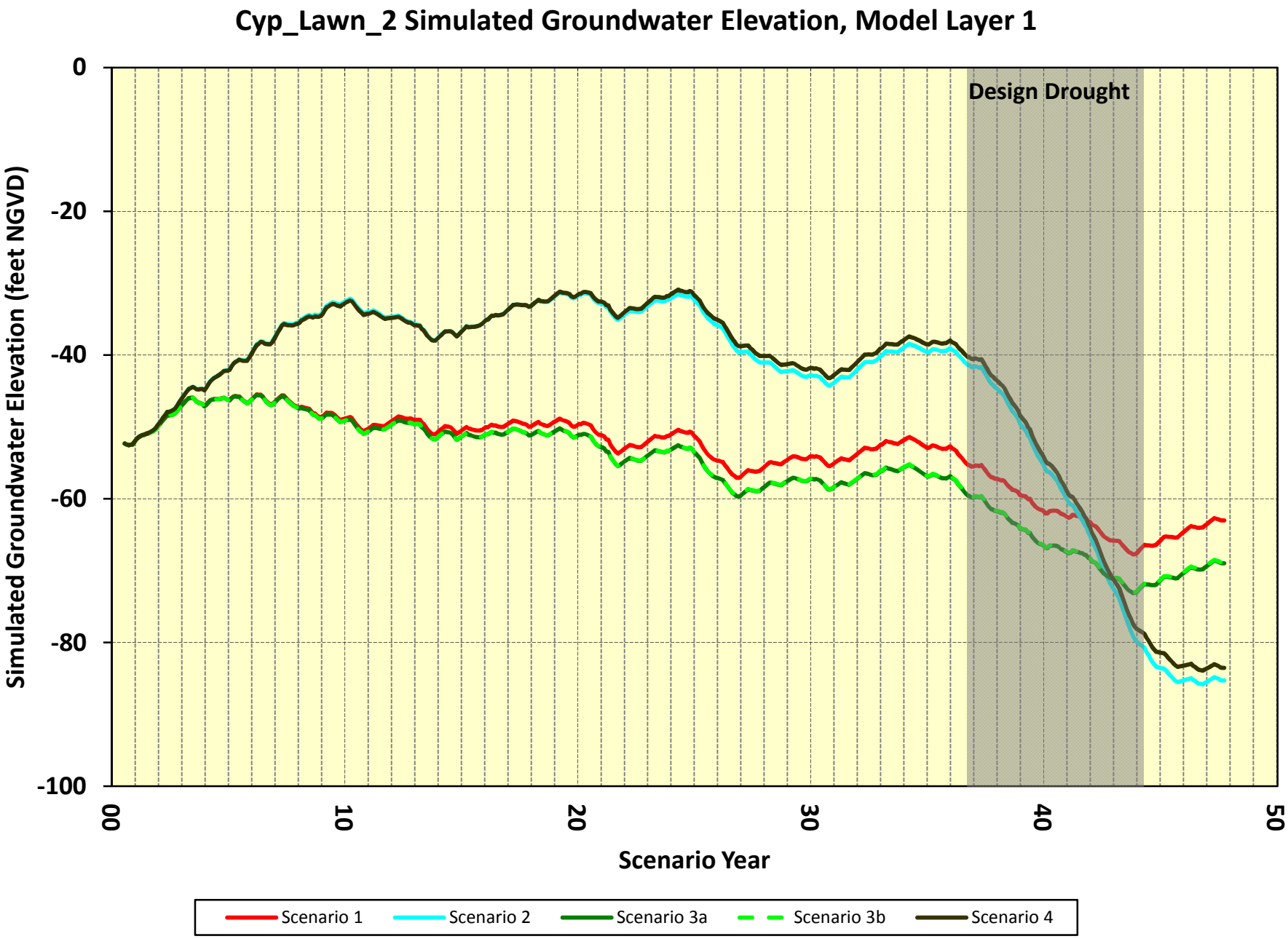
Model Scenario Hydrographs for Selected Locations

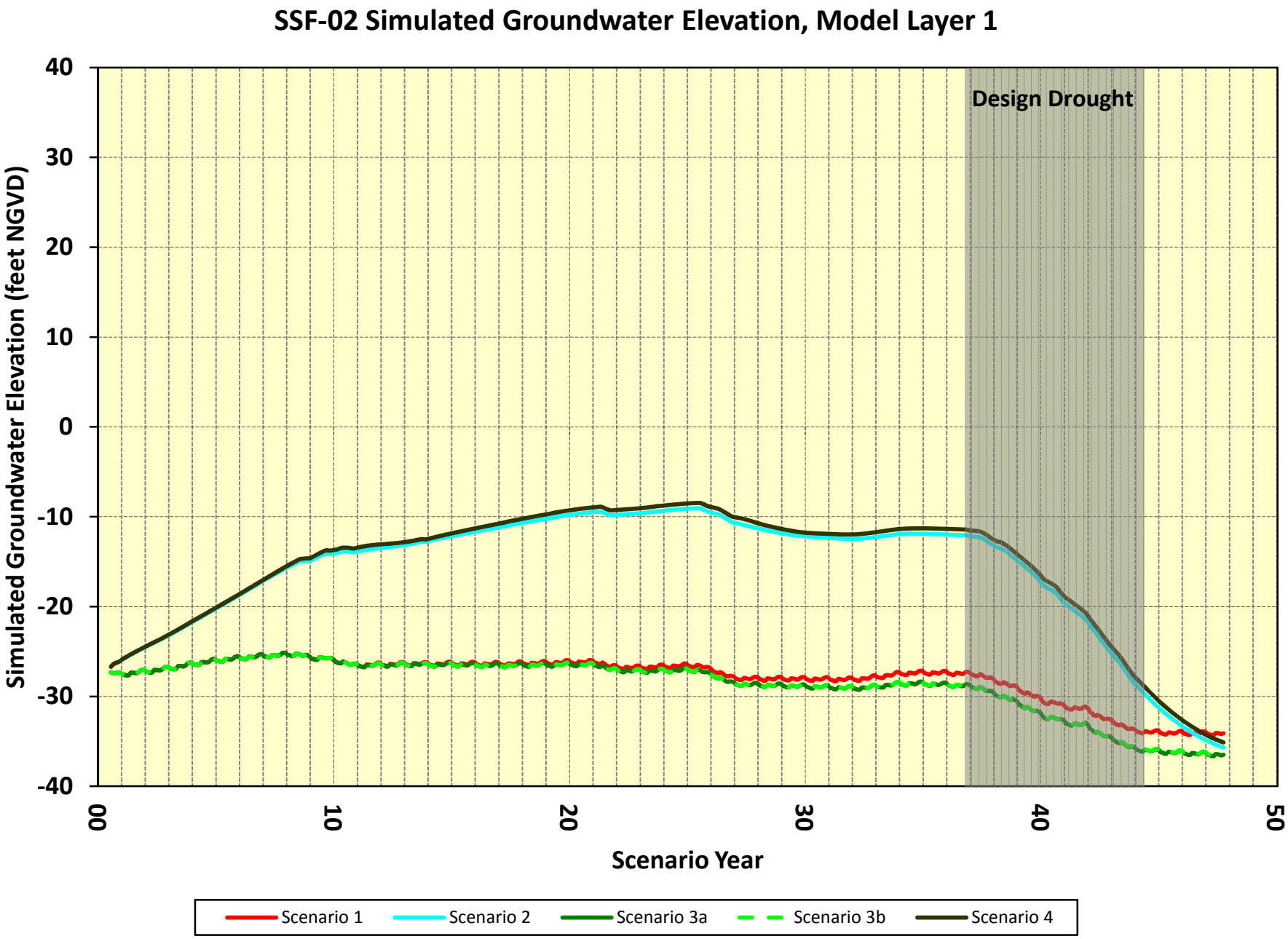

DC-2-Westlake Simulated Groundwater Elevation, Model Layer 1
Simulated Groundwater Elevation (feet NGVD)
0
-20
-40
-60
-80
-100
-120
-140
-160
00
10
20
30
40
50
Scenario Year
Design Drought
Dry cell in Model Layer 1
during Design Drought
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

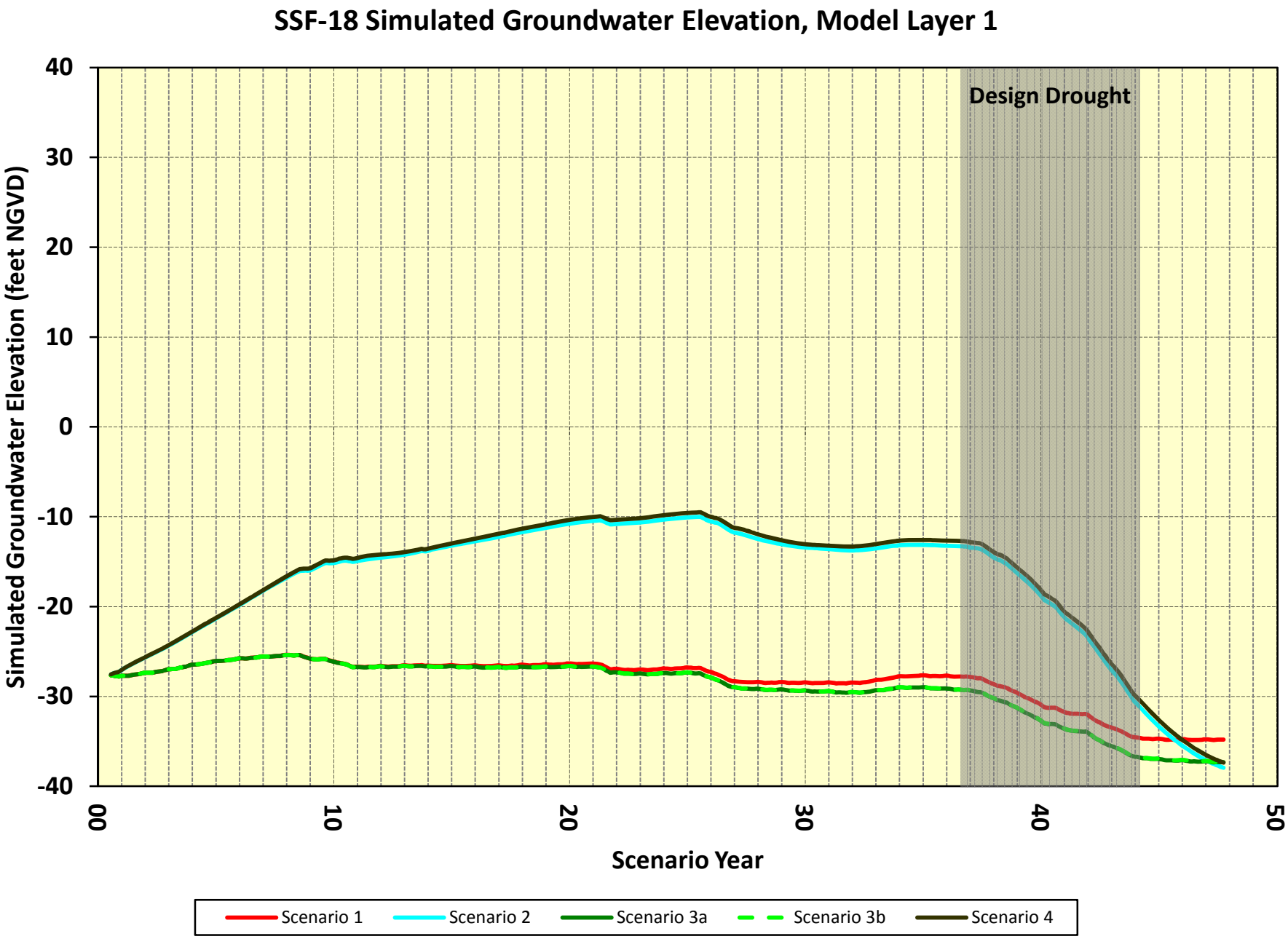

DC-3 Simulated Groundwater Elevation, Model Layer 1
Design Drought
Simulated Groundwater Elevation (feet NGVD)
0
-50
-100
-150
-200
-250
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

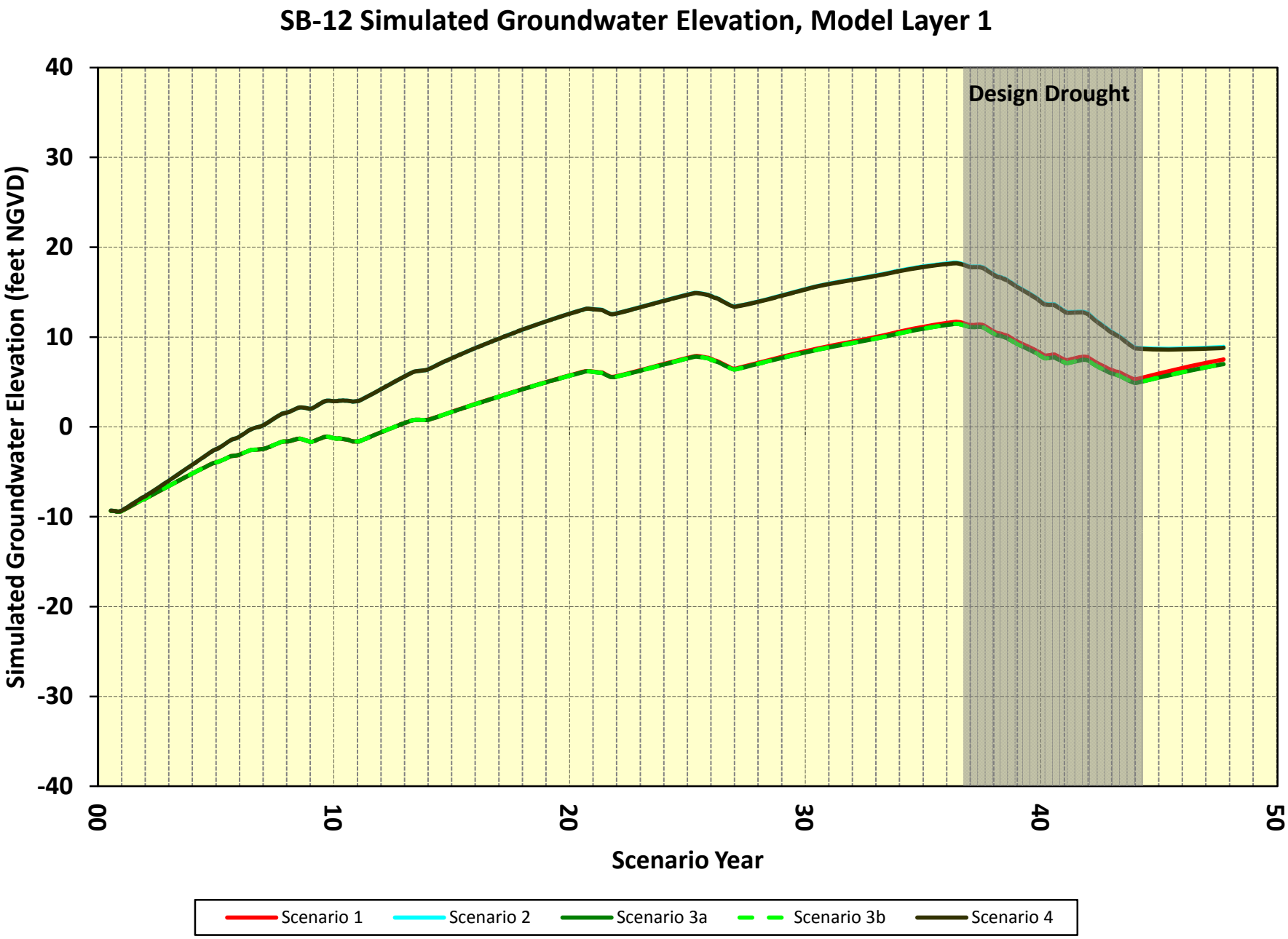

DC-8 Simulated Groundwater Elevation, Model Layer 1
Simulated Groundwater Elevation (feet NGVD)
0
-50
-100
-150
-200
-250
Design Drought
Dry cell in Model Layer 1
during Design Drought
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

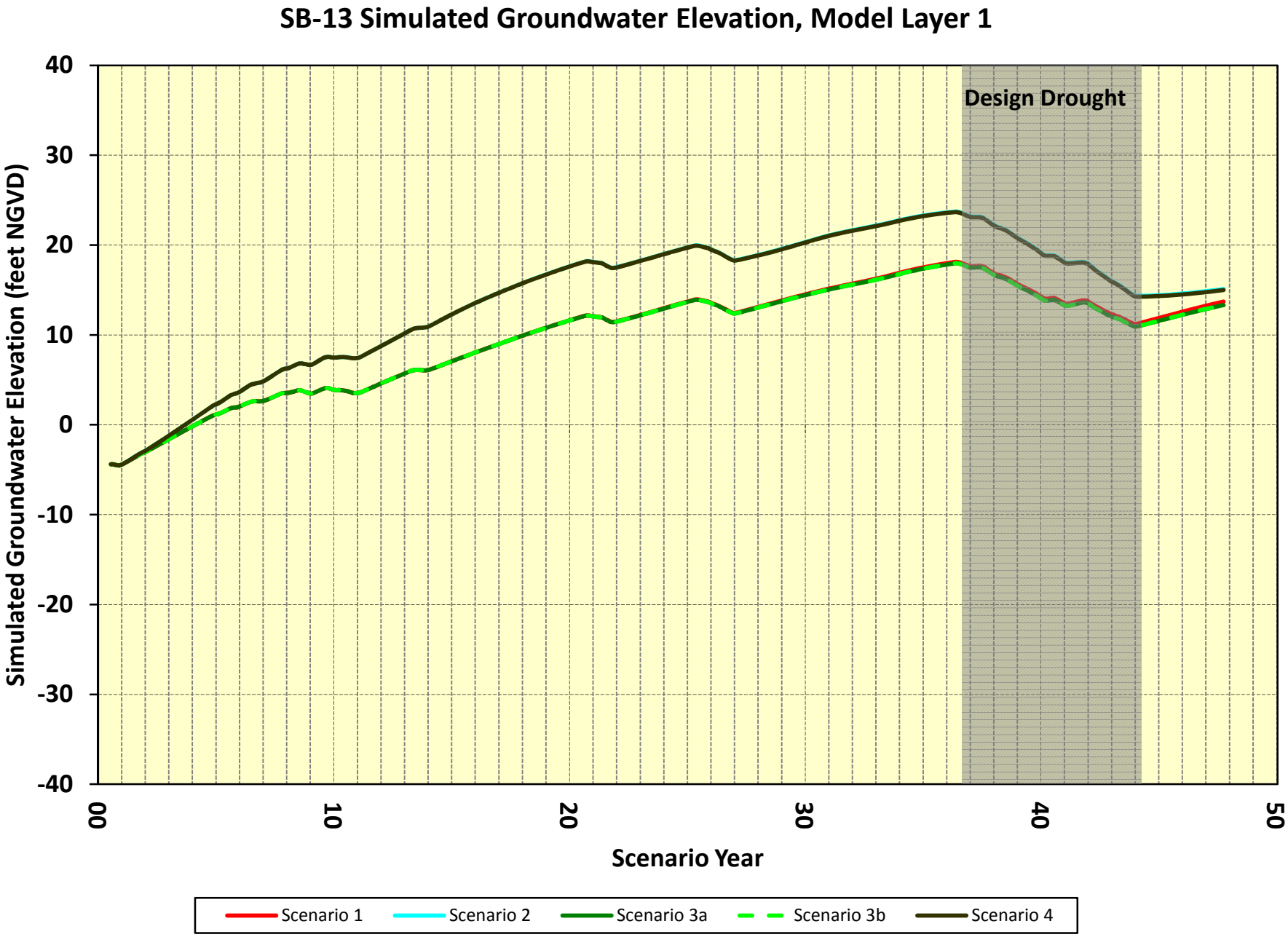

DC-A-St Simulated Groundwater Elevation, Model Layer 1
Design Drought
Dry cell in Model Layer 1 during Design Drought
Simulated Groundwater Elevation (feet NGVD)
0
-50
-100
-150
-200
-250
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

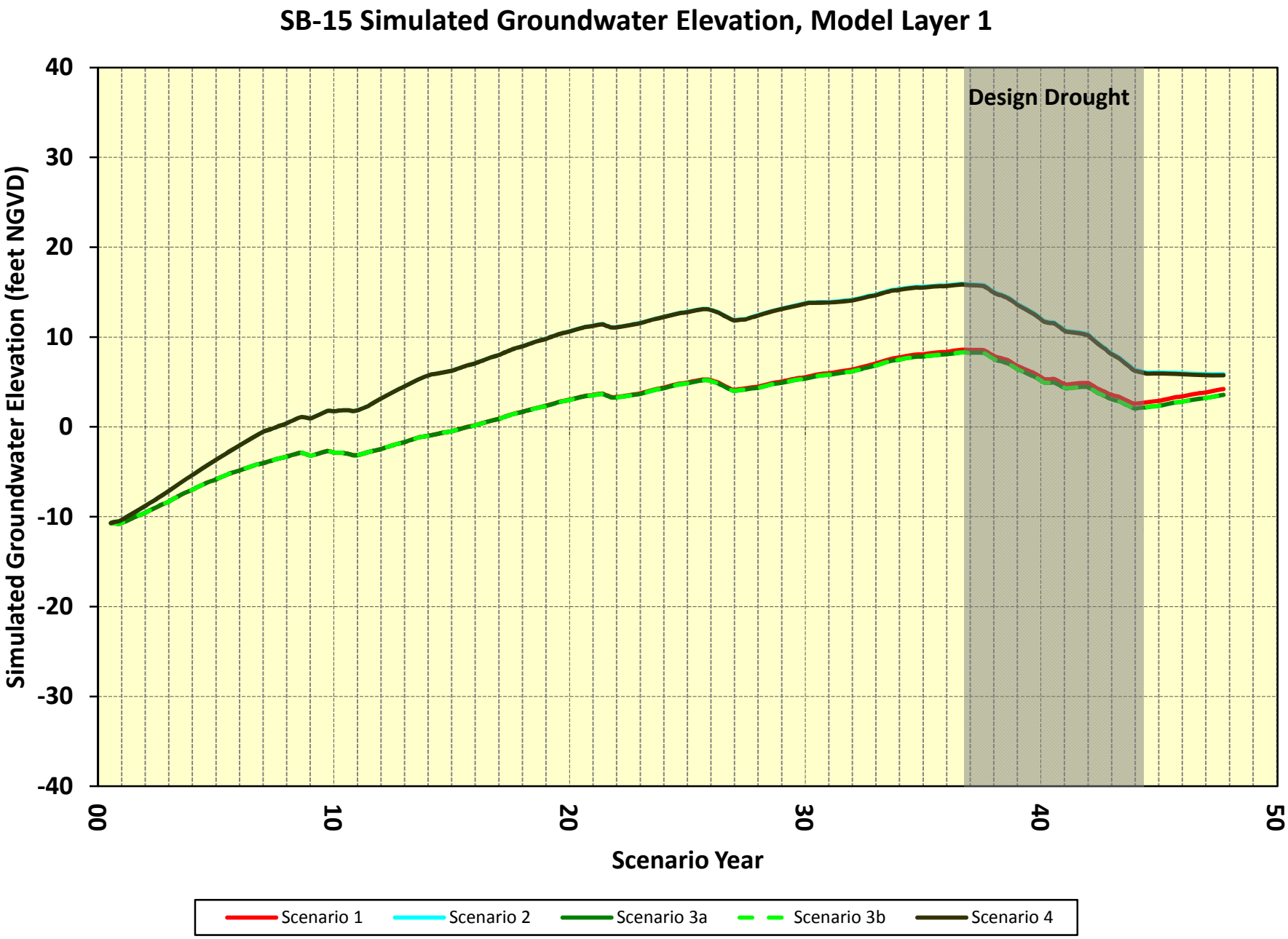

Cyp_Lawn_2 Simulated Groundwater Elevation, Model Layer 1
Design Drought
Simulated Groundwater Elevation (feet NGVD)
0
-20
-40
-60
-80
-100
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

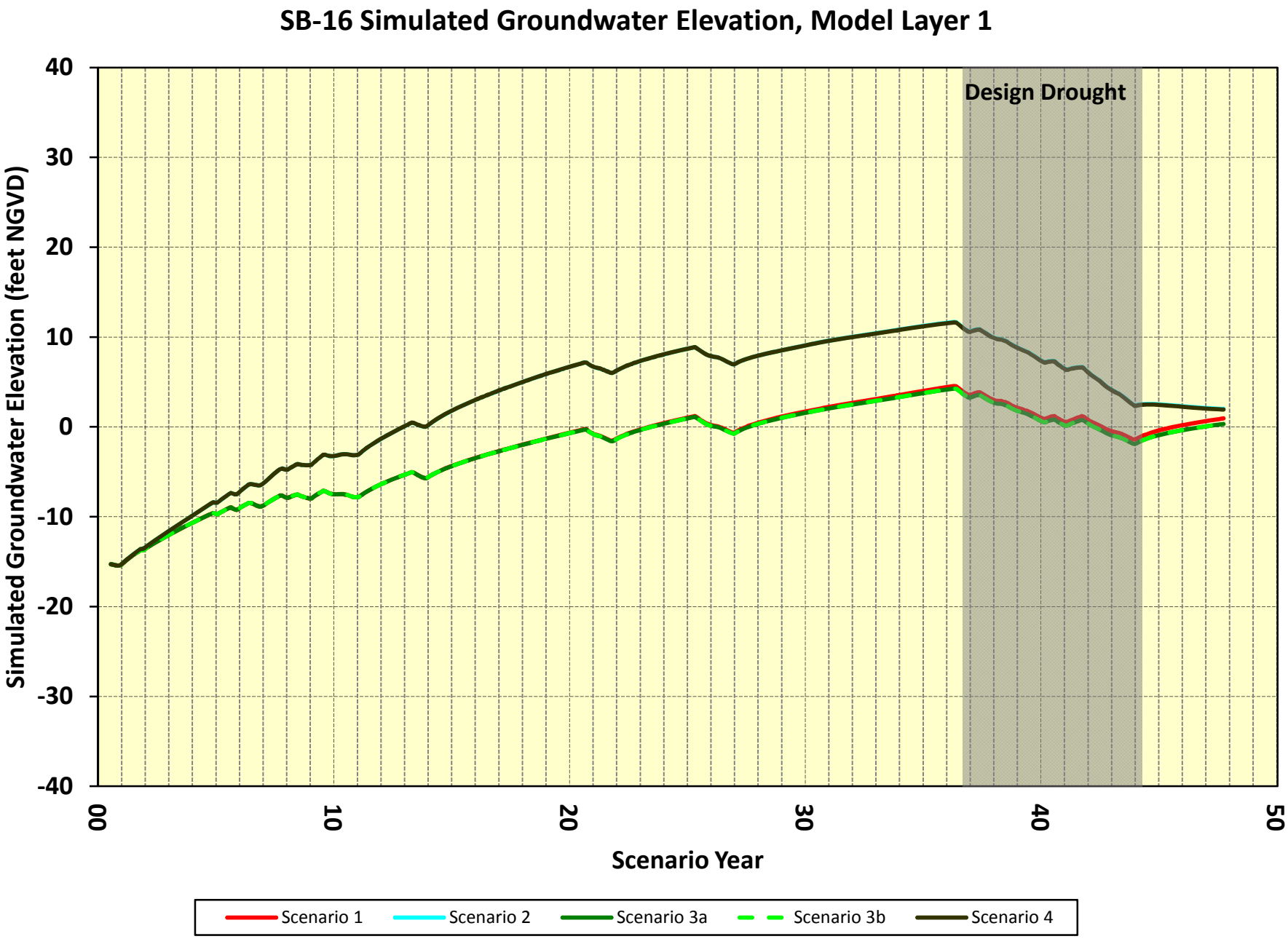

SSF-02 Simulated Groundwater Elevation, Model Layer 1
Design Drought
Simulated Groundwater Elevation (feet NGVD)
40
30
20
10
0
-10
-20
-30
-40
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

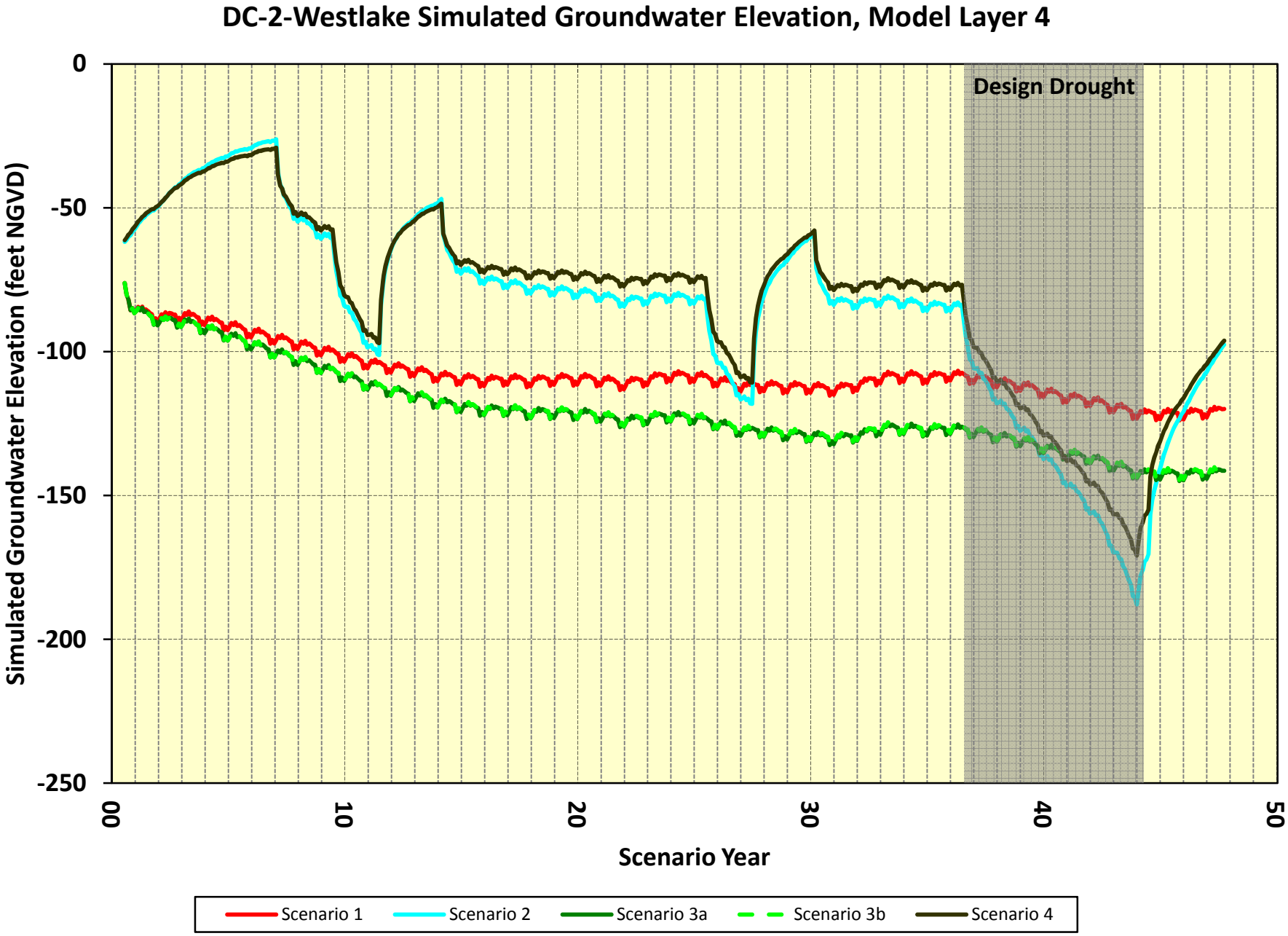

SSF-18 Simulated Groundwater Elevation, Model Layer 1
Design Drought
Simulated Groundwater Elevation (feet NGVD)
40
30
20
10
0
-10
-20
-30
-40
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

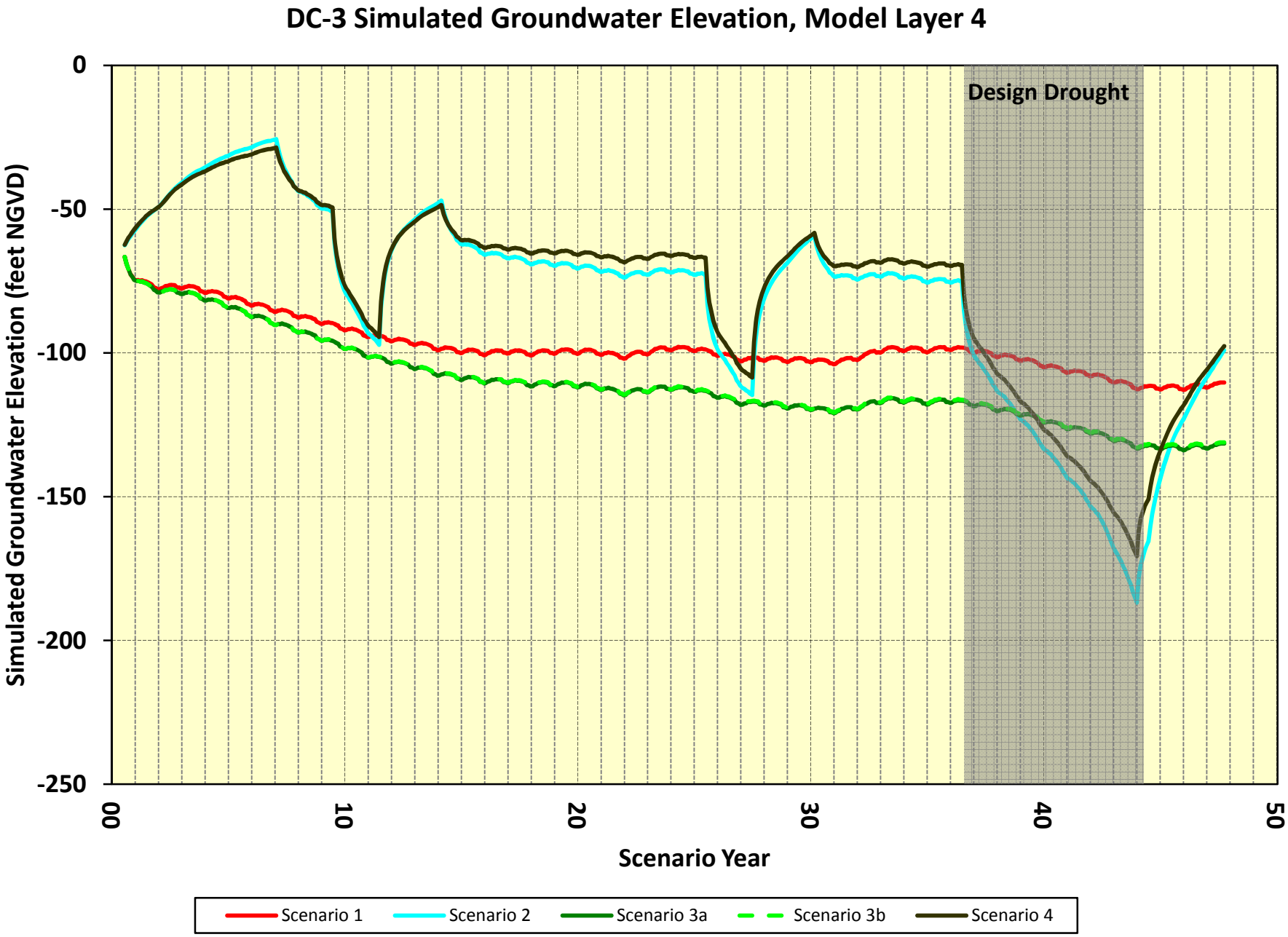

SB-12 Simulated Groundwater Elevation, Model Layer 1
Design Drought
Simulated Groundwater Elevation (feet NGVD)
40
30
20
10
0
-10
-20
-30
-40
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

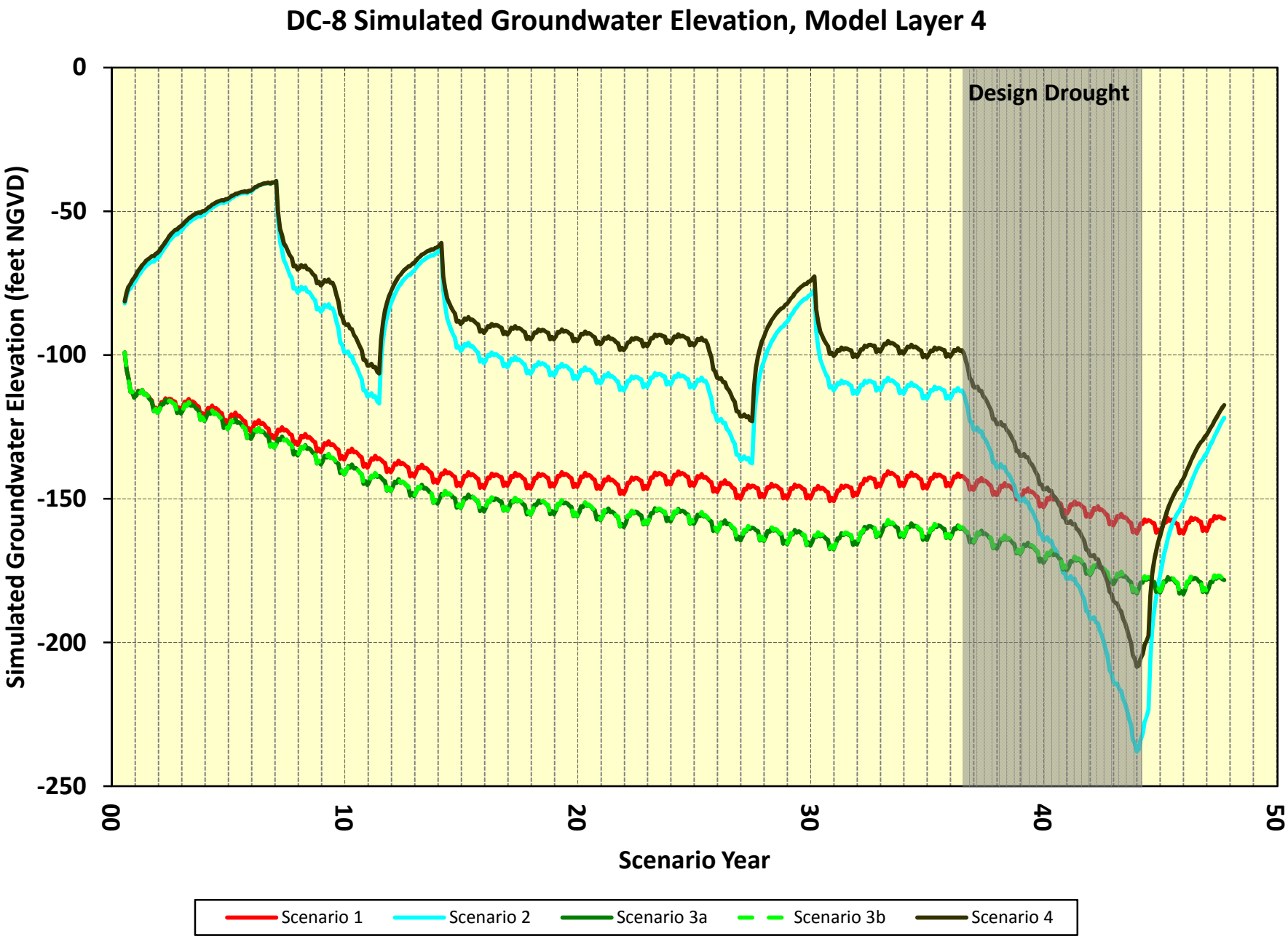

SB-13 Simulated Groundwater Elevation, Model Layer 1
Design Drought
Simulated Groundwater Elevation (feet NGVD)
40
30
20
10
0
-10
-20
-30
-40
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

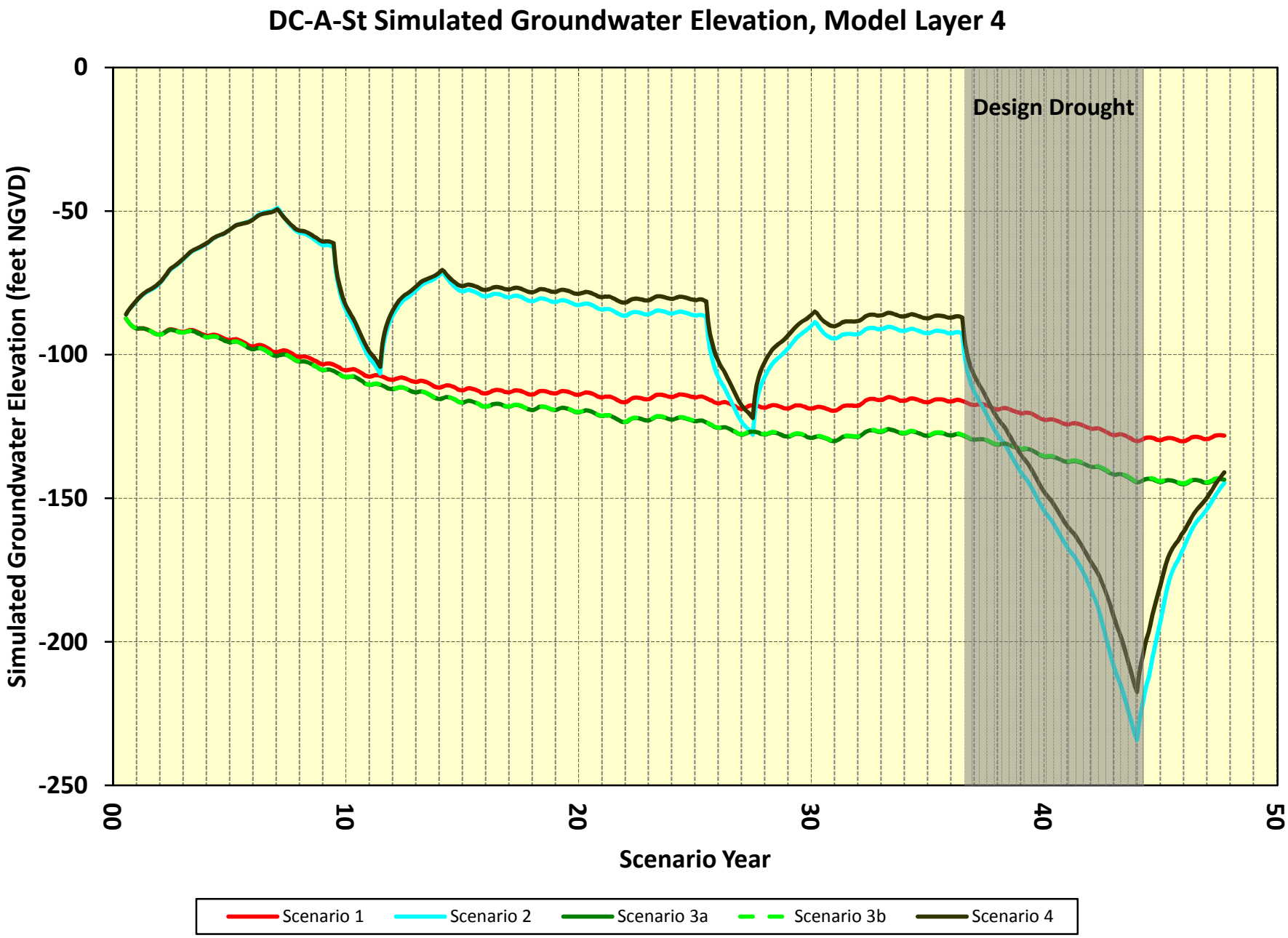

SB-15 Simulated Groundwater Elevation, Model Layer 1
Design Drought
Simulated Groundwater Elevation (feet NGVD)
40
30
20
10
0
-10
-20
-30
-40
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

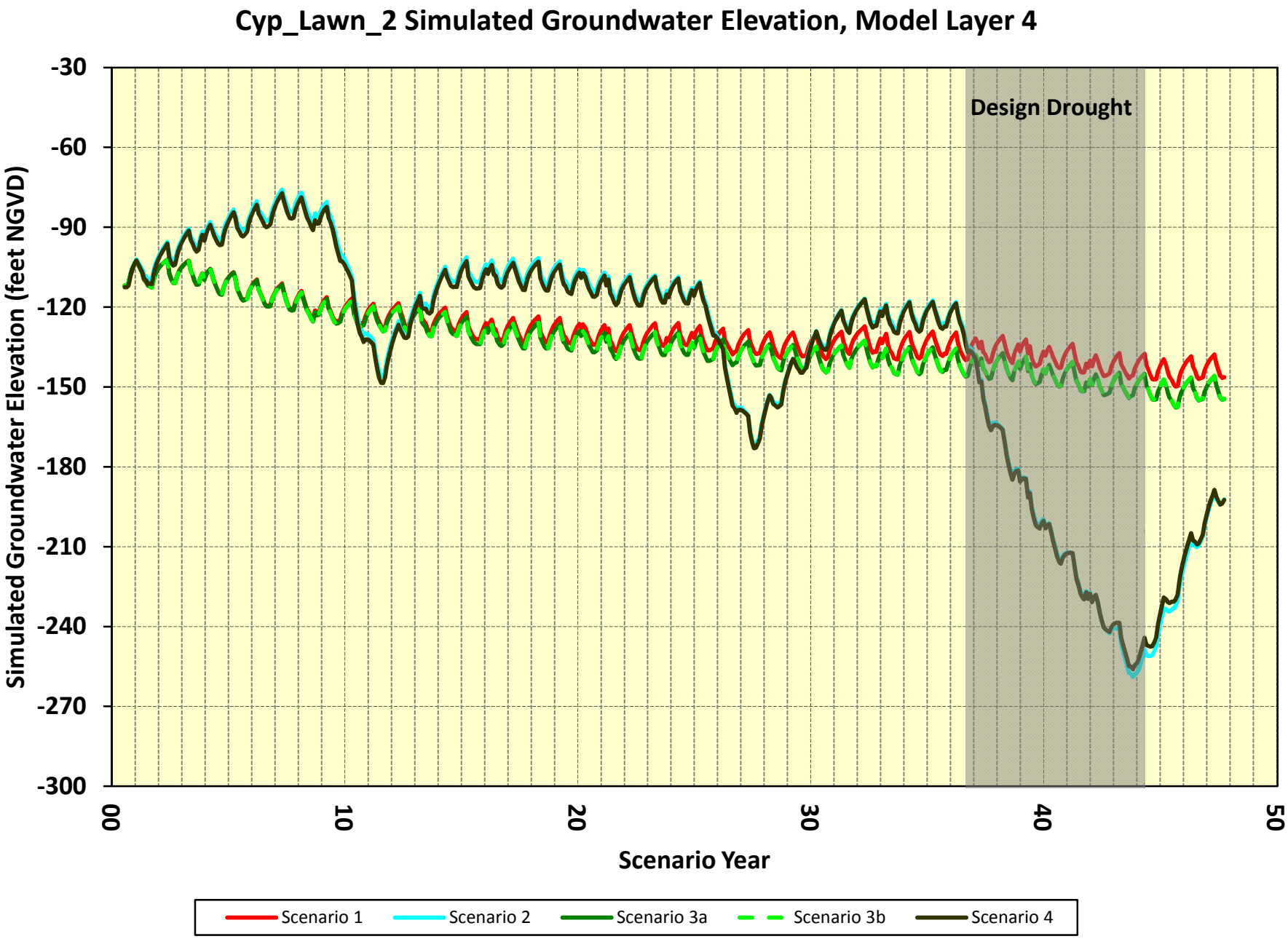

SB-16 Simulated Groundwater Elevation, Model Layer 1
Design Drought
Simulated Groundwater Elevation (feet NGVD)
40
30
20
10
0
-10
-20
-30
-40
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

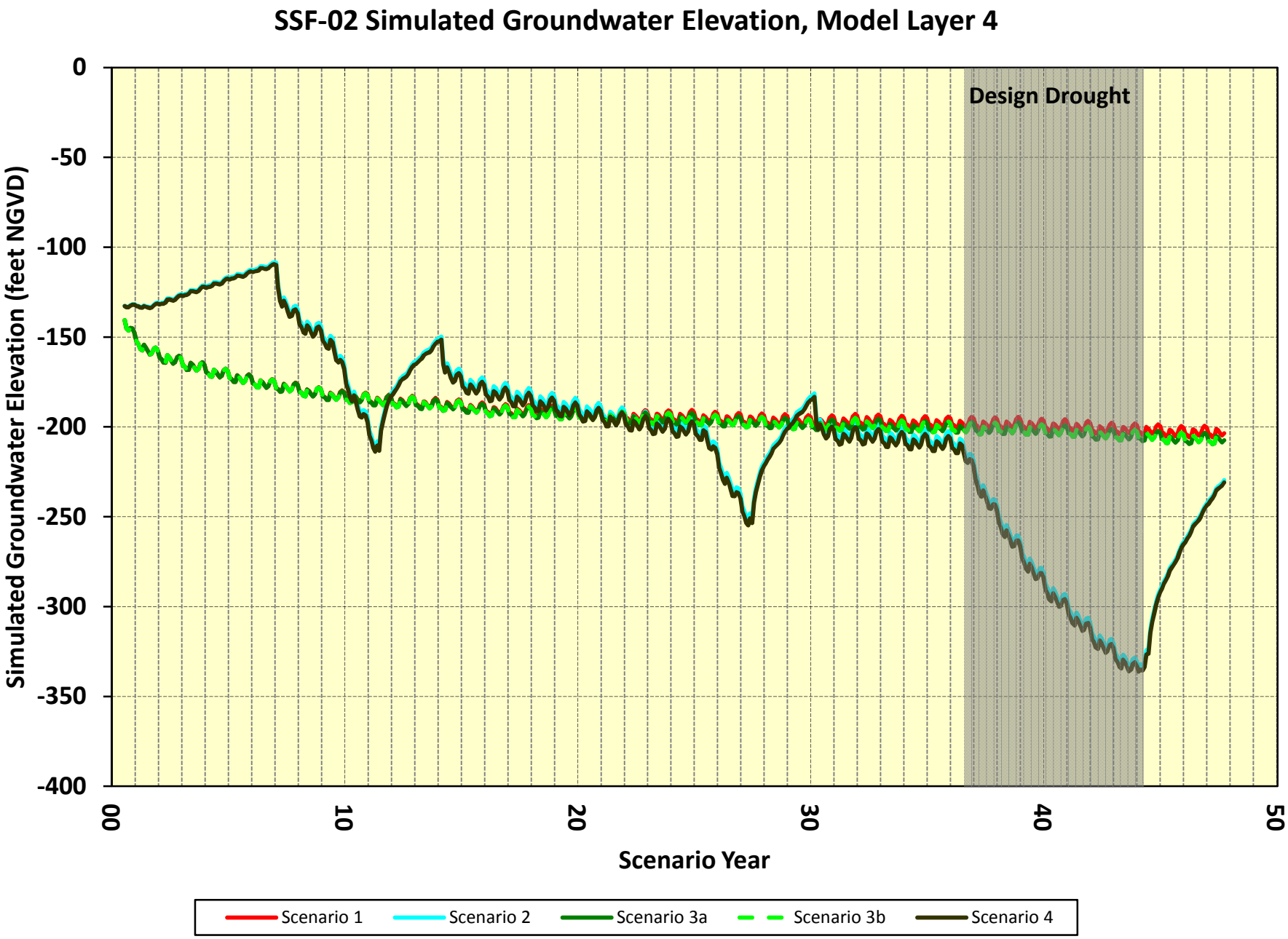

DC-2-Westlake Simulated Groundwater Elevation, Model Layer 4
Design Drought
Simulated Groundwater Elevation (feet NGVD)
0
-50
-100
-150
-200
-250
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

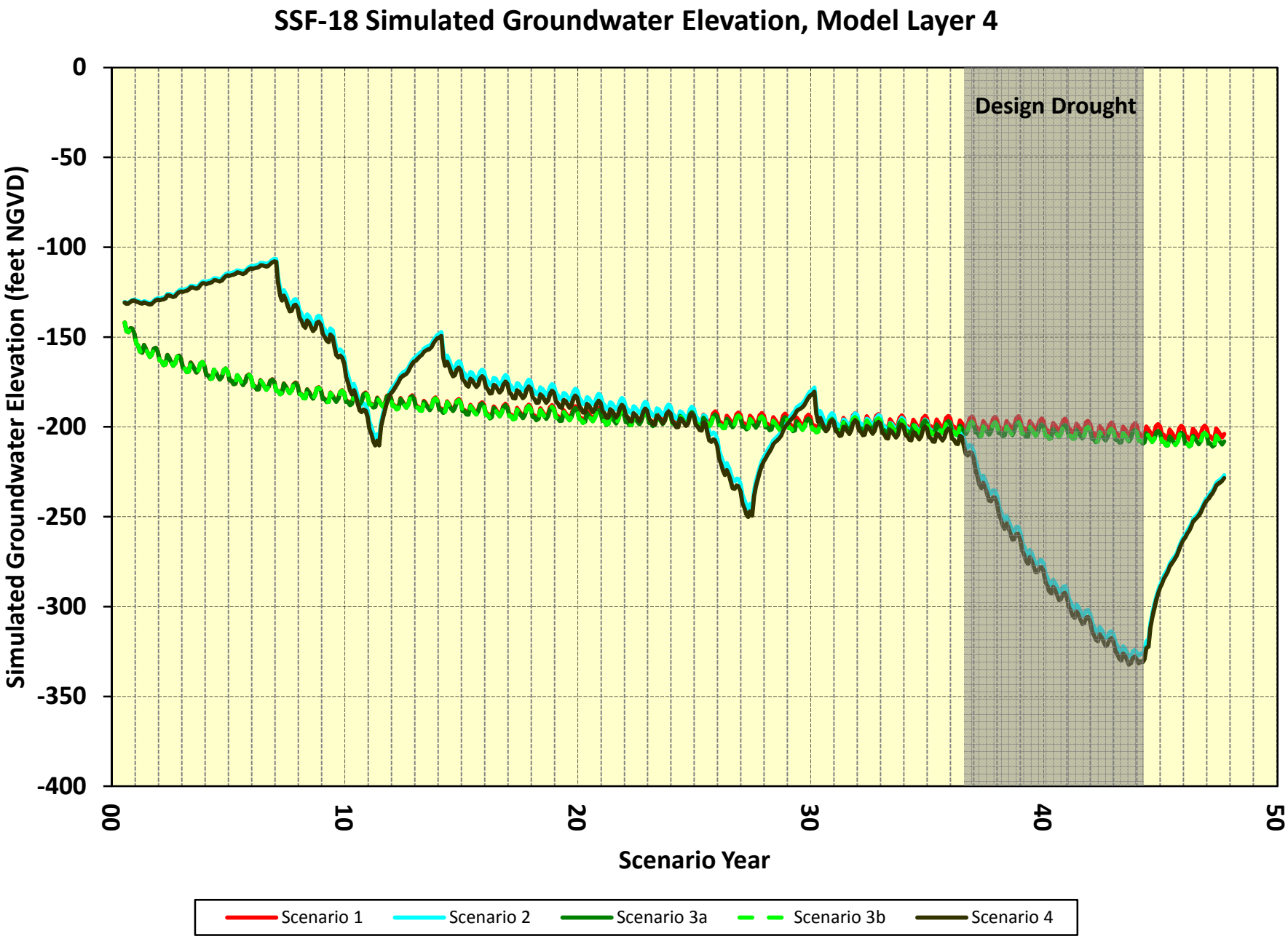

DC-3 Simulated Groundwater Elevation, Model Layer 4
Design Drought
Simulated Groundwater Elevation (feet NGVD)
0
-50
-100
-150
-200
-250
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

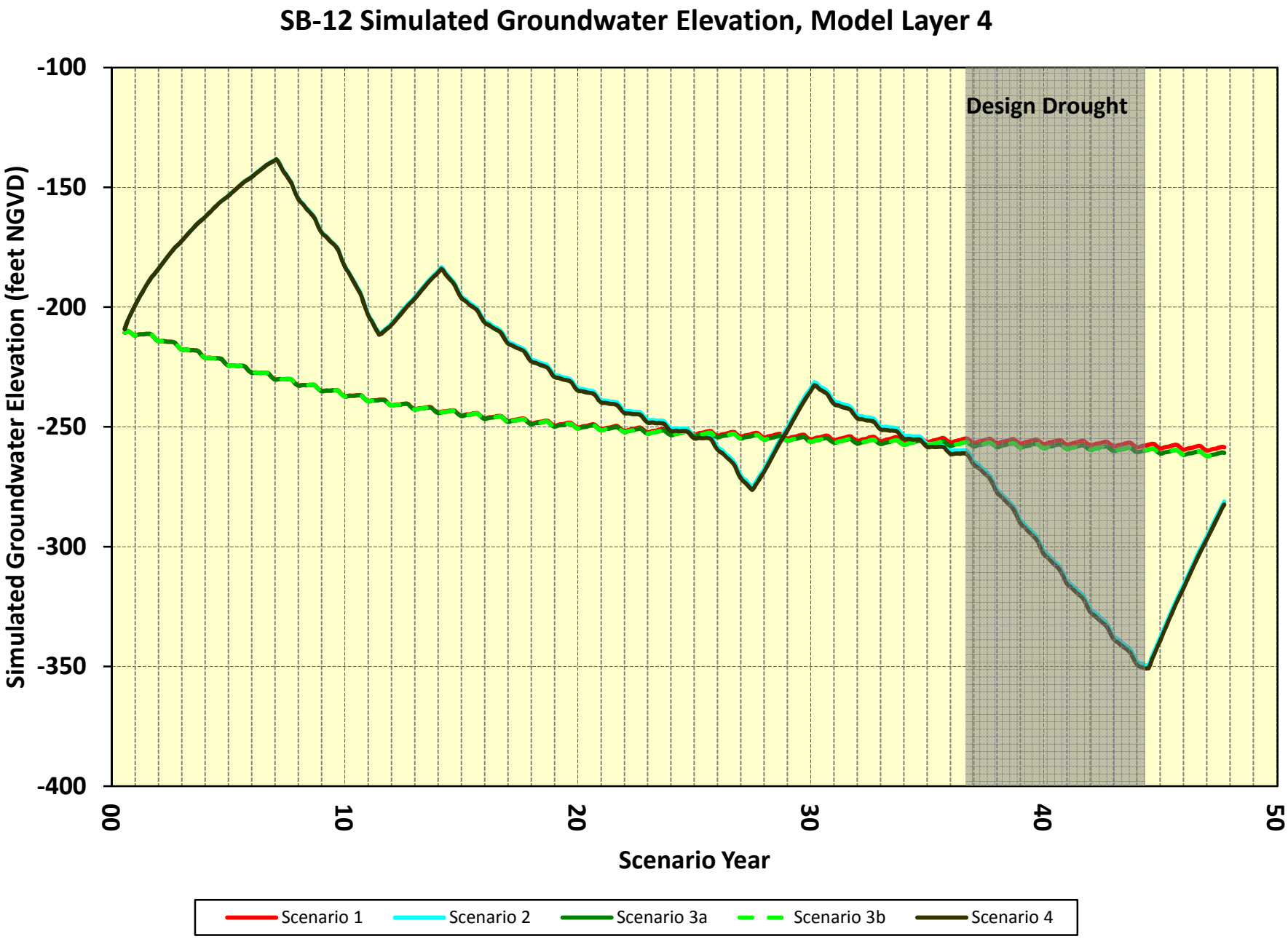

DC-8 Simulated Groundwater Elevation, Model Layer 4
Design Drought
Simulated Groundwater Elevation (feet NGVD)
0
-50
-100
-150
-200
-250
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

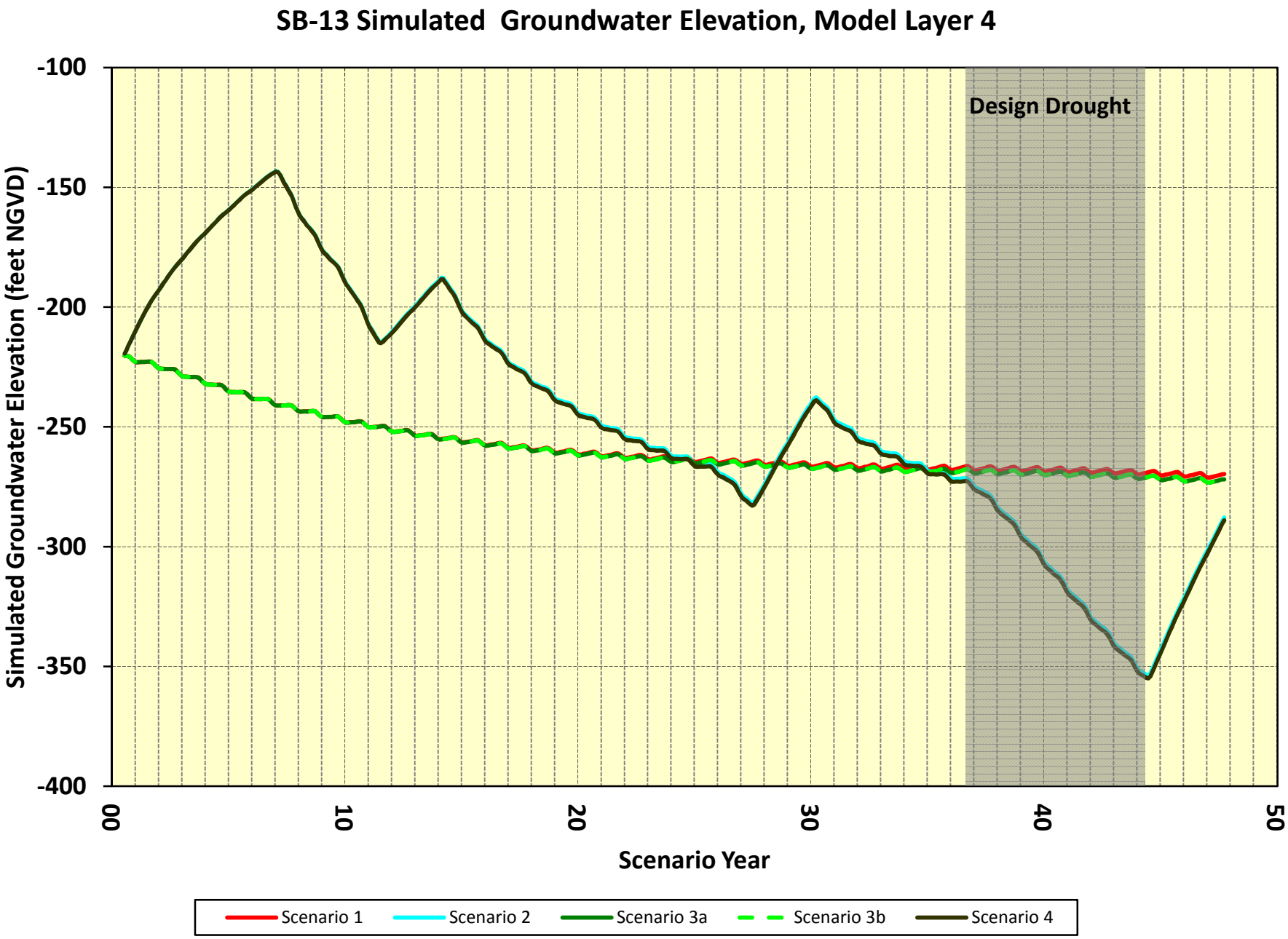

DC-A-St Simulated Groundwater Elevation, Model Layer 4
Design Drought
Simulated Groundwater Elevation (feet NGVD)
0
-50
-100
-150
-200
-250
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

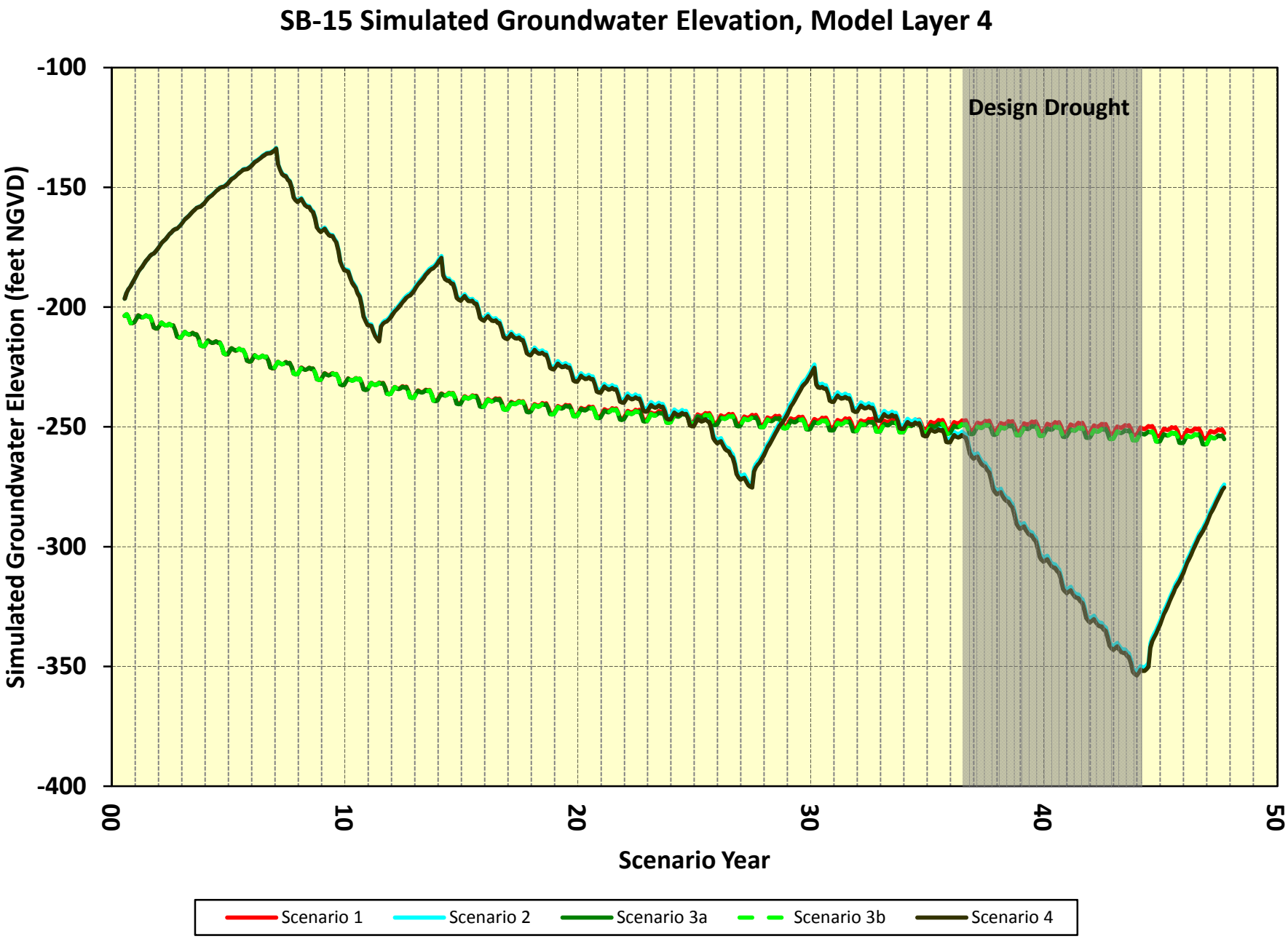

Cyp_Lawn_2 Simulated Groundwater Elevation, Model Layer 4
Design Drought
Simulated Groundwater Elevation (feet NGVD)
-30
-60
-90
-120
-150
-180
-210
-240
-270
-300
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

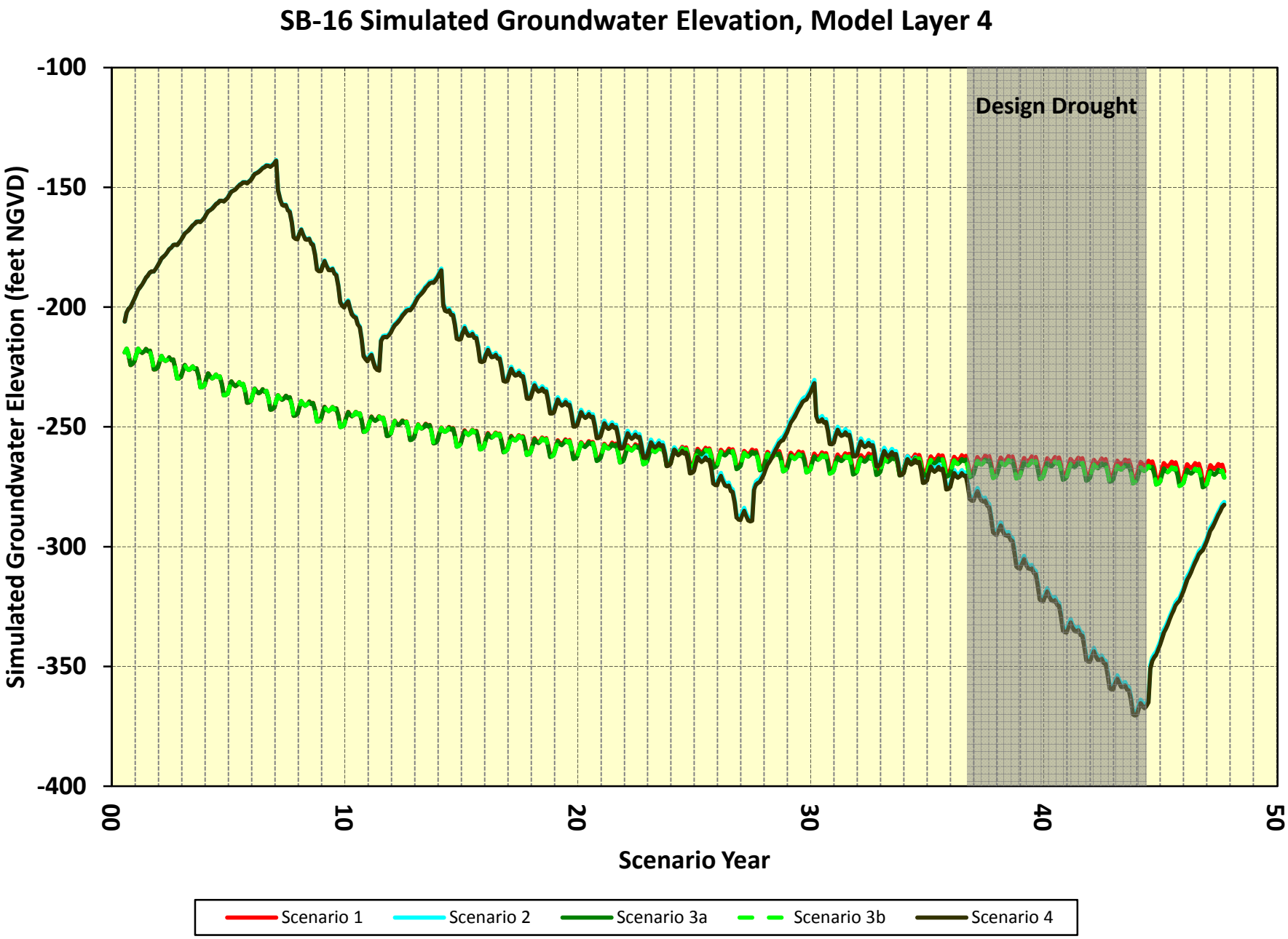

SSF-02 Simulated Groundwater Elevation, Model Layer 4
Design Drought
Simulated Groundwater Elevation (feet NGVD)
0
-50
-100
-150
-200
-250
-300
-350
-400
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

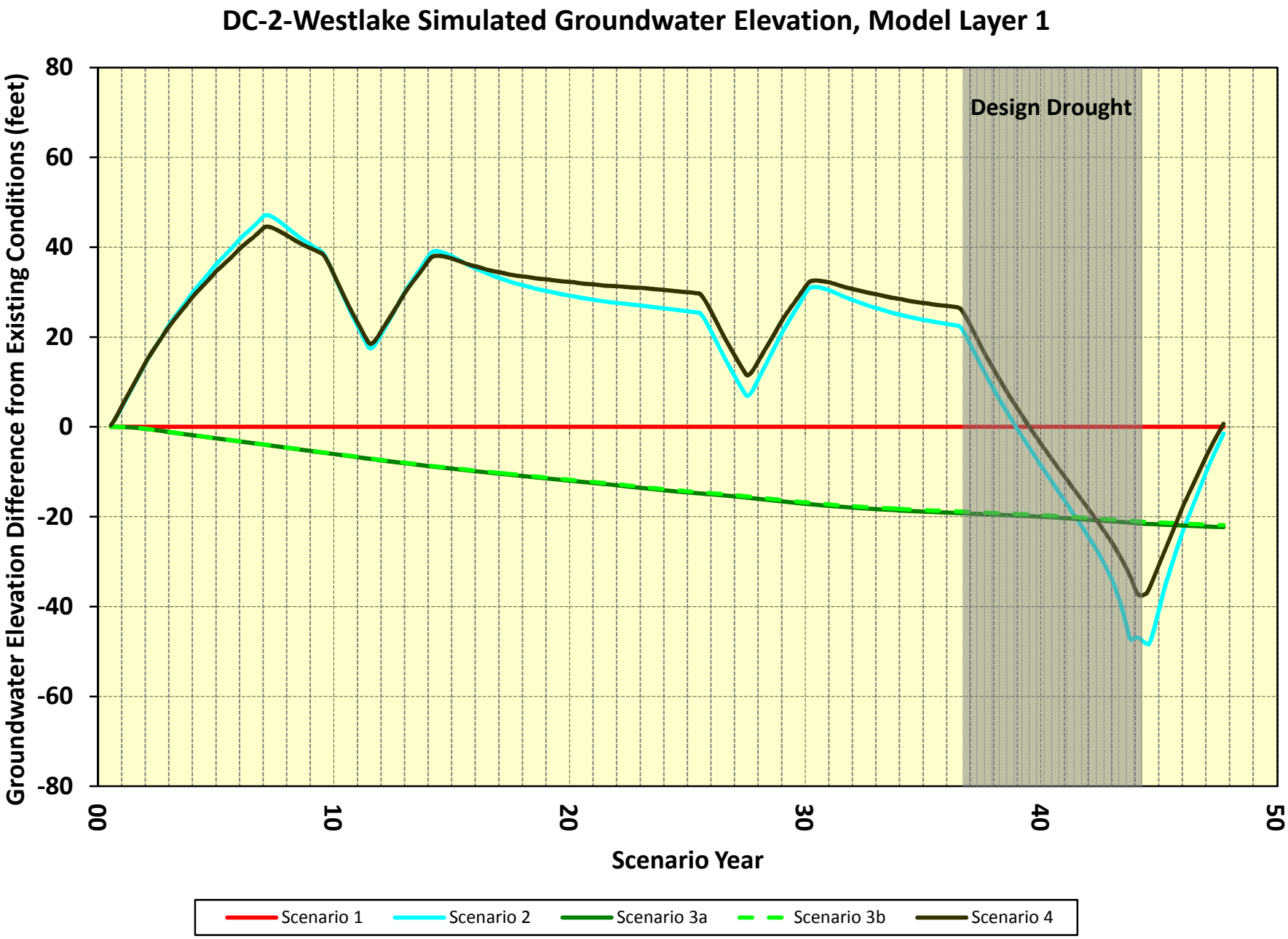

SSF-18 Simulated Groundwater Elevation, Model Layer 4
Design Drought
Simulated Groundwater Elevation (feet NGVD)
0
-50
-100
-150
-200
-250
-300
-350
-400
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

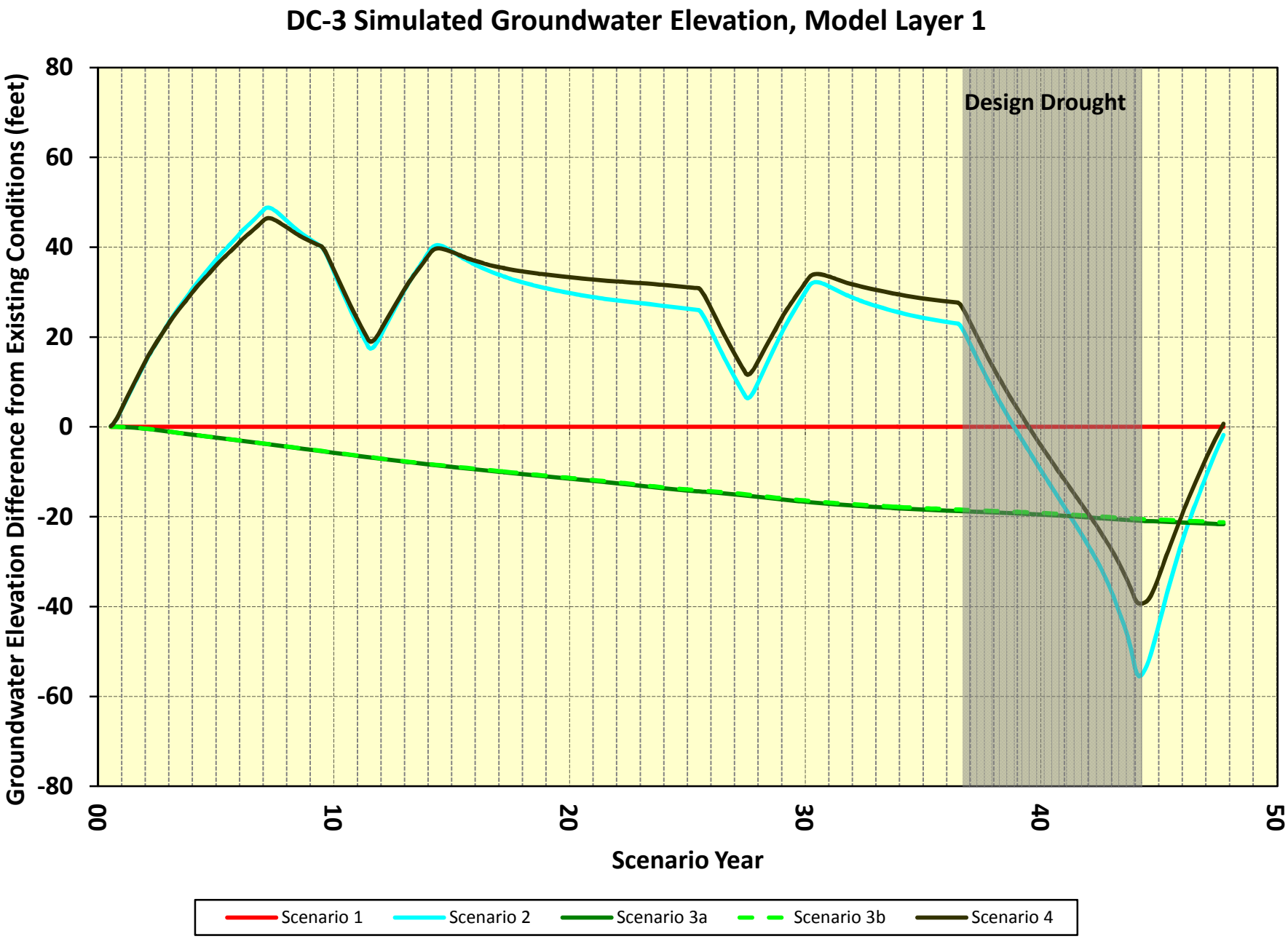

SB-12 Simulated Groundwater Elevation, Model Layer 4
Design Drought
Simulated Groundwater Elevation (feet NGVD)
-100
-150
-200
-250
-300
-350
-400
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

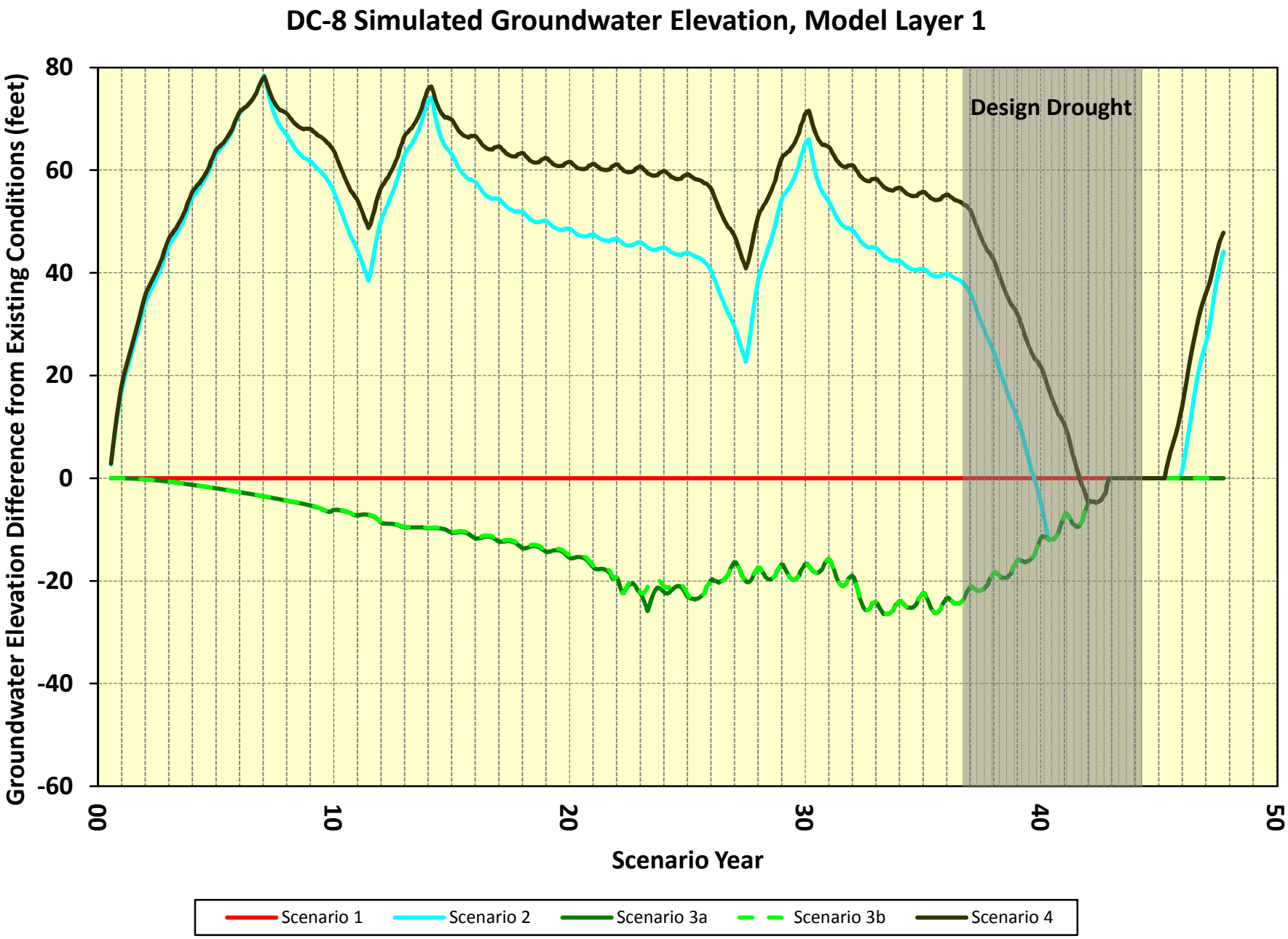

SB-13 Simulated Groundwater Elevation, Model Layer 4
Design Drought
Simulated Groundwater Elevation (feet NGVD)
-100
-150
-200
-250
-300
-350
-400
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

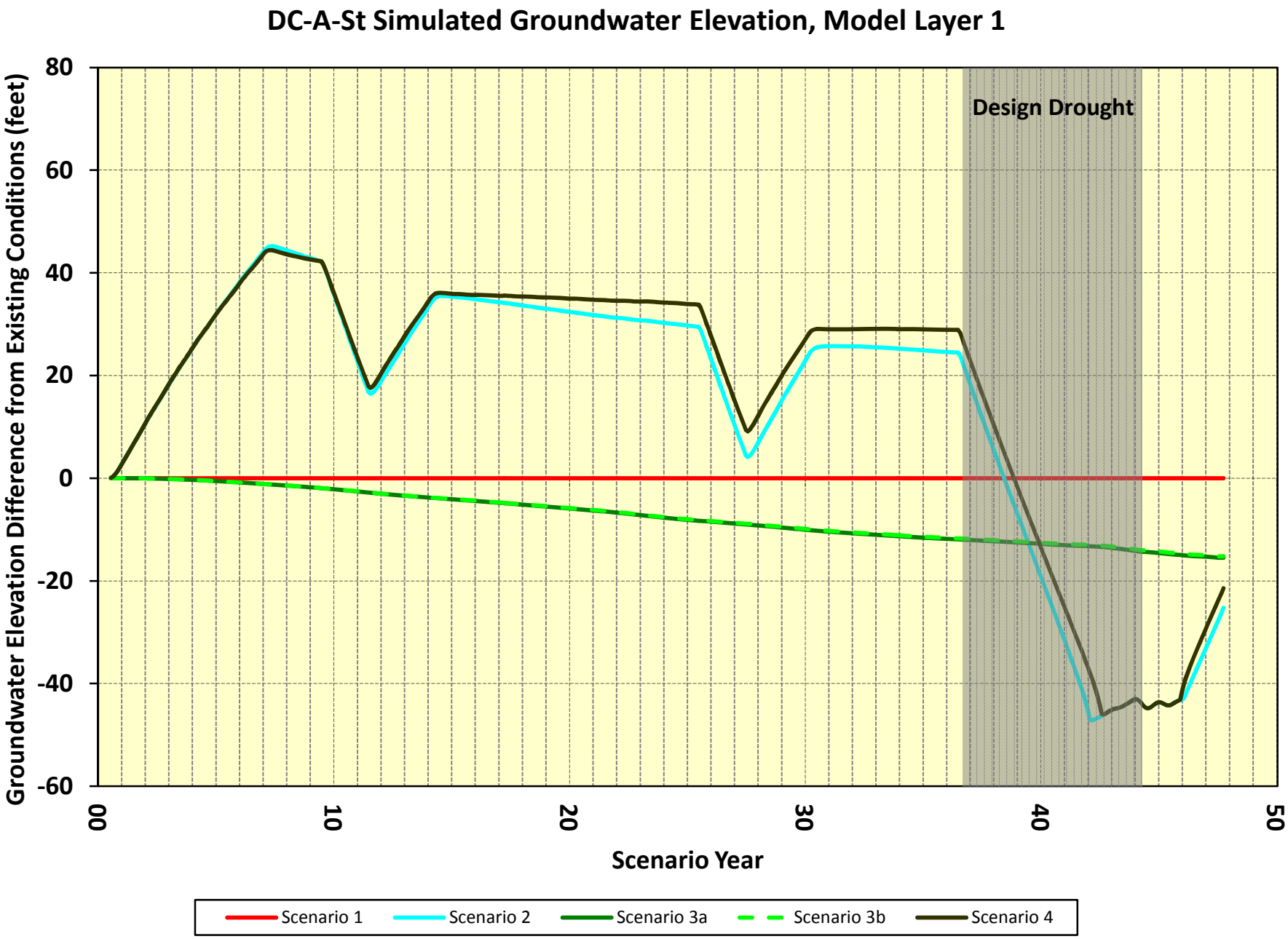

SB-15 Simulated Groundwater Elevation, Model Layer 4
Design Drought
Simulated Groundwater Elevation (feet NGVD)
-100
-150
-200
-250
-300
-350
-400
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

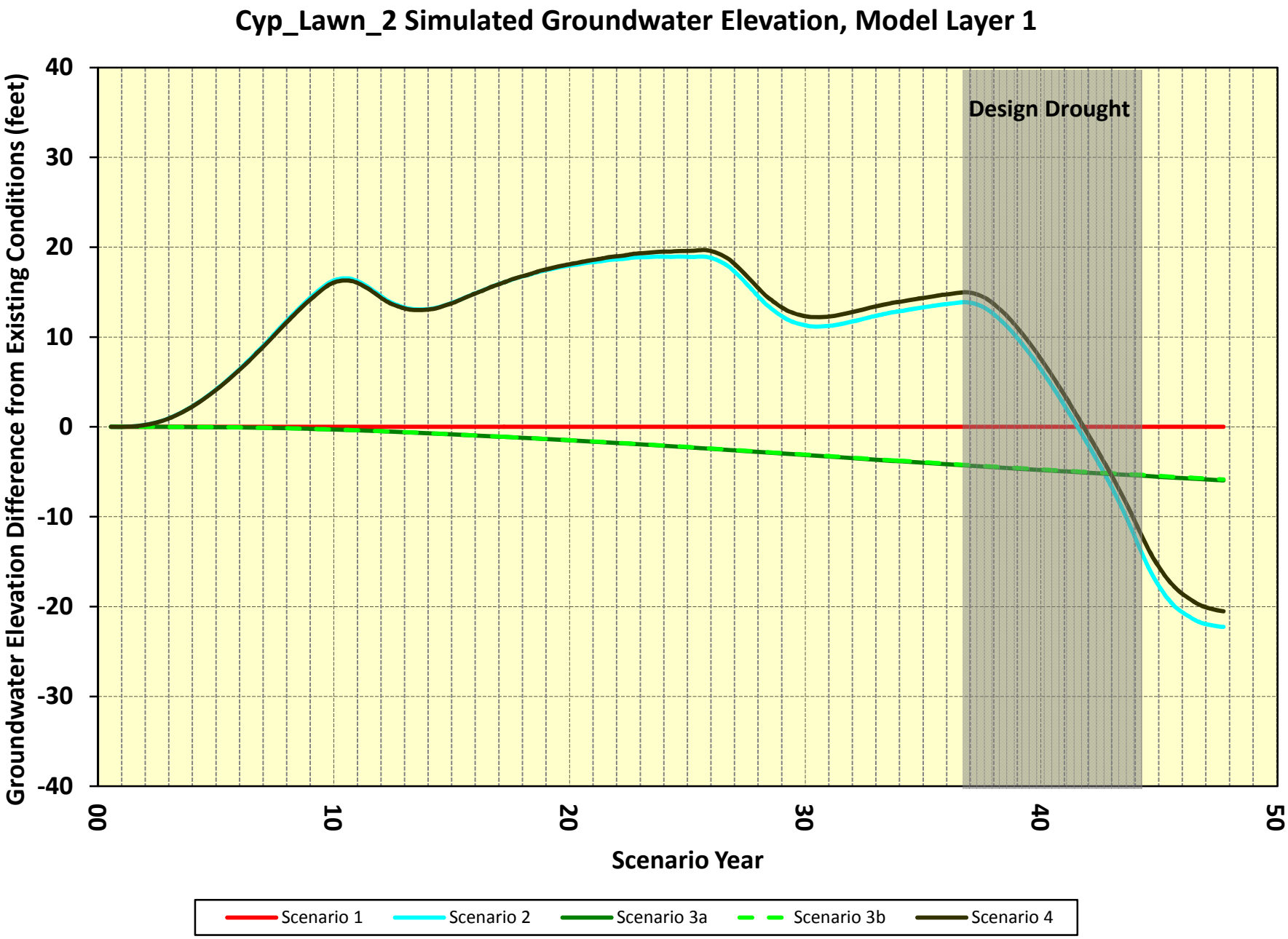

SB-16 Simulated Groundwater Elevation, Model Layer 4
Design Drought
Simulated Groundwater Elevation (feet NGVD)
-100
-150
-200
-250
-300
-350
-400
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

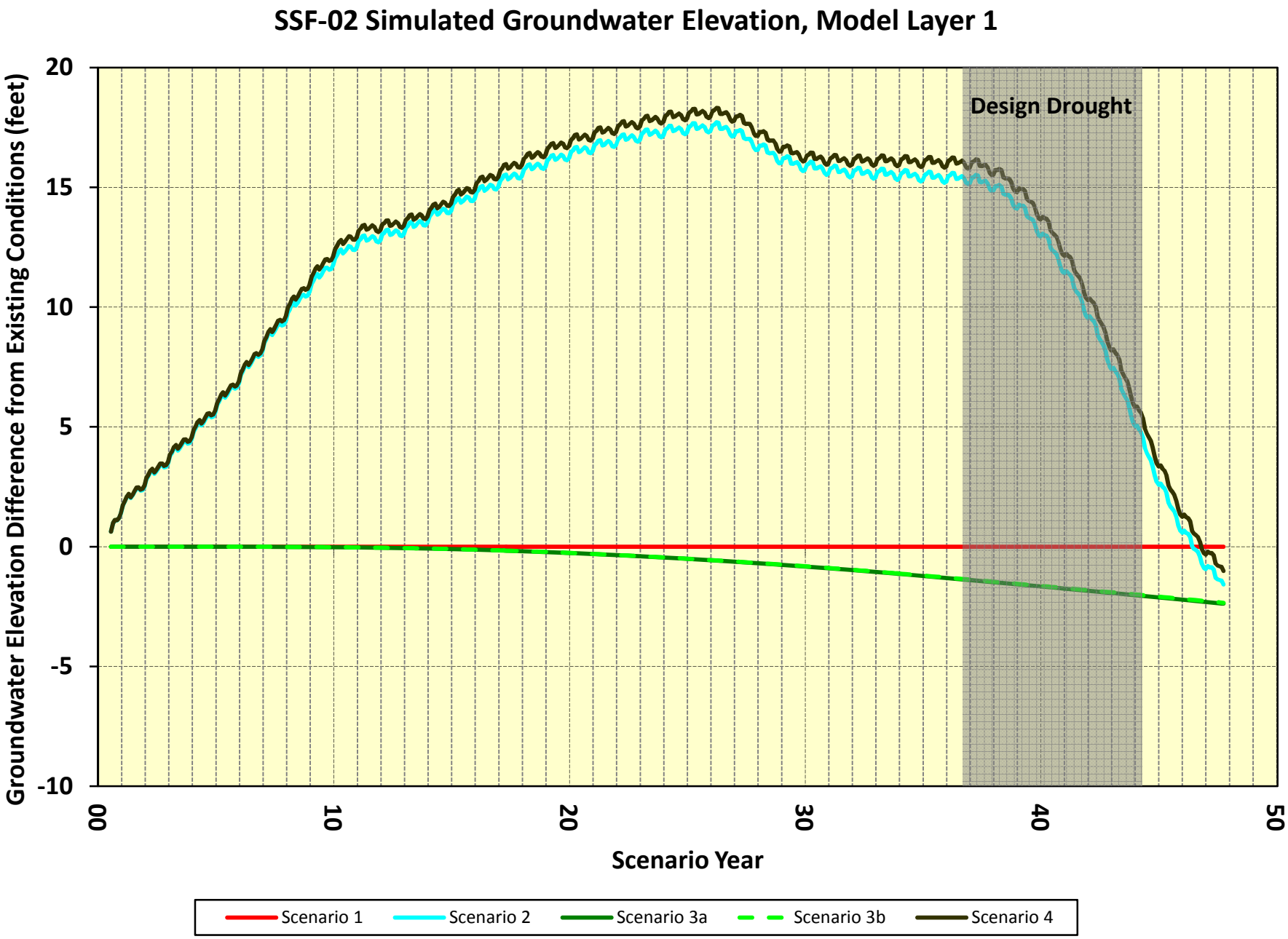

DC-2-Westlake Simulated Groundwater Elevation, Model Layer 1
Groundwater Elevation Difference from Existing Conditions (feet)
80
60
40
20
0
-20
-40
-60
-80
Design Drought
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

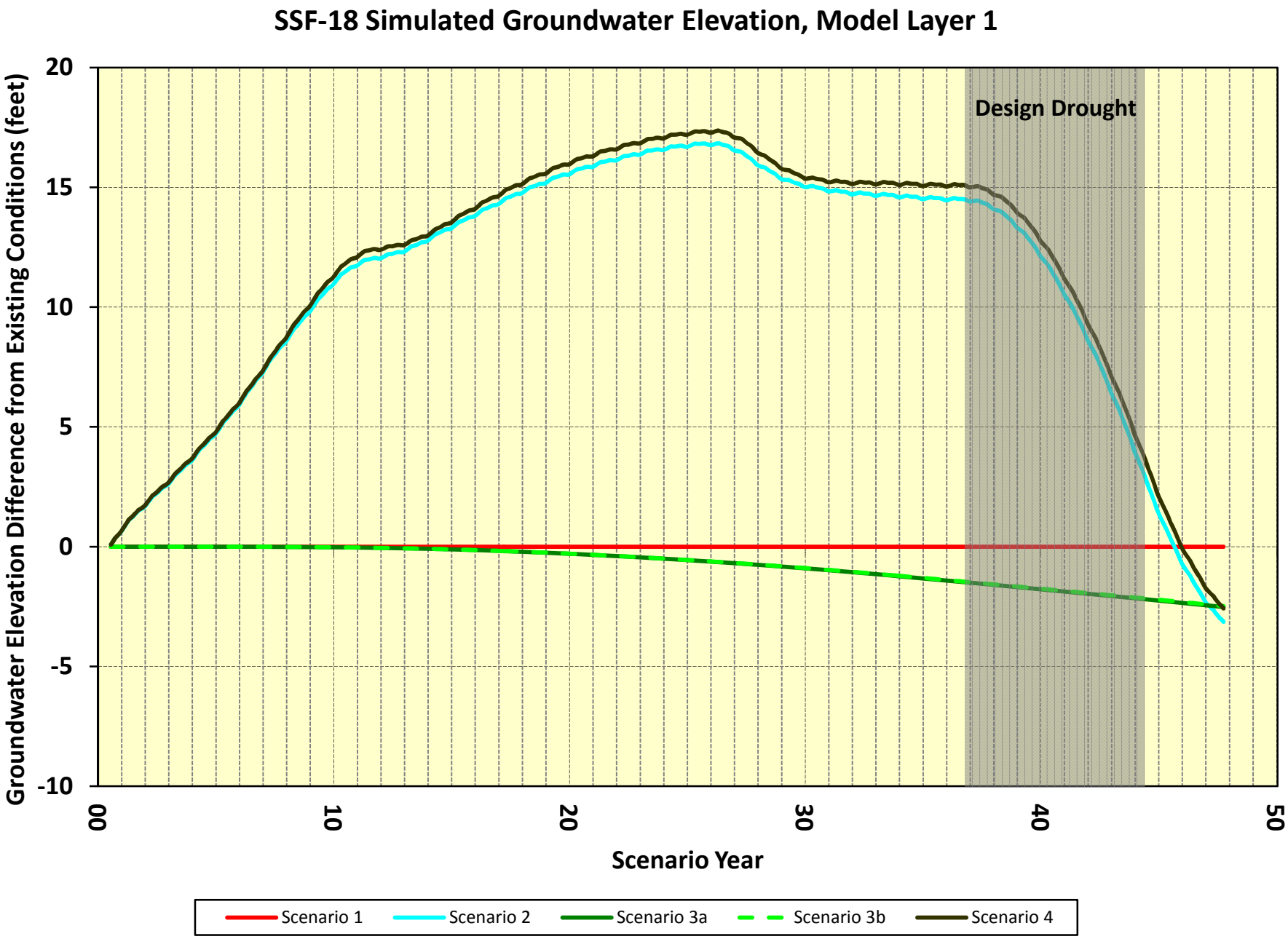

DC-3 Simulated Groundwater Elevation, Model Layer 1
Groundwater Elevation Difference from Existing Conditions (feet)
80
60
40
20
0
-20
-40
-60
-80
Design Drought
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

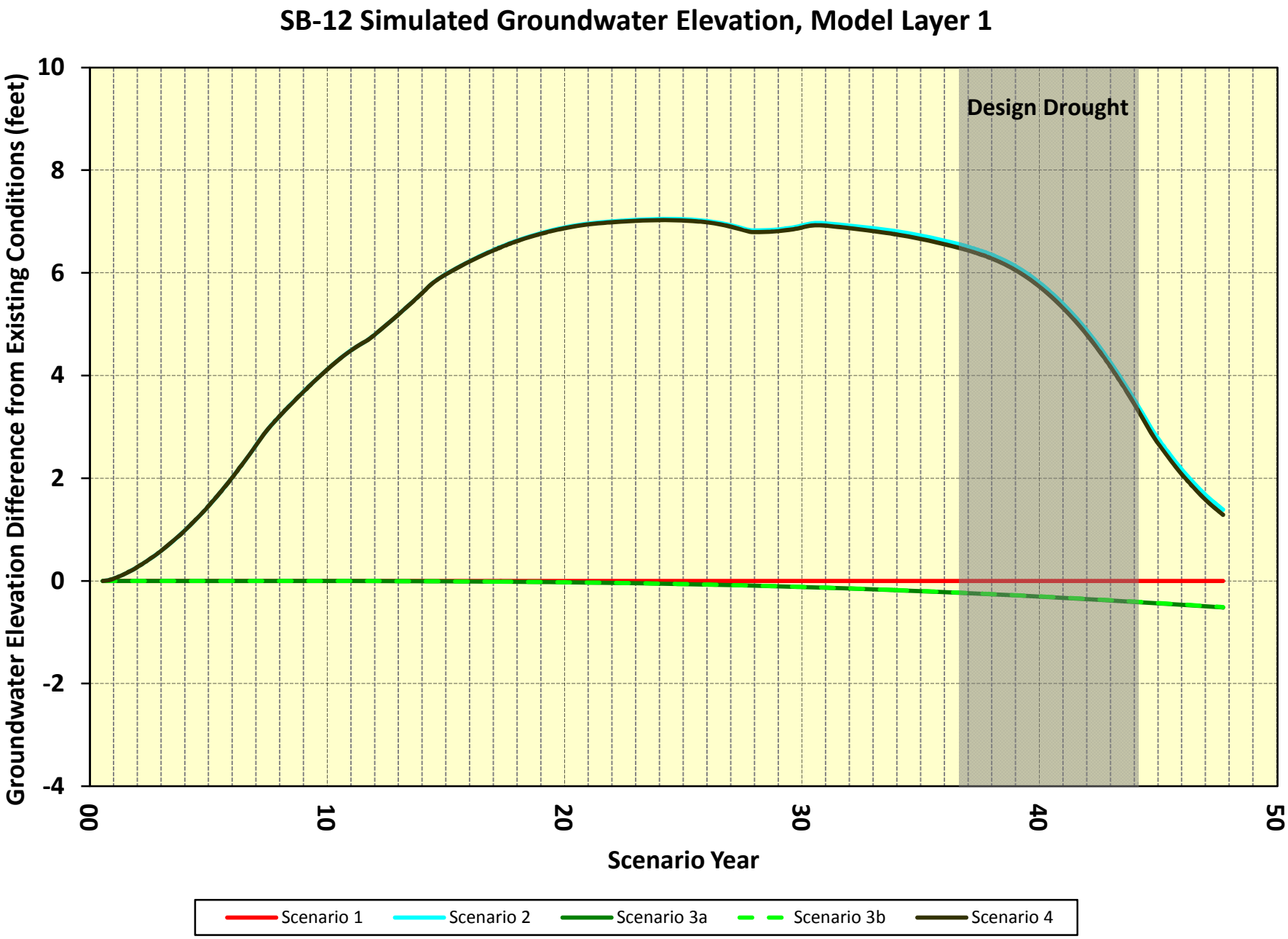

DC-8 Simulated Groundwater Elevation, Model Layer 1
Groundwater Elevation Difference from Existing Conditions (feet)
80
60
40
20
0
-20
-40
-60
Design Drought
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

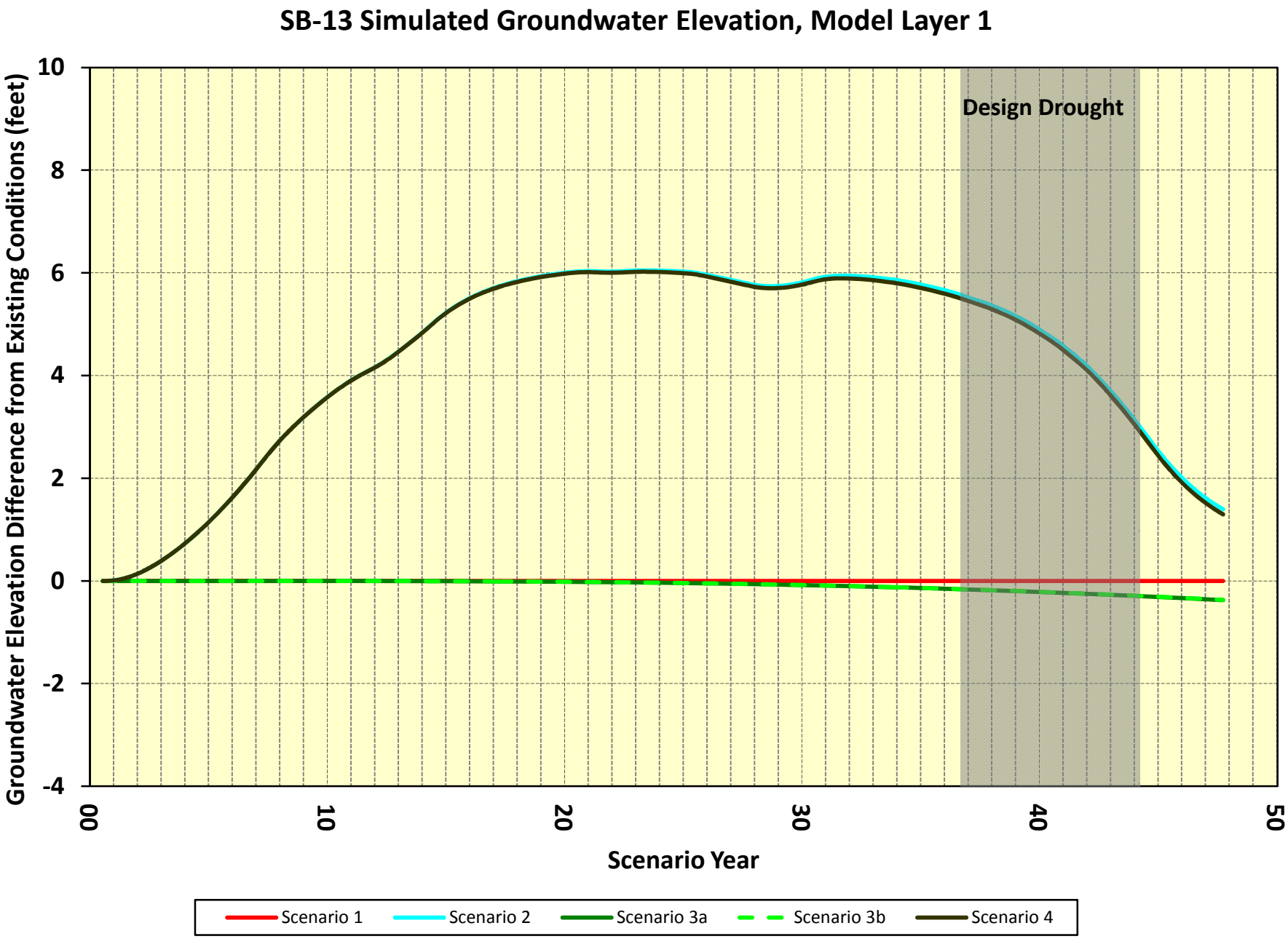

DC-A-St Simulated Groundwater Elevation, Model Layer 1
Groundwater Elevation Difference from Existing Conditions (feet)
80
60
40
20
0
-20
-40
-60
Design Drought
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

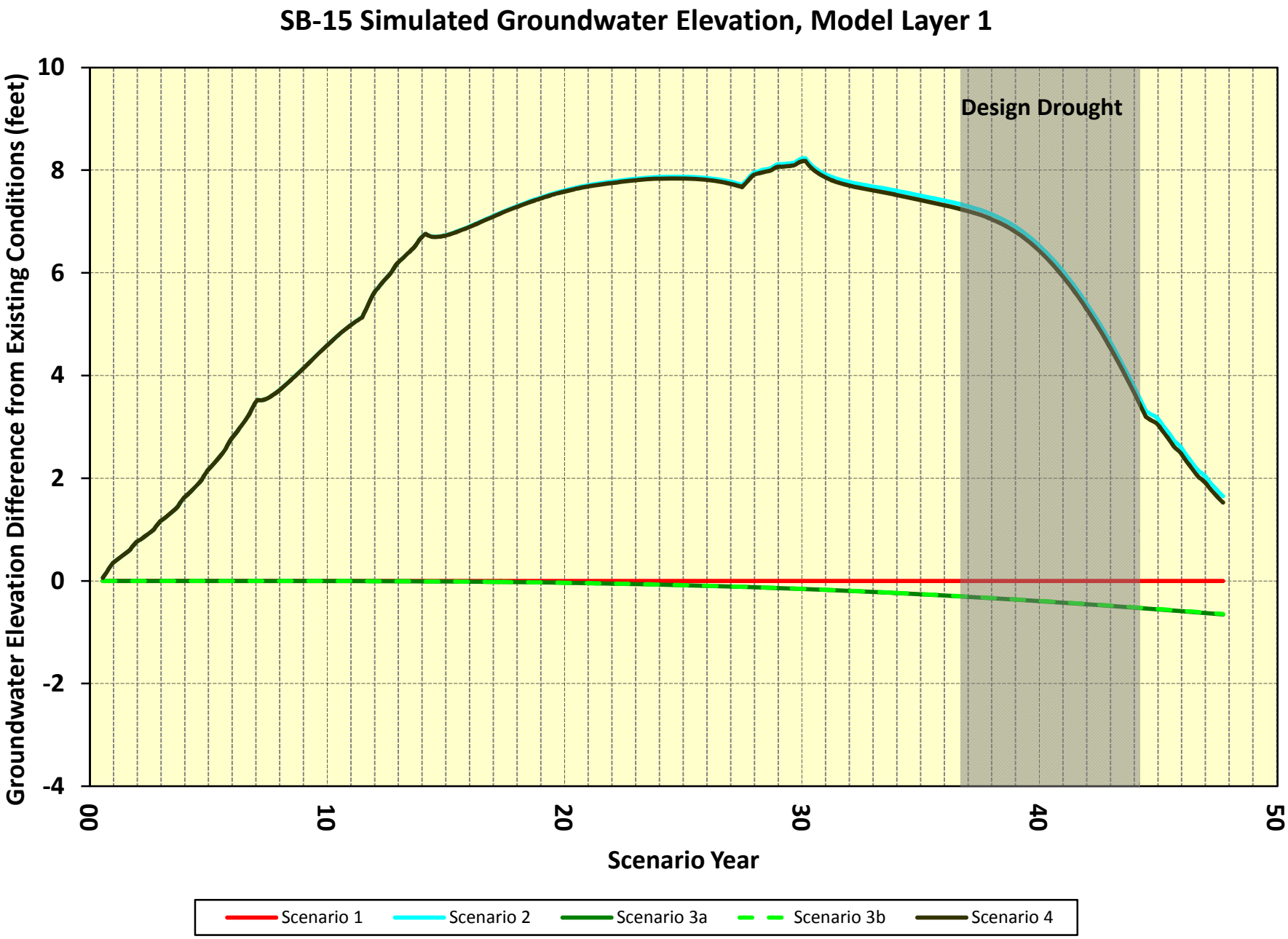

Cyp_Lawn_2 Simulated Groundwater Elevation, Model Layer 1
Groundwater Elevation Difference from Existing Conditions (feet)
40
30
20
10
0
-10
-20
-30
-40
Design Drought
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

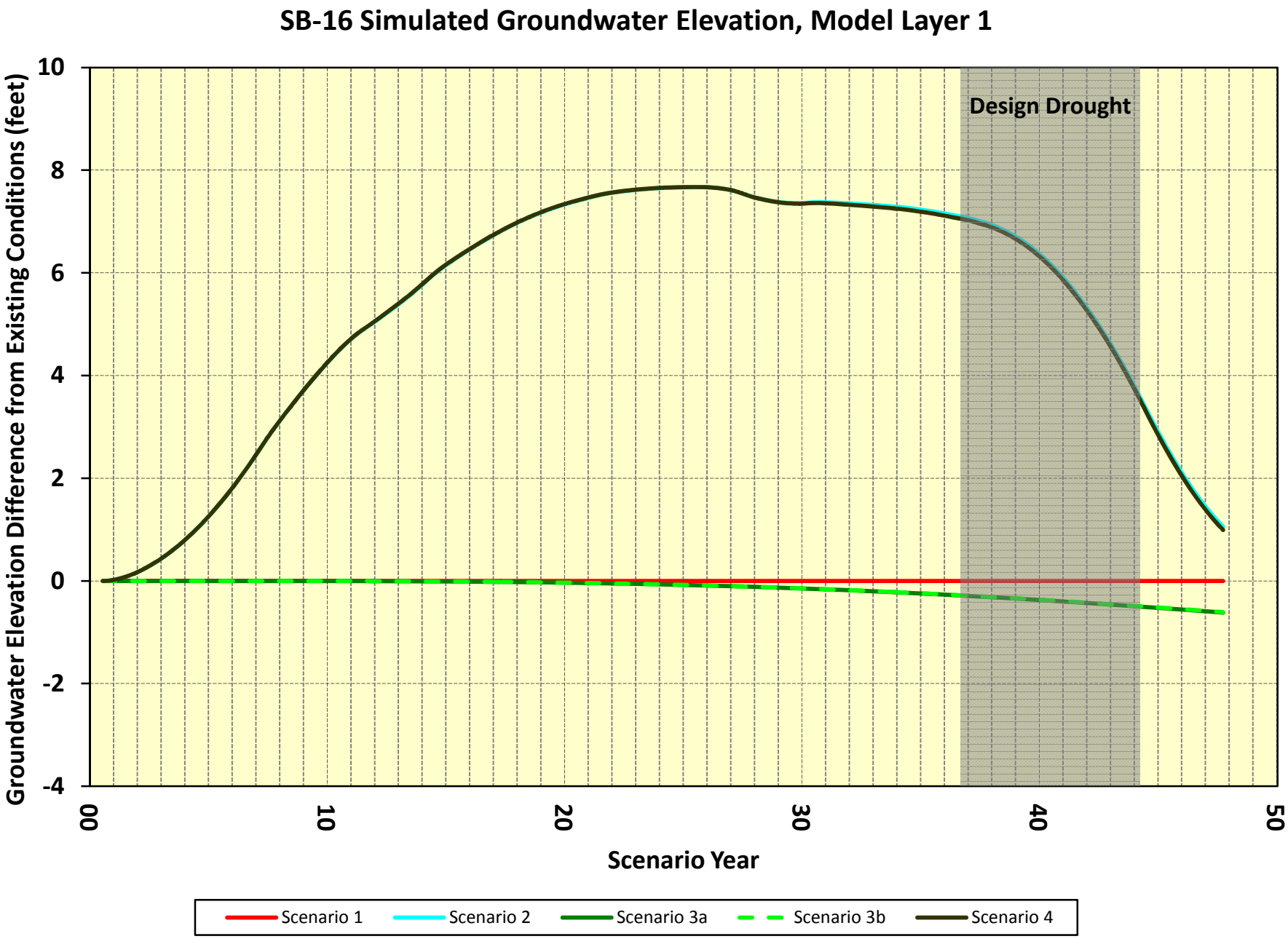

SSF-02 Simulated Groundwater Elevation, Model Layer 1
Groundwater Elevation Difference from Existing Conditions (feet)
20
15
10
5
0
-5
-10
Design Drought
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

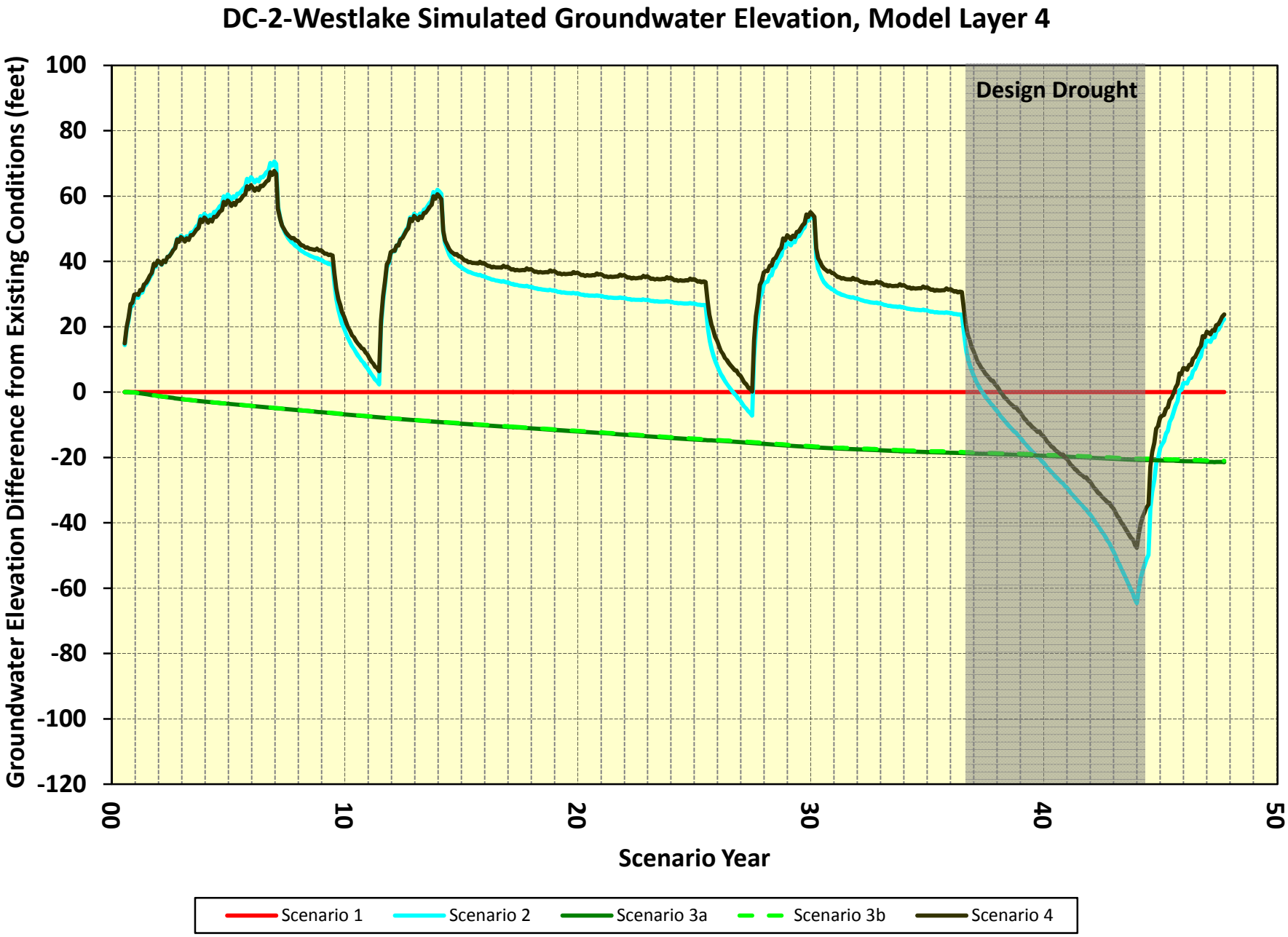

SSF-18 Simulated Groundwater Elevation, Model Layer 1
Groundwater Elevation Difference from Existing Conditions (feet)
20
15
10
5
0
-5
-10
Design Drought
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

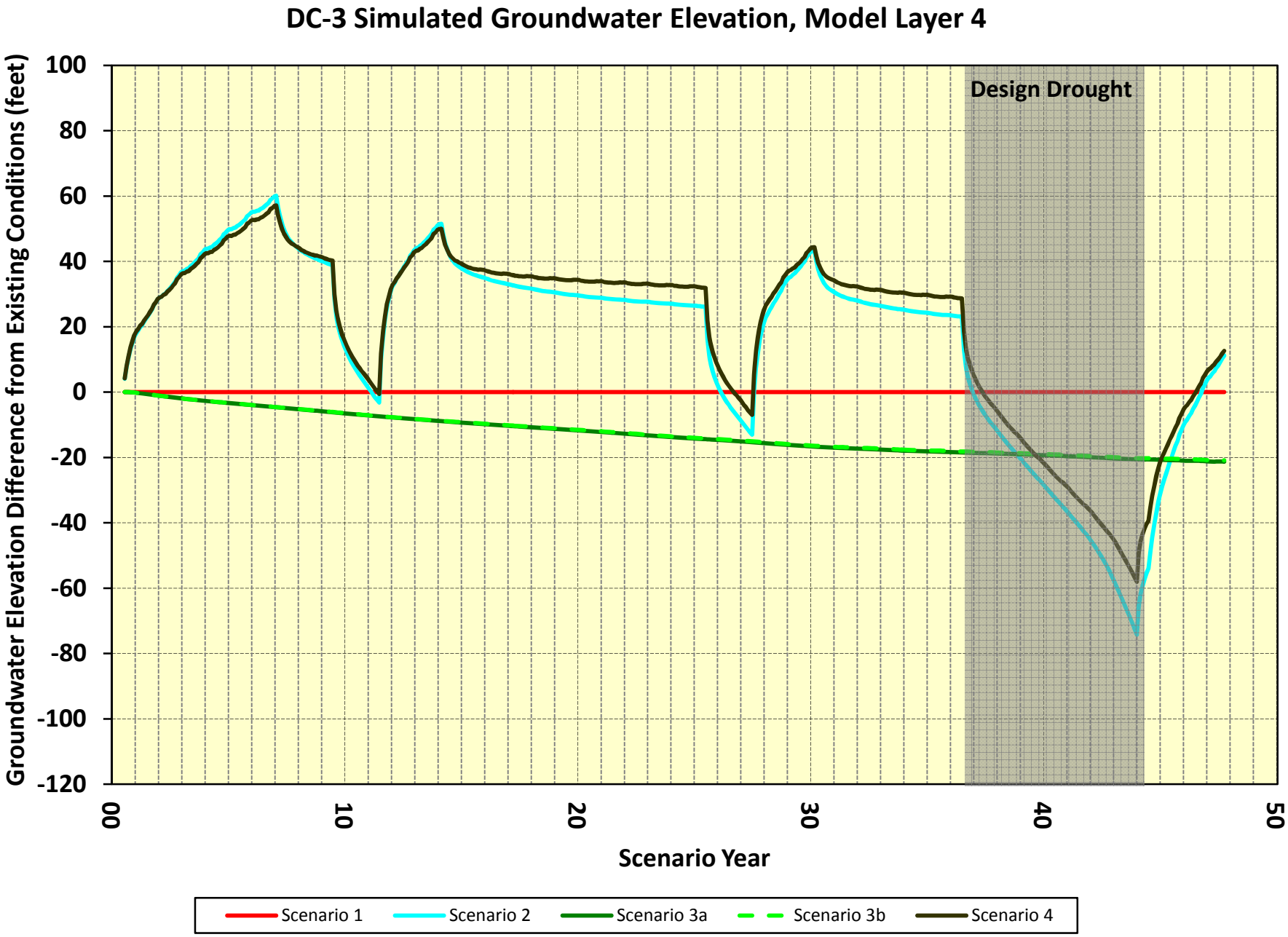

SB-12 Simulated Groundwater Elevation, Model Layer 1
Groundwater Elevation Difference from Existing Conditions (feet)
10
8
6
4
2
0
-2
-4
Design Drought
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

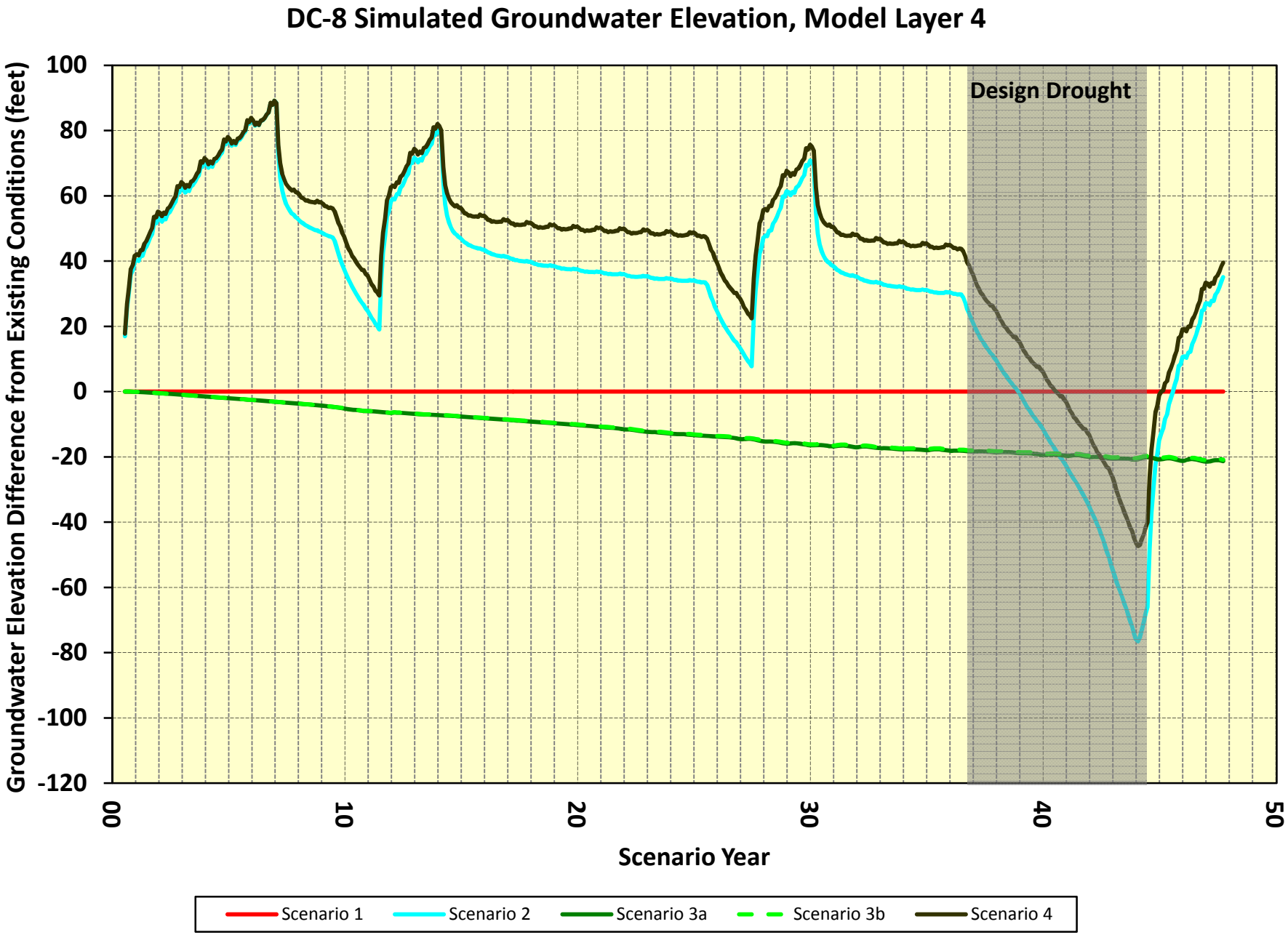

SB-13 Simulated Groundwater Elevation, Model Layer 1
Groundwater Elevation Difference from Existing Conditions (feet)
10
8
6
4
2
0
-2
-4
Design Drought
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

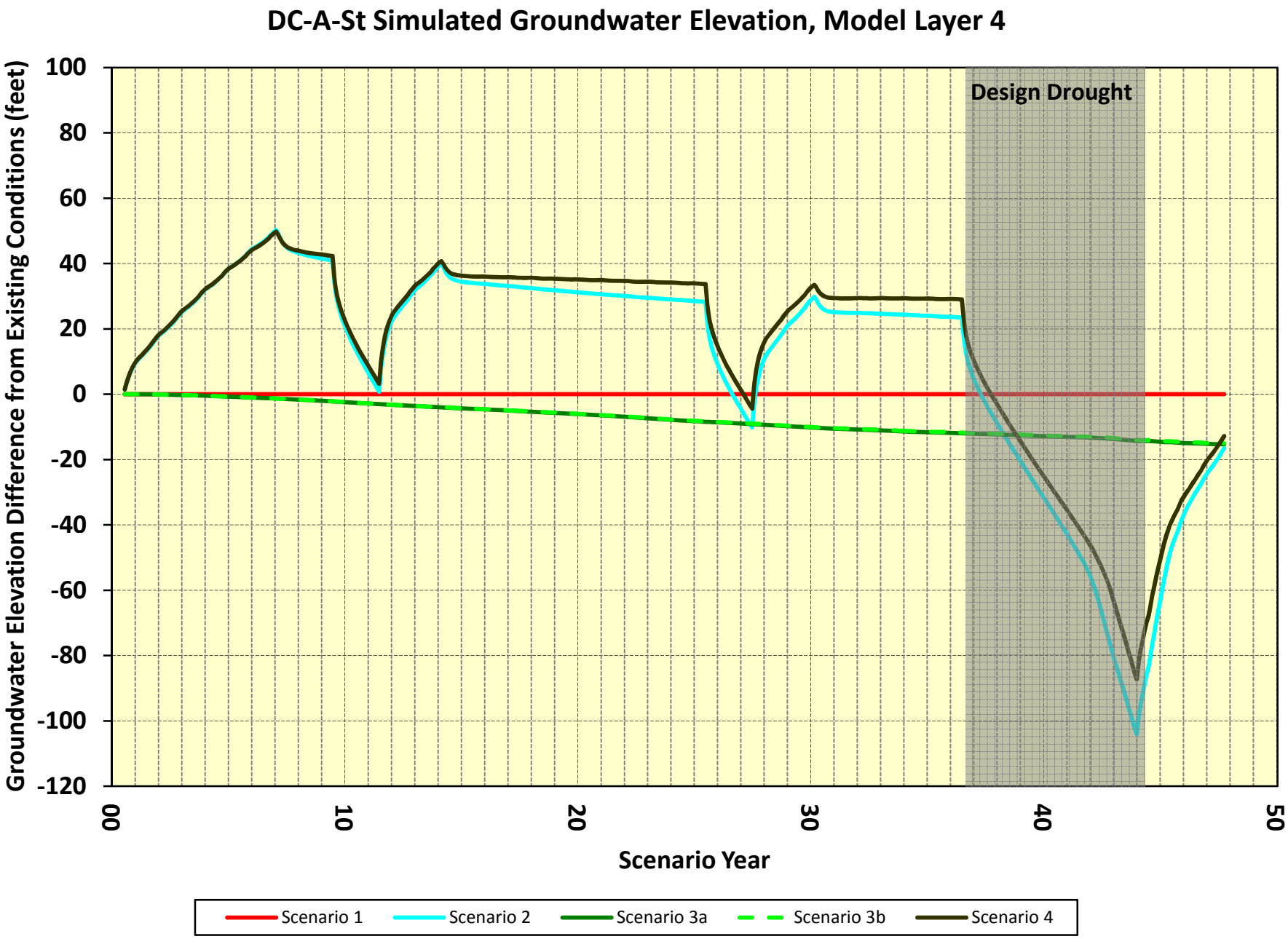

SB-15 Simulated Groundwater Elevation, Model Layer 1
Groundwater Elevation Difference from Existing Conditions (feet)
10
8
6
4
2
0
-2
-4
Design Drought
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

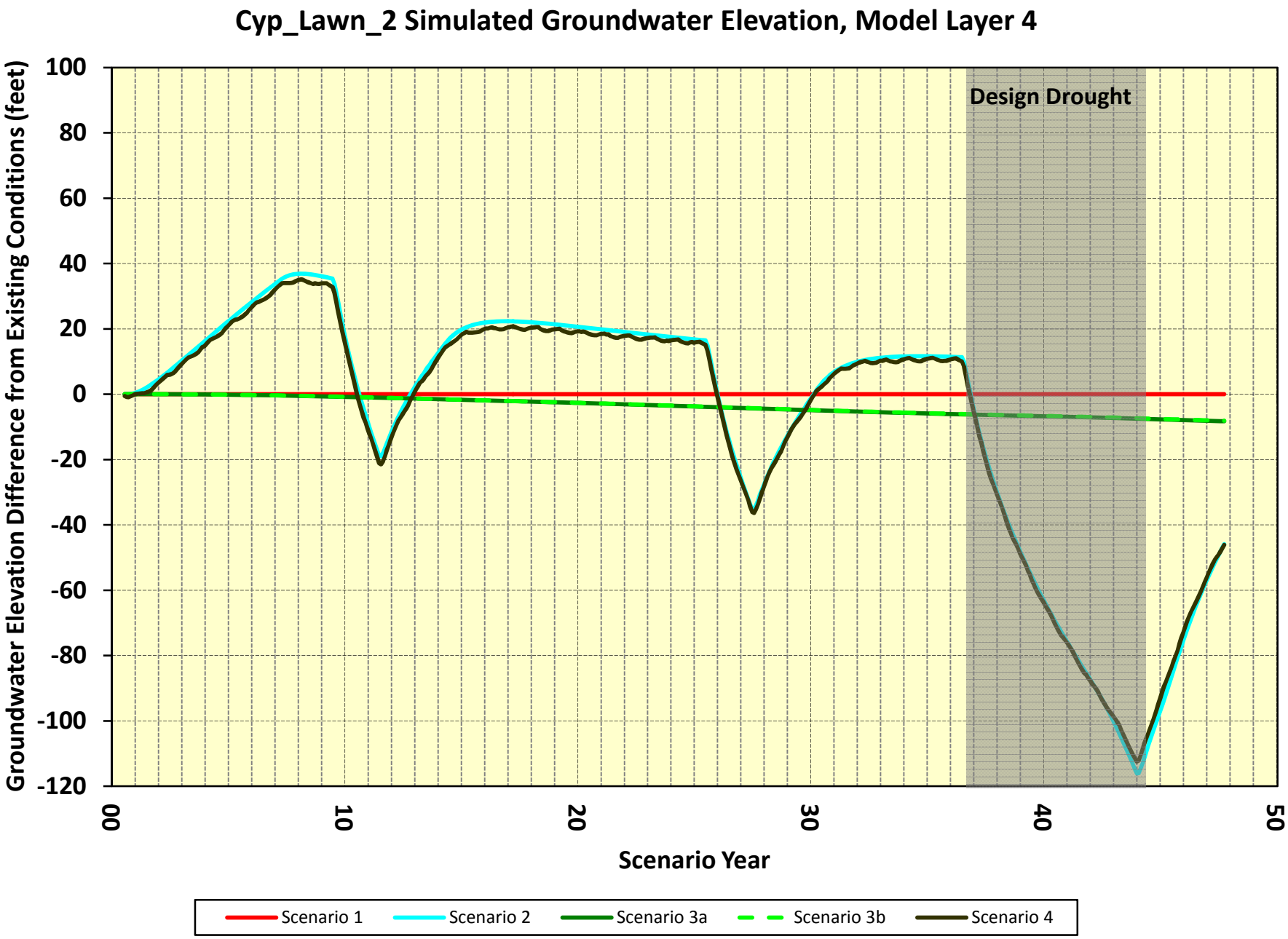

SB-16 Simulated Groundwater Elevation, Model Layer 1
Groundwater Elevation Difference from Existing Conditions (feet)
10
8
6
4
2
0
-2
-4
Design Drought
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

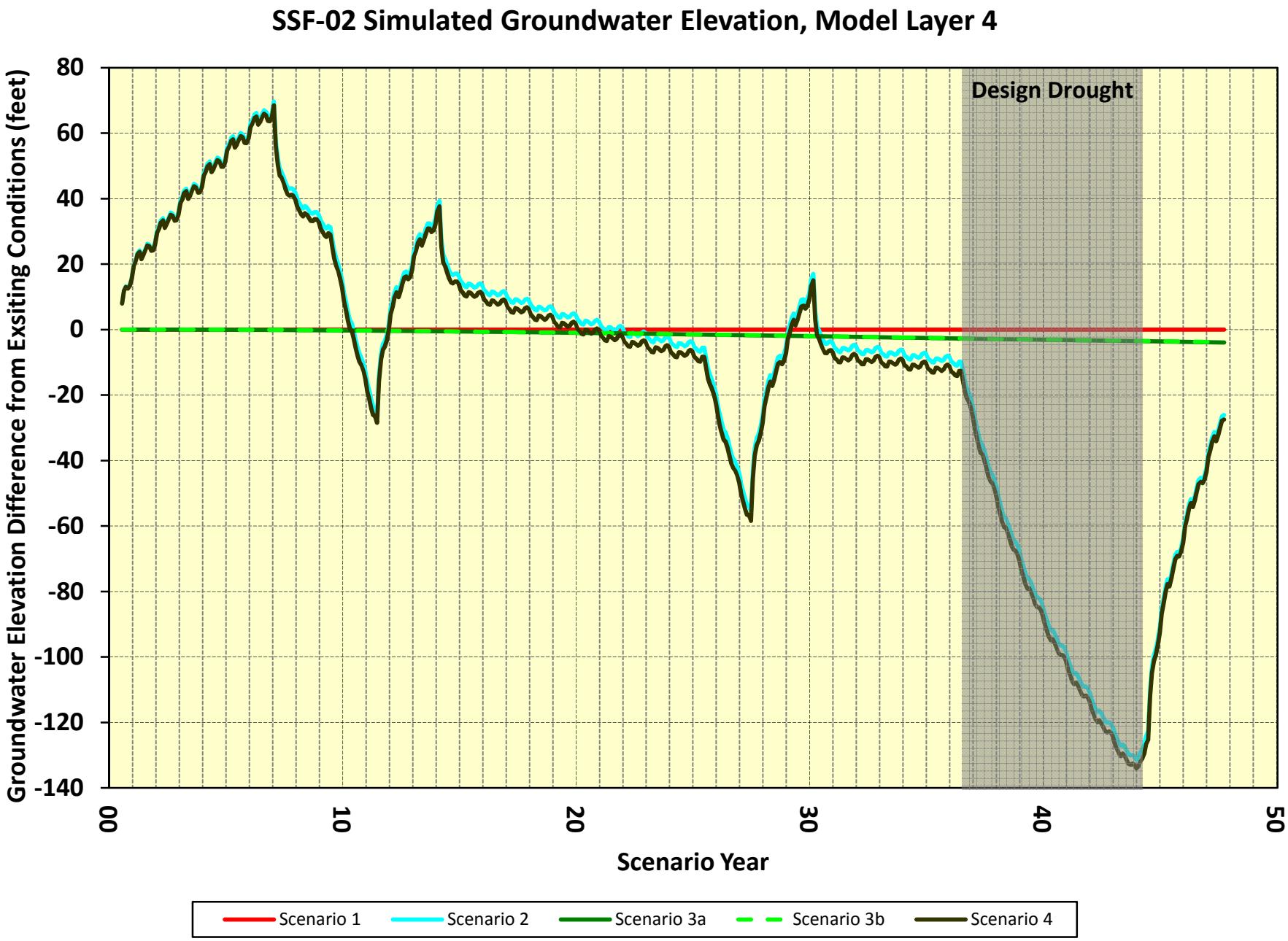

DC-2-Westlake Simulated Groundwater Elevation, Model Layer 4
Groundwater Elevation Difference from Existing Conditions (feet)
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
Design Drought
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

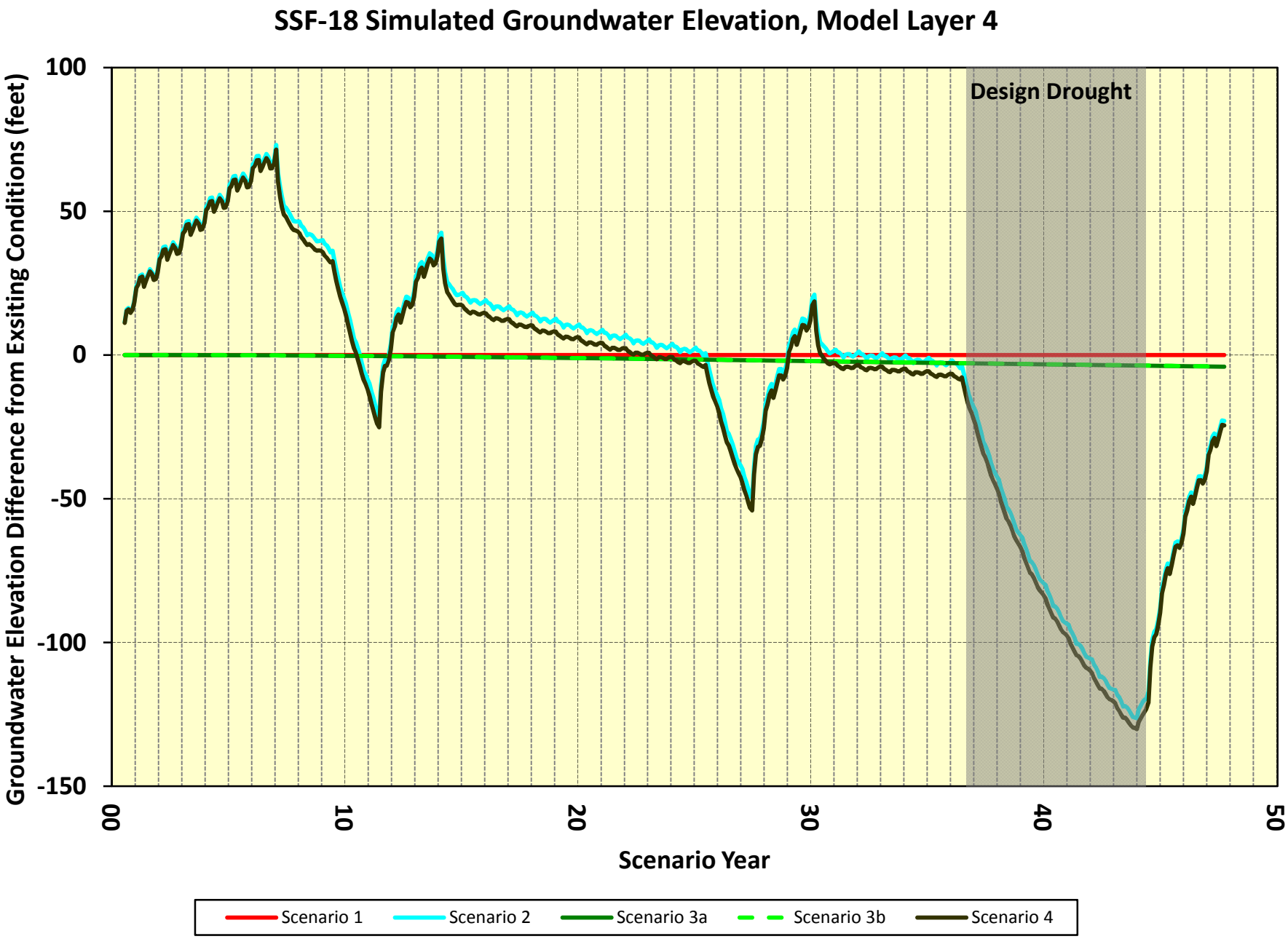

DC-3 Simulated Groundwater Elevation, Model Layer 4
Groundwater Elevation Difference from Existing Conditions (feet)
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
Design Drought
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

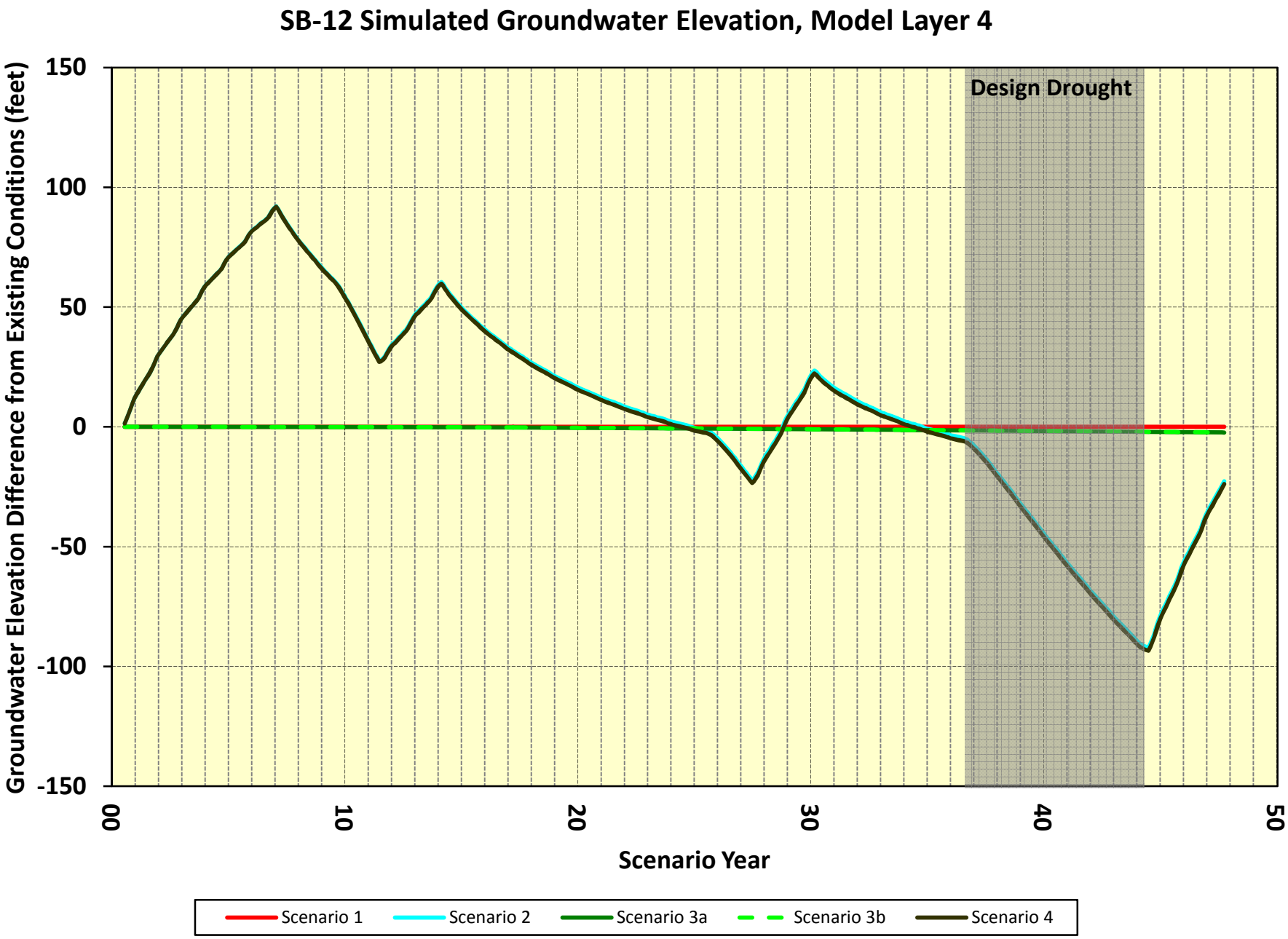

DC-8 Simulated Groundwater Elevation, Model Layer 4
Design Drought
Groundwater Elevation Difference from Existing Conditions (feet)
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

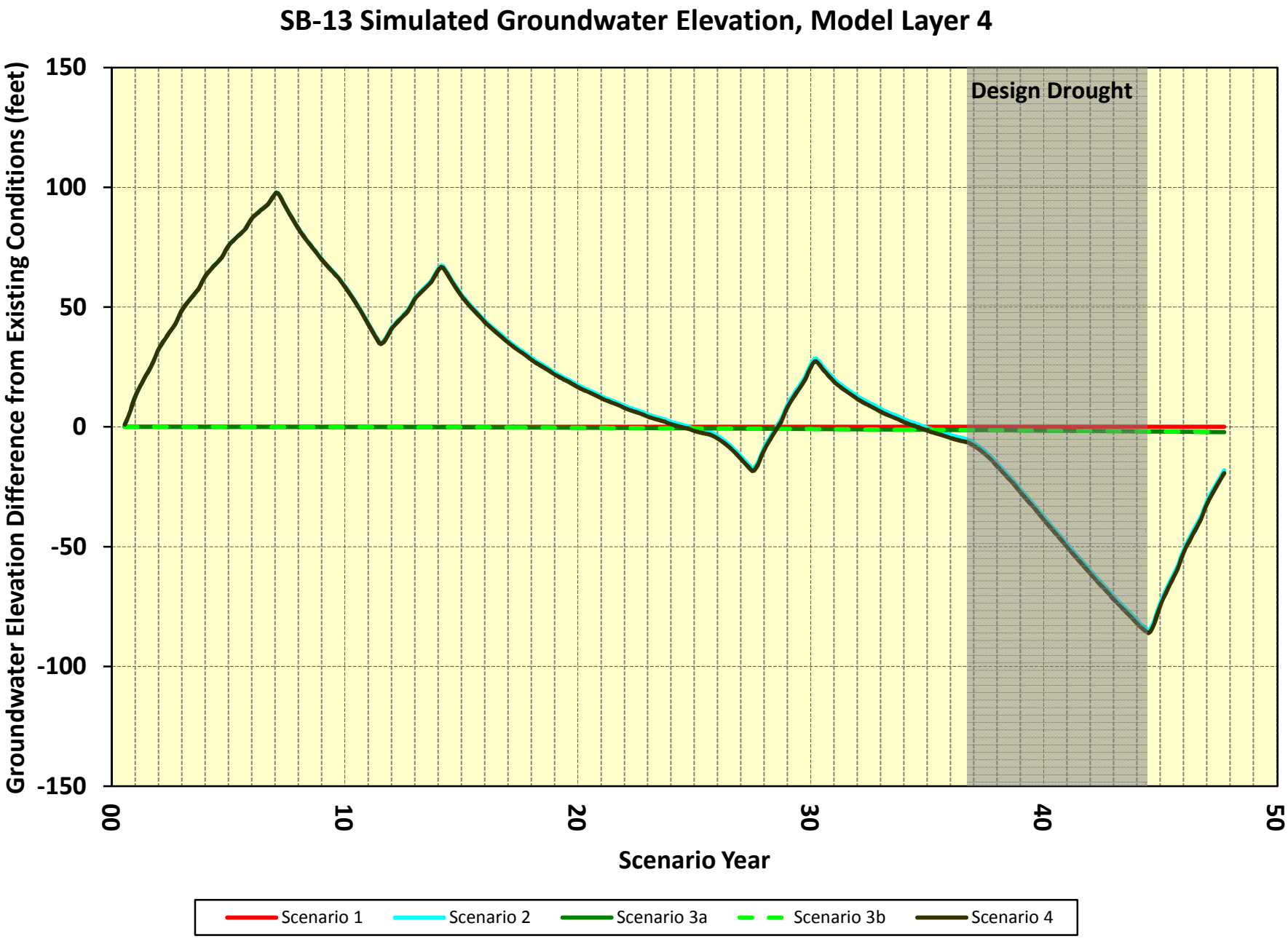

DC-A-St Simulated Groundwater Elevation, Model Layer 4
Groundwater Elevation Difference from Existing Conditions (feet)
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
Design Drought
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

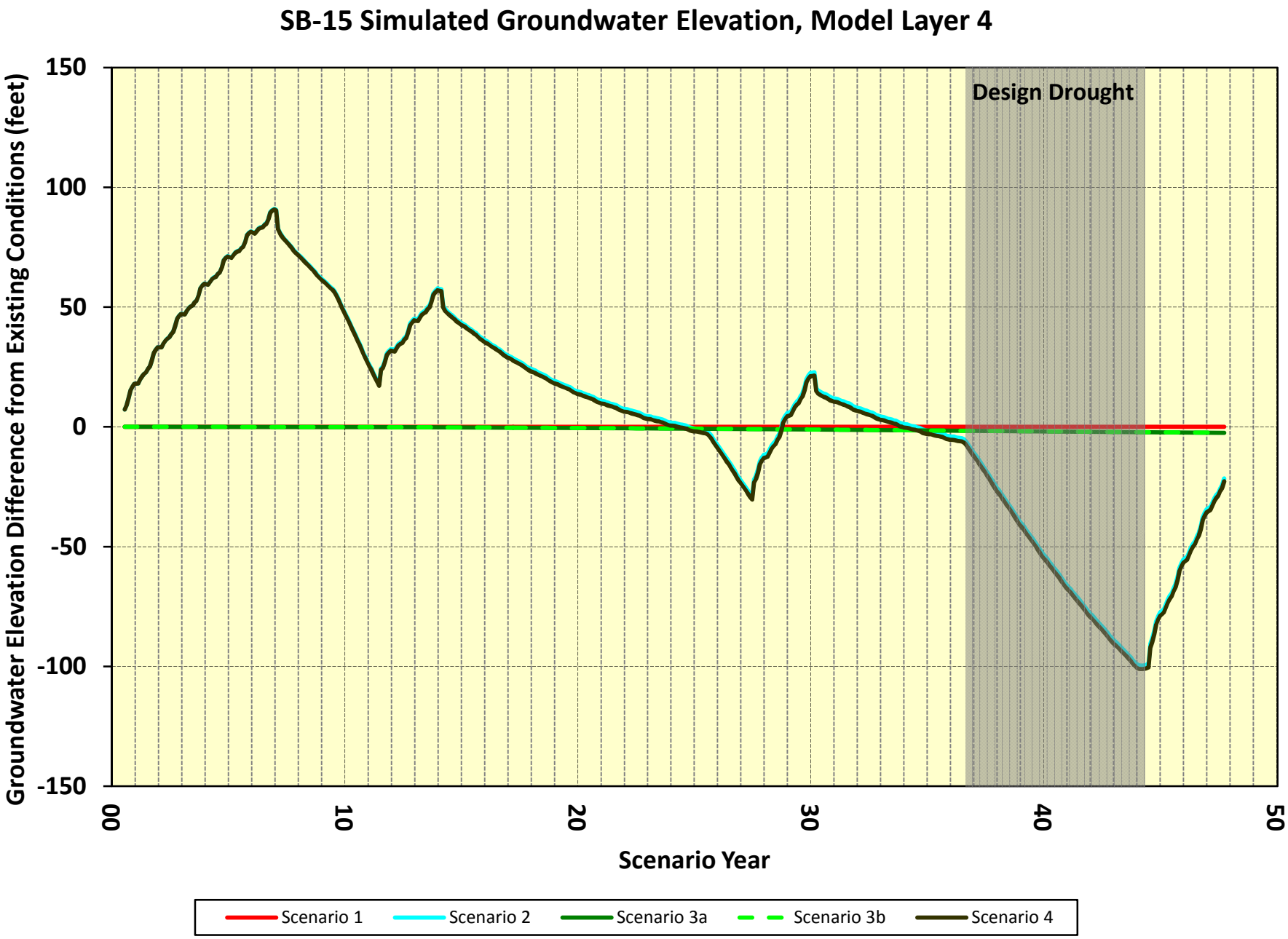

Cyp_Lawn_2 Simulated Groundwater Elevation, Model Layer 4
Groundwater Elevation Difference from Existing Conditions (feet)
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
Design Drought
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

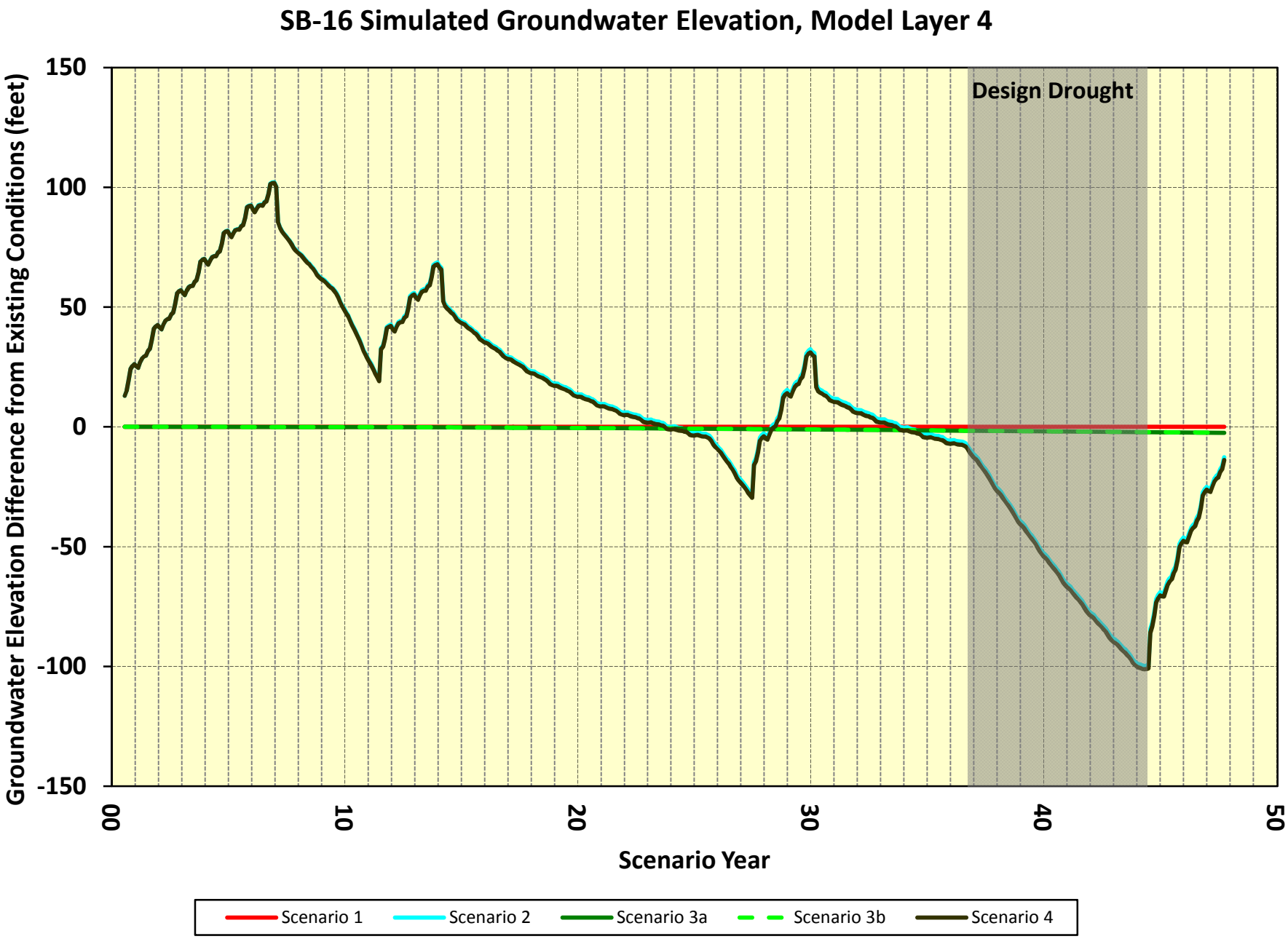

SSF-02 Simulated Groundwater Elevation, Model Layer 4
Design Drought
Groundwater Elevation Difference from Exsiting Conditions (feet)
80
60
40
20
0
-20
-40
-60
-80
-100
-120
-140
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4


SSF-18 Simulated Groundwater Elevation, Model Layer 4
Groundwater Elevation Difference from Exsiting Conditions (feet)
100
50
0
-50
-100
-150
Design Drought
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4


SB-12 Simulated Groundwater Elevation, Model Layer 4
Groundwater Elevation Difference from Existing Conditions (feet)
150
100
50
0
-50
-100
-150
Design Drought
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4


SB-13 Simulated Groundwater Elevation, Model Layer 4
Groundwater Elevation Difference from Existing Conditions (feet)
150
100
50
0
-50
-100
-150
Design Drought
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4


SB-15 Simulated Groundwater Elevation, Model Layer 4
Design Drought
Groundwater Elevation Difference from Existing Conditions (feet)
150
100
50
0
-50
-100
-150
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4


SB-16 Simulated Groundwater Elevation, Model Layer 4
Design Drought
Groundwater Elevation Difference from Existing Conditions (feet)
150
100
50
0
-50
-100
-150
00
10
20
30
40
50
Scenario Year
Scenario 1
Scenario 2
Scenario 3a
Scenario 3b
Scenario 4

Attachment 10.6-B

Existing Regulated Sites – GeoTracker, SWIS, DTSC, and SLIC

Z:\Projects\SFPUC_ConjUse_CER\Events\Task_8\Task8K\20100602_TM\005_SolidWasteSites.mxd

San Francisco
Davey Tree Company
San Francisco Bay
Brisbane Landfill
Brisbane
CUP-03A
CUP-05
CUP-06
CUP-07
Daly City
Mussel Rock Transfer Station
CUP-11A
CUP-10A
Hillside Class III Disposal Site
Hillside Class III Disposal Site
CUP-18
Junipero Serra Solid Waste Disposal Site
CUP-19
Sierra Point Disposal Site
Colma
Dolger
Mussel Rock Disposal Site
CUP-23
CUP-22A
So. San Francisco Municipal Dump/Oyster
CUP-31
CUP-36-1
South San Francisco
Blue Line MRF And TS
CUP-41-4
San Bruno Transfer Station
Tillo Products Co Composting Facility
CUP-44-2
CUP-44-1
San Bruno
Pacific Ocean
Pacifica
CUP-M-1
Millbrae
Burlingame Disposal Site
Frontierland Park Landfill
Burlingame
San Mateo
Burlingame Refuse Disposal Area
Hillsborough
Montara
0 2,500 5,000 Feet
1 " = 5,000 '

Legend

Solid Waste Facility Status
- Active
- Closed
- Closing

Solid Waste Facility Category
- Composting
- Disposal
- Transfer/Processing

- GSR Proposed Municipal Wells
- South Westside Groundwater Basin

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
ENGINEERING MANAGEMENT BUREAU

SOLID WASTE FACILITY LOCATION

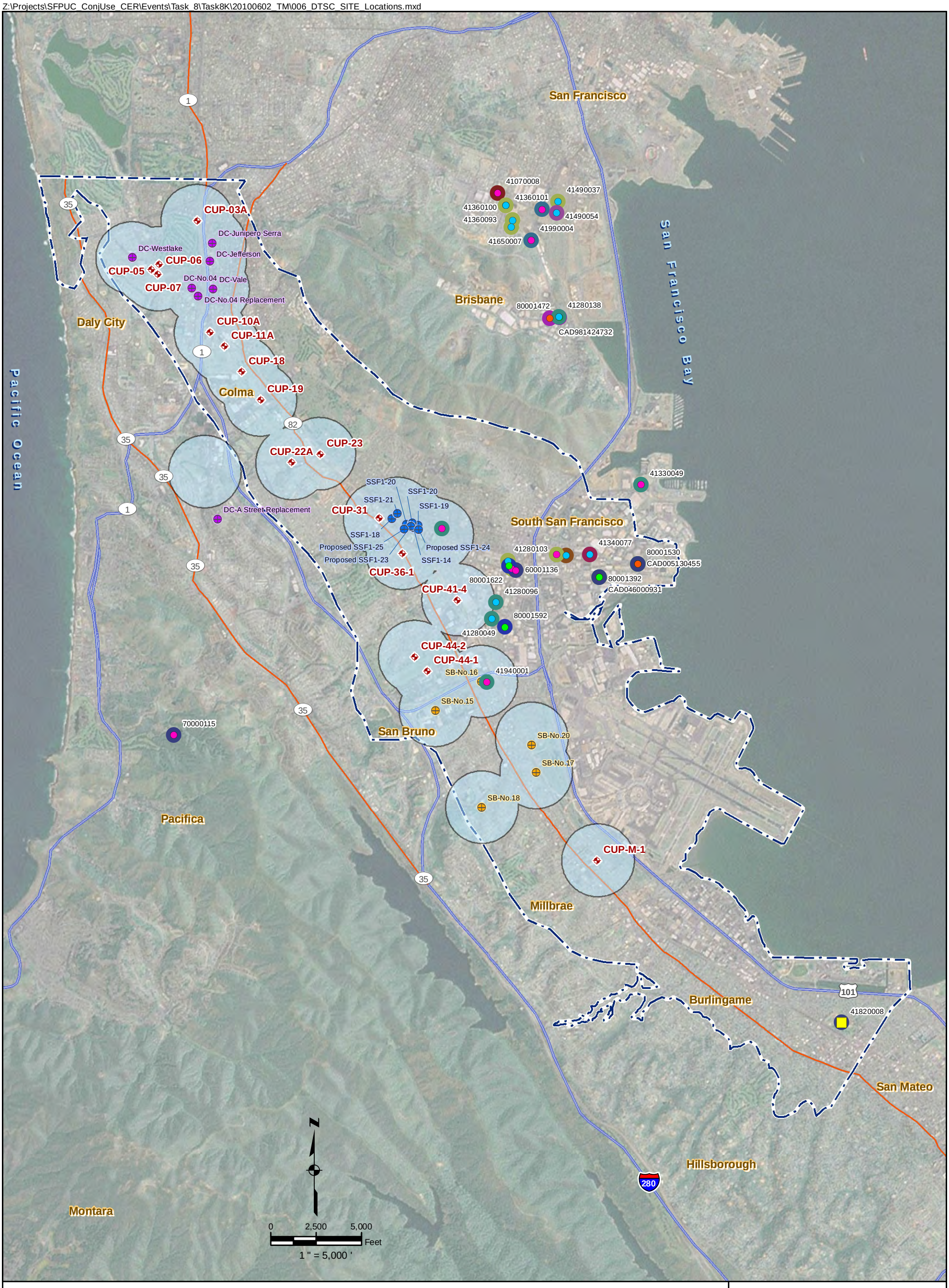
Kennedy/Jenks Consultants
303 Second Street, Suite 300 South
San Francisco, CA 94107

Figure **B-1**

Regional Groundwater Storage and Recovery Project

Date April 2012

Z:\Projects\SFPUC_ConjUse_CER\Events\Task_8\Task8K\20100602_TM\006_DTSC_SITE_Locations.mxd



Legend

DTSC Site/Facility Type

- CORRECTIVE ACTION
- HAZ WASTE - NON-OPERATING
- SCHOOL CLEANUP
- STATE RESPONSE
- VOLUNTARY CLEANUP

DTSC CLEANUP_STATUS

- ACTIVE
- ACTIVE - LAND USE RESTRICTIONS
- BACKLOG
- CERTIFIED
- CERTIFIED / OPERATION & MAINTENANCE
- CERTIFIED/OP & MAINT-LAND USE RESTRIC
- COMPLETED
- INACTIVE
- INACTIVE - NEEDS EVALUATION
- NO FURTHER ACTION
- REFER: LOCAL AGENCY
- REFER: RWQCB
- GSR Proposed Municipal Wells
- San Bruno Municipal Wells
- Daly City Municipal Wells
- Cal Water Municipal Wells
- 2000 feet Radius Buffer
- South Westside Groundwater Basin

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
ENGINEERING MANAGEMENT BUREAU

DTSC SITE LOCATIONS

Kennedy/Jenks Consultants
303 Second Street, Suite 300 South
San Francisco, CA 94107

Figure **B-2**

Regional Groundwater Storage and Recovery Project

Date April 2012

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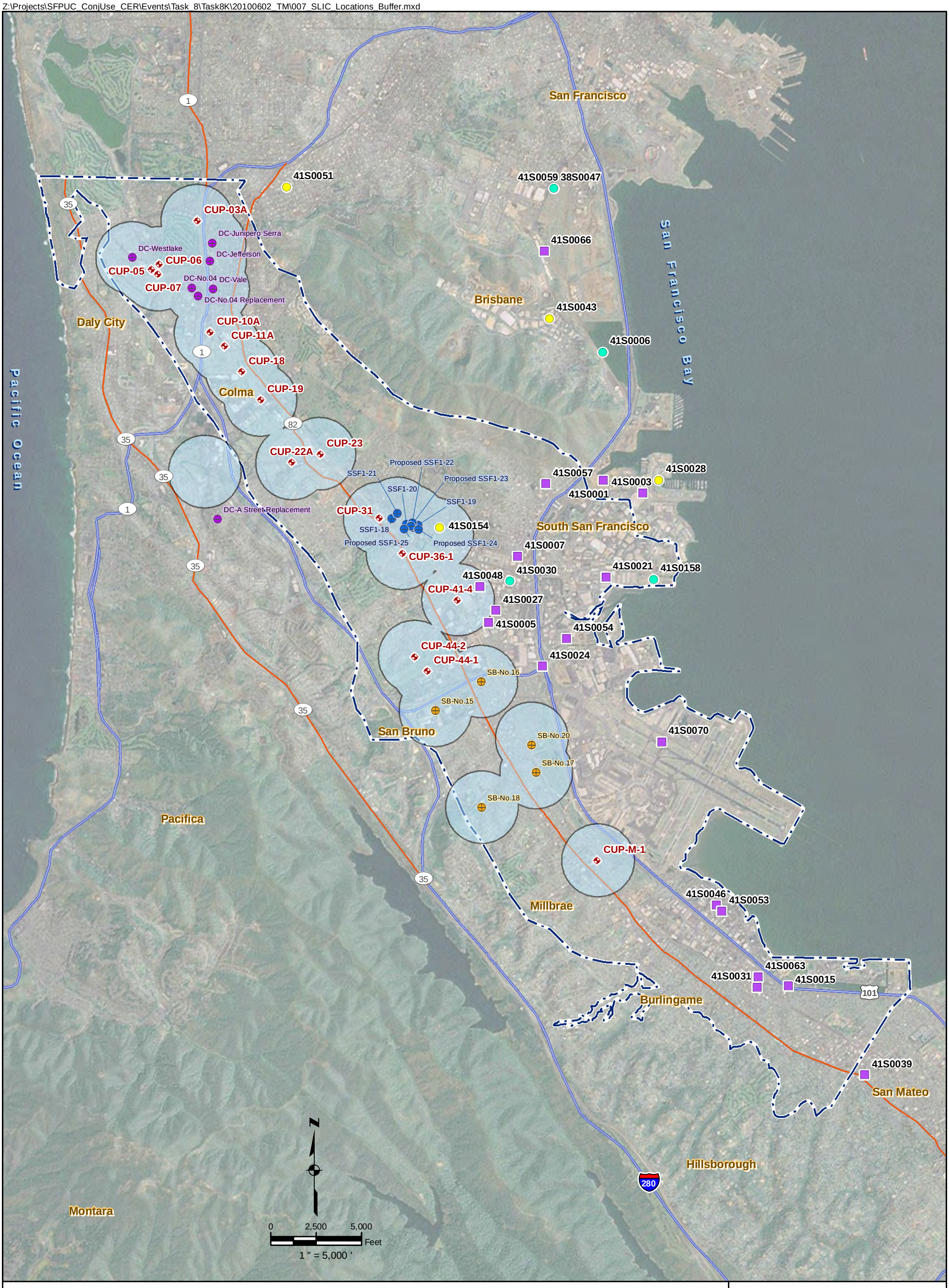


Legend

SLIC (Spills, Leaks, Investigations, and Cleanup Database) Locations and Site Number

- Active (3)
- Inactive (18)
- Refered to Others Agency (4)

- GSR Proposed Municipal Wells
- San Bruno Municipal Wells
- Daly City Municipal Wells
- Cal Water Municipal Wells

- 2000 feet Radius Buffer
- South Westside Groundwater Basin

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
ENGINEERING MANAGEMENT BUREAU

PRODUCTION WELLS AND CLEANUP SITES

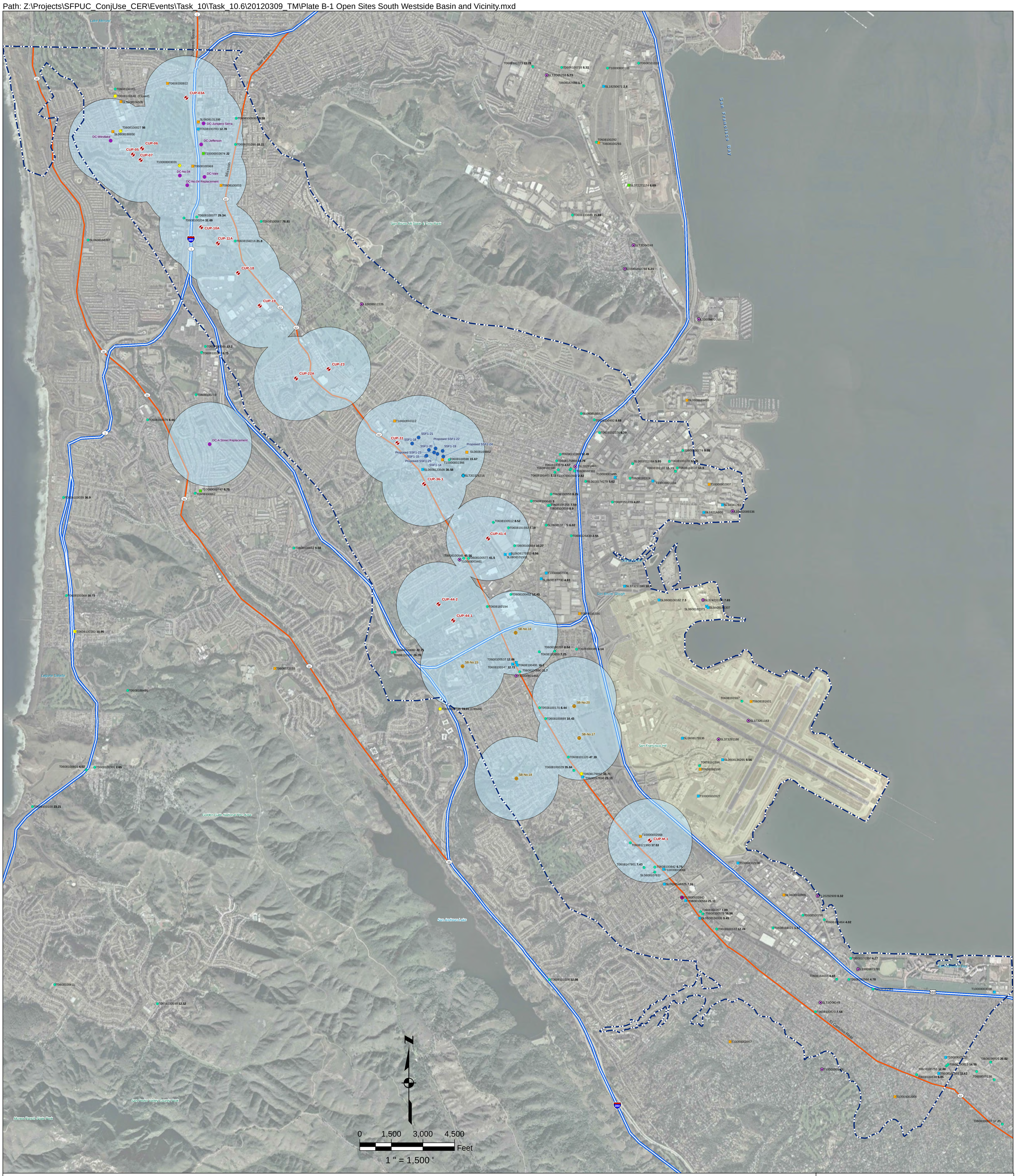
Kennedy/Jenks Consultants
303 Second Street, Suite 300 South
San Francisco, CA 94107

Figure **B-3**

Regional Groundwater Storage and Recovery Project

Date April 2012

Path: Z:\Projects\SFPUC_ConjUse_CER\Events\Task_10\Task_10.6\20120309_TM\Plate B-1 Open Sites South Westside Basin and Vicinity.mxd



Legend

Potential Media Affected Near Project Area

- Other Groundwater (uses other than drinking water)
- Soil
- Soil/Other Groundwater (uses other than drinking water)
- Soil/Other Groundwater (uses other than drinking water)/Aquifer or Well used for drinking water supply
- Soil/Aquifer used for drinking water supply
- Well used for drinking water supply
- Aquifer used for drinking water supply
- Under Investigation
- Unknown

T0608194016 | **21.8**
Global ID | Depth to Water (feet)

- GSR Project Proposed Municipal Wells
- San Bruno Municipal Wells
- Daly City Municipal Wells
- Cal Water Municipal Wells
- South Westside Groundwater Basin
- 2000 feet Radius Buffer

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
ENGINEERING MANAGEMENT BUREAU

"OPEN" REGULATED SITES IN THE SOUTH WESTSIDE BASIN AND VICINITY AND RECORDED DEPTHS TO WATER

Kennedy/Jenks Consultants
303 Second Street, Suite 300 South
San Francisco, CA 94107

Figure
Plate B-1

Regional Groundwater Storage and Recovery Project

Date
April 2012

TABLE B-1 COMPLETE LISTING OF EXISTING REGULATED SITES - GEOTRACKER, SWIS, DTSC AND SLIC

GLOBAL_ID	BUSINESS NAME	CASE TYPE	STATUS	STATUS DATE	POTENTIAL	POTENTIAL 1	PROTECTION ZONE	FIELD_POIN	STATUS_1	GW_MEAS_DA	DTW
L10002089336	O'BRIEN-HASKINS FORMER SAN BRUNO CHANNEL	Land Disposal Site	Open	1/9/2008							
L10008912226	HILLSIDE LNDFL COLMA DUMP	Land Disposal Site	Open	1/1/1965							
L10009873781	BURLINGAME LANDFILL	Land Disposal Site	Open - Verification Monitoring	9/25/2009							
SL0002020085	SHELL OIL SFO SATELLITE PLANT, SOUTH SF (former)	Cleanup Program Site	Open - Assessment & Interim Remedial Action	12/29/2009			Inside 2000ft Protection Zone				
SL0608101503	416 Browning (fmr Goss-Jewett facility)	Cleanup Program Site	Open - Site Assessment	9/17/2007	Tetrachloroethylene (PCE)	Other Groundwater (uses other than drinking water), Soil, Soil Vapor, Under	Inside 2000ft Protection Zone				
SL0608104752	SOFOS PROPERTY	Cleanup Program Site	Completed - Case Closed	6/23/2010	Nickel	Aquifer used for drinking water supply, Other Groundwater (uses other than					
SL0608106162	SFIA - UNITED AIRLINES MAINTENANCE CENTER AT SF AIRPORT	Cleanup Program Site	Open - Remediation	1/1/2007	* Solvents, Aviation	Other Groundwater (uses other than drinking water), Soil, Well used for drinking		MW-3C	ACT	8/8/2005	7.3
SL0608106505	WESTLAKE FRENCH CLEANERS	Cleanup Program Site	Open - Site Assessment	6/4/2008	Tetrachloroethylene (PCE)	Soil	Inside 2000ft Protection Zone				
SL0608107611	CITIBANK/BETTY-BRITE CLEANERS (FORMER)	Cleanup Program Site	Open - Site Assessment	4/28/2004	Tetrachloroethylene (PCE)	Other Groundwater (uses other than	Inside 2000ft Protection Zone				
SL0608111084	GRAND ROEBLING PROPERTY	Cleanup Program Site	Open - Site Assessment	10/5/2005	Tetrachloroethylene (PCE)	Other Groundwater (uses other than		MW-3	ACT	10/25/2006	5.95
SL0608115344	COEN COMPANY	Cleanup Program Site	Completed - Case Closed	11/20/2006	Diesel	Other Groundwater (uses other than					
SL0608116110	MATTISON & SHIDLER	Cleanup Program Site	Completed - Case Closed	11/29/1995		Soil					
SL0608123509	CHEVRON, FORMER STANDARD OIL SUBSTATION	LUST Cleanup Site	Open - Verification Monitoring	3/9/2010	Gasoline	Other Groundwater (uses other than drinking water), Soil	Inside 2000ft Protection Zone	MW-1	ACT	2/2/2010	30.58
SL0608127237	SFIA - SAN FRANCISCO AIRPORT BOARDING AREA E	Cleanup Program Site	Open - Remediation	1/1/2004	Aviation	Other Groundwater (uses other than drinking water), Soil					
SL0608128898	GEORGIA PACIFIC	Cleanup Program Site	Completed - Case Closed	12/22/2009	Tetrachloroethylene (PCE)	Other Groundwater (uses other than		MW-1S	ACT	3/20/2007	7
SL0608131398	PACIFIC PLAZA III	Cleanup Program Site	Open - Remediation	7/6/2009	Arsenic	Soil	Inside 2000ft Protection Zone				
SL0608136265	SFIA - SF AIRPORT BOARDING AREA D	Cleanup Program Site	Open - Remediation	1/1/2005	Aviation	Other Groundwater (uses other than drinking water), Soil		BM-4	ACT	12/5/2005	9.56
SL0608137279	UNION PACIFIC	Cleanup Program Site	Open - Site Assessment	2/14/2007	* Solvents	Other Groundwater (uses other than		MW-1	ACT	2/23/2009	6.02
SL0608146307	SFIA - CHEVRON BULK FUEL TERMINAL @ S.F. INT' AIRPORT	Cleanup Program Site	Open - Verification Monitoring	1/1/1999	Diesel, Aviation, Gasoline	Other Groundwater (uses other than drinking water), Soil		2	NOACC	3/16/2006	
SL0608147763	STANDARD ELECTRIC	Cleanup Program Site	Completed - Case Closed	8/15/2006	* Solvents	Other Groundwater (uses other than drinking water)					
SL0608148825	former PENINSULA CLEANERS - offsite	Cleanup Program Site	Open - Assessment & Interim Remedial Action	12/6/2010	Tetrachloroethylene (PCE)	Other Groundwater (uses other than drinking water), Soil, Soil Vapor, Under		MW-1	ACT	3/2/2004	7.11
SL0608156926	HOLIDAY CLEANERS	Cleanup Program Site	Open - Site Assessment	11/8/2007	Tetrachloroethylene (PCE), Trichloroethylene (TCE), Vinyl chloride	Indoor Air, Other Groundwater (uses other than drinking water), Soil		MW-1	ACT	6/15/2009	9.45
SL0608164408	BAYHILL 7 FACILITY	Cleanup Program Site	Completed - Case Closed	6/16/2009	Waste Oil / Motor / Hydraulic / Lubricating	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone				
SL0608165957	OTTOBONI NURSERY	Cleanup Program Site	Completed - Case Closed	12/4/2003		Soil					
SL0608169862	735 COMMERCIAL	Cleanup Program Site	Open - Site Assessment	7/10/2003	* Pesticides/Herbicides	Soil	Inside 2000ft Protection Zone				
SL0608169865	855 MALCOLM ROAD	Cleanup Program Site	Open - Verification Monitoring	12/29/2009	Tetrachloroethylene (PCE)	Soil					
SL0608174279	ASSOCIATED ROAD PARCEL	Cleanup Program Site	Open - Site Assessment	10/26/2007	* Solvents	Other Groundwater (uses other than drinking water)		MW-1	ACT	10/14/2009	5.62
SL0608175536	SFIA - SAN FRANCISCO AIRPORT BOARDING AREA F	Cleanup Program Site	Open - Remediation	1/1/2004	Aviation	Other Groundwater (uses other than drinking water), Soil					
SL0608175553	290 South Maple	Cleanup Program Site	Open - Assessment & Interim Remedial Action	4/14/2008	Tetrachloroethylene (PCE)	Other Groundwater (uses other than drinking water), Soil	Inside 2000ft Protection Zone	MW-2	ACT	5/20/2008	6.56
SL0608182371	SFIA - PS TRADING BULK TERMINAL AT SFIA	Cleanup Program Site	Open - Verification Monitoring	10/30/2009	Aviation	Other Groundwater (uses other than drinking water), Soil		P-4	DRY	9/6/2005	
SL0608187305	PARKING CORPORATION OF AMERICA	Cleanup Program Site	Completed - Case Closed	5/26/2010	Gasoline	Other Groundwater (uses other than drinking water)		MW-2	ACT	9/16/2005	1.99
SL0608187730	1245 MONTGOMERY AVE	Cleanup Program Site	Open - Remediation	10/31/2007	Benzene, Other Solvent or Non-Petroleum Hydrocarbon, Trichloroethylene (TCE)	Other Groundwater (uses other than drinking water), Soil, Soil Vapor		MW-7	ACT	6/29/2005	4.93
SL0608188827	Rollin J. Lobaugh	LUST Cleanup Site	Open - Site Assessment	3/31/2009	Stoddard Solvent / Mineral Spirits / Distillates	Other Groundwater (uses other than drinking water)					
SL0608188850	SOUTHGATE CLEANERS	Cleanup Program Site	Open - Site Assessment	6/4/2008	Tetrachloroethylene (PCE)	Soil	Inside 2000ft Protection Zone				
SL0608189867	SATURN OF COLMA	Cleanup Program Site	Completed - Case Closed	12/2/2005	Diesel	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone				
SL1821A600	HASKINS JAMIE COURT	Cleanup Program Site	Open - Site Assessment	1/14/2000	Lead, Asphalt	Other Groundwater (uses other than drinking water), Sediments, Soil					
SL18251672	SFIA - SAN FRANCISCO INTERNATIONAL AIRPORT	Cleanup Program Site	Open - Remediation	7/1/1995	1,1,1-Trichloroethane (TCA), Aviation, Diesel, Gasoline	Other Groundwater (uses other than drinking water), Soil	Inside 2000ft Protection Zone				
SL18341761	OBRIEN CORP	Cleanup Program Site	Open - Verification Monitoring	7/6/2009	Other Chlorinated Hydrocarbons, Arsenic, Lead	Other Groundwater (uses other than drinking water), Sediments, Soil, Surface					
SL20251869	W C PROPERTIES	Cleanup Program Site	Open - Inactive	3/20/1995							
SL20261879	US STEEL FACILITY (FORMER)	Cleanup Program Site	Completed - Case Closed	9/17/2009	Polychlorinated biphenyls (PCBs), Lead, Diesel, Waste Oil / Motor / Hydraulic / Lubricating, Polynuclear aromatic	Other Groundwater (uses other than drinking water), Sediments, Soil	Inside 2000ft Protection Zone				
SL20292909	COIT CLEANERS	Cleanup Program Site	Open - Verification Monitoring	9/1/2009				MW 1	ACT	3/17/1998	0.32
SL373231180	Shell (Equilon) South San Francisco Terminal	Cleanup Program Site	Open - Remediation	7/1/2002	Benzene, Toluene, Xylene, Aviation, Diesel, Fuel Oxygenates, Gasoline	Other Groundwater (uses other than drinking water), Soil, Surface water		MW-13	ACT	9/26/2005	10.3
SL373261183	CHEVRON USA SFO	Cleanup Program Site	Open - Site Assessment	7/1/2002							

SL373291186	SFO TAXIWAY C PROJECT	Cleanup Program Site	Open - Assessment & Interim Remedial Action	12/29/2009	* Petroleum - Automotive gasolines, * Petroleum - Diesel fuels, * Petroleum - Jet Fuel / Aviation, * Volatile Organic Compounds					
SL374231190	SHELL OIL BARGE PLANT SFO (Plot 22)	Cleanup Program Site	Open - Assessment & Interim Remedial Action	12/29/2009				S-3	ACT	9/8/2006	7.65
SLT2O04349	DESERT PETROLEUM	Cleanup Program Site	Open - Inactive	6/2/2009							
SLT2O319210	PRICE COMPANY	Cleanup Program Site	Completed - Case Closed	1/1/1970							
SLT2O321212	HILLSIDE BOULEVARD E NURSERY	Cleanup Program Site	Completed - Case Closed	1/1/1970			Inside 2000ft Protection Zone				
SLT2O322213	EXIDE CORP	Cleanup Program Site	Completed - Case Closed	1/1/1970							
SLT2O324940	INTERNATIONAL PAINT COURTALD COATINGS	Cleanup Program Site	Completed - Case Closed	11/22/2002							
SLT2O326216	HOMART DEV CORP EDWARDS WIRE & ROPE	Cleanup Program Site	Open - Inactive	5/12/2010			Inside 2000ft Protection Zone				
SLT2O327217	BACON PROPERTY	Cleanup Program Site	Completed - Case Closed	1/1/1970			Inside 2000ft Protection Zone				
SLT2O330220	POETSCH PETERSON TANNERS	Cleanup Program Site	Completed - Case Closed	1/1/1970			Inside 2000ft Protection Zone				
T0608100003	AAMCO TRANSMISSION	LUST Cleanup Site	Open - Site Assessment	1/5/1988	Gasoline	Soil	Inside 2000ft Protection Zone				
T0608100005	OLYMPIAN SSF TERMINAL	LUST Cleanup Site	Open - Site Assessment	11/8/2006	Gasoline	Other Groundwater (uses other than drinking water)		MW-9	ACT	6/18/2002	8.9
T0608100010	ALAMO RENT-A-CAR	LUST Cleanup Site	Completed - Case Closed	10/10/1991	Waste Oil / Motor / Hydraulic / Lubricating	Other Groundwater (uses other than drinking water)					
T0608100011	ALAMO RENT-A-CAR	LUST Cleanup Site	Completed - Case Closed	9/4/2001	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100012	ALLAN BAKER COMPANY	LUST Cleanup Site	Completed - Case Closed	10/25/2000	Gasoline	Soil					
T0608100015	ALQUEST PROPERTY	LUST Cleanup Site	Completed - Case Closed	5/23/1994	Diesel	Other Groundwater (uses other than drinking water)					
T0608100017	AMERICAN AIRLINES SUPERBAY HANGER	LUST Cleanup Site	Completed - Case Closed	7/22/2009	Kerosene	Other Groundwater (uses other than drinking water)		B-3	ACT	9/9/2005	5.56
T0608100024	ARC ELECTRIC	LUST Cleanup Site	Completed - Case Closed	11/25/1998	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100027	ARCO #0465	LUST Cleanup Site	Open - Site Assessment	9/9/2003	Benzene, Toluene, Xylene, Fuel Oxygenates,	Aquifer used for drinking water supply	Inside 2000ft Protection Zone	MW-4	ACT	6/27/2002	56
T0608100029	ARCO #0743	LUST Cleanup Site	Open - Site Assessment	6/13/1984	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone	MW-5	ACT	6/25/2002	35.84
T0608100033	ARCO #2090	LUST Cleanup Site	Completed - Case Closed	5/27/2011	Gasoline	Aquifer used for drinking water supply, Soil, Soil Vapor	Inside 2000ft Protection Zone	MW-1	ACT	6/27/2002	48.85
T0608100046	AUTO TEKNIK	LUST Cleanup Site	Completed - Case Closed	4/23/2002	Waste Oil / Motor / Hydraulic / Lubricating	Other Groundwater (uses other than drinking water)					
T0608100047	AUTOHAUS	LUST Cleanup Site	Completed - Case Closed	4/24/1997	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100050	AVIS RENT A CAR	LUST Cleanup Site	Completed - Case Closed	9/16/1998	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100051	AVIS RENT-A-CAR	LUST Cleanup Site	Completed - Case Closed	3/6/2002	Diesel	Other Groundwater (uses other than drinking water)					
T0608100053	B & B TRANSMISSION	LUST Cleanup Site	Completed - Case Closed	2/27/1992	Waste Oil / Motor / Hydraulic / Lubricating	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone				
T0608100056	BART	LUST Cleanup Site	Completed - Case Closed	1/27/1992	Gasoline	Soil	Inside 2000ft Protection Zone				
T0608100057	SFIA - San Francisco International Airport TWA CARGO FACILITY	LUST Cleanup Site	Completed - Case Closed	6/21/1999	Kerosene	Other Groundwater (uses other than drinking water)					
T0608100061	BAYSTAR MEDICAL SERVICES	LUST Cleanup Site	Completed - Case Closed	3/18/1997	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100071	BISCAY AUTO REPAIR	LUST Cleanup Site	Completed - Case Closed	8/11/2000	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100073	DEITER BLUHM	LUST Cleanup Site	Completed - Case Closed	9/30/1991		Soil					
T0608100077	BP #11202 (FORMER)	LUST Cleanup Site	Open - Site Assessment	4/20/1987	Waste Oil / Motor / Hydraulic / Lubricating	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone	MW-1	ACT	6/11/2003	29.34
T0608100080	BP #11200	LUST Cleanup Site	Open - Site Assessment	4/14/2009	Gasoline	Other Groundwater (uses other than drinking water)		MW-2	ACT	6/7/2002	3.14
T0608100081	BRESSIE & CO.	LUST Cleanup Site	Completed - Case Closed	6/11/2001	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100084	BROADMOOR LUMBER & PLYWOOD CO	LUST Cleanup Site	Completed - Case Closed	7/3/1995	Gasoline	Soil	Inside 2000ft Protection Zone				
T0608100087	BUDGET RENT-A-CAR	LUST Cleanup Site	Completed - Case Closed	9/13/2002	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100089	BURLINGAME FIRE STA. #3	LUST Cleanup Site	Completed - Case Closed	10/19/2000	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100091	BURLINGAME POST OFFICE	LUST Cleanup Site	Completed - Case Closed	11/28/1995	Gasoline	Soil					
T0608100093	BURLINGTON AIR EXPRESS	LUST Cleanup Site	Completed - Case Closed	1/31/2001	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100094	BROADWAY LOCKSMITH	LUST Cleanup Site	Completed - Case Closed	3/30/2000	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100105	CARLIN CO	LUST Cleanup Site	Completed - Case Closed	6/27/2001	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100107	CARUFF CALIFORNIA CORP	LUST Cleanup Site	Completed - Case Closed	10/10/1993	Gasoline	Other Groundwater (uses other than drinking water)					

T0608100108	CAULKING WATERPROOFING INC.	LUST Cleanup Site	Completed - Case Closed	2/9/1993	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100110	CHEVRON 9-4000	LUST Cleanup Site	Completed - Case Closed	7/22/2009	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100113	CHEVRON 9-1909	LUST Cleanup Site	Completed - Case Closed	7/6/2005	Gasoline	Other Groundwater (uses other than drinking water)		MW-1	ACT	3/1/2002	5.12
T0608100114	CHEVRON 9-1626	LUST Cleanup Site	Completed - Case Closed	10/25/2005	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone	MW-10	ACT	5/31/2002	28.08
T0608100115	CHEVRON 9-7640	LUST Cleanup Site	Completed - Case Closed	12/5/2001	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100116	CHEVRON 9-5131	LUST Cleanup Site	Completed - Case Closed	6/27/2002	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100118	CHEVRON 9-0723	LUST Cleanup Site	Completed - Case Closed	1/18/2001	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100122	CHEVRON 9-8165	LUST Cleanup Site	Open - Site Assessment	7/22/1985	Gasoline	Other Groundwater (uses other than drinking water)		C-3R	ACT	2/16/2002	12.24
T0608100125	CHEVRON 9-7455	LUST Cleanup Site	Completed - Case Closed	5/28/1999	Waste Oil / Motor / Hydraulic / Lubricating	Soil	Inside 2000ft Protection Zone				
T0608100126	CHEVRON 9-0781	LUST Cleanup Site	Completed - Case Closed	10/6/2010	Gasoline	Aquifer used for drinking water supply					
T0608100128	CHEVRON 9-0571	LUST Cleanup Site	Open - Verification Monitoring	4/27/2009	Gasoline	Other Groundwater (uses other than drinking water)		MW-1	ACT	3/14/2002	6.86
T0608100132	CHEVRON 9-0206	LUST Cleanup Site	Completed - Case Closed	7/22/2004	Gasoline	Other Groundwater (uses other than drinking water)		EA-1	ACT	2/16/2002	3.16
T0608100137	CHEVRON 9-0645	LUST Cleanup Site	Completed - Case Closed	1/18/2001	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100144	CHEVRON 9-0248	LUST Cleanup Site	Completed - Case Closed	12/19/2001	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone				
T0608100145	CHEVRON 9-5669	LUST Cleanup Site	Completed - Case Closed	4/9/2007	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone	MW-5	ACT	2/16/2002	38.88
T0608100147	CHEVRON 9-2759 ECR SB COMINGLED	LUST Cleanup Site	Open - Assessment & Interim	5/21/2010	Benzene, Gasoline	Other Groundwater (uses other than	Inside 2000ft Protection Zone	C-1	ACT	3/25/2002	12.72
T0608100148	CHEVRON 9-6982	LUST Cleanup Site	Completed - Case Closed	12/27/2011	Gasoline	Aquifer used for drinking water supply		MW-2	DRY	5/14/2004	
T0608100149	CHEVRON 9-0858	LUST Cleanup Site	Completed - Case Closed	12/4/2000	Gasoline	Soil	Inside 2000ft Protection Zone				
T0608100152	CITY OF DALY CITY	LUST Cleanup Site	Completed - Case Closed	5/28/1991	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone				
T0608100153	FEDERAL EXPRESS FLYNG TIGERS	LUST Cleanup Site	Completed - Case Closed	7/22/2009	Diesel	Other Groundwater (uses other than drinking water)					
T0608100157	CITY OF MILLBRAE CORP YARD	LUST Cleanup Site	Completed - Case Closed	4/28/1997	Diesel	Other Groundwater (uses other than					
T0608100165	CODON (GRAND/ROEBLING INV)	LUST Cleanup Site	Completed - Case Closed	11/13/1991	Gasoline	Soil					
T0608100167	COLUMBUS SALAME INC.	LUST Cleanup Site	Completed - Case Closed	6/13/1991	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100170	Mobil 99-ELM (Former)	LUST Cleanup Site	Open - Site Assessment	6/13/1990	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone	GW-1	ACT	10/22/2002	8.44
T0608100171	COYNE CYLINDER CO	LUST Cleanup Site	Completed - Case Closed	7/20/2011	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone	MW-4	ACT	7/25/2003	6.55
T0608100172	CORTANA CORPORATION	LUST Cleanup Site	Completed - Case Closed	2/17/1993	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100173	COULTERS CARPETS	LUST Cleanup Site	Completed - Case Closed	11/14/2002	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone				
T0608100178	CYPRESS LAWN CEMETERY	LUST Cleanup Site	Completed - Case Closed	8/27/2001	Diesel	Other Groundwater (uses other than	Inside 2000ft Protection Zone				
T0608100179	DALY CITY CORP YARD	LUST Cleanup Site	Completed - Case Closed	1/24/2003	Gasoline	Aquifer used for drinking water supply	Inside 2000ft Protection Zone				
T0608100180	DALY CITY SERVICE	LUST Cleanup Site	Completed - Case Closed	4/19/1996	Gasoline	Soil	Inside 2000ft Protection Zone				
T0608100181	DALY CITY WASTEWATER PLANT	LUST Cleanup Site	Open - Verification Monitoring	2/1/1990	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100188	KEN FUNK PROPERTY	LUST Cleanup Site	Completed - Case Closed	12/3/1998	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100191	SAN BRUNO CORP. YARD	LUST Cleanup Site	Completed - Case Closed	11/7/2001	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone				
T0608100193	EARLY AMERICAN PAINT	LUST Cleanup Site	Completed - Case Closed	5/11/2000	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone				
T0608100194	OLYMPIC EAST GRAND CARDTOL	LUST Cleanup Site	Completed - Case Closed	4/23/2009	Gasoline	Other Groundwater (uses other than drinking water)		MW-1	ACT	12/12/2002	5.25
T0608100195	EMERY AIR FREIGHT	LUST Cleanup Site	Completed - Case Closed	8/22/1996	Diesel	Other Groundwater (uses other than drinking water)					
T0608100196	ENCORE THEATER	LUST Cleanup Site	Completed - Case Closed	9/23/1997	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100199	ESCHELBACH PROPERTIES	LUST Cleanup Site	Completed - Case Closed	6/12/2001	Gasoline	Other Groundwater (uses other than drinking water)					

T0608100202	EUROPEAN CAR SERVICE	LUST Cleanup Site	Completed - Case Closed	10/17/2002	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone				
T0608100204	EXXON 7-0207, FORMER	LUST Cleanup Site	Open - Site Assessment	4/23/2009	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone	MW1	ACT	9/12/2001	32.69
T0608100207	EXXON 7-0107 (Former)	LUST Cleanup Site	Open - Remediation	11/22/2006	Gasoline	Other Groundwater (uses other than drinking water)		MW7A	ACT	11/25/2002	8.04
T0608100214	FEDERAL SUPPLY WAREHOUSE	LUST Cleanup Site	Completed - Case Closed	4/28/1997	Gasoline	Other Groundwater (uses other than					
T0608100215	FINLEY CONSTRUCTION CO	LUST Cleanup Site	Completed - Case Closed	7/9/1992	Gasoline	Soil	Inside 2000ft Protection Zone				
T0608100220	FLAT RATE RENT-A-CAR	LUST Cleanup Site	Completed - Case Closed	8/11/1999	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone				
T0608100223	SFIA - AMERICAN AIRLINES PLOT 9	LUST Cleanup Site	Completed - Case Closed	1/1/2004	Aviation	Other Groundwater (uses other than drinking water)					
T0608100226	FOUR STAR AUTOMOTIVE, INC.	LUST Cleanup Site	Completed - Case Closed	6/28/1996	Waste Oil / Motor / Hydraulic / Lubricating	Other Groundwater (uses other than drinking water)					
T0608100228	GALLO SALES CO.	LUST Cleanup Site	Open - Verification Monitoring	1/1/2011	Gasoline	Other Groundwater (uses other than drinking water)		MW-G1	ACT	3/26/2002	12.26
T0608100229	UNITED TRANSMISSION INC	LUST Cleanup Site	Completed - Case Closed	11/20/1996	Stoddard Solvent / Mineral Spirits / Distillates	Other Groundwater (uses other than drinking water)					
T0608100230	GASCO SERVICE STATION	LUST Cleanup Site	Completed - Case Closed	1/23/2002	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100231	GELCO TRUCK LEASING	LUST Cleanup Site	Completed - Case Closed	8/4/1992	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100233	GEORGIA PACIFIC	LUST Cleanup Site	Completed - Case Closed	11/10/1998	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100238	PENSKE TRUCK LEASING II	LUST Cleanup Site	Completed - Case Closed	1/17/2003	Gasoline	Other Groundwater (uses other than					
T0608100239	GRACE HONDA	LUST Cleanup Site	Completed - Case Closed	6/30/1994	Gasoline	Soil	Inside 2000ft Protection Zone				
T0608100240	GRANITE ROCK CO	LUST Cleanup Site	Completed - Case Closed	4/1/2008	Waste Oil / Motor / Hydraulic / Lubricating	Other Groundwater (uses other than		MW-1	ACT	3/28/2002	5.32
T0608100241	GREEN HILLS COUNTRY CLUB	LUST Cleanup Site	Completed - Case Closed	9/2/1993	Gasoline	Soil					
T0608100243	CITY OF DALY CITY	LUST Cleanup Site	Completed - Case Closed	5/28/1991		Soil	Inside 2000ft Protection Zone				
T0608100244	GREYHOUND EXPOSITION SERVICES	LUST Cleanup Site	Completed - Case Closed	7/28/2000	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100248	H.S. CROCKER CO.	LUST Cleanup Site	Completed - Case Closed	10/14/1998	Gasoline	Other Groundwater (uses other than					
T0608100250	HAMMETT & EDISON REAL ESTATE	LUST Cleanup Site	Completed - Case Closed	2/8/1994	Diesel	Soil					
T0608100252	HARMON SHRAGGE CO	LUST Cleanup Site	Completed - Case Closed	8/22/1996	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100253	HARRIS PROPERTY	LUST Cleanup Site	Open - Remediation	8/1/1989	Gasoline	Other Groundwater (uses other than drinking water)		PSB-5	ACT	4/28/2003	12.88
T0608100255	HUMBER REALTY	LUST Cleanup Site	Completed - Case Closed	12/29/1993	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100256	HERTZ	LUST Cleanup Site	Completed - Case Closed	7/19/2001	Gasoline	Other Groundwater (uses other than					
T0608100257	HERTZ RENTAL CAR	LUST Cleanup Site	Completed - Case Closed	9/16/1998	Gasoline	Under Investigation					
T0608100259	HIRAM WALKER	LUST Cleanup Site	Completed - Case Closed	1/27/1998	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100261	HOFFMAN BROTHERS	LUST Cleanup Site	Completed - Case Closed	4/18/2000	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone				
T0608100266	HOME SAVINGS OF AMERICA	LUST Cleanup Site	Completed - Case Closed	3/26/2002	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100269	HOUSING CONSTRUCTION	LUST Cleanup Site	Completed - Case Closed	7/27/2000	Diesel	Other Groundwater (uses other than drinking water)					
T0608100274	GEORGIA GERRITSEN	LUST Cleanup Site	Completed - Case Closed	11/10/2005	Gasoline	Other Groundwater (uses other than		MW-1	INACT	12/31/2003	
T0608100276	SFIA - SIGNITURE FLIGHT	LUST Cleanup Site	Completed - Case Closed	7/22/2009	Kerosene	Under Investigation					
T0608100283	J.R. FLYNN CO.	LUST Cleanup Site	Completed - Case Closed	7/6/1998	Gasoline	Other Groundwater (uses other than					
T0608100288	SHOPPING STRIP MALL	LUST Cleanup Site	Completed - Case Closed	10/8/1998	Gasoline	Soil					
T0608100291	DELANO NURSERY	LUST Cleanup Site	Completed - Case Closed	9/14/1993	Gasoline	Soil					
T0608100296	KPR PROPERTIES	LUST Cleanup Site	Completed - Case Closed	3/19/1998	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100300	LA MARK TRANSPORTATION	LUST Cleanup Site	Completed - Case Closed	1/2/2003	Gasoline	Other Groundwater (uses other than					
T0608100307	OYSTER POINT	LUST Cleanup Site	Completed - Case Closed	5/21/2009	Waste Oil / Motor / Hydraulic / Lubricating	Soil					
T0608100310	LONATI PROPERTIES	LUST Cleanup Site	Completed - Case Closed	12/1/2004	Gasoline	Other Groundwater (uses other than drinking water)		MW-1	ACT	9/16/2002	8.62
T0608100312	LUBRIVAN TRUCK SERVICES	LUST Cleanup Site	Completed - Case Closed	3/7/2003	Gasoline	Other Groundwater (uses other than drinking water)					

T0608100313	LUCCA PACKING CORP.	LUST Cleanup Site	Completed - Case Closed	8/16/2001	Diesel	Other Groundwater (uses other than drinking water)					
T0608100318	MIZRA/SETO PROPERTY	LUST Cleanup Site	Completed - Case Closed	7/24/2000	Gasoline	Other Groundwater (uses other than					
T0608100322	MCCLENNAN PROPERTY	LUST Cleanup Site	Completed - Case Closed	4/20/1990	Gasoline	Soil	Inside 2000ft Protection Zone				
T0608100332	MIKE HARVEY CHRYSLER	LUST Cleanup Site	Completed - Case Closed	7/21/1997	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100341	MOBIL 04-FT7	LUST Cleanup Site	Completed - Case Closed	1/26/1999	Waste Oil / Motor / Hydraulic / Lubricating	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone				
T0608100350	BP #11204	LUST Cleanup Site	Open - Verification Monitoring	9/30/1988	Benzene, Toluene, Xylene, Diesel, Fuel Oxygenates, Gasoline, Waste Oil / Motor /	Other Groundwater (uses other than drinking water)		MW-1	ACT	6/19/2003	4.27
T0608100351	MONROE SCHNEIDER ASSOC.	LUST Cleanup Site	Completed - Case Closed	5/6/1992	Xylene	Other Groundwater (uses other than drinking water)					
T0608100353	MR DETAIL	LUST Cleanup Site	Completed - Case Closed	2/19/1999	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100355	MYERS AIR CONDITIONING	LUST Cleanup Site	Completed - Case Closed	6/7/1996	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100356	NATIONAL CAR RENTAL SYSTEM INC	LUST Cleanup Site	Completed - Case Closed	2/23/1998	Gasoline	Other Groundwater (uses other than					
T0608100362	OLIVET MEMORIAL PARK	LUST Cleanup Site	Completed - Case Closed	10/12/1994	Gasoline	Soil					
T0608100363	OLYMPIAN	LUST Cleanup Site	Completed - Case Closed	2/23/1996	Gasoline	Other Groundwater (uses other than					
T0608100366	OLYMPIAN OIL	LUST Cleanup Site	Completed - Case Closed	5/12/2003	Gasoline	Aquifer used for drinking water supply					
T0608100369	OLYMPIC AUTO SERVICE	LUST Cleanup Site	Open - Remediation	3/31/2003	Gasoline	Other Groundwater (uses other than drinking water)		MW1	ACT	2/4/2002	12.49
T0608100370	CHEVRON 209437, FORMER	LUST Cleanup Site	Completed - Case Closed	12/3/2002	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone				
T0608100376	PACIFIC BELL	LUST Cleanup Site	Completed - Case Closed	8/12/2010	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone	MW-1	ACT	12/12/2002	26.13
T0608100377	PACIFIC BELL	LUST Cleanup Site	Completed - Case Closed	7/9/1992	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100380	PACIFIC CONSTRUCTION	LUST Cleanup Site	Completed - Case Closed	11/13/1997	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100385	SFIA - San Francisco International Airport UAL OGDEN FORMER PAN	LUST Cleanup Site	Completed - Case Closed	7/22/2009	Diesel	Other Groundwater (uses other than					
T0608100389	PENINSULA PROPERTIES	LUST Cleanup Site	Completed - Case Closed	12/1/1993	Gasoline	Soil					
T0608100391	PENINSULA TOW SERVICE	LUST Cleanup Site	Completed - Case Closed	6/13/2002	Gasoline	Soil	Inside 2000ft Protection Zone				
T0608100393	PERIN COMPANY	LUST Cleanup Site	Completed - Case Closed	6/26/1997	Waste Oil / Motor / Hydraulic / Lubricating	Other Groundwater (uses other than drinking water)					
T0608100401	GENERAL RENT-A-CAR	LUST Cleanup Site	Completed - Case Closed	3/19/1998	Gasoline	Other Groundwater (uses other than					
T0608100402	PONY EXPRESS	LUST Cleanup Site	Completed - Case Closed	3/16/2000	Gasoline	Soil					
T0608100406	PRESSURE GROUT COMPANY	LUST Cleanup Site	Completed - Case Closed	8/9/1993	Gasoline	Other Groundwater (uses other than					
T0608100407	PRICE COMPANY	LUST Cleanup Site	Completed - Case Closed	7/29/1992	Gasoline	Under Investigation					
T0608100411	COLOR CRAFT	LUST Cleanup Site	Completed - Case Closed	1/2/2001	Gasoline	Other Groundwater (uses other than					
T0608100415	RAGNI CONSTRUCTION	LUST Cleanup Site	Completed - Case Closed	3/20/1991	Gasoline	Soil					
T0608100418	RECTOR CADILLAC	LUST Cleanup Site	Completed - Case Closed	6/9/1992	Waste Oil / Motor / Hydraulic / Lubricating	Soil					
T0608100429	RON PRICE MOTORS	LUST Cleanup Site	Completed - Case Closed	1/8/1996	Waste Oil / Motor / Hydraulic / Lubricating	Soil	Inside 2000ft Protection Zone				
T0608100431	RPM RENT-A-CAR	LUST Cleanup Site	Completed - Case Closed	10/25/1995	Diesel	Other Groundwater (uses other than drinking water)					
T0608100434	SAGE TRANSPORTATION	LUST Cleanup Site	Completed - Case Closed	6/27/2001	Diesel	Other Groundwater (uses other than drinking water)					
T0608100436	SAM TRANS (VACANT)	LUST Cleanup Site	Completed - Case Closed	4/10/2000	Gasoline	Other Groundwater (uses other than					
T0608100438	SAN BRUNO CABLE TV	LUST Cleanup Site	Completed - Case Closed	12/11/1997	Waste Oil / Motor / Hydraulic / Lubricating	Soil	Inside 2000ft Protection Zone				
T0608100439	SAN BRUNO FORD	LUST Cleanup Site	Completed - Case Closed	12/20/2001	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone				
T0608100440	SAN BRUNO GLASS CENTER	LUST Cleanup Site	Completed - Case Closed	10/11/2002	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100441	SAN BRUNO LUMBER	LUST Cleanup Site	Completed - Case Closed	1/3/2002	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone				
T0608100443	SAN FRANCISCO NEWSPAPER AGENCY	LUST Cleanup Site	Completed - Case Closed	11/27/2002	Waste Oil / Motor / Hydraulic / Lubricating	Other Groundwater (uses other than drinking water)					
T0608100444	MOSQUITO ABATEMENT OFFICE	LUST Cleanup Site	Completed - Case Closed	10/9/1997	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100452	SEARS AUTOMOTIVE CENTER	LUST Cleanup Site	Open - Site Assessment	4/10/1985	Gasoline	Other Groundwater (uses other than	Inside 2000ft Protection Zone	MW-4	ACT	4/30/2003	12.43
T0608100455	SERRAMONTE FORD	LUST Cleanup Site	Completed - Case Closed	9/17/1992	Gasoline	Soil	Inside 2000ft Protection Zone				

T0608100456	SF GARDEN MART	LUST Cleanup Site	Completed - Case Closed	8/7/1991	Gasoline	Soil				
T0608100458	SHAFFER'S TIRE CENTER	LUST Cleanup Site	Completed - Case Closed	1/14/1992	Waste Oil / Motor / Hydraulic / Lubricating	Other Groundwater (uses other than drinking water)				
T0608100461	SHELL OIL	LUST Cleanup Site	Open - Remediation	2/6/2001	Gasoline	Other Groundwater (uses other than drinking water)		MW-2	ACT	12/17/2001	2.11
T0608100463	HICKEY FAMILY PARTNERSHIP	LUST Cleanup Site	Completed - Case Closed	5/20/1997	Gasoline	Other Groundwater (uses other than drinking water)				
T0608100464	SHELL	LUST Cleanup Site	Open - Site Assessment	7/1/2009	Gasoline	Other Groundwater (uses other than drinking water)		S-4	ACT	1/9/2002	4.02
T0608100465	SHELL OIL	LUST Cleanup Site	Completed - Case Closed	6/24/2005	Diesel	Other Groundwater (uses other than drinking water)		MW-6	ACT	1/10/2002	6.65
T0608100468	SHELL	LUST Cleanup Site	Completed - Case Closed	8/21/2001	Gasoline	Other Groundwater (uses other than					
T0608100487	SHELL	LUST Cleanup Site	Completed - Case Closed	10/10/1991	Gasoline	Soil					
T0608100490	SHELL	LUST Cleanup Site	Completed - Case Closed	6/24/2005	Waste Oil / Motor / Hydraulic / Lubricating	Soil	Inside 2000ft Protection Zone	MW-1	ACT	2/14/2002	40.14
T0608100491	SHELL ECR SB COMINGLED	LUST Cleanup Site	Open - Verification Monitoring	3/8/2010	Gasoline	Other Groundwater (uses other than drinking water), Soil Vapor	Inside 2000ft Protection Zone	MW-1	ACT	10/16/2001	16.2
T0608100492	SHELL	LUST Cleanup Site	Open - Site Assessment	1/12/2009	Gasoline	Other Groundwater (uses other than drinking water)		MW-1	ACT	1/15/2002	8.68
T0608100494	SHELL	LUST Cleanup Site	Completed - Case Closed	4/7/1992	Waste Oil / Motor / Hydraulic / Lubricating	Other Groundwater (uses other than					
T0608100498	SIMEON PROPERTIES	LUST Cleanup Site	Completed - Case Closed	2/24/2000	Diesel	Soil					
T0608100504	SOUTH CITY DODGE	LUST Cleanup Site	Completed - Case Closed	10/27/1992	Diesel	Soil	Inside 2000ft Protection Zone				
T0608100505	SOUTH CITY FORD	LUST Cleanup Site	Completed - Case Closed	8/9/2001	Gasoline	Other Groundwater (uses other than					
T0608100506	SOUTH CITY LUMBER	LUST Cleanup Site	Completed - Case Closed	12/14/1992	Gasoline	Soil					
T0608100507	TEXACO, SOUTH CITY (INDEP)	LUST Cleanup Site	Completed - Case Closed	11/17/2003	Gasoline	Other Groundwater (uses other than		MW-1	ACT	8/15/2002	1.33
T0608100508	S.S.F. HIGH SCHOOL	LUST Cleanup Site	Completed - Case Closed	8/4/1993	Gasoline	Soil	Inside 2000ft Protection Zone				
T0608100510	GARY HIRSCH	LUST Cleanup Site	Completed - Case Closed	10/18/1994	Gasoline	Soil					
T0608100512	SPRUCE CAR WASH	LUST Cleanup Site	Open - Remediation	5/12/2006	Gasoline	Other Groundwater (uses other than	Inside 2000ft Protection Zone	MW-9	ACT	2/20/2002	8.52
T0608100516	STEWART CHEVROLET	LUST Cleanup Site	Completed - Case Closed	10/10/1991	Waste Oil / Motor / Hydraulic / Lubricating	Soil	Inside 2000ft Protection Zone				
T0608100517	THE PROPERTY	LUST Cleanup Site	Completed - Case Closed	11/21/2000	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone				
T0608100526	SUPER CROWN CATERING	LUST Cleanup Site	Completed - Case Closed	6/12/2009	Gasoline	Other Groundwater (uses other than drinking water)		MW-1R	ACT	1/9/2003	5.81
T0608100530	STUMP PROPERTY	LUST Cleanup Site	Open - Remediation	9/12/2000	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone	MW-1	ACT	9/28/2001	19.59
T0608100537	EXXON 7-0259 (FORMER) ECR SB COMINGLED	LUST Cleanup Site	Open - Verification Monitoring	3/8/2010	Benzene, Other Chlorinated Hydrocarbons, Gasoline	Other Groundwater (uses other than drinking water), Soil Vapor	Inside 2000ft Protection Zone	MW16B	ACT	3/25/2002	12.06
T0608100541	THOMPSON AIR CRAFT TIRE CORP	LUST Cleanup Site	Completed - Case Closed	3/7/2003	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100543	HANSEN PROPERTY	LUST Cleanup Site	Completed - Case Closed	9/24/1992	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100545	TONY'S SERVICES	LUST Cleanup Site	Open - Remediation	12/18/2006	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone	MW-8	ACT	2/3/2003	45.56
T0608100548	TRADITIONAL WOOD WORKS	LUST Cleanup Site	Completed - Case Closed	6/27/2001	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100549	TRAFFIC INTERNATIONAL CORP.	LUST Cleanup Site	Completed - Case Closed	10/4/2002	Gasoline	Other Groundwater (uses other than					
T0608100550	TREASURE ISLAND TRAILER COURT	LUST Cleanup Site	Completed - Case Closed	9/15/1993	Gasoline	Soil	Inside 2000ft Protection Zone				
T0608100551	TRUX AIRLINE CARGO SERVICE	LUST Cleanup Site	Completed - Case Closed	12/28/1992	Gasoline	Other Groundwater (uses other than					
T0608100552	TORNBERG ENTERPRISES	LUST Cleanup Site	Completed - Case Closed	6/12/1992	Gasoline	Soil					
T0608100554	U-FREIGHT AMERICA INC	LUST Cleanup Site	Completed - Case Closed	6/26/2001	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100558	UNION CARBIDE CORP.	LUST Cleanup Site	Open - Remediation	12/21/2005	Acetone, Other Chlorinated Hydrocarbons, Vinyl chloride, Diesel, Gasoline	Other Groundwater (uses other than drinking water)		MW-4	ACT	5/1/2002	8.25
T0608100559	SFIA - UNITED AIRLINES SERVICE CENTER	LUST Cleanup Site	Completed - Case Closed	7/6/2009	Diesel	Other Groundwater (uses other than drinking water)					
T0608100566	UNOCAL STATION #3885	LUST Cleanup Site	Open - Site Assessment	6/26/1997	Gasoline	Other Groundwater (uses other than drinking water)		U-1	ACT	3/18/2002	4.78
T0608100567	UNOCAL #4527, FORMER	LUST Cleanup Site	Open - Site Assessment	12/30/1985	Gasoline	Other Groundwater (uses other than drinking water)		U-6	ACT	3/20/2002	78.81
T0608100570	UNOCAL STATION #0670	LUST Cleanup Site	Open - Site Assessment	11/1/1987	Gasoline	Other Groundwater (uses other than drinking water)		MW-4	ACT	4/7/2002	7.58
T0608100573	UNOCAL #3857	LUST Cleanup Site	Completed - Case Closed	4/4/2002	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone				

T0608100575	UNOCAL STATION #3798	LUST Cleanup Site	Open - Site Assessment	6/1/1989	Gasoline	Other Groundwater (uses other than drinking water)		MW-3	ACT	3/28/2002	10.58
T0608100577	UNOCAL #6980 (FORMER)	LUST Cleanup Site	Open - Site Assessment	3/2/1993	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone	MW-1	ACT	10/13/2003	41.5
T0608100579	UNOCAL STATION #1020	LUST Cleanup Site	Open - Site Assessment	9/1/1991	Gasoline	Other Groundwater (uses other than drinking water)		MW-1	ACT	9/14/2002	4.67
T0608100584	UNOCAL STATION #3676	LUST Cleanup Site	Open - Site Assessment	11/10/2000	Gasoline	Other Groundwater (uses other than		MW-2	ACT	5/1/2002	21.11
T0608100585	UNOCAL	LUST Cleanup Site	Completed - Case Closed	12/11/1995	Gasoline	Soil	Inside 2000ft Protection Zone				
T0608100586	TOSCO #4113 (FORMER UNOCAL)	LUST Cleanup Site	Completed - Case Closed	9/3/2008	Gasoline	Under Investigation	Inside 2000ft Protection Zone				
T0608100593	UNOCAL STATION #4524 (FORMER)	LUST Cleanup Site	Completed - Case Closed	7/7/2011	Gasoline	Other Groundwater (uses other than		MW-7	ACT	8/1/2006	6.71
T0608100597	USCG	LUST Cleanup Site	Completed - Case Closed	7/22/2009	Diesel	Under Investigation					
T0608100598	CITY OF SSF CORP YARD	LUST Cleanup Site	Open - Site Assessment	12/19/2011	Fuel Oxygenates, Gasoline	Other Groundwater (uses other than	Inside 2000ft Protection Zone	MW-1	ACT	11/4/2002	15.67
T0608100602	VALLEY SHEET METAL	LUST Cleanup Site	Completed - Case Closed	11/12/1991	Gasoline	Soil	Inside 2000ft Protection Zone				
T0608100613	WALL STREET PROPERTIES	LUST Cleanup Site	Completed - Case Closed	3/19/2001		Other Groundwater (uses other than drinking water)					
T0608100614	WAREHOUSE I	LUST Cleanup Site	Completed - Case Closed	8/26/1999	Gasoline	Other Groundwater (uses other than					
T0608100616	WESCO MANAGEMENT	LUST Cleanup Site	Completed - Case Closed	12/15/2000	Gasoline	Soil	Inside 2000ft Protection Zone				
T0608100619	WILL-STA, INC.	LUST Cleanup Site	Completed - Case Closed	1/17/1996	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100626	W. J. BRITTON COMPANY	LUST Cleanup Site	Completed - Case Closed	6/30/1998	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100628	YELLOW FREIGHT SYSTEM	LUST Cleanup Site	Completed - Case Closed	4/26/2002	Waste Oil / Motor / Hydraulic / Lubricating	Other Groundwater (uses other than drinking water)					
T0608100631	ZELLERBACH PAPER CO	LUST Cleanup Site	Completed - Case Closed	10/16/2001	Gasoline	Other Groundwater (uses other than	Inside 2000ft Protection Zone				
T0608100635	PACIFIC BELL	LUST Cleanup Site	Completed - Case Closed	9/18/2002	Gasoline	Soil	Inside 2000ft Protection Zone				
T0608100640	HILLSIDE SERVICE STATION	LUST Cleanup Site	Completed - Case Closed	2/20/1996	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100642	BURLINGAME FIRE DEPT.	LUST Cleanup Site	Completed - Case Closed	8/9/2002	Gasoline	Other Groundwater (uses other than					
T0608100645	PACIFIC BELL	LUST Cleanup Site	Completed - Case Closed	11/13/2000	Gasoline	Soil					
T0608100646	R.E.H. PROPERTIES	LUST Cleanup Site	Open - Remediation	1/12/2005	Gasoline	Other Groundwater (uses other than		MW-1	ACT	5/13/2003	
T0608100649	PLATH NURSERY, FORMER	LUST Cleanup Site	Completed - Case Closed	10/4/2000	Gasoline	Soil					
T0608100650	BAY BRIDGE HARDWARE SUPPLY	LUST Cleanup Site	Completed - Case Closed	6/6/1995	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100651	SEE's CANDIES	LUST Cleanup Site	Completed - Case Closed	1/18/2001	Gasoline	Other Groundwater (uses other than	Inside 2000ft Protection Zone				
T0608100652	ABBEY HOMESTEAD NURSERY	LUST Cleanup Site	Completed - Case Closed	12/13/1999	Gasoline	Soil					
T0608100653	CALIFORNIA GOLF CLUB	LUST Cleanup Site	Completed - Case Closed	10/4/2000	Gasoline	Soil	Inside 2000ft Protection Zone				
T0608100658	DUPONT	LUST Cleanup Site	Completed - Case Closed	10/6/2011	Arsenic, Stoddard Solvent / Mineral Spirits / Distillates	Other Groundwater (uses other than drinking water)		MW-1	ACT	6/5/2002	7.16
T0608100659	BLANKENHORN PROPERTY	LUST Cleanup Site	Completed - Case Closed	6/12/2000	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100660	BP #11206	LUST Cleanup Site	Open - Site Assessment	2/2/1993	Gasoline	Other Groundwater (uses other than		MW-1	ACT	5/15/2003	22.75
T0608100664	VW AUTO REPAIR	LUST Cleanup Site	Completed - Case Closed	7/21/2000	Waste Oil / Motor / Hydraulic / Lubricating	Soil	Inside 2000ft Protection Zone				
T0608100668	WESTLAKE PONTIAC	LUST Cleanup Site	Completed - Case Closed	9/27/1991	Gasoline	Soil	Inside 2000ft Protection Zone				
T0608100674	ALQUEST PROPERTY CORP	LUST Cleanup Site	Completed - Case Closed	10/12/1994	Gasoline	Soil					
T0608100675	CALIF. FEDERAL SAVINGS BANK	LUST Cleanup Site	Completed - Case Closed	11/12/1995	Gasoline	Other Groundwater (uses other than					
T0608100693	CATERAIR INTERNATIONAL	LUST Cleanup Site	Completed - Case Closed	1/15/1995	Gasoline	Soil					
T0608100695	EL CAMINO LINES	LUST Cleanup Site	Completed - Case Closed	12/30/1996	Gasoline	Other Groundwater (uses other than					
T0608100696	STAN THE ROOF MAN	LUST Cleanup Site	Completed - Case Closed	8/10/2000	Gasoline	Soil	Inside 2000ft Protection Zone				
T0608100697	DALY CITY SCAVENGER	LUST Cleanup Site	Completed - Case Closed	12/2/1994	Gasoline	Soil	Inside 2000ft Protection Zone				
T0608100701	GUY F. ATKINSON CO.	LUST Cleanup Site	Completed - Case Closed	5/27/1997	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone				
T0608100704	TOWN OF HILLSBOROUGH	LUST Cleanup Site	Completed - Case Closed	3/5/1999	Gasoline	Other Groundwater (uses other than					
T0608100705	LEROY GREENWOOD PROPERTY	LUST Cleanup Site	Completed - Case Closed	12/29/1993	Gasoline	Soil	Inside 2000ft Protection Zone				
T0608100712	BUBBLE MACHINE	LUST Cleanup Site	Completed - Case Closed	12/7/1998	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100713	SWINERTON & WALBERG	LUST Cleanup Site	Completed - Case Closed	4/3/1996	Gasoline	Other Groundwater (uses other than drinking water)					

T0608100720	VOLONTE AUTOMOTIVE	LUST Cleanup Site	Completed - Case Closed	9/27/2001	Gasoline	Other Groundwater (uses other than drinking water)				
T0608100721	SOUTH CITY SCAVENGER	LUST Cleanup Site	Completed - Case Closed	4/19/2011	Gasoline	Other Groundwater (uses other than drinking water)		MW-2	ACT	6/16/2003	4.95
T0608100723	SAMTRANS NORTH BASE	LUST Cleanup Site	Completed - Case Closed	7/26/2002	Gasoline	Other Groundwater (uses other than drinking water)				
T0608100725	HORN INVESTMENT & REALTY	LUST Cleanup Site	Completed - Case Closed	11/30/1995	Diesel	Other Groundwater (uses other than drinking water)				
T0608100727	CYCLE SHACK,INC	LUST Cleanup Site	Completed - Case Closed	11/13/2000	Gasoline	Other Groundwater (uses other than				
T0608100728	GARRATT CALLAHAN COMPANY	LUST Cleanup Site	Completed - Case Closed	1/26/1995	Gasoline	Soil				
T0608100736	WAREHOUSE II	LUST Cleanup Site	Completed - Case Closed	9/27/1996	Gasoline	Other Groundwater (uses other than				
T0608100738	INTERSTATE GRADING	LUST Cleanup Site	Completed - Case Closed	8/13/1999	Gasoline	Soil				
T0608100740	TOWN OF COLMA	LUST Cleanup Site	Completed - Case Closed	4/11/1994	Gasoline	Soil	Inside 2000ft Protection Zone			
T0608100742	MCKINLEY SCHOOL	LUST Cleanup Site	Completed - Case Closed	12/5/1994	Gasoline	Soil				
T0608100743	REPO DEPOT	LUST Cleanup Site	Completed - Case Closed	5/4/1994	Gasoline	Soil				
T0608100748	KLIX CORP.	LUST Cleanup Site	Completed - Case Closed	6/12/2003	Gasoline	Soil				
T0608100752	MERCY PENINSULA AMBULANCE	LUST Cleanup Site	Completed - Case Closed	12/26/2001	Gasoline	Soil	Inside 2000ft Protection Zone			
T0608100753	BOB LEECH'S AUTO RENTAL	LUST Cleanup Site	Completed - Case Closed	3/15/2001	Gasoline	Other Groundwater (uses other than drinking water)				
T0608100760	EFL TRANSPORTATION	LUST Cleanup Site	Completed - Case Closed	12/3/1996	Diesel	Other Groundwater (uses other than				
T0608100761	COLMA FIRE PROTECTION DIST.	LUST Cleanup Site	Completed - Case Closed	5/31/2002	Gasoline	Soil	Inside 2000ft Protection Zone			
T0608100765	SERBIAN CEMETERY	LUST Cleanup Site	Completed - Case Closed	2/17/2003	Gasoline	Soil				
T0608100766	SAN BRUNO FORD II	LUST Cleanup Site	Completed - Case Closed	8/21/1995	Gasoline	Other Groundwater (uses other than drinking water)				
T0608100768	BCBM	LUST Cleanup Site	Completed - Case Closed	3/18/1996	Gasoline	Other Groundwater (uses other than drinking water)				
T0608100772	SEWAGE PUMP STATION #4	LUST Cleanup Site	Completed - Case Closed	8/21/2003	Gasoline	Other Groundwater (uses other than drinking water)		MW-1	ACT	5/31/2002	9.28
T0608100774	MONFREDINI PROPERTY	LUST Cleanup Site	Open - Site Assessment	3/9/2005	Diesel	Other Groundwater (uses other than		MW-1	ACT	12/17/2002	9.88
T0608100777	BLUES ROOFING	LUST Cleanup Site	Completed - Case Closed	6/28/1994	Gasoline	Soil	Inside 2000ft Protection Zone			
T0608100779	S F ENGINE RE-MANUFACTURING	LUST Cleanup Site	Completed - Case Closed	2/28/2001		Other Groundwater (uses other than				
T0608100782	MATTISON & SHIDLER	LUST Cleanup Site	Completed - Case Closed	11/29/1995	Gasoline	Soil				
T0608100783	OLYMPIAN WESTLAKE	LUST Cleanup Site	Open - Assessment & Interim	10/16/2008	Gasoline	Other Groundwater (uses other than	Inside 2000ft Protection Zone	MW-1	ACT	5/5/2009	12.78
T0608100785	PACIFIC CAR RENTAL	LUST Cleanup Site	Completed - Case Closed	9/28/1994	Gasoline	Soil				
T0608100791	AIRPORT BOULEVARD SERVICE STATION	LUST Cleanup Site	Completed - Case Closed	8/12/1997	Gasoline	Other Groundwater (uses other than				
T0608100794	FOUR STAR AUTOMOTIVE II	LUST Cleanup Site	Completed - Case Closed	6/12/1995	Gasoline	Soil				
T0608100795	COIT CLEANERS	Cleanup Program Site	Open - Inactive	1/1/2011	Waste Oil / Motor / Hydraulic / Lubricating	Other Groundwater (uses other than drinking water)				
T0608100799	THRIFTY RENT-A-CAR	LUST Cleanup Site	Completed - Case Closed	6/19/2001	Gasoline	Other Groundwater (uses other than drinking water)				
T0608100801	PRIVATE RESIDENCE	LUST Cleanup Site	Completed - Case Closed	3/27/1995	Heating Oil / Fuel Oil	Other Groundwater (uses other than				
T0608100802	NERLI CONSTRUCTION	LUST Cleanup Site	Completed - Case Closed	11/9/2000	Gasoline	Soil				
T0608100806	EMERGENCY GENER DIESEL TANKS	LUST Cleanup Site	Completed - Case Closed	7/22/2009	Diesel	Other Groundwater (uses other than drinking water)				
T0608100807	GOOTNICK PROPERTY	LUST Cleanup Site	Completed - Case Closed	10/27/2011	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone	MW-1	ACT	3/20/2003	9.37
T0608100808	UNITED AIRLINES MAINTENANCE OPS CENTER	LUST Cleanup Site	Completed - Case Closed	7/22/2009	Waste Oil / Motor / Hydraulic / Lubricating	Other Groundwater (uses other than drinking water)				
T0608100813	KING YEE PROPERTY	LUST Cleanup Site	Open - Remediation	3/3/1994	Gasoline	Other Groundwater (uses other than drinking water)		EW-15	ACT	4/24/2002	14.55
T0608100821	LIBERTY MARKET	LUST Cleanup Site	Completed - Case Closed	6/11/2001	Gasoline	Other Groundwater (uses other than drinking water)				
T0608100822	MOBIL, FORMER	LUST Cleanup Site	Completed - Case Closed	9/22/1997	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone			
T0608100824	TRICOR	LUST Cleanup Site	Completed - Case Closed	9/22/1997	Gasoline	Other Groundwater (uses other than drinking water)				
T0608100828	DIADOTI CONSTRUCTION	LUST Cleanup Site	Completed - Case Closed	11/10/1998	Gasoline	Other Groundwater (uses other than drinking water)				
T0608100829	NICOLET PROPERTY	LUST Cleanup Site	Completed - Case Closed	9/20/2001	Gasoline	Other Groundwater (uses other than drinking water)				
T0608100831	THE SERVICE ZONE	LUST Cleanup Site	Completed - Case Closed	4/24/2006	Waste Oil / Motor / Hydraulic / Lubricating	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone			

T0608100835	FOLGER COFFEE CO	LUST Cleanup Site	Completed - Case Closed	10/12/1994	Diesel	Other Groundwater (uses other than drinking water)					
T0608100836	MIDAS MUFFLER	LUST Cleanup Site	Completed - Case Closed	5/13/1998		Other Groundwater (uses other than drinking water)					
T0608100837	PEKING HANDICRAFT	LUST Cleanup Site	Completed - Case Closed	8/18/1998	Gasoline	Other Groundwater (uses other than					
T0608100841	AGUNDIS TIRE SHOP	LUST Cleanup Site	Completed - Case Closed	11/28/2000	Waste Oil / Motor / Hydraulic / Lubricating	Soil					
T0608100842	JERAIR SHELL (FORMER)	LUST Cleanup Site	Open - Site Assessment	10/1/1995	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone	MW-1	ACT	3/31/2003	6.75
T0608100845	HOBART CORP	LUST Cleanup Site	Completed - Case Closed	12/6/1996		Other Groundwater (uses other than					
T0608100855	PENINSULA TRANSMISSION	LUST Cleanup Site	Completed - Case Closed	10/15/1997	Diesel	Aquifer used for drinking water supply	Inside 2000ft Protection Zone				
T0608100856	FEDERAL EXPRESS	LUST Cleanup Site	Completed - Case Closed	12/1/2004	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100863	BELL ELECTRICAL SUPPLY	LUST Cleanup Site	Completed - Case Closed	7/31/1995	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100864	CHEVRON 9-7875	LUST Cleanup Site	Completed - Case Closed	12/11/2002	Gasoline	Other Groundwater (uses other than drinking water)		MW-1	ACT	7/10/2002	1.18
T0608100865	SO. SAN FRANCISCO TIRE SERVICE	LUST Cleanup Site	Completed - Case Closed	8/21/2003	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100868	UNOCAL #6329	LUST Cleanup Site	Completed - Case Closed	2/22/1996	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100872	ROBINSONS CARPET	LUST Cleanup Site	Completed - Case Closed	8/1/2005	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone	MW-2	ACT	12/10/2004	9.92
T0608100873	AVIS RENT A CAR SYSTEM	LUST Cleanup Site	Completed - Case Closed	8/5/2003	Waste Oil / Motor / Hydraulic / Lubricating	Other Groundwater (uses other than drinking water)					
T0608100884	PELLEGRINI BROS WINES INC	LUST Cleanup Site	Open - Remediation	2/10/2004	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone	MW-1	ACT	9/13/2002	10.27
T0608100889	UNOCAL STATION #0109	LUST Cleanup Site	Open - Site Assessment	2/21/2000	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone	MW-1	ACT	3/5/2002	10.43
T0608100890	MELODY TOYOTA	LUST Cleanup Site	Open - Site Assessment	2/2/2005	Gasoline	Other Groundwater (uses other than	Inside 2000ft Protection Zone	MW-3	ACT	6/12/2003	11.7
T0608100893	SILVER TERRACE NURSERY II	LUST Cleanup Site	Completed - Case Closed	4/29/1996	Gasoline	Soil	Inside 2000ft Protection Zone				
T0608100904	DEVINCENZI METAL PRODUCTS	LUST Cleanup Site	Completed - Case Closed	5/23/2006	Gasoline	Other Groundwater (uses other than drinking water)		MW-1	ACT	3/20/2003	4.22
T0608100905	CALEGARI PROPERTY	LUST Cleanup Site	Completed - Case Closed	6/29/2000	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100908	S. F. DEPT. OF PUBLIC WORKS	LUST Cleanup Site	Completed - Case Closed	8/12/2009	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone				
T0608100911	OROWEAT	LUST Cleanup Site	Completed - Case Closed	1/25/2005	Diesel	Other Groundwater (uses other than	Inside 2000ft Protection Zone				
T0608100912	UNOCAL STATION #3816	LUST Cleanup Site	Open - Remediation	7/13/2010	Gasoline	Soil, Soil Vapor	Inside 2000ft Protection Zone				
T0608100916	PRIVATE RESIDENCE	LUST Cleanup Site	Completed - Case Closed	9/17/1996	Heating Oil / Fuel Oil	Soil					
T0608100917	BUDGET RENT A CAR	LUST Cleanup Site	Completed - Case Closed	9/13/2002							
T0608100936	MARTINELLI PROPERTY	LUST Cleanup Site	Completed - Case Closed	5/17/2000	Gasoline	Other Groundwater (uses other than					
T0608100938	PRIVATE RESIDENCE	LUST Cleanup Site	Completed - Case Closed	4/1/1997		Soil					
T0608100945	DONS AUTO WRECKERS	LUST Cleanup Site	Completed - Case Closed	1/22/1997	Gasoline	Under Investigation					
T0608100946	KING COLE HOMES	LUST Cleanup Site	Completed - Case Closed	4/1/1997	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100949	HAMDI PROPERTY	LUST Cleanup Site	Completed - Case Closed	1/7/2005	Gasoline	Other Groundwater (uses other than drinking water)					
T0608100953	KIRKBRIDE PROPERTY	LUST Cleanup Site	Completed - Case Closed	12/9/1997	Diesel	Other Groundwater (uses other than drinking water)					
T0608100954	AUTOPRIDE CAR WASH	LUST Cleanup Site	Completed - Case Closed	6/30/2011	Gasoline	Other Groundwater (uses other than drinking water)		MW-1	ACT	3/18/2002	4.9
T0608100963	CHEVRON 9-1035	LUST Cleanup Site	Completed - Case Closed	5/17/2011	Gasoline	Other Groundwater (uses other than	Inside 2000ft Protection Zone	MW-1	ACT	9/10/2002	8.86
T0608100965	PRICE DEALERSHIP	LUST Cleanup Site	Completed - Case Closed	6/11/2001	Gasoline	Soil	Inside 2000ft Protection Zone				
T0608100966	BEST WESTERN EL RANCHO INN	LUST Cleanup Site	Completed - Case Closed	2/29/2000	Gasoline	Other Groundwater (uses other than	Inside 2000ft Protection Zone				
T0608100969	PIMENTEL PROPERTY	LUST Cleanup Site	Open - Verification Monitoring	11/6/2009	Benzene, Toluene, Xylene, Fuel Oxygenates,	Soil	Inside 2000ft Protection Zone				
T0608100970	HOLY CROSS CEMETERY	LUST Cleanup Site	Completed - Case Closed	1/8/1998	Gasoline	Soil	Inside 2000ft Protection Zone				
T0608100990	VINCE'S SHELLFISH	LUST Cleanup Site	Completed - Case Closed	1/1/2002	Diesel	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone				
T0608100992	GOLDEN GATE DRYWALL	LUST Cleanup Site	Completed - Case Closed	10/4/2002	Gasoline	Other Groundwater (uses other than					
T0608100994	CAPUCHINO HIGH SCHOOL	LUST Cleanup Site	Completed - Case Closed	7/13/2000	Diesel	Soil					
T0608101008	FIRE STATION #1	LUST Cleanup Site	Completed - Case Closed	6/27/2001	Diesel	Other Groundwater (uses other than drinking water)					

T0608101013	GROSVENOR AIRPORT INN	LUST Cleanup Site	Completed - Case Closed	6/26/2001	Gasoline	Other Groundwater (uses other than drinking water)					
T0608101015	PRIVATE RESIDENCE	LUST Cleanup Site	Completed - Case Closed	9/1/2000	Diesel	Other Groundwater (uses other than					
T0608101018	F ST LIFT STATION	LUST Cleanup Site	Completed - Case Closed	1/6/2000	Diesel	Soil	Inside 2000ft Protection Zone				
T0608101023	CTC FOOD INTERNATIONAL	LUST Cleanup Site	Completed - Case Closed	8/10/2000	Gasoline	Other Groundwater (uses other than drinking water)					
T0608101028	MILLBRAE SCHOOL WAREHOUSE	LUST Cleanup Site	Completed - Case Closed	6/1/2001	Gasoline	Other Groundwater (uses other than drinking water)					
T0608101044	ARATA PROPERTY	LUST Cleanup Site	Completed - Case Closed	12/27/2001	Gasoline	Other Groundwater (uses other than drinking water)					
T0608101045	PACIFIC BELL	LUST Cleanup Site	Completed - Case Closed	1/9/1991		Other Groundwater (uses other than					
T0608101051	CRESTMOOR HIGH SCHOOL	LUST Cleanup Site	Completed - Case Closed	1/9/1998	Diesel	Soil					
T0608101056	A-1 TRANSFER CO	LUST Cleanup Site	Completed - Case Closed	5/1/1991		Soil	Inside 2000ft Protection Zone				
T0608101058	PRIVATE RESIDENCE	LUST Cleanup Site	Completed - Case Closed	10/10/1991		Soil					
T0608101063	MOOSEHEAD INC	LUST Cleanup Site	Completed - Case Closed	10/30/1998	Gasoline	Soil					
T0608101069	LEXUS OF SERRAMONTE	LUST Cleanup Site	Completed - Case Closed	10/12/1994	Gasoline	Soil	Inside 2000ft Protection Zone				
T0608101074	GOLDEN GATE NATIONAL CEMETERY	LUST Cleanup Site	Completed - Case Closed	4/12/2005	Gasoline	Soil	Inside 2000ft Protection Zone				
T0608101083	AMERICAN AIRLINES FACILITY	LUST Cleanup Site	Completed - Case Closed	7/22/2009	Diesel	Other Groundwater (uses other than drinking water)					
T0608101086	CHEVRON (CORPORATE HANGAR)	LUST Cleanup Site	Completed - Case Closed	7/22/2009	Gasoline	Other Groundwater (uses other than drinking water)					
T0608101088	SHELL OIL	LUST Cleanup Site	Completed - Case Closed	9/19/2001	Gasoline	Other Groundwater (uses other than drinking water)					
T0608101089	MILLBRAE CORP YARD	LUST Cleanup Site	Completed - Case Closed	4/28/1997	Gasoline	Other Groundwater (uses other than drinking water)					
T0608101090	CIRCLE K #5638 (TOSCO)	LUST Cleanup Site	Open - Site Assessment	9/9/1999	Gasoline	Other Groundwater (uses other than	Inside 2000ft Protection Zone	MW-1S	ACT	3/20/2002	15.21
T0608101091	MILLS HIGH SCHOOL	LUST Cleanup Site	Completed - Case Closed	1/12/1998	Diesel	Soil					
T0608101096	SFIA - NORTH TERMINAL AREA	LUST Cleanup Site	Completed - Case Closed	7/6/2009	Aviation	Other Groundwater (uses other than					
T0608101102	UNITED AIRLINES MOC	LUST Cleanup Site	Completed - Case Closed	7/22/2009	Diesel	Under Investigation					
T0608101103	SFIA - FAA - Runway 28 Right San Francisco International Airport	LUST Cleanup Site	Completed - Case Closed	7/6/2009	Aviation	Other Groundwater (uses other than drinking water), Soil					
T0608101111	SPRINT	LUST Cleanup Site	Completed - Case Closed	10/4/2000	Gasoline	Other Groundwater (uses other than drinking water)					
T0608101120	AL'S OLYMPIC	LUST Cleanup Site	Open - Verification Monitoring	4/7/2011	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone	MW-1	ACT	7/5/2005	47.19
T0608101122	MERCEDES BENZ	LUST Cleanup Site	Completed - Case Closed	6/27/2000		Other Groundwater (uses other than drinking water)					
T0608102301	CALTRANS MAINTENANCE STATION	LUST Cleanup Site	Open - Site Assessment	7/9/2008	Diesel	Other Groundwater (uses other than					
T0608105263	PRESSURE GROUT COMPANY	LUST Cleanup Site	Completed - Case Closed	6/4/1996	Waste Oil / Motor / Hydraulic / Lubricating	Soil					
T0608105470	ALAMO RENT A CAR, FORMER	LUST Cleanup Site	Completed - Case Closed	5/19/2000		Other Groundwater (uses other than					
T0608105654	STEEG PROPERTY	Cleanup Program Site	Completed - Case Closed	10/5/2001		Soil	Inside 2000ft Protection Zone				
T0608106256	OLYMPIAN SSF TERMINAL	LUST Cleanup Site	Open - Assessment & Interim Remedial Action	8/15/2006	Gasoline	Other Groundwater (uses other than drinking water)		MW-5	ACT	11/3/2006	7.59
T0608106763	CONTRERAS PAINTING	Cleanup Program Site	Completed - Case Closed	6/23/2011	Stoddard Solvent / Mineral Spirits / Distillates	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone	MW-3	ACT	3/29/2007	11.06
T0608108772	REAL ESTATE NORTH INVESTMENT PARTNERSHIP LP	LUST Cleanup Site	Completed - Case Closed	1/12/2012	Gasoline	Other Groundwater (uses other than		MW-1	ACT	10/9/2009	8.12
T0608110422	LOPEZ PROPERTY	Cleanup Program Site	Completed - Case Closed	1/17/2003	Lead	Soil					
T0608110689	D&M TOWING	LUST Cleanup Site	Completed - Case Closed	11/30/2001		Other Groundwater (uses other than drinking water)					
T0608111410	WINSTON TIRE #100	LUST Cleanup Site	Completed - Case Closed	5/26/2010	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone	MW-1	ACT	11/14/2008	16.09
T0608116637	STELLING PROPERTY	Cleanup Program Site	Open - Remediation	6/10/2005	* Solvents	Other Groundwater (uses other than drinking water)		MW-1	ACT	10/24/2005	13.5
T0608117321	AMPHLETT PRINTING	Cleanup Program Site	Completed - Case Closed	3/9/2005		Other Groundwater (uses other than drinking water)					
T0608117395	SHELL	LUST Cleanup Site	Completed - Case Closed	1/26/1995	Gasoline	Other Groundwater (uses other than					
T0608118237	BAUTISTA PROPERTY	LUST Cleanup Site	Completed - Case Closed	8/31/2000		Soil					
T0608119056	AGBAYANI CONSTRUCTION CORP	LUST Cleanup Site	Completed - Case Closed	2/25/2011	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone	MW-1	ACT	6/3/2005	18.97
T0608121993	ROB BAKER'S OLYMPIC	LUST Cleanup Site	Open - Site Assessment	2/9/2000	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone	MW-1	ACT	12/2/2003	17.53

T0608122176	THE CROSSING	LUST Cleanup Site	Completed - Case Closed	2/25/2004	Heating Oil / Fuel Oil	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone				
T0608125206	AVIS RENT A CAR SYSTEM	LUST Cleanup Site	Completed - Case Closed	7/8/2010	Gasoline	Other Groundwater (uses other than drinking water)		MW-1R	ACT	8/19/2003	6.04
T0608126439	OLYMPIAN PRODUCE MKT CARD LOCK	LUST Cleanup Site	Open - Remediation	10/16/2003	Gasoline	Other Groundwater (uses other than drinking water)		MW-1	ACT	7/19/2002	2.55
T0608128052	KB SOUTH SAN FRANCISCO	LUST Cleanup Site	Completed - Case Closed	3/11/2010	Diesel	Other Groundwater (uses other than drinking water)		MW-1	ACT	10/22/2008	9.5
T0608131587	ROLLINGWOOD AUTO SERVICE	LUST Cleanup Site	Open - Site Assessment	2/27/2002	Gasoline	Other Groundwater (uses other than		MW-1SP	ACT	12/16/2004	26.78
T0608138236	COLMA BART STATION APARTMENTS	Cleanup Program Site	Completed - Case Closed	4/8/2003	Lead	Soil	Inside 2000ft Protection Zone				
T0608138359	SOFOS PROPERTY	LUST Cleanup Site	Completed - Case Closed	6/23/2010	Waste Oil / Motor / Hydraulic / Lubricating	Other Groundwater (uses other than drinking water)					
T0608139599	AVIS RENT A CAR (TEMP FAC)	LUST Cleanup Site	Completed - Case Closed	9/25/2000	Gasoline	Other Groundwater (uses other than drinking water)					
T0608140024	CALIFORNIA GOLF CLUB OF SAN FRANCISCO	LUST Cleanup Site	Completed - Case Closed	8/17/2006	Gasoline	Other Groundwater (uses other than	Inside 2000ft Protection Zone				
T0608141952	WELCH PROPERTY	LUST Cleanup Site	Completed - Case Closed	2/11/2003	Diesel	Soil	Inside 2000ft Protection Zone				
T0608144136	CITY OF BURLINGAME	LUST Cleanup Site	Completed - Case Closed	7/30/2004	Gasoline	Other Groundwater (uses other than drinking water)					
T0608145778	SCHULZE MANUFACTURING	Cleanup Program Site	Completed - Case Closed	12/5/2003	* Solvents	Other Groundwater (uses other than drinking water)					
T0608147901	JIFFY CLEANERS	Cleanup Program Site	Open - Site Assessment	4/1/2001	* Solvents	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone	MW-2	ACT	3/25/2005	7.43
T0608148945	BINKS MANUFACTURING CO	Cleanup Program Site	Completed - Case Closed	12/16/1997		Other Groundwater (uses other than drinking water)					
T0608149730	OLYMPIAN GATEWAY	LUST Cleanup Site	Completed - Case Closed	2/26/2004	Diesel	Other Groundwater (uses other than drinking water)					
T0608150511	COSTCO	LUST Cleanup Site	Completed - Case Closed	8/8/2001	Gasoline	Other Groundwater (uses other than	Inside 2000ft Protection Zone				
T0608150735	SSF BART PROPERTY (FORMER COSTCO)	Cleanup Program Site	Completed - Case Closed	12/29/2003	Gasoline	Soil	Inside 2000ft Protection Zone				
T0608151141	GEMIGNANI NURSERY	Cleanup Program Site	Completed - Case Closed	6/25/1996		Soil					
T0608151779	TROYER AUTOMATIC DOORS, INC	LUST Cleanup Site	Open - Site Assessment	4/10/2008	Stoddard Solvent / Mineral Spirits / Distillates	Other Groundwater (uses other than drinking water)		MW-1S	ACT	6/29/2009	4.27
T0608151808	ACUTEC AUTOS	LUST Cleanup Site	Completed - Case Closed	5/13/2003	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone				
T0608152226	BRESSIE & CO.	LUST Cleanup Site	Open - Site Assessment	7/25/2007	Diesel	Other Groundwater (uses other than		MW-12	ACT	3/22/2011	6.39
T0608152524	DELANO NURSERY II	Cleanup Program Site	Completed - Case Closed	6/25/1996	Polychlorinated biphenyls (PCBs)	Soil					
T0608153743	SHELL SERVICE STATION	LUST Cleanup Site	Completed - Case Closed	8/29/2006	Gasoline	Other Groundwater (uses other than		MW-1	ACT	6/14/2005	4.58
T0608153758	STANDARD BRANDS	Cleanup Program Site	Completed - Case Closed	12/31/1996		Soil	Inside 2000ft Protection Zone				
T0608158624	SSF WATER TREATMENT	Cleanup Program Site	Completed - Case Closed	12/2/1999		Other Groundwater (uses other than	Inside 2000ft Protection Zone				
T0608161472	PIERCE TRUCKING	LUST Cleanup Site	Completed - Case Closed	1/14/2000	Gasoline	Soil					
T0608164207	Texaco Service Station 35-2469, Former	LUST Cleanup Site	Open - Site Assessment	5/1/2008	Gasoline	Other Groundwater (uses other than drinking water)		MW-1	ACT	2/5/2010	7.89
T0608164698	ARCO #0508	LUST Cleanup Site	Open - Site Assessment	5/29/2001	Benzene, Toluene, Xylene, Fuel Oxygenates, Gasoline	Other Groundwater (uses other than drinking water)		MW-1	ACT	6/28/2002	4.68
T0608165213	AUTO SERVICE PROPERTY	LUST Cleanup Site	Completed - Case Closed	10/5/1998		Other Groundwater (uses other than drinking water)					
T0608165551	BARBER-GREENE CO.	LUST Cleanup Site	Completed - Case Closed	9/27/2001	Gasoline	Other Groundwater (uses other than					
T0608171378	SILVER TERRACE NURSERY	Cleanup Program Site	Completed - Case Closed	6/6/1996		Soil	Inside 2000ft Protection Zone				
T0608174310	BAYHILL OFFICE CENTER	LUST Cleanup Site	Completed - Case Closed	6/12/1997	Waste Oil / Motor / Hydraulic / Lubricating	Soil	Inside 2000ft Protection Zone				
T0608174722	BRIDGESTONE/FIRESTONE	LUST Cleanup Site	Completed - Case Closed	2/14/2002	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone				
T0608175368	REST PARKING GARAGE	Cleanup Program Site	Completed - Case Closed	8/8/2011	* Solvents	Other Groundwater (uses other than drinking water)		8245-MW1	ACT	3/10/2005	7.6
T0608175400	SHELL SERVICE STATION	LUST Cleanup Site	Completed - Case Closed	11/10/2009	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone				
T0608175868	WRIGHT CLEANERS	Cleanup Program Site	Open - Site Assessment	3/4/2004	Tetrachloroethylene (PCE), *	Other Groundwater (uses other than		MW-1	ACT	3/6/2006	10.79
T0608178422	MCLELLAN NURSERY	LUST Cleanup Site	Completed - Case Closed	5/11/2000		Soil					
T0608179229	NATIONAL CAR RENTAL	LUST Cleanup Site	Completed - Case Closed	9/9/2002	Diesel	Other Groundwater (uses other than drinking water)					
T0608179893	THRIFTY RENT-A-CAR	LUST Cleanup Site	Completed - Case Closed	4/8/2009	Gasoline	Other Groundwater (uses other than					
T0608179897	CHEVRON 9-5584, FORMER	LUST Cleanup Site	Open - Remediation	2/1/2005	Gasoline	Aquifer used for drinking water supply	Inside 2000ft Protection Zone	MW-1	ACT	12/29/2003	33.71
T0608182194	SHELL STATION	LUST Cleanup Site	Open - Remediation	3/15/2010	Benzene, Fuel Oxygenates, Gasoline	Other Groundwater (uses other than	Inside 2000ft Protection Zone	MW-1	DRY	5/29/2003	

T0608182660	SAN MATEO HOUSING AUTHORITY	LUST Cleanup Site	Completed - Case Closed	4/5/2000		Soil	Inside 2000ft Protection Zone				
T0608184609	OLIVET MEMORIAL PARK	LUST Cleanup Site	Completed - Case Closed	5/27/2011	Gasoline	Aquifer used for drinking water supply, Soil		MW-3	ACT	1/5/2007	24.15
T0608185252	OTTOBONI PROPERTY	Cleanup Program Site	Completed - Case Closed	8/24/2004		Soil	Inside 2000ft Protection Zone				
T0608186803	BERENSTEIN ASSOC. PROPERTY	Cleanup Program Site	Open - Site Assessment	10/19/2005	Tetrachloroethylene (PCE)	Other Groundwater (uses other than drinking water), Soil		MW-5	ACT	4/6/2009	11.62
T0608189277	DOLLAR RENT-A-CAR	LUST Cleanup Site	Completed - Case Closed	12/20/2002	Gasoline	Other Groundwater (uses other than					
T0608189622	LES VOGEL	LUST Cleanup Site	Completed - Case Closed	4/28/2000	Waste Oil / Motor / Hydraulic / Lubricating	Soil					
T0608190888	ALFRED MOLAKDIS PROPERTIES	Cleanup Program Site	Completed - Case Closed	12/31/1993		Soil					
T0608191137	STELLING PROPERTY	LUST Cleanup Site	Open - Verification Monitoring	9/20/2011	Gasoline	Other Groundwater (uses other than drinking water)		MW-6	ACT	6/13/2002	13.13
T0608191183	WEST ORANGE LIBRARY	LUST Cleanup Site	Completed - Case Closed	8/9/2001	Diesel	Other Groundwater (uses other than	Inside 2000ft Protection Zone				
T0608191578	SUN CHEMICAL	Cleanup Program Site	Completed - Case Closed	1/1/1990	Waste Oil / Motor / Hydraulic / Lubricating	Soil					
T0608191581	TEEVAN EXTERIOR CONTRACTORS	Cleanup Program Site	Open - Inactive	6/4/2009		Other Groundwater (uses other than					
T0608191585	DELUXE PACKAGES	Cleanup Program Site	Open - Inactive	6/4/2009	Alcohols	Soil					
T0608191588	INTERNATIONAL PAINT COURTALD COATINGS	Cleanup Program Site	Open - Inactive	6/4/2009	* Solvents	Other Groundwater (uses other than drinking water)					
T0608191592	COYNE CYLINDER COMPANY	Cleanup Program Site	Open - Inactive	6/4/2009	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone	MW-2	ACT	7/25/2003	7.19
T0608191596	SFIA - SIGNATURE FLIGHT	Cleanup Program Site	Open - Inactive	5/13/2009	* Solvents	Other Groundwater (uses other than drinking water)					
T0608191597	UAL HYDRANT LEAK SHELL CHEVRON	Cleanup Program Site	Open - Inactive	5/13/2009	* Solvents	Other Groundwater (uses other than					
T0608191598	FUEL HYDRANT SYSTEM UNITED PARKING LOT	Cleanup Program Site	Open - Inactive	5/13/2009	Kerosene	Soil					
T0608191600	SFIA - GHILOTTI BROS SPILL	Cleanup Program Site	Completed - Case Closed	1/1/1999	Kerosene	Soil					
T0608191601	MILLBRAE AVE GATE	Cleanup Program Site	Open - Inactive	5/13/2009	Diesel	Soil					
T0608191820	SAN BRUNO FIRE	LUST Cleanup Site	Completed - Case Closed	9/28/2011	Gasoline	Other Groundwater (uses other than drinking water)		MW-1	ACT	9/27/2002	6.89
T0608191865	BAY CITIES BUILDING MATERIALS	LUST Cleanup Site	Completed - Case Closed	8/27/2001	Diesel	Other Groundwater (uses other than drinking water)					
T0608192381	ANZA PARK & FLY	LUST Cleanup Site	Completed - Case Closed	3/17/2000	Diesel	Other Groundwater (uses other than drinking water)					
T0608192685	SAN BRUNO CAR WASH	LUST Cleanup Site	Completed - Case Closed	7/1/2010	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone	MW-1	ACT	9/19/2005	7.18
T0608192695	BACON PROPERTY	LUST Cleanup Site	Completed - Case Closed	3/14/2007	Gasoline	Other Groundwater (uses other than drinking water)					
T0608192696	A-1 BODY SHOP	LUST Cleanup Site	Open - Site Assessment	8/14/2000	Gasoline	Other Groundwater (uses other than	Inside 2000ft Protection Zone	MW-1	ACT	9/13/2002	23.13
T0608192697	DALY CITY FIRE DEPT	LUST Cleanup Site	Completed - Case Closed	9/25/2000		Soil					
T0608192721	FRIMER REALTY/APTMNT COMPLEX	LUST Cleanup Site	Completed - Case Closed	8/11/2000	Diesel	Other Groundwater (uses other than drinking water)					
T0608192783	MILLS PENINSULA MEDICAL CENTER	LUST Cleanup Site	Completed - Case Closed	9/7/2000	Diesel	Other Groundwater (uses other than drinking water)					
T0608193859	TOSCO #3857	LUST Cleanup Site	Open - Site Assessment	8/1/2003	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone	MW-9	ACT	3/29/2007	7.25
T0608194008	BLANDINI TRUST	LUST Cleanup Site	Completed - Case Closed	9/28/2001	Gasoline	Other Groundwater (uses other than drinking water)					
T0608194016	L.BOCCI & SONS INC	LUST Cleanup Site	Open - Site Assessment	4/14/2004	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone	MW-1	ACT	2/14/2003	21.8
T0608194021	TIMPAC	LUST Cleanup Site	Open - Verification Monitoring	3/25/2006	Gasoline	Other Groundwater (uses other than		MW-3	ACT	6/20/2002	1.57
T0608194029	U-SAVE PLUMBING HARDWARE	LUST Cleanup Site	Completed - Case Closed	2/21/2003	Gasoline	Aquifer used for drinking water supply					
T0608194030	CHEVRON, FORMER/EAGLE GAS STA	LUST Cleanup Site	Completed - Case Closed	5/17/2006	Gasoline	Other Groundwater (uses other than		C-5	ACT	1/13/2002	11.24
T0608194884	PRIVATE RESIDENCE	LUST Cleanup Site	Completed - Case Closed	3/14/1994		Soil					
T0608195324	BRITANNIA DEVELOPMENTS	Cleanup Program Site	Open - Verification Monitoring	6/7/2004	Lead	Other Groundwater (uses other than drinking water)					
T0608196820	PATEL PROPERTY	LUST Cleanup Site	Completed - Case Closed	3/27/2002		Other Groundwater (uses other than drinking water)					
T0608198948	OLYMPIAN JUNIPERO SERRA	LUST Cleanup Site	Open - Site Assessment	7/27/2004	Gasoline	Other Groundwater (uses other than drinking water)	Inside 2000ft Protection Zone	MW-1	ACT	2/11/2004	12.83
T0608199177	PENSKE TRUCK LEASING II	LUST Cleanup Site	Completed - Case Closed	1/17/2003	Gasoline	Other Groundwater (uses other than drinking water)					
T0608199761	MARY RUANE PROPERTY	LUST Cleanup Site	Completed - Case Closed	6/21/2002	Gasoline	Other Groundwater (uses other than drinking water)					
T10000000282	BRESSIE & CO.	Cleanup Program Site	Completed - Case Closed	3/15/2011	* Solvents	Other Groundwater (uses other than		MW-12	ACT	7/6/2010	7.25

T10000000968	Chevron AST Facility (Former)	Cleanup Program Site	Completed - Case Closed	2/16/2010	Lead, Diesel	Soil				
T10000001104	ARE San Francisco No. 12	Cleanup Program Site	Open - Assessment & Interim	5/7/2009	Heating Oil / Fuel Oil	Other Groundwater (uses other than				
T10000001468	Mills Park Cleaners	Cleanup Program Site	Open - Site Assessment	8/4/2009	Tetrachloroethylene (PCE)					
T10000001754	SFIA - SAN FRANCISCO AIRPORT BOARDING AREA B (eastern portion, TWA site)	Cleanup Program Site	Completed - Case Closed	7/6/2011	Aviation	Indoor Air, Other Groundwater (uses other than drinking water), Soil				
T10000002006	B and B Transmission	LUST Cleanup Site	Open - Site Assessment	5/6/2010	Diesel, Gasoline	Other Groundwater (uses other than				
T10000002008	Colson Residence	LUST Cleanup Site	Open - Site Assessment	5/6/2010	Diesel, Heating Oil / Fuel Oil	Soil, Surface water				
T10000002366	Parcels Northwest of Orange Park	Cleanup Program Site	Open - Site Assessment	8/11/2010	Chlordane, Endrin, Other Insecticides / Pesticides / Fumigants / Herbicides	Soil	Inside 2000ft Protection Zone			
T10000002568	San Francisco Water Department	Cleanup Program Site	Open - Assessment & Interim Remedial Action	9/29/2010	Diesel	Soil, Under Investigation	Inside 2000ft Protection Zone			
T10000002674	Agbayani Construction	Cleanup Program Site	Open - Assessment & Interim Remedial Action	12/6/2010	Tetrachloroethylene (PCE), Trichloroethylene (TCE), Vinyl chloride	Aquifer used for drinking water supply, Indoor Air, Other Groundwater (uses other	Inside 2000ft Protection Zone	MW-1	ACT	8/31/2011	22
T10000002807	California Water Service Company, Reservoir #1	Cleanup Program Site	Open - Assessment & Interim Remedial Action	2/8/2011	Mercury (elemental)	Soil, Under Investigation				
T10000002827	SFIA - SAN FRANCISCO AIRPORT BOARDING AREA B (western portion)	Cleanup Program Site	Open - Remediation	6/21/1999	Aviation	Other Groundwater (uses other than drinking water), Soil				
T10000002842	Unocal #1020	LUST Cleanup Site	Open - Site Assessment	2/17/2011	Waste Oil / Motor / Hydraulic / Lubricating	Other Groundwater (uses other than		MW-1	ACT	1/17/2011	2.82
T10000002843	39-49 El Camino Real	Cleanup Program Site	Open - Site Assessment	2/4/2011	Tetrachloroethylene (PCE)	Under Investigation				
T10000002916	City of Millbrae Corporation Yard	Cleanup Program Site	Open - Assessment & Interim Remedial Action	3/17/2011	Diesel	Other Groundwater (uses other than drinking water), Soil				
T10000003031	Gas & Wash Partners	LUST Cleanup Site	Open - Site Assessment	5/20/2011	Benzene, Toluene, Xylene, Gasoline	Aquifer used for drinking water supply, Soil, Soil Vapor, Under Investigation	Inside 2000ft Protection Zone			
T10000003038	Real Estate North Investment Partnership LP	Cleanup Program Site	Open - Site Assessment	5/26/2011	Tetrachloroethylene (PCE), Trichloroethylene (TCE), Vinyl chloride	Other Groundwater (uses other than drinking water), Soil, Soil Vapor				
T10000003068	Bishop Property	LUST Cleanup Site	Open - Assessment & Interim Remedial Action	6/23/2011	Diesel, Gasoline	Other Groundwater (uses other than drinking water), Soil	Inside 2000ft Protection Zone			
T10000003112	Grand Avenue Gas	LUST Cleanup Site	Open - Assessment & Interim Remedial Action	7/5/2011	Gasoline	Soil, Under Investigation	Inside 2000ft Protection Zone			
T10000003211	Sterling Cleaners (Former)	LUST Cleanup Site	Open - Site Assessment	8/11/2011	Stoddard Solvent / Mineral Spirits / Distillates	Other Groundwater (uses other than				
T10000003461	One Hour Dry Cleaning	Cleanup Program Site	Open - Site Assessment	10/19/2011	Tetrachloroethylene (PCE), Trichloroethylene (TCE)		Inside 2000ft Protection Zone			
T10000003495	Golden Gate Petroleum	LUST Cleanup Site	Open - Assessment & Interim	1/19/2012	Diesel	Other Groundwater (uses other than				
T10000003522	SFIA - San Francisco Airport Taxiway F Spill Cleanup	Cleanup Program Site	Completed - Case Closed	8/9/2011	Aviation	Soil				