



London N. Breed, Mayor  
Philip A. Ginsburg, General Manager

**Date:** January 16, 2020  
**To:** Recreation and Park Commission  
**Through:** Philip A. Ginsburg, General Manager  
Toks Ajike, Planning and Capital Program Director  
**From:** Dan Mauer, Project Manager  
**Subject:** Golden Gate Park Middle Lake Rehabilitation Project

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### **Agenda Wording**

Discussion and possible action to approve the conceptual improvement plan to rehabilitate Middle Lake located in Golden Gate Park. Approval of this proposed action by the Commission is the Approval Action as defined by S.F. Administrative Code Chapter 31.

### **Strategic Plan**

#### **Strategy 1: Inspire Public Space:**

Objective: 1.2: Strengthen the quality of existing Parks & Facilities  
Objective: 1.4: Preserve and celebrate historic and cultural resources

#### **Strategy 4: Inspire Stewardship:**

Objective 4.1: Conserve and strengthen natural resources  
Objective 4.2: Increase biodiversity and interconnectivity on City parkland

### **Background information**

The manmade lakes in Golden Gate Park are among the most scenic highlights of the park, and were created to appear naturalistic so as to fit into the overall landscape. There are ten lakes and three ponds sprinkled throughout the park. Middle Lake is approximately 1.3 acres in size and is located at the west end of the park along Chain of Lakes Drive. Middle Lake was originally constructed in 1898 along with South and North Lakes, which created a linked chain with water



flowing from south to north. All of the lakes in the park are considered contributing features in the park's designation on the National Register of Historic Places.

Most of the lakes in the park were constructed utilizing a natural clay liner installed over the dune sands naturally occurring in the park. These liners are critical to maintaining the integrity of the lakes, but unfortunately over the decades some of these systems have become compromised creating leaking conditions. In 1994, as part of the Golden Gate Parks Master Plan development, an outside consult team prepared a comprehensive Lake Assessment Report that analyzed the lakes existing conditions and made recommendations of possible improvements to restore the health and longevity of these important park features. That assessment determined that Middle Lake was not constructed with the standard clay liner, and as a result was losing approximately 2.4 inches of water per day, or 85,046 gallons per day in 1994. The Department has anecdotal information that indicates a different water barrier solution may have been installed several decades ago, but confirmation of this work has not been established.

In addition to its leaking condition, Middle Lake has had a tremendous amount of sediment build up, which reduces the overall lake depth. A shallower lake leads to poor water quality and the ability for invasive aquatic plants to propagate and invade. Middle Lake had an original average water depth of 4.2 feet with a maximum depth of 6.1 feet. Over the years, sediment has been measured in the range of 11 inches to 22 inches, with an average water depth of 3.5 feet. The leaking lake bed, high level of sediment material, and invasive water vegetation have all compromised this park feature to the point that it no longer resembles a formal lake.

### **Golden Gate Park Master Plan**

The Golden Gate Park Master Plan (GGPMP) outlines the condition of the lakes and proposes recommendations to bring these features back to their original glory. The Master Plan calls for the following restoration improvements: *(Note: there are restoration recommendations in the Master Plan not shown below which are not relevant to this particular lake and site conditions)*

1. Install a natural clay lake bottom as the preferred lining method.
2. Some water loss should be tolerated to retain naturalistic edges.
3. Lake edge treatments in naturalistic lakes will permit the growth of vegetation and improve wildlife habitat.
4. Lake levels will be controlled automatically to minimize variations in levels.
5. Sediment will be removed from lakes with excessive accumulations.
6. Erosion and runoff should be controlled to minimize future deposits.
7. A lake management program will be established to develop regular lake maintenance procedures. Lake redesign will facilitate efficient maintenance of lakes.
8. Wildlife habitat values should be improved at all lakes, within the context of existing lake function and character.
9. Where feasible, edge designs will permit disabled access to lakes at key points.

Our proposed improvement plan respects and addresses all items above.

## **Proposed Improvements**

The improvements for this project are outlined below with a brief description of the work task. Please refer to the attached concept plan and section and the attached photos.

**Draining the Lake.** It is the goal of the project to drain the Lake prior to formal construction activities. This will be accomplished by stopping the flow of water from South Lake into Middle Lake using a temporary dam at the outflow pipe leading from South Lake. Water removal will occur over time by leaching through the lake bottom. Water reduction will be monitored during this period to observe the current infiltration rate. During construction, a temporary flexible water hose will be connected between South Lake and North Lake, bypassing Middle Lake in order to keep water flowing between this chain lake system.

**Excavating sediment and removing invasive vegetation to increase water depth, and re-contouring portions of the Lake bottom to create more open-water habitat for aquatic wildlife and for resident/migratory birds.** Following draining the lake and a dry-out period, vegetation and sediment will be removed through a combination of hand and mechanical means (i.e. excavators, bulldozers). Excavation and tree/vegetation removal work will be overseen by qualified biological monitors. Excavated spoils (approximately 11,850 cubic yards) will be off-hauled to appropriate and approved disposal location(s). As sediment is removed, the lake depth will be deepened and re-contoured to a 7foot maximum depth in the open areas and to minimum depth of 6 feet in the channels and around the islands. Also, the project will recontour all lake edges and will work to create targeted, low-lying open-water habitat for aquatic wildlife and resident/migratory birds. *(GGPMP items #2, #3, #5)*

**Replacing the clay liner lake bottom.** Following excavation and recontouring of the lake bottom, a natural clay material liner will be installed throughout the lake bottom and edges. This new liner will replace the failing lake bottom. The new clay liner will include the mechanical spreading of approximately 18” of this material. *(GGPMP item #1)*

**Improving water circulation and aeration.** This will be accomplished by: 1) clearing the water circulation pipes connecting Middle Lake to South and North Lakes of sediment and vegetation; and 2) rehabilitating the rock cascade from the Fly Casting Pools to the southeast portion of Middle Lake by reconstructing the cosmetic rock channel and installing a recirculating pump system that will draw water from the lake to the top of the cascade channel. This channel will be accompanied by a pedestrian pathway leading from Middle Lake up to the Fly-Casting Pools. The rock channel work will be developed as a bid alternative item in the bid package and will be implemented if funding allows. Finally, an aeration device will be installed to increase water oxygenation levels in the lake, which will improve water quality. This aeration system is comprised of a simple air pump that pushes air to diffusers located on the Lake’s bottom. *(GGPMP item #4)*

**Removal of invasive vegetation from upland habitat areas and restoring these habitat areas with a wildlife-appropriate mix of native and drought tolerant species.** Invasive vegetation will be removed through a combination of hand, mechanical, and chemical means. All chemical herbicide practices will be preapproved by the Department’s Integrated Pest Management team.

Following invasive vegetation removal, erosion control measures will be installed as required by the City's temporary erosion and sediment control specifications. These areas will then be revegetated through a combination of seeding and planting with a wildlife-appropriate mix of native and drought tolerant species. All landscaped areas will also include the installation of a new automated irrigation system. (*GGPMP items #6, #8*)

**Pedestrian pathway improvements to increase visibility and accessibility and to channel park users on to designated paths with the goal of limiting impacts to sensitive restored upland areas.** The current pedestrian pathway surrounding the lake is made up of various natural materials including native "red rock", compacted aggregate base material, and native park sand. In many areas, there are signs of erosion and deterioration, and the pathway does not comply with accessibility requirements. The pathway will be replaced in a similar configuration, but with natural materials of stone and aggregate, held together with a binder. This new pathway will be ADA accessible, and will provide safe access by the public with a natural and durable product. A new pathway made of the same material will also be added, which will allow the public to gain access to the edge of the lake without impacting the plant community. Providing formal, dedicated points of access to the water's edge will help to mitigate unwanted access through newly planted landscape zones. (*GGPMP items #6, #9*)

**Installation of an accessible boat launch and an improved bridge crossing over an existing culvert (rock cascade).** A boat launch ramp will be installed, which will be used by our park maintenance staff for entrance into and egress from the lake for routine maintenance needs. A turf block material will provide a stable, firm surface for boat and vehicle access which will terminate at the edge of the lake. The ramp will not enter the lake or be submerged below the water level. Access to the lake for maintenance is currently anticipated to happen approximately twice a year. Given the limited use, the turf block product will allow turf and other low growing plant material to grow over the ramp so that its appearance is minimize. A small wooden foot bridge that spans the existing rock cascade will also be installed and will integrate into the existing pathway surrounding the lake. The bridge will be constructed with simple concrete foots at either end along with a wooden deck and railings. (*GGPMP item #7*)

**Specific volumes and dimensions of the various improvements are outlined below. These are conceptual (approximate) figures at this phase of the project.**

- Overall project area: 266,470 SF
- Existing surface area of lake (water): 56,890 SF
- Proposed surface area of lake (water): 83,230 SF
- Area of invasive vegetation removal (water): 51,240 SF
- Area of invasive vegetation removal (upland): 92,530 SF
- Proposed tree removals: 77 of 183 (surveyed)
- Proposed pedestrian pathway: 23,770 SF
- Foot bridge area: 80-100 SF
- Cascade channel area: 2,010 SF
- Slope stabilization at water inlet area (from South Lake): 1,000 SF

## Community Process

Staff conducted one community meeting where we presented the concept plan to approximately 15 community members, many of whom are active park advocates, and some who represent formal organizations such as the California Native Plant Society. The plan was met with great success and support. Staff also conducted an informal site tour with representatives from the Golden Gate Audubon organization. They were also supportive of the project.

## Funding and Budget

This project will be funded by a combination of 2012 Clean and Safe Neighborhood Parks Bond dollars, Open Space Funds and General Fund sources. The bond funds will be allocated from the City-Wide Parks Program which allots funding to Golden Gate Park for restoration of natural features, including lakes, meadows and landscapes.

Total Project Budget:	\$ 8,000,000	
Secured Funds:	\$ 5,000,000	2012 Park Bond – City Wide Program
	\$ 900,000	Open Space Fund
	\$ 2,100,000	General Fund
Soft Costs:	\$ 1,725,000	(PM, A/E, CM, permits, testing & reg. review fees)
Hard Costs:	\$ 7,015,000	(construction cost incl. construction contingency)

## Project Schedule

Planning Phase:	January 2019 through December 2019
Design Phase:	December 2019 through June 2020 (6 months)
Bid Phase:	July 2020 thru October 2020 (4 months)
Construction Phase:	November 2020 through November 2021 (12 months)

## Regulatory Reviews

**Environmental Review:** On July 17, 2019, the City's Planning Department issued a CEQA Categorical Exemption determination under Classes 1 and 4. Planning also conducted an advanced historical review and determined that the project was consistent with the Secretary of the Interior Standards for the Treatment of Historic Properties and that it was in compliance with the Golden Gate Park Master Plan.

**Local Coastal Plan (LCP):** Because the project lies within the Coastal Zone Boundary, the Planning Department reviewed the project against the requirements established in the Local Coastal Permit Program. It was determined that the project is in conformance with the plan. Approval of the LCP will be issued when the project secures the building permit from the Department of Building Inspection.

**California Department of Fish and Wildlife:** Because the project includes lakebed restoration, the Department has submitted a Lake and Streambed Alteration Program Notification to the California Department of Fish and Wildlife for review and approval. The project will adhere to all terms and conditions of the issued notification.

**United States Fish and Wildlife Service:** Though a recent biological assessment concluded that California red-legged frogs are likely not present in Middle Lake, out of an abundance of caution the Department has submitted an application for a Recovery-based Biological Opinion and Incidental Take Permit to the U.S. Fish and Wildlife Service for review and approval. The project will adhere to all conservation measures and terms and conditions of the issued permit.

### **Recommendation**

Staff recommends that the Commission approve the conceptual plan for the rehabilitation of Middle Lake in Golden Gate Park. Approval of this proposed action by the Commission is the Approval Action as defined by S.F. Administrative Code Chapter 31.

### **Supported By**

General Community Support

### **Opposed By**

None known

### **Attachments**

Conceptual Design Package