council agenda report

CITY OF SAN LUIS OBISPO

Meeting Date
November 17, 2009

Item Number

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SUBJECT: **LAGUNA LAKE DREDGING ENVIRONMENTAL DOCUMENT**

RECOMMENDATIONS

1. Adopt a resolution approving a Mitigated Negative Declaration (ER 31-06) for the Laguna Lake Dredging project, Specification No. 99110.

2. Provide direction to staff on next steps.

REPORT-IN-BRIEF

Over several years, staff has provided a discussion of dredging and related issues for several Council study sessions, Parks and Recreation Commission meetings, as well as collected input from the community, generated technical reports through consultants, and developed alternatives to complete the dredging of Laguna Lake. (Attachment 1) Staff has provided a summary of many of the items discussed over this period (Attachments 2, 3, 4, and 5), including general information about dredging and dredging alternatives, other related issues, and public input.

At the September 6, 2005 study session, the Council authorized staff to proceed with development of the environmental study for the project. The Council endorsed a general project description presented by staff for purposes of completing the study shown in Attachment 6. Staff was clear at the time that the project may change in the future, and the environmental study might need to be updated; however, the project description would include the most likely project elements to maximize the benefit of completing the document. Most recently the document was updated to meet the requirements of the California Global Warming Solution Act, targeting green house gas emissions.

Project Description Summary

As outlined in greater detail in Attachment 6, the proposed project is to continuously dredge the lake for twenty-two weeks annually for the next ten years. This should result in the removal of 150,400 cubic yards of silt and other material at the end of this ten-year period, which will lower the average depth of the central lake by about 1.5 feet, for a resulting average depth of about 9 feet. Dredged materials would be disposed of via a combination of the construction of berms in the active park, wetland creation (filling in low areas of the lake near the peninsula,) and offsite disposal. At the end of the ten-year cycle, it is likely that the City would need to begin maintenance dredging to keep the lake at the new depth. In summary, with this approach, maintaining the lake is likely to be an ongoing operation indefinitely.

Based on this ten-year approach, the "mid-range" average annual cost estimate is $460,000, summarized as follows in 2009 dollars:

Mid-Range Annual Cost Estimate	
Annual lease-purchase payment for equipment *	40,000
Staffing	135,000
Silt disposal	240,000
Other costs	45,000
Total	$460,000

** Based on purchase cost of $300,000, 5% interest rate and ten-year term*

As discussed in Attachment 5, the cost could be different, depending on how much of the lake is dredged, how quickly, and how the material is disposed of.

Feasibility Assessment

The Initial Study provides the information that the project, as described, is feasible as long as reasonable care is taken to protect the environment. It does not address the feasibility from a funding perspective. The Initial Study resulted in a Mitigated Negative Declaration of environmental impact. Mitigation measures are incorporated in the Resolution to approve the environmental document incorporated in this report as Attachment 7. This report, the attachments, and the Initial Study provide historical context and technical information. It must be noted that the project is subject to regulation and approval by the Army Corps of Engineers and the Department of Fish and Game. It is anticipated that further detailing of the manner of dredging, configuration of the temporary basins, and ultimate disposal of dredge spoils will be done to provide further reduction of environmental impacts of the project as part of the permitting process.

The heart-of-the-matter is really about our vision for this body of water as a park amenity over the long term, and whether or not the vision is achievable and sustainable. It is not just the initial dredging that is required, but ongoing dredging to maintain the lake depth. In order to answer this core question it may be necessary to engage a broad cross-section of the public (and not only lake area residents) to study the issue, the options and the level of community support for the various options. An alternative is provided in the staff report that would make a citizen engagement process the next step.

Prior to considering the options, it is important to outline the early history of the park, including how the lake came about. Staff has also included information to refresh Council members on dredging methods and related issues, including dredging alternatives and rough estimated costs, in the attachments. The Initial Study and companion documents also provide significant amounts of technical information. This report is organized to provide this information as follows:

Staff Report: Historical context, status and "next step" alternatives

Attachments: Project description and negative declaration resolution, summaries regarding dredging and related issues; 2004 Parks and Recreation Commission and public input; dredging and disposal alternatives detailed.

Council Reading File: Historical park plans and environmental technical studies

DISCUSSION

Background and Historical Context

History bears out that this has been one of the City's more challenging projects to bring to completion, and so staff has been looking deeper into the history of the park and lake to better understand its beginnings, the original intent, and the City's obligations. The history of the lake not only gives the Council a frame of reference for how the City got into this position, but helps understand the community interests and how they have changed over time.

1. The first Laguna Lake Committee and Laguna Lake Master Plan - 1955-1964

Council records indicate that in 1956 the Laguna Lake Committee reported to the Council its recommendation to proceed with lake development and property acquisition. At that time, the City owned a portion of the property, but not all. Adjacent property owners were not interested in developing a lake for a recreational area then. The Council supported the Committee's recommendation for the park, including pursuing condemnation of properties if necessary.

The original vision of the lake appears to have come about through the Laguna Lake Committee and the development of the first Master Plan for the park. More commonly known as the Hector Plan, named after its author, the Master Plan outlined a very developed park estimated to have 10,000 visitors a day, 500 of which were sightseers only. The park was envisioned to include conversion of the marsh to a lake and included the following vision:

> A lake "…filled frequently to capacity with … boats," with sheltered coves, fishing, boat launching and docking, a 1000 foot long swimming beach sheltered by vegetation and fencing and accommodating 1000 people at a time, a golf course, a peninsula for fisherman, picnickers, and "strolling visitors," a club house with a social room, restaurant, snack bar and park office, a tot lot, a dancing and skating facility, ping pong tables, junior museum, senior citizens building and facilities, playfields for football, softball, volley ball, and lawn bowling, along with horseshoe pits, handball and shuffleboard areas, a nine hole golf course and driving range, a fire circle, outdoor amphitheater, camp-out areas, archery range, hiking, and picnic facilities for 300 families and a group picnic area for 600.

In 1964, the Council adopted the Hector Plan for a balanced recreational use of the property. When looking out across the park today, it is possible to see how that vision started to take shape:

1. The lake was partially dredged out to assist adjacent property development
2. Additional properties were acquired
3. Roads and restrooms were installed

4. A play ground and some picnic tables were installed
5. A boat launching area was built
6. Trees were planted to begin the landscaping that would provide shelter from the wind
7. The outflow from the lake was controlled to store more water

2. The Laguna Lake Management Plan – 1979-1982

In 1982, a separate Laguna Lake Management Plan was completed for the lake only, separate from the prior park master plans which address the park as a whole. In that plan, community desires for the lake were condensed into four essential goals, wildlife preservation, recreation enhancement, shoreline home protection and agricultural preservation. The plan identified a variety of potential uses of the lake including:

1. Shore Fishing
2. Boating
3. Swimming
4. Open-Water Wildlife Habitat
5. Bird Watching
6. Riparian Wildlife Habitat
7. Sediment Retention

The management program adopted by the City Council at that time included only two measures to be undertaken by the City, maintenance of the Prefumo Creek sediment basin and control of aquatic weeds by mechanical harvester. Some of the programs for lake management discussed in the study included dredging; however, the Council did not adopt any of those programs at the time. The management plan identified the following objectives, which dredging could assist in achieving:

1. Increase the depth so that in dry weather water would remain in the lake
2. Reduce aquatic weeds
3. Prevent sediment from reaching the lake
4. Preserve the characteristics of the lake that are important to wildlife, flood protection and recreational opportunities

The City has pursued the adopted management program. For many years after Prefumo Creek was diverted to flow through the lake, silt transported down from the Irish Hills accumulated in the Prefumo Arm, gradually filling that area and effectively reducing the surface area of the original lake. Regular projects to remove silt from the area near Los Osos Valley Road have prevented more sediment from reaching the lake. While the delta that has formed at the mouth of the creek, where it reaches the lake, is not popular with some local residents, it probably serves to slow water in the Prefumo Arm and allow it additional time to release sediment. Fine silts, suspended in the water, still reach the lake, which is the source of much of the turbidity (cloudiness) when the prevailing winds blow. Aquatic weeds were harvested for several years. They are now not the problem they were at the time the management plan was developed. Actual harvesting of weeds has not been done in many years. Reeds along the lake edge continue to grow and will until such time as the City invests in a removal operation. The reeds grow in

shallow water close to the shore, an area not suitable for dredging because of potential for shore destabilization and erosion.

Dredging, although not identified in the originally adopted program, will certainly deepen the lake and reduce the likelihood of it going dry. This original plan envisioned a long-term project whereby material would be dredged from the lake each year, dried and disposed of on site. That plan acknowledged that: "Due to cost, it is not considered feasible to transport the material away from the disposal site." Discussions continue today on how to accomplish this.

The proximity of the lake to the surrounding open space in and near Cerro San Luis contributes to the ongoing presence of wildlife at the lake. Whether we have a lake or a marsh, wildlife will continue to be a part of the park (and lake) environment.

3. The Laguna Lake Master Plan

In 1993, when the next Laguna Lake Park Master Plan was completed, an on-site and telephone survey ranked expanded use for natural wildlife as the number one priority. Clearly the vision had changed from a very developed and heavily used active park represented in the original Hector Plan, to one that was passive in nature. Even the name of the park was recommended to be changed to Laguna Lake Nature Park. That plan also established the Nature Preserve area of the park.

The lake itself has remained at the heart of discussion over the years most likely because whether the park is a highly developed park with thousands of people, or a park supporting wildlife, the lake is a part of the vision. At least for some members of the public, there is a fear that the lake will gradually fill in because of sediment deposited by Prefumo Creek, and there is still a desire that the lake be available for recreation. The drying-out of the lake during droughts also draws concerns from those advocates of the lake as a recreational resource. For those whose vision is solely for a nature preserve / passive setting, the loss of the lake seems to matter less.

4. Previous Council Direction

After the completion of the Laguna Lake Management Plan and at the urging of members of the community, the Council authorized an environmental study with the assistance of outside expertise. Cutbacks in funding resulted in that effort going uncompleted for several years. Council action in 1999 confirmed their intent to maintain the lake as a recreational facility and resurrected the effort to explore the possibility of a dredging project. The Council allocated approximately $200,000 in funding over a two year period and staff obtained the services of a firm to complete various technical studies and produce the environmental document.

During the preparation of the most recent technical studies, Council direction was to look at a short term dredging project to see how that might be accomplished. After reviewing technical studies and costs, the Council directed staff to return to the slower, long term dredging concept for purposes of the environmental document. This concept is described in more detail in the project description, but in summary it details a seasonal removal of material with an electric dredge, stretching over 10 years, costing approximately $2 million over that period to operate the dredging and drying program, with additional costs for disposal. The dredging would have to

eventually become a maintenance dredging program if the money invested was to be meaningful. Just like streets, the condition will deteriorate if maintenance is not ongoing and the money spent initially to complete the dredging would have been wasted.

The other major, and very significant change in terms of cost since dredging was originally proposed in the Laguna Lake Management Plan, was the designation of the nature preserve area in the Laguna Lake Park Master Plan, which severely limited the area (25 acres) originally identified in the for large scale disposal of dredged material. The Council did ultimately authorize the use of 5 acres for drying operations, but this would be suitable only for the longer term/low volume dredging operation, with the area used for drying beds.

Environmental Document

The environmental document is a Mitigated Negative Declaration of an Initial Study. It was made available for public comment as required and is now ready for Council approval. Staff recommends approval of the document, even though there is no dedicated funding for any project because the document is the culmination of several years of work on technical documents, Council Study Sessions, and revisions. Although the City did not have funding allocated for dredging at the time the direction to move forward with the document was made, staff recommended the development of a project description and completion of the document for two reasons:

1. The completed environmental document would provide information on whether it was possible to reasonably mitigate the work.

2. Possession of a completed document could assist the City in obtaining grant funding if a suitable grant source was located.

Several mitigation measures have been identified, which are specified in the Council Resolution for approval, Attachment 7. In general, the mitigation measures cover a series of requirements to be used in guiding the work to ensure the impact of the project is minimized to the largest degree possible:

1. The measures are standard practices seen in grading projects and projects near water bodies.

2. The project will include monitoring for biological and archeological resources and for noise levels.

3. In addition to the monitoring for biological resources, pre-construction surveys will be carried out, as well as training and work area delineation.

4. Dust control will include normal measures for wetting and reseeding along with a mandatory slow speed limit for hauling vehicles.

5. Other air quality measures include using modern, lower emission equipment and an electric dredge. The document specifies carbon neutrality through offsets.

6. Dredging will not encroach too close to the shore line to prevent destabilization. (This means that reeds will remain along the shore unless a separate reed removal operation is undertaken.)

Next Steps

With the completion of the environmental document, staff would normally be ready to proceed with preparation of construction documents for public bidding. Given the lack of budget for the construction and an alternative to complete the work as a staff maintenance operation, direction is needed from the Council as to how they wish to proceed. Staff has outlined some options for the Council's consideration below.

1. Pursue Citizen Outreach and Engagement

The completion of the environmental document has shown that there are no fatal technical flaws for the project, as described. However, while feasible, it is anticipated to be about $5,000,000 to complete the dredging as described and dispose of the material. Funding, therefore, is the major stumbling block for moving forward. One option to address this is to have staff create a citizen engagement program to help determine if there is enough community support for dredging and how much time and money the community is willing to spend on dredging versus other important priorities. Grants are available for citizen engagement, a process intended to address problems faced by agencies for which there are no preconceived outcomes, where an agency truly does not have firm direction on what to do. The remaining project funding of might also be used to achieve this. The information from such an effort would give the Council a better understanding of how high a priority this is for the community at large (not just for the neighborhood), and whether the City should move forward or not.

Over the years, the City has involved the community to varying degrees. There was a committee in 1955 that discussed what should be done with the lake and it supported dredging. The Laguna Lake Study Committee was set up in 1979 to assist the consultants with the development of the Laguna Lake Management Program. The outcome of that was the Lake Management Plan which, with Council approval, recommended a program of sediment removal in Prefumo Arm and weed harvesting. Dredging was identified as the last option due to the cost. In 2004 the Parks and Recreation Commission discussed the dredging on three occasions and received public comment. That input is summarized in Attachment 4.

At the Council's request, the survey in the spring of 2005 to gage support for a revenue measure included a question that dealt with Laguna Lake Dredging. The survey indicated about 44% of the citizens may be supportive of spending some new revenue on a dredging project. However, in comparison to all the possible service issues presented to survey respondents, such as public safety, senior services, traffic congestion, street paving and flood protection, Laguna Lake dredging rated at or near the bottom of interest.

The downside of proceeding with an engagement program is that it may appear the City is going to study dredging again and that the City has been doing that for 50 years.

2. Discontinue or postpone project work

The City's current financial situation may speak to simply postponing consideration of a dredging project at this time, or the Council may decide the City will never be able to afford (without significant grant assistance) a large-scale dredging project. The consultant's reports have been accepted and the environmental document can be approved. Specifications for the dredging project could be put off until such time as a funding mechanism for dredging is developed. The other downside to continued pursuit of the dredging is that it takes staff time away from priority infrastructure maintenance projects that are funded, on top of staff reductions.

If the lake is allowed to gradually fill in, a channel of some type would remain, conveying Prefumo Creek through the area to the outlet. The lake would increasingly take on marsh qualities and remain a wildlife refuge. While this would be a difficult decision, it has the advantage of discontinuing the frustration for dredging proponents of City studies and discussions about dredging with no actual dredging completed. Instead, it would let the community know that other services have been determined to be more important.

3. Investigate an Assessment District

A survey of the neighborhood regarding assessment district support has not been undertaken to staff's knowledge and may be worthy of further consideration. The City, as a lake front property owner, should consider its own response to such a question. The City would conceivably be responsible for half the cost as a lake front property owner.

4. Complete Financial Plan Submittals

If the Council would like to continue to work on this project, staff can be directed to prepare Financial Plan submittals for continued work. Those submittals could take a variety of forms including, a request for funding to pursue disposal easements on adjacent property, staff and equip an in-house dredging program, contract with grant acquisition firms to research and apply for grants to dredge the lake or allocate a portion of the general fund for a contract dredging operation.

Summary – The Heart of the Matter

Although a great deal of technical, environmental and financial information is outlined in this report, the attached materials, and within the environmental document, the "elephant-at-the-table" is that we do not have funding to move this project forward in a timely and sustained way, unless the Council is willing to reallocate funding from other priorities. In the meantime, the lake continues to silt up. Therefore, we need to eventually get to the heart of the matter, which is:

> How much are we willing to invest as a community to drastically alter the present "evolution" of the lake in order to assure its long term future as a man-made lake suitable for boating and other activities? Or, do we allow it to evolve into something different?

As the elected representatives of the community, the Council may choose to directly answer this question. Or, the Council may wish to initiate a more extensive citizen engagement process before making a final decision. If the "citizen engagement" option is chosen, staff will need to develop an engagement concept and submit a grant application for support funds. An entity exists within California (Common Sense California) to promote such engagements through small grant awards (for example, Morro Bay received a grant to engage a discussion about a future fire station). Staff would pursue this grant source first. A requirement of this program is that the grantee does not have a preconceived outcome in mind when initiating the engagement. If we truly are not sure what to do and how much to invest in restoring Laguna Lake, then this issue may be a good candidate for such a grant.

While the cost will depend on the engagement concept, it is estimated to cost $15,000. If the grant application is not successful, and the remaining project balance is not adequate, the staff could return to the Council for consideration of other funding options.

CONCURRENCES

The Community Development Department has reviewed the Initial Study and concurs with the outlined findings and mitigation measures. Planning Commission review is not required for this environmental Study. Earlier Parks and Recreation Commission reviewed the project alternatives during a series of meetings and their input has been provided as Attachment 4. They will also be part of the final project plan design at such time as the project moves forward. Natural Resources staff has been involved during the development of the technical reports and environmental study, and will continue to be involved as the project is developed. Regulatory permits will need to be acquired if the City moves forward with implementation, and additional requirements and mitigation are anticipated from those agencies.

FISCAL IMPACT

The approval of the environmental document has no fiscal impact. Additional action on the project may have significant costs, depending upon what Council directs. The project has a current unencumbered balance of just under $14,000.

The alternatives for the initial dredging range in cost from about $4 to $9 million dollars depending upon how much of the lake is dredged, if some disposal is included at the park, and where the remaining material is disposed of. These costs would need to be periodically paid out to sustain the lake depth. Most likely, only during the initial dredging operation would the material be able to be placed at the park, after the available area had been used, future material from maintenance dredging would have to be disposed of off site. More detail of the alternatives can be found in Attachment 5, or in the Tables section of the Engineering Analysis of Dredging and Disposal Alternatives.

ALTERNATIVE

Stop work altogether on the dredging project with no further staff resources spent. This alternative, while definitively conveying the message to staff that there would not be continuing work on the project, would not answer the question about the community's desires for the lake

and park. It would also fall short knowing whether dredging work is a priority worth spending limited City resources on, if there was community support for any dredging option.

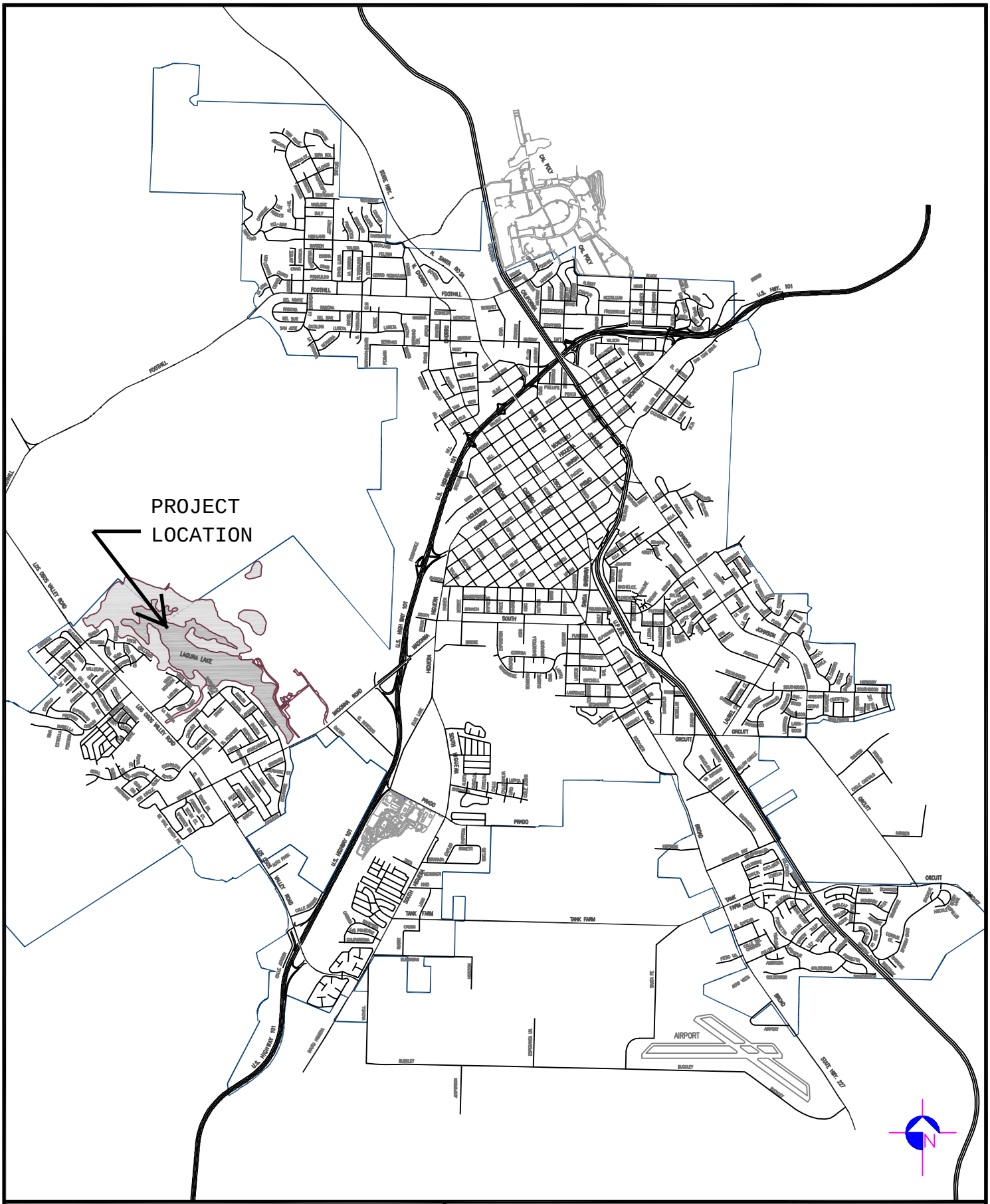
ATTACHMENTS

1. Site Map
2. About Dredging
3. Related Issues
4. 2004 Parks and Recreation Commission Input
5. Dredging and Disposal Alternatives
6. Project Description
7. Resolution for approval of the Environmental Document

AVAILABLE FOR REVIEW IN THE COUNCIL OFFICE

Laguna Lake Master Plan (1961 – The Hector Plan)
Laguna Lake Master Plan (1993)
Laguna Lake Management Plan (1982)
Environmental Document
Technical Reports prepared by LFR Levine·Fricke:

1. Ecological Resources and Potential Impacts of Dredging Operations at Laguna Lake
2. Characterization of Sediment and Water at Laguna Lake
3. Engineering Analysis of Dredging and Disposal Alternatives at Laguna Lake



LAGUNA LAKE DREDGING
LOCATION MAP

What are the goals for the lake?
In the Laguna Lake Park Management Plan the goals are listed as Wildlife Preservation, Recreation Enhancement, Shoreline Home Protection and Agricultural Preservation.

Comments from the public vary and include concerns about mosquitoes, smell, flooding, recreation uses and, particularly when the lake dries out during droughts, the subject of dredging the lake comes up.

What dredging will do?
The dredging will maintain the lake as a recreational facility for the community. Parks and Recreation is even considering the possibility of stocking the lake for fishing. The lake will also be more conducive to wind surfing and boating. The completion of the dredging will result in deeper open water habitat, less subject to roiling by the wind, which should reduce the turbidity that currently exists at the lake. The deeper, cooler water may also discourage the growth of certain weeds, which need sunlight to grow, and possibly the algae.

Finally, increasing the depth of the lake by dredging will increase the likelihood that there will be water in the lake during drought years.

What dredging will not do?
Dredging Laguna Lake is not a storm water management activity. Water remains in the lake during the summer months. This is because the lake bottom is lower than the outlets. Because that water level is relatively constant, the lake can not take in significant amounts of storm water in the winter from the adjacent residential area. Once the lake is full, water begins to back up in the system and flooding occurs. The lake would have to be emptied prior to winter rains to provide any significant flood protection.

Dredging the lake will not take care of the reeds and associated mosquito problem along the shore line. Recommendations for dredging are clear that dredging should not start closer than 50 feet from the shore line. The reason for this is to prevent destabilizing the shore. Dredging too close to the shore could result in excessive shore line erosion or collapse.

The seven basic components to the dredging project:

1. How much of the lake is dredged (quantity)
2. Material removal technique
3. Material drying technique
4. Material disposal / placement
5. Environmental Impacts
6. Cost
7. Duration

1. Quantity
How much of the lake we dredge will clearly have an impact on cost. The project description used for the Initial Study is for a reduced dredging area. In general, this approach looks at

dredging the lake, from above the inlet at Prefumo Creek, to Madonna Road. The alternative is to dredge to the northern end of the lake.

The delta which has formed at the mouth of the Prefumo Arm has grown to such a size that it now serves as a wildlife habitat and one consulting biologist recommended that it be left in place. There has been interest expressed in removing it to allow deeper dredging in the Prefumo Arm and reestablishing open water in that area. Based on biological studies, it may be difficult to get approval to do so from regulatory agencies. The City should continue its practice of routine dredging in the arm to remove the collection of material. This helps to control what reaches the lake.

2. Material Removal Technique

The material will either be scooped or pumped out. Once the material is manageable, it can be placed at the park or hauled away. The scooping methods reduce the amount of water that is taken with the material. This shortens the drying time. Pumping is accomplished by mixing water with the material at the lake bottom and pumping it to shore. The water content can be as high as 90 percent.

3. Material Drying Technique

There are two basic drying techniques. The first method is to use nature to do the work. The material is set out and allowed to drain and dry. The second is a mechanical means. Specialized equipment processes the material through something equating to the spin cycle on a washing machine. The effectiveness can be heightened with additives to absorb water. This equipment is proprietary and can add cost, but the trade off is avoiding the need to find areas large enough to construct drying beds without impacting sensitive species.

4. Material Disposal / Placement

Disposal of dredge materials is a significant portion of the cost to complete the dredging. If a location can be found for disposal on the lake property, it would reduce the cost. The Nature Preserve portion of the park is home to various protected plants and wildlife. Portions of the front of the park are dedicated to the memorial grove, with the rest of the park considered the "active" park. There are areas within the active park were spoils could be placed, changing the contours of the park. This will not be enough to handle all of the spoils but would still reduce the cost of the project.

Off-site disposal is an unknown cost. It could be very costly or relatively inexpensive. It relies on available uses at the time the material is removed. In the past, on small dredging projects, the City has left disposal to the contractor. If the City completes the dredging in a short period of time, finding a single location in need of that much material could be difficult. If a site adjacent to the lake could be found and the material used to re-contour the ground, it would be *relatively* inexpensive. Sometimes use can be made of this type of material at landfills for cover. Probably the worst situation is that the City will have to pay to place it at the landfill as waste.

While it seems extremely odd to put the material back in the lake, that is an option. The project description used for the Initial Study proposes that the material would be used to fill in an area of the lake to create a different type of habitat from that of open water, and to enlarge the peninsula.

Additional islands could be created by berming the soil with rock structures below the water to prevent the material from drifting.

Metals in the sediment are not found in extreme amounts and are most likely of natural origins. This finding is based on a review of surrounding rock formations and their makeup. However, if for any reason, the sediment was determined to be "regulated," and require special handling and disposal, the project costs would increase dramatically. Based on the information collected to date, this problem is not anticipated.

5. Environmental Impacts

In the short term, the project has the potential for noise, both from the dredging equipment and the hauling of material. This noise could be constant at times. There is the potential for odors and unsightliness if the material is dried at the site. Disruption to plants and wildlife is to be expected primarily as a result of a decreased water surface elevation as water gets removed with sediment. Also placement of the spoils at the park and / or hauling activities can disrupt plant and wildlife as well as park activities.

6. Cost

Costs to complete the project have been estimated in the $4,000,000 to $9,000,000 range.

7. Duration

The alternatives described in the technical report vary from 1 to 3 summers, working with aggressive schedules. Less aggressive approaches could easily extend the duration for many years.

Below are summaries of other items the Council has requested for discussion at various points during the project, related to the dredging:

Related Issues

1. Aeration
2. Lake Depth versus Turbidity
3. Lake infill rate review and historical depth
4. North Oceanaire Area Drainage Improvements
5. Upstream Sediment Control
6. Water Pollution

1. Aeration

Aeration is a process by which air is introduced to the lake to increase the level of dissolved oxygen in the water. A secondary result can be mixing of the water which reduces temperature differences in the water, ie warm at the top, cool at the bottom.

The value in introducing oxygen is to assist with the breakdown of organic material. If the volume of organic material is great enough, it will tend to use up the available oxygen and then the process slows or stops. The result is turbidity and lack of oxygen for fish. Oxygen in the bottom water of the lake also reduces the release of elements such as iron and manganese from the sediments.

The City does not have data on the volume of organic sediments in the lake. However, studies were completed in previous years to determine the levels of dissolved oxygen. Due to the wind that whips the lake, typically most afternoons, the lake generally has oxygen throughout its depth. There may be a few of the deepest areas that do not. The wind also blends the lake temperature and so there is little differential in lake temperatures. There can be low levels of oxygen in the morning, both because plants do not generate oxygen at night and because the water is calm. This is relieved by both the wind and rainy weather which increase the oxygen in the lake. Aquatic weeds, noted as a problem in the 1980's studies have not been a problem in recent years and the City has taken no action in that area since halting the weed harvesting program and does not receive complaints regarding weeds.

The primary issue at the lake, besides mosquitoes, for which the City staff takes complaints, is the algae bloom which occurs in mid to late summer during some years. Algae are a part of a normal lake environment and provide food and energy for other animals. When algae grow rapidly it is referred to as an algae "bloom." Blooms are typically a result of high levels of nutrients, particularly nitrogen and phosphorus. These nutrients can come from a variety of sources. The most likely sources for this lake are the birds and storm water runoff carrying detergents, fertilizers and organic debris. An active public information program as part of the City's efforts to reduce pollutants in the storm water is probably one of the best actions to take against this particular problem. The City should also discourage feeding of birds by the public. Other options include chemical treatment which causes the precipitation of the phosphorus in the water.

The estimated cost for solar aeration units is $150,000. The current condition of the lake does not appear to warrant the expense of aeration, primarily because of the wind action which provides this activity free of charge most afternoons. If the lake is dredged, it is possible aeration may be need if the wind action does not allow the lower depths to be stirred up.

2. Lake Depth versus Turbidity

To date, none of the studies have covered the relationship between the lake depth and the turbidity. The amount of material removed from the Prefumo Arm indicates this area serves to remove the larger material, such as sands and gravels. The fine clay remains suspended in the water and moves out into the lake. Some of it remains suspended as long as the lake is turbulent.

There has been testimony from the public indicating that in the early days of the lake (1960's,) the water was clearer. Using the historical information on the lake, and the above testimony, a bottom depth of about 9 feet should reduce the muddy appearance. The area of the lake nearest Madonna Road is the closest to that, ranging from 8 to 9 feet depth when the lake is full, with the central portion of the lake ranging from 6 to 8 feet deep. It should be noted that the lake near Madonna Road is currently at about 5 feet deep.

3. Lake infill rate review and historical depth

Using 1957, 1977, 1992 and 2001 lake bottom surveys, staff reviewed historical data to take another look at the rate of sedimentation accumulation in the lake. The rates are higher near the delta at Prefumo Creek and lower in the northern reaches. Using **average rates** of fill since 1957, and assuming no filling occurred until 1964 when Prefumo Creek was rerouted into the lake, it would take between 40 and 180 years to fill the lake depending upon the location in the lake. Taking the **highest rate** of sedimentation between the various surveys, again depending upon the location in the lake, it would take between 20 and 100 years to fill.

4. North Oceanaire Area Drainage Improvements

The north Oceanaire area is subject to flooding due to its low elevation in relation to the lake. The storm drain system for this area is very simple. It accepts street water and pipes it directly to the lake. Once the lake is full, that system backs up and no longer drains the streets. The subdivision was designed with the street system as the backup to the pipe system, allowing the water to inundate the streets but not the homes. Staff was asked to look at the possibility of collecting the water from the north Oceanaire neighborhood and carrying it, via pipe, to below the outlet of the lake on the southerly side of Madonna Road.

Assuming a design for a 10-year storm capacity, a 42" pipeline would have to be installed the length of Oceanaire Drive. Due to the distance to reach the outlet of the lake culverts on the southerly side of Oceanaire Drive, the resulting depth is such that a lift station would be required to bring it above the creek waters. After including needed manholes in the system and upgrading the inlets for increased capture ability, this project is estimated to cost $2.2 million. The area would still flood in heavier storms.

5. Upstream Sediment Control

The watershed for Prefumo Creek includes the Irish Hills area in addition to some residential tracts. This area is steep and sparsely vegetated. Water can be observed running down cuts in

the slopes along Prefumo Canyon Road. In a nutshell, the potential for sediment is very high. There is not one particular spot that is responsible for the debris found in the Prefumo Arm of the lake. This makes control in the watershed difficult.

One option for sediment control was discussed in the 1982 Laguna Lake Management Plan and that is to dredge the arm much deeper. The creek would then encounter an area of open water in the Arm prior to entering the lake. The slower open water area would be more likely to cause the creek to give up its fine sediments at this point in addition to the heavy material it now yields.

Dredging the arm deeply is no small task. It is a restricted area with considerable vegetation and residences nearby. To date, the regulatory agencies have been anxious that we keep the upper vegetation. At least some of this would have to go in order to establish stable banks as we went deeper. We could no longer dredge with earth moving equipment as we do now because we would be working in a wet environment. Sediment removal would have to be done **regularly** with a dredge or we would return to the situation we have now. This returns us to the issue of the need for dredging equipment and dealing with dewatering dredging slurry.

Another option is establishing sedimentation basins upstream. The only property controlled by the City upstream is the Laguna Lake Golf Course. Such basins would impact the course and are probably not desirable.

The Master Plan for flood control and drainage in the watershed that was completed in the late 1970's discussed the use of a debris dam on Prefumo Creek. The dam was proposed to be 20 feet high and sized to hold 100,000 cubic yards of material. The estimated cost of construction **at that time** was about $0.5 million. This study was completed for the purpose of proposing flood protection improvements. The dam was not recommended for flood protection because of the low cost-benefit ratio. Building the dam at this time would be very difficult due to development that has occurred near the recommended area for the dam, environmental issues associated with dams and a high cost.

6. Water Pollution

The lake is home to a number of birds that feed along the shore and likely is contaminate with waste from them. The lake also does not have fresh water flowing through it in the summer months providing water exchange. There are naturally occurring metals in the surrounding hills which may be present in the water. The water appears turbid due to the suspended silts in the water. The City does not do routine testing of the water and is not aware of testing by any other agency. The lake was posted for no swimming some years ago. Shoreline banks are eroded and so not suitable for swimming entry.

Parks and Recreation Commission Review

Staff presented the project to the Parks and Recreation Commission on June 2nd, October 6th and November 3rd of 2004. The Commission took testimony during the first meeting, but did not discuss it.

For the second and third meetings, staff presented the following six questions to help focus the discussion of this complex issue and gage the Commissions feelings about the project. The Commission created a seventh question themselves. The results of the straw polls at these two meetings are shown after each question.

1. Does the Commission agree dredging of Laguna Lake is an important Parks and Recreation goal?
   October - 4 Yes, 3 No / November - 3 Yes, 4 No
2. Does the Commission agree dredging of the lake is more important than other improvements in City parks such as upgrades and expansions if limited funds are available?
   October - 0 Yes, 7 No / November - 0 Yes, 7 No
3. Does the Commission support dredging a portion of the lake, in lieu of the entire lake, as a reasonable alternative to reduce project costs?
   October - 4 Yes, 3 No / November - 0 Yes, 7 No
4. Does the Commission support use of portions of the park for deposition of dredged material, and if so, where?
   October - 6 Yes, 1 No / November - 4 Yes, 3 No
   (The Commission was clear that disposal was in the Active Park area not the Nature Preserve. It would be reasonable to assume before the park was used to accommodate dredging spoils, they would want to see a specific plan of the disposal proposal.)
5. Does the Commission support creation of islands or wetlands in the lake using the dredged material?
   October - 1 Yes, 5 No, 1 Undecided / November - 0 Yes, 7 No
6. Does the Commission support a long term (over 10 years) project if necessary as a reasonable alternative to reduce project costs?
   October - 2 Yes, 4 No, 1 Undecided / November - 0 Yes, 7 No
7. Does the Commission support buying adjacent land for deposition of dredged material disposal?
   October - 6 Yes, 1 No / November - 3 Yes, 4 No

The change in the results of the two polls could be attributed to additional time for the commissioners to consider the questions or it could have resulted from the testimony of the public at the second meeting.

The Commission expressed mixed feelings about dredging. They are concerned about the cost and understand that the cost will just continue to rise if the project gets put off. However, they are also very concerned about the impact of dredging on the surrounding community and activities at the lake.

One clear message from the Commissioners was the unanimous agreement that dredging should not come before other Parks and Recreation needs when funding is limited.

Citizen Input

At the goal setting sessions a few citizens have attended meetings to date and the majority speak in favor of dredging. There appears to still be some misconceptions that dredging will take care of mosquito problems or flooding, which it will not.

The preference of citizens speaking out appears to be to dredge the entire lake in a relatively short period of time, removing the spoils from the park. The creation of islands or wetlands has not been well received because it reduces the amount of open water, and raises concerns that it would increase the breeding grounds for mosquitoes.

At the two Council Study Sessions 16 different citizens spoke in favor of dredging, three lived outside the Oceanaire neighborhood, two spoke regarding concerns about mosquitoes, and three about flooding.

Dredging Alternatives

The alternatives presented by the consultant in the Engineering Analysis are a mix of quantity, technique, drying and disposal, giving resulting impacts, cost and duration. The alternatives are presented in the Engineering Analysis as a way of looking at the project, but are by no means the only permutations available. Below is a summary of the information provided in detail in the Engineering Analysis

Alternative 1 - Full scale dredging with near shore placement and habitat restoration
This alternative uses a closed clamshell to scoop the material from the bottom. The closed clamshell minimizes fall back of material into the lake in comparison to an open loader such as those we might use in the street. The material is placed on barges and taken to shore.

At the shore, the material is dried and left in place on a large area of the park. The area proposed is a 25 acre site in the Nature Preserve which, while dominated by non-native grasses, is also home to several sensitive botanical species. Significant impact can be expected. The alternative would then include the importation of topsoil for plant reestablishment.

Estimated duration - 12 months. Restoration would take several years.

Estimated cost - $6.9 Million

Alternative 2 – Dredging with off-site commercial or agricultural beneficial reuse
A special hydraulic dredging and dewatering device is used for this alternative. The electric remote ability of the unit allows 24 hour dredging. The material processed by this method is dry enough to be trucked from the site without separate drying beds. The number of trucks to remove the material is estimated at 30 trucks a day. There is a high probability for concerns resulting from the noise and disruption of the trucking activities. The City will need to locate a receiving site where the material could be used.

If the City were able to acquire rights to dispose of the material on one of the agricultural sites that already abuts the lake, the material could be removed directly to the agricultural area and trucking from the park would not be required.

Estimated duration - 4 months to perform the dredging with continued hauling for 8 months to dispose of the material.

Estimated cost - $6.2 Million **plus** any costs for reuse site

Alternative 3 – Dredging with off-site landfill disposal
The material would be removed as in Alternative 2. The difference is in how the material is disposed of. In this alternative, the material is taken to the land fill to be used as cover or paid for as waste.

Estimated duration - 4 months to perform the dredging with continued hauling for 8 months to dispose of the material.

Estimated cost - $7.5 Million

Alternative 4 – Dredging with combined on-site island and wetland creation
The material is removed as in Alternative 1 with the closed clam shell. The material is dried on a 4 to 10 acre area of the park. Special berms are constructed in the lake and the material reintroduced to the lake to form an island. A portion of the material can be directly deposited back in the lake without drying to create wetlands. Some existing wetlands will be lost if expansion of the existing peninsula is done, but new wetlands would be created in the upper area of the lake.

Estimated duration - 12 months

Estimated cost $8.6 Million **plus** any costs to acquire rights to deposit material in privately owned portions of the lake

Alternative 5 – Limited dredging with near-shore placement and habitat restoration
This alternative is a reduced version of alternative 1 or 2. It requires an on shore area of 10 to 15 acres combined drying and fill area.

Estimated duration – 8 months

Estimated cost - $3.9 Million **plus** land cost if placement occurs off park property

Alternative 6 – Limited dredging with expanded wetland creation
Alternative 6 is a reduced Alternative 4 with wetland creation, but no island creation. This eliminates the need to dry the material if it is to be used for wetlands.

Estimated duration – 6 months

Estimated cost - $6.3 Million

Incremental Dredging – Not covered in Consultant's Engineering Analysis Report

The City would purchase a small electric suction dredge and operate it remotely using a cable system. The slurry would be pumped to the shore where a system of drying ponds would be set up. The slurry would be retained long enough in the pond system to allow the solids to drop out and the water to flow off. The water would have to be sampled and tested prior to returning it to the lake. With a City staffed operation, activity would occur every year until the work was completed. Based on use of 5 acres of the Nature Preserve for drying beds, drying time and seasonal constraints, it would take approximately 10 years to remove the sediment that has accumulated in the lake to date. Given the duration of the initial dredging, the lake would accumulate additional sediment during that time and the dredging operation would have to be undertaken regularly to maintain the lake depth.

Staffing for this operation would require at least a two people, with significant oversight, given the complexity and regulatory issues involved. One person would take on the entire responsibility for the dredging equipment and operation, including construction and maintenance of the drying beds, purchase of equipment, locating and arranging for disposal of the solids and the hiring of temporary help as needed to assist them with the operation of the dredge and drying facility.

Costs - The initial cost to construct the drying beds, drains and purchase equipment is estimated at $550,000. An additional $150,000 would be needed on an annual basis to fund the new dredging staff position, provide temporary help, fund operation costs and fund equipment maintenance and replacement costs. A dredge that would be able to work independently (off a cable) would cost an additional $150,000 to $300,000*. It would also be a larger and more powerful dredge to accelerate the operation and could do reed removal. The public has expressed a strong desire to have the reeds removed because of the potential for mosquito breeding. *(These cost estimates **do not include disposal costs** which are covered in more detail below**.)**

Incremental Dredging - "Spin Dry" method using a Contractor

The material is dredged with an electric dredge. The slurry is pumped back to a mechanical device on shore which removes the water and leaves the sediment. The "Spin Dry" equipment is proprietary in nature, thus not available for purchase and use by the City. No drying beds are needed, however some area is needed for stockpiling. Contracted dredging would occur on a periodic rather than annual basis, as funds were available and to reduce mobilization costs.

Incremental Dredging Alternatives - 10 Year cost summary for **full lake dredging**:

Method	**Frequency**	**Annual Cost**	**Total Cost** [2]
City Staffed	Annual project for 10 years	Dredge, w/ Piping & Cabling: $200,000 [1] Loader & Pickup: $ 100,000 [1] Pond Construction Costs: $ 250,000 [1]	$ 550,000[1]
		Annual Staffing & Operation: $ 150,000	$ 1,500,000
			$ 2,050,000[2]
Contract	2 projects - 1 every 5 years	Annual set aside amount: $620,000	**$ 6,200,000**[2]

[1] First year only costs

[2] Does not include disposal costs – see below

In summary, on an annual basis, assuming a worst case for disposal costs as outlined in the next section, dredging the lake could cost up to an estimated $705,000 to $1,120,000 per year over a ten year period. (**Total Cost** above **plus $5,000,000** disposal discussed below, **divided by 10 years**.)

Initial Study Project Description
Incremental Dredging –Partial Lake Dredging

Worked would be accomplished as described above for the City operated electric dredge. Only the central portion of the lake and some areas of the southern part of the lake, would be dredged. Assuming material would first be disposed of in the active park, then through wetland creation, and lastly by off site landfill disposal, the costs over the 10 year operation would be as follows:

Year 1 Costs:	Dredge, cabling & Piping		$200,000
	Pickup & Loader		$100,000
	Pond Construction		$250,000
	Staff		$135,000
	Disposal at on active park		$42,000
	Operations & hydroseeding		$20,000
		Total:	$747,000
Year 2 Costs:	Staff		$135,000
	Disposal at on active park		$42,000
	Operations & hydroseeding		$20,000
		Total:	$197,000
Year 3 Costs:	Staff		$135,000
	Wetland Preparation Construction		$1,200,000
	Wetland Disposal		$170,000
	Operations & planting		$20,000
		Total:	$1,525,000
Year 4 - 7 Annual Costs:	Staff		$135,000
	Wetland Disposal		$170,000
	Operations & planting		$20,000
		Annual Total:	$325,000
Year 8-10 Annual Costs:			
	Staff		$135,000
	Landfill Disposal		$81,000
	Operations		$15,000
		Annual Total:	$231,000
		10 Year Total:	$4,462,000

Disposal Alternatives

The consultant discussed several options in their report for the disposal of the material. To recap, these are; 1) send the material to the landfill 2) barge the material out into the ocean

dispose of it there, 3) deposit it on land, either a parcel leased or owned by the City, including the park property or 4) deposit it back into the lake to create wetlands and islands.

Disposal costs are a significant part of the overall costs and it could be cost effective to purchase property for the disposal and sell it after the work is complete. This would not address future dredge disposal needs. The other option relating to land disposal is to have a dredging contractor be responsible to locate a disposal site and haul it. The availability of property for the contractor's disposal would make the cost of dredging difficult to predict. Costs would range up to $5,000,000 for disposal of the current accumulation in the lake in addition to the other costs outlined to complete dredging. This cost assumes disposal at the landfill.

The active park can accept approximately 10-20% of the total amount estimated to be dredged. These would appear as two mounds of approximately 12 feet in height relative to the surrounding area and would be located adjacent to the memorial grove and to the playground. Drainage facilities may have to be included in at least one of these areas as there are numerous drainage ways in the park. The mounds would need to be amended to some degree and planted to prevent erosion and blend them better into the park.

Excerpt from Laguna Lake Dredging Initial Study (ER 31-06)

Description of the Project:

Laguna Lake is a shallow urban lake located in the City of San Luis Obispo, California. It is currently surrounded by residential development to the southwest, ranch land to the northwest, the municipal Laguna Lake Park to the northeast, and Madonna Road to the southeast (Figure 1 and Figure 2).

The major open-water portions of the lake, known as the Central Lake and the Southeast Arm, cover a total area of approximately 23 hectares (57 acres.) In addition, there are approximately 10 hectares (25 acres) of open water and 27 hectares (67 acres) of wetland habitat in adjoining areas, including the Prefumo Inlet, the Northwest Inlets, and the Peninsula Inlet (Figure 2). The main body of Laguna Lake has not previously been dredged, although the Prefumo Creek inlet has been periodically dredged in the past by the City, County and local contractors to remove deposited gravel material coming in from Prefumo Creek.

The area now occupied by Laguna Lake was historically a low-lying area that collected storm water drainage from the surrounding fields and hillsides. In 1963, nearby Prefumo Creek was rerouted to drain into the lake area. Continued siltation from the creek began to gradually fill the lake, and so a small dam was subsequently built at the southeastern end of the lake, near Madonna Road, to raise the lake's water level. In spite of these measures, the lake has gone nearly dry twice during the last 20 years. In order to maintain the lake's suitability for recreational purposes and wildlife habitat, the City is proposing dredging as described herein as part of the broader management plan for the park.

Dredging of the lake has been studied extensively over the last 25-30 years. The following documents have been prepared and the findings are incorporated into the proposed project description and associated studies.

- Archeological Subsurface Testing at the Laguna Lake Project (Heritage Discoveries (2007)
- Archeological Surface Survey for the Laguna Lake Project; (Heritage Discoveries (2006)
- Ecological Resources and Potential Impacts of Dredging Operations at Laguna Lake; LFR Inc. (2003)
- Engineering Analysis of Dredging and Disposal Alternatives at Laguna Lake; LFR Inc. (2001)
- Characterization of Sediment and Water at Laguna Lake; LFR Inc. (2001)
- Rare Plants, Vegetation, and Flora of Laguna Lake Park; Keil (1996)
- Laguna Lake Park Master Plan; City of San Luis Obispo (1993)
- Geotechnical Report Laguna Lake Dredging Project; Earth Systems Consultants (1992)
- Wildlife of Laguna Lake Park Relationship to Proposed Dredging; Michael T. Hanson (1992)
- Laguna Lake Management Program; City of San Luis Obispo (1981)
- Final EIR – Laguna Lake Management Program; City of San Luis Obispo (1981)

Through the most recent studies, conducted between 2000 and 2007, the City has evaluated a number of dredging alternatives including the use of different types of dredging equipment, different methods to dry the dredged material, and different end uses for the dredged materials. The proposed project is a hybrid of previously studied approaches to meet the project objective of maintaining suitable lake depth while limiting costs. The proposed approach utilizes techniques to avoid and minimize potential impacts through all phases of the dredging operations. As part of the impact avoidance and minimization approach, the total volume of dredging has been reduced from approximately 230,000 cubic meters (300,800 cubic yards) to approximately 115,000 cubic meters (150,400 cubic yards.)

The proposed project would entail the use of an electric suction (hydraulic) dredge to remove sediment from the bottom of the lake. Most areas of the lake would be dredged including the main body and Prefumo arm, though setbacks have been established that prohibit dredging activities near the lake banks to prevent potential bank destabilization. The dredge would operate during approximately 22 weeks per year as necessary during the dry season from June through October. As much as 15,300 cubic meters (20,000 cubic yards) would be dredged from the lake each year over a period of ten years to achieve a total removal of approximately 115,000 cubic meters of material. The overall rate of dredging is restricted primarily by the drying time of the fine grained dredged material. The dredged material would be pumped via temporary piping from the dredge to an approximately two hectare (5 acre) upland drying facility to be constructed in the undeveloped portion of the park (Figure 2). The drying facility would be comprised of bermed areas created with earthen berms up to two meters (6 feet) in height. Dredged material would be pumped into the drying areas in approximately 60 centimeter (2 foot) lifts with approximately six weeks of drying time estimated to meet sufficient dryness for hauling or rehandling for subsequent use. The final configuration and lift size within the anticipated drying area is subject to input from the dredge contractor though it would not affect the analysis of impacts. The percent water, particle size, and weather conditions (particularly wind and temperature) will affect the drying time significantly. It is anticipated that the particle size of most of the dredged material will be primarily clay and silt size (requiring a long settlement period) but that the area is subject to a high percentage of days through the summer with strong winds and warm temperatures. As the material dries, a crust is anticipated to form due to the clay nature of the sediments from the main body of the lake (the Prefumo inlet area has historically been the only area with larger sediment size). To maximize drying efficiency, it is anticipated that heavy equipment (e.g., bull-dozer or equivalent) will be used to turn over and wind-row the dredged material as it dries. Decanted water from the drying facility would pass through a filter at the outlet of the drying facility prior to re-entering the lake. The City has also considered the use of a mechanical dewatering system that would eliminate the need for the large upland drying area and the associated impacts from its construction and that would substantially reduce the drying time. However the system is more expensive than the traditional approach proposed. Mechanical dewatering uses a self contained centrifuge system that rapidly dries dredged material and immediately returns the water fraction back to the lake. While the mechanical dewatering is feasible and will likely be evaluated from a cost perspective by the City for implementation, this Initial Study addressed the upland drying facility to be certain that all potential impacts of the project were evaluated from the most conservative (“worst case”) perspective.

When dry, a portion of the dredged material would be placed within the park in several locations as described below and in the supporting documents for the project (referenced in Section 19 below), however this analysis assumes that approximately 30,000 cubic meters of the material would be trucked off-site for beneficial re-use (when suitable locations are available) or to a landfill where it would be used for clean cover.

In developing this project description, the City has studied alternatives and options for each of the principal components of the project (dredging methods, drying and rehandling options, disposal/reuse options). The studied alternatives included the following:

<u>Dredging Methods</u>

- Hydraulic dredging (hopper dredge, cutterhead dredge)

- Mechanical dredging (dipper dredge, bucket dredge)
- Specialty options (digger dredge for dry lakebeds)

Drying/Rehandling Options

- Dewatering basins and mechanical handling (using heavy equipment)
- Centrifuge decanting (specialty equipment)

Disposal Options

- On-site beneficial reuse (park amendments, wetland creation, island creation, habitat restoration)
- Off-site beneficial reuse (agricultural fill, commercial fill)
- Off-site commercial disposal (class III landfill, ocean disposal)

After assessment of the potential options, five dredging alternatives were studied in greater detail:

- Full-scale dredging with near shore placement and habitat restoration
- Dredging with off-site commercial or agricultural beneficial reuse
- Dredging with off-site landfill disposal
- Dredging with combined on-site island and marshland creation
- Limited dredging with near shore placement

Based on input from the City Council, City Staff, and the consultants preparing the engineering studies, soil and water studies, and the ecological assessment, this project description was prepared combining aspects of several of the studied alternatives to result in a limited dredging project with combined on-site and off-site use of dredged material. On-site re-use of materials would include creation of wetland habitat (by filling an area of shallow open water) and through the creation of hills and berms within the developed portion of the park that would be subsequently planted with lawn or landscaped for recreational use. It is anticipated that the wetland creation component would utilize approximately 60,000 cubic meters (78,500 cubic yards) of dredged material. The material would be placed in the peninsula inlet area and potentially in one of the small inlets of the Northwest Inlet area (Figure 2). Technical details for this and all of the studied approaches are provided in the Engineering Analysis of Dredging and Disposal Alternatives at Laguna Lake (LFR Inc., 2001). This document is on file at the Public Works Department.

The final volume of material to be placed within the developed portion of the park and planted with lawn would be determined in cooperation with the City's Parks and Recreation Department but it is feasible that at least 25,000 cubic meters (32,700 cubic yards) of the fill could be utilized in this manner. For example a round hill with a maximum height of six meters (20 feet) and a diameter of 125 meters (410 feet, resulting in a 10:1 slope) would utilize approximately 25,000 cubic meters of soil without compaction. However, because the proposed annual dredging is limited to 15,000 cubic meters (20,000 cubic yards) per year this approach would require that the first year of material for this purpose be stockpiled until the second year of material is available, or that the material is placed and temporarily stabilized (for erosion control) until the second year's material is dry and ready for placement on top. As such, several smaller features, each using less than 15,000 cubic meters may simplify implementation and eliminate the delay in completion for the construction for landscaping. The impact analysis herein assumes that 25,000 cubic meters of material will be placed within the already developed portion of the park.

The remaining dredged material would be taken off-site for beneficial re-use if suitable sites are available such as agricultural fill or commercial fill. If no such beneficial reuse sites are available, the

material would be taken to a commercial landfill. Material taken off-site would be hauled from the dewatering/rehandling facility through the park to Los Osos Valley Road and east to highway 101 (Figure 2). Off-site hauling of 30,000 cubic meters (40,000 cubic yards) of material would require approximately 750 truck loads. It is anticipated that the hauling could be completed in one month with approximately ten truck trips per day. The number of trucks employed and the total round trip haul time will affect the potential number of trucks per day and it is expected that the number of days of hauling could be reduced significantly if desired by increasing the trucks per day, though that would not affect the total number of trips. The impact analysis herein assumed up to 30 truck trips per day.

Through the inclusion of the proposed minimization and mitigation measures, the project will be "carbon neutral" with no net increase in greenhouse gas emissions.

Project Description

1. An archeologist will review the final plans for the dredging project to confirm that the final plans do not conflict with the findings of this Initial Study and that there are no project activities in the vicinity of site CA-SLO-605
2. An electric suction dredge would be used to remove sediment from the lake bottom. The discharge would include a significant percentage of water (80% to 90%) that would flow passively back to the lake from drying areas. Use of an electric system would minimize noise and air emissions.
3. The dredge would operate on cables and may or may not have an operator on the dredge itself.
4. Most of lake would be dredged (including the Prefumo Arm and removal of the delta at the mouth of the Prefumo Arm)
5. The project would be conducted seasonally over approximately ten years. Periodic or low volume dredging would occur as follow up to maintain the lake depth.
6. Approximately 15,000 cubic meters of material would be removed per year.
7. The operation would occur for approximately 22 weeks per year through the summer season with most of the time required for drying. The actual dredging component would likely be completed within four weeks per year.
8. State and federal regulatory agency permits would be obtained as required.
9. Approximately two hectares (5 acres) of the upland area adjacent to the lake would be used for settling, drying, and rehandling operations.
10. Once dried for rehandling, a portion of the sediment would be kept in the developed park area to form berms or hills which would be vegetated to blend into the park landscaping.
11. A portion of the dredged material would be placed on the peninsula area to raise its level and/or in the adjacent open water area to decrease the depth and create vegetated wetlands.
12. The dredged material that is not re-used on-site, would be trucked off-site following drying to an alternative disposal area (either a landfill for clean cover or potentially a construction site or other beneficial reuse site as available and appropriate).
13. Haul routes will be marked with signs notifying park visitors of truck hauling activities and park speed limits enforced.
14. Berms for drying beds would be created in the upland area using primarily onsite materials potentially with some import. The berms would be approximately two meters high.
15. Noise level monitoring of equipment will occur to ensure it is below required levels.
16. Construction and handling activities will only occur during normal working hours on weekdays.

17. Filters would be installed at the water outlets of the drying beds to ensure that water returning to lake does not contain excessive suspended sediment.
18. Water samples will be collected and tested to ensure compliance with local, state and federal standards pertaining to Total Dissolved Solids limits. Adjustments will be made to the dewatering operation if needed to maintain standards.

RESOLUTION NO. (2009 Series)

A RESOLUTION OF THE COUNCIL OF THE CITY OF SAN LUIS OBISPO APPROVING THE MITIGATED NEGATIVE DECLARATION FOR THE LAGUNA LAKE DREDGING PROJECT

WHEREAS, the City is pursuing the dredging of Laguna Lake; and

WHEREAS, an environmental review was prepared and made available for public comment at the time and in the manner required by law; and

WHEREAS, the Council has reviewed and considered the Negative Declaration of environmental impact for the project;

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of San Luis Obispo as follows:

SECTION 1. Environmental Determination. The City Council finds and determines that the project's Mitigated Negative Declaration adequately addresses the potential significant environmental impacts of the proposed project entitlements in accordance with the California Environmental Quality Act and the City's Environmental Guidelines, and reflects the independent judgment of the Council. The Council hereby adopts the Mitigated Negative Declaration incorporating all of the mitigation measures listed below into the project:

Mitigation Measures:

1. Air Quality Mitigation

a. AIR-01 Restrict Footprint: Reduce the amount of the disturbed area where possible.

b. AIR-02-Prevent Airborne Dust: A dust control plan shall be submitted to Air Pollution Control District at least 30-days prior to construction and should consider employ measures such as water trucks or sprinkler systems in sufficient quantities to prevent airborne dust from leaving the site. Increased watering frequency would be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water should be used whenever possible. All PM_{10} mitigation measures required in the plan should be shown on any construction plans and monitored in the field to prevent transport of dust offsite.

c. AIR-03-Stockpile Management: If stockpiled soil remains on-site beyond the appropriate drying period for reuse or disposal, spraying to prevent dust shall be required or the material shall be adequately covered and secured.

d. AIR-04-Dust Control Implementation: Permanent dust control should be implemented as soon as possible following completion of any soil disturbing activities.

e. AIR-05-Extended Soil Stabilization: Exposed ground areas that are planned to be reworked at dates greater than one month after initial grading should be sown with a fast germinating native grass seed and watered until vegetation is established.

f. AIR-06-Vehicle Speed: Vehicle speed for all construction vehicles shall not exceed 15 miles per hour on any unpaved surface at the construction site.

g. AIR-07-Haul Truck Dust Control: All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least two feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with California Vehicle Code Section 23114.

h. AIR-08 -Roadway Dust Control: If visible soil material is carried onto adjacent paved roads, install wheel washers where vehicles enter and exit unpaved roads onto streets, or wash off trucks and equipment leaving the site, and sweep streets at the end of each day. Water sweepers with reclaimed water should be used where feasible.

Standard NOx Control Measures for Construction Equipment:

i. AIR-09-Equipment Maintenance: Maintain all construction equipment in proper tune according to manufacturer's specifications.

j. AIR-10-Fuel: Fuel all off-road and portable diesel powered equipment with Air Resources Board certified motor vehicle diesel fuel (non-taxed version suitable for use off-road.)

k. AIR-11-Diesel Equipment: Maximize, to the extent practical and feasible, the use of diesel construction equipment meeting Air Resources Board's Tier III equipment.

l. AIR-12-Equipment Certification: Maximize to the extent practical and feasible, the use of on-road heavy-duty equipment and trucks that meet the Air Resources Board's Tier III certification standard for on-road heavy-duty diesel engines.

m. AIR-13-Idling of Diesel Equipment: All on and off-road diesel equipment shall not be allowed to idle for more than 3 minutes. Signs shall be posted in the designated queuing areas and or job sites to remind drivers and operators of the 3 minute idling limit.

n. AIR-14 Queuing of Haul Trucks: Queuing of haul trucks should be in location to minimize impact to park visitors or neighboring residents.

o. AIR-15 Dredge: Electrification of dredging and pumping equipment is recommended as feasible.

Greenhouse Gas Emissions:

p. AIR-16- Carbon Neutrality: Greenhouse gas emissions will be minimized through the use of an electric dredge rather than a diesel dredge. The off-site greenhouse gas emissions associated with the power production by the energy company (PG&E) will be offset through participation in PG&E's Climate Smart Green House Gas offset program.

2. Biological Resources Mitigation

a. BIO-01 Project scheduling: Dredging activity in or within 23 meters of nesting areas will be scheduled to avoid the bird breeding season (March 1 – August 31.) The initial upland disturbance (creation of the drying facility) will be scheduled outside the bird breeding season unless a nesting survey of the disturbance area is completed immediately prior to disturbance and finds no nesting activity. Dredging is proposed to occur during the summer to avoid the winter/spring breeding season of amphibians and to minimize the likelihood of turtles in the bottom material within the dredging areas.

b. BIO-02 Field Design Placement: The City Biologist and the Biological Monitor (discussed below) will walk the construction areas as drawn in the final design specifications for the drying/rehandling facility to confirm that the location is the most appropriate and maximizes resource avoidance. Minor adjustments to the disturbance area may be made at that time to further reduce impacts. The City Biologist and the Biological Monitor will work with the dredge contractor to determine the onshore landing of the temporary pipeline to connect the dredge to the drying facility. The portion that extends through the wetlands should be flagged in advance and should ideally remain in place throughout the entire project to avoid temporary impacts associated with installation and removal.

c. BIO-03 Biological awareness training: All contractors will participate in meetings be designed to inform construction personnel of issues related to sensitive biological resources potentially encountered during the project. These meetings will cover the basic biology and identification of sensitive species occurring at the project site and cover on-site protection measures of these species. State and federal laws protecting sensitive species and penalties for non-compliance will also be discussed. Other topics such as spill prevention and cleanup procedures and the location of areas off limits to construction personnel will be addressed.

d. BIO-04 Work area delineation: All work areas will be delineated using silt fence, caution tape, cones or other appropriate material to indicate where work is permitted to occur and what areas are to be avoided. All work areas and avoidance areas will be discussed with construction personnel during daily “tailgate” meetings.

e. BIO-05 Pre-construction wildlife surveys: These surveys are designed to detect sensitive species occurring in the work area just prior to the start of dredging. Pre-construction surveys allow for sensitive species occurring in the work area to be re-located as appropriate, avoided, or protected by other means so that no take occurs as a result of project activities. Pre-construction wildlife surveys will occur no sooner than two weeks prior to the start of the project. If a federally or state listed threatened or endangered species is observed in the work area, the proposed activities in the area will be re-evaluated by the contractor, the City and the Biological Monitor to ensure that no take will occur. No disturbance activities are allowable in an area supporting a state or federally listed species if the activity could result in take of the listed species.

f. BIO-06 Biological monitoring: The purpose of an on-site Biological Monitor is to ensure that all sensitive species avoidance and protection measures agreed upon for the project are properly implemented and maintained and to ensure that all work procedures are conducted in a manner that maximizes resource avoidance and impact minimization. The Biological Monitor will also help to make on-site decisions regarding any sensitive species identified during dredging operations. Monitoring is not required daily, but will be required during all initial clearing and then periodically (at least weekly) through the dredging or at the discretion of the Biological Monitor in coordination with the City. If at any time a state or federally listed threatened or endangered species is observed in the work are, all work activities will stop in the area. The Biological Monitor will be responsible for a determination of what activities may proceed that do not pose the risk of take of the listed species.

g. BIO-07 Exclusion fencing: Exclusion fencing (silt fence) will be installed to reduce the likelihood of species such as southwestern pond turtles from entering the work areas (particularly the settling ponds or along hauling roads). It is very important that silt fence be installed properly and checked regularly by the Biological Monitor for issues requiring repair or re-installation due to wind or mechanical impacts.

h. BIO-08 Avoidance areas: Areas of important biological significance to potentially occurring sensitive species will be flagged or marked in some way to signify that no project related activities are to occur within these areas. Avoidance areas will be displayed in a figure and shown to the construction personnel during the tailgate meetings.

i. BIO-09 Habitat replacement: Any impacts to sensitive native habitats will be mitigated. On-site restoration of impacted plant communities will occur within the areas disturbed by the project and/or within the park. Restoration activities including weed abatement of otherwise high quality habitat and installation of propagules in areas where native emergence is needed are appropriate and will be implemented under a habitat restoration plan that identifies specific areas of impact and restoration. The restoration plan will be reviewed and approved by the City Biologist. Temporary impacts of native habitat will be mitigated on a minimum 1:1 basis. Permanent impacts to native habitat will be mitigated on a 3:1 basis. Because the dredge will remain outside marsh habitat (minimum 23-meters from the bank) and because the drying and rehandling facility will be constructed in an area of non-native annual grassland, impacts to sensitive native plant communities are expected to be minimal and temporary.

j. BIO-10 Biological monitoring: An on-site Biological Monitor will review the final design plans and will survey the disturbance area for the drying and rehandling facility with the City Biologist when it is flagged in the field. The Biological Monitor will be on-site during project activities to ensure that all sensitive species avoidance and protection measures agreed upon for the project are properly implemented and maintained and to ensure that all work procedures are conducted in a manner that maximizes resource avoidance and impact minimization. The Biological Monitor will also help to make implementation

decisions throughout the project regarding any potential ecological issues or to address sensitive species identified during the project operations. Monitoring is not required daily, but will be required during all initial clearing and then periodically (at least weekly) through the dredging or at the discretion of the Biological Monitor in coordination with the City. The Biological Monitor will have stop-work authority and will do so should a listed species be identified in the work area. Work will not recommence in the area until the Biological Monitor determines what activities may proceed that do not pose the risk of take of the listed species. The Biological Monitor will prepare regular monitoring reports during all phases of the work for review by the City Biologist. Monitoring reports will briefly describe the work activities conducted during the monitoring period, the status and/or condition of resource protection measures, and any occurrences of sensitive species or events requiring the involvement of the Biological Monitor.

3. Cultural Resources Mitigation

The project does not require mitigation for cultural resources impacts; however, the following monitoring is required as a measure of caution.

a. CULT-01 Cultural resource monitoring: Prior to project implementation, an archaeologist will review the final project plans for the Laguna Lake dredging project to confirm that the final plans to not conflict with the findings or recommendations from the current studies.

4. Geology & Soils Mitigation

a. GEO-1 Use appropriate shoreline setbacks and dredging depths: ESC (1992) recommended that no dredging be conducted within 15 meters (50 feet) of the shoreline as mapped at maximum lake elevation. ESC (1992) further concluded that dredging shall be conducted to depths of 0.76 meters (2.5 feet) at distances of 15 to 23 meters (50 to 75 feet) from the shoreline, and to depths of 1.5 meters (5 feet) at distances of more than 23 m (75 ft) ft from the shoreline. The current proposal incorporates a complete setback of 23 meters to avoid potential impacts.

b. GEO-2 Conduct pre-dredging reconnaissance of shoreline structures: ESC (1992) indicated that it would be prudent to document the existing structures, fences, retaining walls, and other improvements along the shoreline just prior to initiation of dredging. This could facilitate recognition of any adverse effects related to dredging, and would document pre-existing conditions.

c. GEO-03 Monitoring Program: An appropriately licensed engineer or geologist will certify the final dredging design specifications and confirm that the proposed 23-meter setbacks from the banks of the lake avoids the potential for significant impacts.

5. Hydrology and Water Quality Mitigation

The project does not require mitigation for water quality impacts; however, the following monitoring is required as a measure of caution.

a. HYDRO-01 - Monitoring Program: Testing return water for Total Dissolved Solids content: Samples of return water from the dredge operation shall be collected and tested regularly or as needed to insure compliance with local, state, or federal standards pertaining to allowable Total Dissolved Solids limits. If test results show unacceptable amounts of Total Dissolved Solids in the return water, then the release of return water will be stopped to allow for changes to the system that will result in returning the Total Dissolved Solids to acceptable levels upon start-up of operations.

6. Noise Mitigation

The project does not require mitigation for noise issues; however, the following monitoring is required.

a. NOISE-01 Monitoring Program: Periodic noise level monitoring: The noise levels produced by equipment working on the project shall be monitored routinely throughout the project. Equipment or activities found to be exceeding noise standards established in the noise ordinance are to be prevented from conducting further work on the project site until such time as it can be demonstrated that they can operate below such standards.

7. Recreation Mitigation

The project does not require mitigation for recreation impacts; however, the following monitoring is required as a measure of caution.

a. REC-01 Monitoring Program: The allowable work periods (regular business hours on weekdays with no weekend or holiday work) shall be a part of the contract for the project and compliance shall be monitored by City Staff as part of standard monitoring for construction projects.

8. Transportation Mitigation

The project does not require mitigation for transportation issues; however, the following monitoring is required as a measure of caution.

a. TRANS-01 Monitoring Program: Installation of appropriate signage identifying haul routes and notifying park visitors of truck hauling activity, and the required speed limit shall be a part of the project contract and shall be monitored by City Staff as part of standard monitoring of construction projects.

Upon motion of _____, seconded by _____, and on the following vote:

AYES:
NOES:
ABSENT:

The foregoing resolution was adopted this _____ day of _____ 2009.

_____
Mayor David F. Romero

ATTEST:

_____
Elaina Cano
City Clerk

APPROVED AS TO FORM:

_____
Jonathan P. Lowell
City Attorney