Implementation

"Splash", Will van Overbeek

Short Term Projects

From the beginning, one of the goals of this master plan was to identify a collection of short-term projects, and present them to the City Council for funding in the 2007-2008 budget cycle. And that was, indeed, done when 21 projects were presented to and funded by Council in September of 2007. Those projects were chosen on the basis of several criteria:

Public safety.
The roof replacement for the Bathhouse and the evaluation of certain existing trees are two projects with public safety components.

Preliminary steps to a larger goal.
The topographic survey, structural testing of the dams and the hydrodynamic modeling are all required information-gathering steps leading to a larger goal--actually making flow regime modifications to the Pool.

Projects with separate funding sources.
Austin Energy agreed to fund the replacement of site lighting and to make electrical upgrades around the Pool. And the Watershed staff agreed to undertake three pilot studies using available resources.

Projects agreed to by consensus.
A proposed list of short-term goals was developed, in part, through a public participation process, where the planning team learned that there was a general preference for seeing water quality improvements as soon as possible. This list was refined through additional public participation. Many of those projects were agreed to by consensus.

Projects that support City of Austin values.
The accessible route in the South Woods is one project that satisfies a City value; to be an accessible community.

The short term projects were grouped into five categories:

Water Quality Improvements

- Remove Gravel Bar
- Replace Bypass Tunnel Inlet Grate
- Repair Bypass Tunnel Joints
- Renovate Sunken Garden (part 1)

Water Quality Studies

- Topographic Survey
- Hydrodynamic Modeling
- Structural Testing of Dams
- Pilot Study for Water Recirculation at Beach
- Pilot Study to Determine Effects of Creek Flows on Pool Water Quality
- Pilot Study for Ultrasonic Algae Control

Pool Cleaning Improvements

- Additional Electrical Power at Pool Side
- New Pump to Increase Water Pressure and to Facilitate Cleaning
- New Algae Skimmer
- Disposal for Silt and Nuisance Algae

Grounds Improvements

- Tree Assessment and Treatment
- General Grounds Improvements
- New Accessible Route on South Side
  Evaluate Existing Accessibility Improvements on the North Side
- Interpretive Plan

Building

- Rehabilitate Existing Bathhouse (phase 1)

WATER QUALITY IMPROVEMENTS

Remove Gravel Bar

Because removing the gravel bar is such a serious challenge, it should only be undertaken with a professional engineer in charge and an environmental engineer to consult on mitigation criteria and to coordinate permitting efforts. A landscape architect may be required to lead the site restoration efforts, to repair damage to plantings that might occur during the course of the work.

In addition to writing the proposal, a significant aspect of this project will be the administration of the gravel removal contract during the removal operations. The downstream dam must be protected, environmental controls (booms, etc.) must be kept secure, load constraints on the south walk must be respected, the South Lawn must be protected and the site must be restored as the work is finished. All of this work should be administered by the engineer of record.

Efforts should be made to undertake this work during the normal Pool cleaning period in February. Even so, it will take longer than that to execute, so it will be a disruption to normal Pool operations. For this reason, and for reasons of effective Pool administration policy, the public should be kept informed on its progress.

New Algae Skimmer

Since a new algae skimmer as long as the one under consideration will have flow-regime implications, its effects should be confirmed through the efforts of the hydrodynamic modeling effort

Replace Bypass Tunnel Inlet Grate

For the most part, this is a stand-alone task. It does not rely on the completion of any other tasks as a precondition for proceeding, although it may be preferable to do this in coordination with the bypass joint repair work. This work can and should begin promptly. This work should be jointly led by a civil engineer, experienced in working in environmentally sensitive areas, and a design professional, either an architect or a landscape architect. This unusual team composition is recommended to acknowledge the fact that this element has both a functional and an aesthetic component. The design professional should be counted on for graphic depictions of design proposals.

Water Quality Improvements Estimated Costs

Remove Gravel Bar	*905,600*
Replace Bypass Inlet Grate	*233,478*
Repair Bypass Tunnel Joints	*285,362*
Renovate Sunken Garden (part 1)	*278,495*
Subtotal	*1,702,935*
Contingency (25%)	*425,734*
TOTAL	*$2,128,669*

These estimated costs include construction costs, professional fees, administrative and soft costs and a factor for price escalation.

Because this is a rather small task, it may be cumbersome to administer. So the City may choose to bundle it with other, larger efforts for administration efficiency. In that case, it may want to add it to the scope of the hydrodynamic design team.

Repair Bypass Tunnel Joints
This is a stand-alone task. It does not rely on the completion of any other tasks as a pre-condition for proceeding, although it may be preferable to do this in coordination with the bypass inlet grate work. This work can and should begin promptly.

While this task is likely to take a number of months, most, if not all of this work will be accomplished from inside the tunnel. Nonetheless, the required drawdowns may impact the operation of the Pool. The swimming public will likely be interested in understanding the project. So the consultant, together with City staff should anticipate a need to report on progress as required.

Because this is a rather small task, it may be cumbersome to administer. So the City may choose to bundle it with other, larger efforts for administration efficiency. In that case, it may want to add it to the scope of the hydrodynamic design team.

Renovate Sunken Garden (Part 1)
This plan recommends renovating Sunken Garden in two parts, with the first part concentrating on the spring vessel, the spring run and the next wall in the concentric series. The second part should concentrate on the renovation of the remainder of the walls. Because it is important that both renovation efforts be coordinated, even if they are separated by an interval of time, the remediation strategies for the masonry restoration for the entire complex should be designed in Part 1.

The renovation of Sunken Garden should be led by an architect experienced in historic preservation. The team should include a structural engineer (for the walls), a civil engineer for grading and drainage issues, a dam engineer for the operable gate and a landscape architect. Because significant salamander biology efforts are already underway, the team should work to coordinate with them, and should rely on City Watershed scientists for habitat expertise. Even so, if unanticipated mitigation requirements present themselves during the design process, an environmental engineer should be included on the team.

The permitting requirements for this effort are not entirely clear at this time. Nonetheless, the team should anticipate consulting with U.S. Fish and Wildlife Service and City Water-

shed Protection and Development Review Department regulatory staff. And because this is a historic site, the team should anticipate a review by the Texas Historical Commission and the City Historic Preservation Office will be required.

Part 2 should be seen as a continuation of the work of Part 1, and should be undertaken by a similarly composed team.

WATER QUALITY STUDIES

Topographic Survey, Hydrodynamic Modeling, Structural Testing of Dams, Pilot Studies

The topographic survey, hydrodynamic modeling and structural testing of the dams are three components of a larger effort to improve the flow regime in the Pool. Since they are so related, these efforts should not be separated into individual tasks, but should be coordinated by one team of professionals, the hydrodynamic design team. The new skimmer design is proposed to eliminate nuisance algae, but it will require water flow to operate, so it will have a flow-regime consequence, so it should be included, too. Significantly, all of this work will be influenced by the results of two proposed pilot studies: the study for water recirculation at the Beach and the study to determine effects of creek flows on water quality. While these studies are related to flow regime questions, they need not be the work of the hydrodynamic design team. Indeed, they should be the work of the City Watershed Protection and Development Review staff.

It is important to stress that the hydrodynamic design team should be looked to for structural and hydrological concepts. But they are not scientists trained in the nuances of stream ecology, and should, therefore, not be expected to make judgements on matters of ecological impact. Those should be made by a scientific team formed for the purpose of providing leadership on these matters.

The recommendations that emerge from the hydrodynamic design efforts will likely impact the Pool in many ways, subtle and profound, from adjustments to the flow regime (obviously), to construction closures, to design changes (recirculation at the Beach, for instance). Because the public will have a keen interest in any changes, a mechanism for public involvement should be included in this process.

This work should flow as follows:

1. City Watershed staff should conduct Pilot Studies, with results communicated to hydrodynamic design team.
2. A scientific team should be created whose charge is to provide scientific leadership and advice to this project. This can be any combination of in-house City Water-

Water Quality Studies Estimated Costs

Pilot Study for Water Recirculation at Beach	**
Pilot Study for Ultrasonic Algae Control	***
Pilot Study to Determine Effects of Creek Flows on Pool Water Quality	**
Topographic Survey	*106,275*
Hydrodynamic Modeling and Dam Design	*250,809*
Structural Testing of Dams	*141,700*
Subtotal	*498,784*
Contingency (25%)	*124,696*
TOTAL	*$623,480*

These estimated costs include professional fees, administrative and soft costs and a factor for price escalation.

** *These costs are not enumerated here, because the work is being done by Watershed's own forces.*

*** *This cost is not enumerated here, because Watershed intends to pay for the ultrasonic device with available funds.*

shed expertise or outside consultants. It will likely include City Watershed engineers, geomorphologists experienced with fluvial processes and other professionals as may be deemed appropriate and necessary.

3. The scientific team should establish the goals for the modeling exercise that should include flow, temperature and other relevant criteria.
4. The hydrodynamic design team should write proposal criteria for a topographic survey. City of Austin should commission the survey.
5. With the topographic survey in hand, the hydrodynamic design team should write a proposal for a flood study. City of Austin should commission the study.
5. The hydrodynamic design team should write proposal criteria for structural testing of dams. City of Austin should commission the testing.
6. The hydrodynamic design team should install temperature and vector sensors in the Pool to gather information on temperature stratification and flow direction, as may be appropriate.
7. Using the gathered information and working with the criteria developed by the scientific team, the hydrodynamic design team should test flow regime improvement concepts. Concepts should include flow-regime impact of skimmer. Results should be evaluated by the scientific team, so that modified concepts can identified and tested as required.
8. At regular intervals, and as promising concepts are developed, the public should be informed, and public input should be sought.
9. Final recommendations should be published in anticipation of future implementation funding. If, however, results are inconclusive or if they point to the need to replace dams, the public should be informed, and—with significant public input—a full range of options should be explored.

HYDRODYNAMIC DESIGN TEAM

Team Leader

A professional engineer with special expertise in dam design. This individual should coordinate the efforts of others within the team, and should be the chief author of engineering-findings.

Hydrodynamic Modeler

A hydrologist with special expertise in flow-regime modeling. The model should be capable of analyzing flow speed and direction, the influence of insolation (sun heat), the influence of wind and the influence of temperature differences across the cross section.

This professional is likely to be found at a nationally recognized modeling laboratory, such as the Utah Water Research Laboratory.

Design Professional
An architect or a landscape architect to interpret potential impacts on the physical experience of the Pool. Their work could include graphic depictions of proposals. And if concepts emerge that suggest a new built feature (like a bubbling element in the shallow end, for example), the design professional should design it.

Environmental Scientist
An engineer experienced in mitigating environmental impacts of construction projects in environmentally sensitive circumstances. This individual should be experienced in the regulatory requirements associated with such projects.

PILOT STUDIES
Pilot Study for Water Recirculation at Beach
This is a stand-alone project to be conducted by City Watershed staff, and is intended to generate useful design criteria for the hydrodynamic modeling team and its scientific team. The results of this project should be integrated with the preliminary calculations on this same topic that can be found in Appendix B, Consultant Reports. Since this project is to be undertaken with City Watershed's own forces, no money was budgeted for this task.

Pilot Study to Determine the Effects of Creek Flow on Water Quality
This is another stand-alone project to be conducted by City Watershed staff, and again, it is intended to generate useful design criteria for the hydrodynamic modeling team and its scientific team. Since this project is to be undertaken by City Watershed's own forces, no money was budgeted for this task.

Pilot Study for Ultrasonic Algae Control
This is a third stand-alone project to be conducted by City Watershed staff. It is intended to verify that ultrasonic algae control technology is effective in the control of nuisance algae and that it is harmless to beneficial plant and animal life. The results of this study will be used to determine if this technology is suitable for being deployed in the Pool on a permanent basis. The device to be tested will be purchased using City Watershed operating funds, and the tests will be conducted by City Watershed's own forces. Therefore, no money was budgeted for this task.

Pool Cleaning Improvements Estimated Costs

Additional Power at Pool Side	***
New Pump to Increase Water Pressure to Facilitate Cleaning	*258,848*
Remove Overhead Wiring	***
New Algae Skimmer	*278,495*
Disposal for Silt and Nuisance Algae	*35,000*
Subtotal	*572,343*
Contingency (25%)	*143,086*
TOTAL	*$715,429*

These estimated costs include professional fees, administrative and soft costs and a factor for price escalation.

**** These costs are not enumerated here, because Austin Energy has agreed to pay for them.*

POOL CLEANING IMPROVEMENTS

Additional Electrical Power at Pool Side,
New Pump to Increase Water Pressure to Facilitate Cleaning,
Remove Overhead Wiring

These three tasks should be done together, and the efforts should be led by a mechanical, plumbing and electrical engineer. The team should include an architect to design the pump house and to detail the visible elements. It should also include an environmental engineer to consult on construction mitigation matters. This work should coordinate with the efforts of Austin Energy, which has agreed to fund the replacement of all site lighting and the addition of electrical power at Pool side.

While it seems unlikely that extensive permitting will be required for these tasks, consultations with U.S. Fish and Wildlife Service and the City's Watershed Protection and Development Review Department should be anticipated.

Because all of these tasks will likely be subjects of public interest, the consultant should anticipate a need to report on progress and to receive input.

New Algae Skimmer

A new algae skimmer should be designed for installation along the south wall of the Pool generally extending from the diving board to the downstream dam. Discussions with U.S. Fish and Wildlife Service officials suggest that extensive permitting will not be required for this intervention. The design of this skimmer should be led by a civil engineer, and the effort should be coordinated with the hydrodynamic modeling study, since the basic premise of the skimmer is to divert flow. The effects of that flow should be understood in advance of deploying the skimmer.

Disposal for Silt and Nuisance Algae

After flood events, one part of the clean-up effort involves pumping turbid water out of the Pool. The 10(a) permit describes a method of pumping this water to a distant destination for filtering, but this method proved so cumbersome that it was abandoned in favor of the current, non-compliant method; pumping unfiltered turbid water into deck drains. This method is also used during routine cleaning. The intention of this task is to design a practical, permit-compliant method.

This task involves hiring an environmental engineer to write filtration protocols. It will require working with the Aquatics staff to tailor a solution that fits with their capabilities. The effort will also involve consulting with the U.S. Fish and Wildlife Service and the City's Watershed Protection and Development Review Department.

Nuisance algae removal appears to be a less troublesome task. It appears that it can be taken to the park brush pile and composted by mixing it with organic matter collected in the park (primarily tree leaves). The finished compost can be used to fertilize plants around the Bathhouse. The algae removal and composting effort should be done by PARD gardening staff. Staff should consult with the Texas Compost Advisory Council or similar entities as appropriate.

GROUNDS IMPROVEMENTS

Tree Assessment and Tree Treatment

In the course of preparing this plan, certain trees were identified as needing additional assessment to better determine their health. This work should be performed by a nationally recognized tree expert, and should use advanced tree assessment techniques. Using this assessment, the expert should make recommendations for accelerated tree care or tree replacement. Recommendations, including routine tree-care protocols, should be compared with the City's existing tree care manual, and appropriate adjustments should be made.

The tree canopy is one of the defining features of Barton Springs, so it is a certainty that any work, whether pruning or removal will be a subject of keen public interest. PARD staff and the consultant should plan for an appropriate public participation process.

Accessible Route on South Side

The design of an accessible route on the south side should be led by a landscape architect or an architect. The team should include a civil engineer for hydrology issues, an electrical engineer for lighting and an environmental engineer for construction mitigation. If an architect is leading this team, a landscape architect should also be included to consult on plant selection matters. None of this work can begin until the topographic studies have been completed.

This project may require an exemption from the SOS Ordinance. Consultation with U.S. Fish and Wildlife Service and the City's Watershed Protection and Development Review Department should be anticipated.

Grounds Improvements Estimated Costs

Tree Assessment and Tree Treatment	**
General Grounds Improvements	*1,010,975*
Accessible Route at South Side	*571,106*
Accessibility Improvements on North Side	***
Interpretive Plan	*121,862*
Subtotal	*1,703,943*
Contingency (25%)	*425,936*
TOTAL	*$2,129,928*

These estimated costs include construction costs, professional fees, administrative and soft costs and a factor for price escalation.

*** This cost is not enumerated here, because the Parks Department intends to pay for this work with available funds.*

**** This was not treated as a separate item when presented to Council. Its cost is included in the Accessible Route at South Side figure.*

Building Estimated Costs

Rehabilitate Bathhouse (part 1)	*476,875*
Subtotal	*476,875*
Contingency (25%)	*119,219*
TOTAL	*$596,094*

These estimated costs include construction costs, professional fees, administrative and soft costs and a factor for price escalation.

During the master planning process, the accessible route concept has been the subject of broad differences of opinion and heated debate. The staff and consultant team should anticipate a need for an appropriate public participation process. This process will likely involve studying alternatives to the concept articulated in this plan. Further, this process should discuss with the public a vision for the experience beginning at the south parking lot and ending at the water's edge. It should include concepts for a small bathhouse for public consideration as well.

Accessibility Improvements on North Side

Accessibility improvements currently exist on the north side, but questions have been raised as to their compliance with the ADA. Those improvements should be evaluated for compliance, and remediation recommendations should be made and implemented. Again, an appropriate public participation process should be anticipated.

Interpretive Plan

This work should be seen as a joint effort of an interpretative planning consultant and the City's Nature Center interpretive staff, with staff taking the first step. The staff should gather the raw information on interpretation topics and it should assemble preliminary thoughts on themes and storylines. This should provide the consultant with a place to begin.

The staff and the consultant should expect that the stories to be told and the planning process itself will be matters of keen public interest. They should plan for an appropriate public participation process.

The essence of this plan should be to describe a comprehensive approach to the matter of interpretation. Most of the implementation should be expected to accompany other tasks (renovating Sunken Garden, for instance). But the initial planning effort should include some installations. During the master planning process, interactive exhibits in the Gallery and information kiosks at the Tree Court were discussed, and should be considered as possibilities.

BUILDING

Rehabilitate Existing Bathhouse (Part 1)

The recommendation to replace the roof is made, because a recent roof assessment raised life-safety concerns about the design of certain drains. It makes sense to add solar hot water collectors in the same effort, because their attachment to the roof must be detailed and coordinated anyway. The roof replacement team should be led by an architect experienced in historic preservation, and should include a structural engineer, a plumbing engineer for the solar hot water, a civil engineer for stormwater management and a roofing consultant. While the stated goal is to correct a life-safety problem, the consultant team should anticipate a future rain water collection system and plan accordingly.

Like all visible changes at Barton Springs, keen public interest should be anticipated and planned for with an appropriate public participation process.

Long Term Projects

In addition to the short-term projects, another goal of this master plan was to identify long-term projects. The short-term projects were funded by the City Council in 2007, and are on their way to implementation, but the long-term projects are not funded, so their implementation trajectory is less clear. And, because they vary in terms of cost and complexity, their trajectories will vary from project to project. But even in the face of these uncertainties, implementation is discussed here as a way of fostering an understanding of the kinds of challenges--scheduling, funding, professional resources--each project might require, hoping that a clearer picture will assist the process of one day making each project a reality. To understand how and when long-term projects may be undertaken, it may be useful to understand them in terms of three general sets of constraints and opportunities:

Projects awaiting clarification.
Projects relating to improving the flow regime fall into this category, since even their scope will be determined by studies undertaken as short-term projects. Similarly, the rehabilitation of Eliza Spring awaits progress (when and if it happens) in improved habitat conditions and greater salamander population at Sunken Garden.

Projects that might be broken into phases.
Landscape projects lend themselves to being tackled in parts. And they even lend themselves to different project delivery methods; hiring professional landscape contractors, performing the work with Parks Department landscape forces, or using volunteer forces.

Projects awaiting funding.
Rehabilitating the existing Bathhouse (part 2) is a good example as is the construction of a new south bathhouse. Each of these are stand-alone projects, and each should be done in a single effort.

The long term projects can be grouped into four categories**:

Water Quality Improvements

- Flow Regime Improvements
- Renovate Eliza Spring
- Renovate Sunken Garden (part 2)

Grounds Improvements

- Rehabilitate Zilker Ponds
- "Dog Park" Improvements
- Further Downstream Improvements
- General Grounds Improvements, North Side
- Grounds Improvements, South Side

Building

- Rehabilitate Existing Bathhouse (part 2)
- New South Bathhouse

Projects by Others ***

- Complete the Zilker Trail
- Relocate the train tracks
- Convert Maintenance Yard to New Function
- Build New Restroom/Concession Stand North of Playscape
- Build New, Smaller Concession Stand in Tree Court
- Grounds Improvements at Drives near Robert E. Lee

*** The use of categories can be tricky, because some projects fall into more than one. Renovating Eliza Spring, for example, is a water quality improvement, but it is at the same time a grounds improvement. Even so, for purposes of establishing some order, they have been assigned to the category that seems to define them best.*

**** These projects are listed here even though they are beyond this scope, because they are mentioned in the text of the master plan, and because they, generally speaking, complete the logic of the plan. They will not be further elaborated in this chapter, but by listing them here, it is hoped that they will not be forgotten.*

WATER QUALITY IMPROVEMENTS

Flow Regime Improvements

Discussing flow regime improvements in any detail is impossible at this time, because even the act of making these recommendations awaits the results of hydrodynamic modeling studies yet to be undertaken. Even still, anticipating that they might include some combination of installing new operable openings in the dams, and some water recirculation, it is reasonable to suppose that the team should be led by a civil engineer experienced with water impoundment issues and in mitigating environmental impacts of construction projects in environmentally sensitive areas. And it should include a design professional, either an architect or a landscape architect. This unusual team composition is recommended to acknowledge the fact that these improvements are likely to have both functional and aesthetic components. The design professional should be counted on for graphic depictions of design proposals.

These kinds of improvements will almost certainly require permits at the federal level from U.S. Fish and Wildlife Service, the Army Corps of Engineers, as well as permits at the state and local levels. And since these kinds of improvements strike at the very core of the place, a process for soliciting public input should be anticipated.

Renovate Eliza Spring

Renovating Eliza Spring involves a collection of tasks spread across a number of disciplines. The reconstruction of the spring run will involve civil engineering and landscape architecture as well as stream ecology specialists. The removal of concrete and stone from the amphitheater will involve an architect with experience in historic preservation as well as a civil engineer. And the construction of new landscape steps, paths and walls will involve an architect or landscape architect. The new plant materials will, of course, involve a landscape architect. This project also anticipates an interpretive planning component, so specialists in that discipline should be made a part of the effort. And a plan for an appropriate public participation process should be anticipated.

Renovate Sunken Garden (part 2)

This plan recommends renovating Sunken Garden in two parts, with the first part concentrating on the spring vessel, the spring run and the next wall in the concentric series. The second part should concentrate on the renovation of the remainder of the walls and surrounding landscape. Because it is important that both renovation efforts be coordinated, even if they are separated by an interval of time, the remediation strategies for the masonry restoration for the entire complex should be designed in Part 1.

Water Quality Improvements Estimated Costs

Flow Regime Improvements	***
Renovate Eliza Spring	*779,569*
*Renovate Sunken Garden (part 2)*** **	*613,431*
Subtotal	*1,393,000*
Contingency (25%)	*348,250*
TOTAL	*$1,741,250*

These estimated costs include construction costs, professional fees, administrative and soft costs.

*** Because the scope of this item cannot be determined at this time, it is not possible to offer an estimated cost.*

*****This estimated cost does not include a "new, more attractive, more transparent" bridge. It is included in Further Downstream Improvements.*

Grounds Improvements Estimated Costs

Rehabilitate Zilker Ponds	*319,035*
*"Dog Park" Improvements***	*431,681*
Further Downstream Improvements	*777,282*
*General Grounds Improvements, *** North Side*	*123,012*
*General Grounds Improvements, **** South Side*	*73,427*
Subtotal	*1,720,437*
Contingency (25%)	*430,109*
TOTAL	*$2,150,546*

These estimated costs include professional fees, administrative and soft costs.

*** For the purpose of this estimate, it is assumed that the stonework abutting the dam will be included in the work emerging from the yet-to-be-determined flow regime recommendations, and is, therefore, not included in this number .*

**** For the purposes of this estimate, it is assumed that the work in the Tree Court is to be included in the estimate for the rehabilitation of the existing Bathhouse (part 2), and is, therefore, not included in this number.*

***** This estimate only includes improvements to the South Lawn and the area around the diving board.*

The renovation of Sunken Garden should be led by an architect experienced in historic preservation. The team should include a structural engineer (for the walls), a civil engineer for grading and drainage issues, a dam engineer for the operable gate and a landscape architect. It should also include an interpretive planner. Because significant salamander biology efforts are already underway, the team should work to coordinate with them, and should rely on COA Watershed scientists for habitat expertise. Even so, if unanticipated mitigation requirements present themselves during the design process, an environmental engineer and other appropriate scientists should be included on the team.

The permitting requirements for this effort are not entirely clear at this time. Nonetheless, the team should anticipate consulting with U.S. Fish and Wildlife Service and City of Austin Watershed Protection regulatory staff. And because this is a historic site, the team should anticipate that a review by the Texas Historical Commission.

GROUNDS IMPROVEMENTS

Rehabilitate Zilker Ponds

The renovation of the Zilker Ponds should be led by an architect or landscape architect experienced in historic preservation. The team should include a civil engineer for grading and drainage issues, an electrical engineer for lighting and, if the team is led by an architect, a landscape architect to consult on the use and placement of plant materials. Because this is a historic site, the team should anticipate that a review by the Texas Historical Commission.

"Dog Park" Improvements

The "Dog Park" improvements fall into three distinct categories; one, the stonework abutting the dam intended to replace the concrete armored slabs, the stairs and associated flatwork and the plant materials.

Because the stonework abutting the dam appears to be part of the structural mechanism holding the dam in place, its design and construction should be included with work associated with improving the flow regime. Another consideration supports this thought; the proposed solutions for improving the flow regime may involve rethinking the depth of the stream on the downstream side.

Two, the stairs involve the construction of two new stone stairs and rehabilitation work on the existing stair on the north side. It also involves some stone walking surfaces on the north side. This can be a stand alone project, or it can be bundled with other, larger projects. In any event, the team should be led by an architect or a landscape architect.

The permitting requirements for the stairs are not entirely clear at this time. It seems likely that they will not trigger a permit from either of the federal agencies, U.S. Fish and Wildlife Service or the Corps of Engineers. But because it is an historic site, the team should anticipate a review by the Texas Historical Commission.

Three, the plant materials should be planned by a landscape architect. This work can be installed in one of three ways: by a landscape contractor, the Parks Department landscape personnel or volunteers. And it may be possible to combine the project delivery methods. This installation also lends itself to being done part by part over periods of time. Even this work should anticipate a review by the Texas Historical Commission.

Further Downstream Improvements

The improvements further downstream generally involve stonework for the overlooks, stone paving and planting materials, so the team for this work should be led by an architect or a landscape architect. The need to improve the wide gravel road on the north side may require a civil engineer, and there is a modest requirement for irrigation design. There is also some interpretive planning.

Because it is an historic site, the team should anticipate a review by the Texas Historical Commission.

General Grounds Improvements, North Side

The general grounds on the north side can be divided into two distinct parts: the Front Yard and the Pecan Grove; and the Tree Court. A variety of approaches to plant material installation would be appropriate, but in any event, the work should be based on professionally designed plans.

These grounds improvements are largely a landscape architecture exercise, so, not surprisingly, they should be designed by a landscape architect. Automatic irrigation will be required for the trees in the Tree Court, so an irrigation designer will be required. The hardscape should be installed by experienced landscape contractors. Because it is an historic site, the team should anticipate a review by the Texas Historical Commission. It is perhaps appropriate to mention here that this master plan discusses replacing the existing concession stand with a new building on the same site with a smaller footprint, and discusses augmenting these food services with a new facility north of the Zilker Playscape. Both of these efforts are complements to the thinking of this plan, and are logical extensions to it, but they are distinctly beyond the scope of this plan. Therefore, they are not further elaborated here or elsewhere in the plan. It is also worth saying that, while the general rationale

Building Estimated Costs

*Rehabilitate Bathhouse * (part 2)*	*3,581,775*
*New South Bathhouse **	*892,253*
Subtotal	*4,740,028*
Contingency (25%)	*1,118,507*
TOTAL	*$5,858,535*

These estimated costs include construction costs, professional fees, administrative and soft costs.

** This estimate includes the work in the Tree Court and work associated with the Boulder Garden.*

*** This estimate includes work in the South Grounds between the bathhouse and the parking lot as well as work in the parking lot, such as paving and new trees. Even though they are discussed, the trees lining the drive near Robert E. Lee and the riparian planting in the drainage ditch are beyond the scope of this plan, and are, therefore, not included in estimated costs.*

for building a smaller concession stand is to strengthen the connection between the Tree Court and Eliza Spring, the other work related to this goal should not wait for the smaller concession stand.

General Grounds Improvements, South Side

This work generally includes the area between the proposed new bathhouse and the existing parking lot and the parking lot itself. While this can be done as a stand-alone project, it can also be included in the scope of work for the bathhouse. Since most of this landscape work, if it is a stand-alone project, the team should be led by a landscape architect. A civil engineer will be required to design the paving for the parking lot and to design drainage and stormwater mitigation measures.

BUILDINGS

Rehabilitate Existing Bathhouse (Part 2)

This project includes the rehabilitation of the Bathhouse architecture, and it includes enhancements to the Beverly S. Sheffield Education Center, including the design and installation of a new Visitor's Center. It will include substantial sustainability features including rainwater collection and a system to reuse shower and lavatory water for flushing toilets and irrigation.

This project should include the construction of the Boulder Garden, and in the event the work in the Tree Court has not been done previously, that should be included in this project.

This project will close the Bathhouse for the better part of an entire swimming season, so it must include provisions for providing alternative bathhouse services and alternative education services during the construction.

This project should be led by an architect experienced in historic preservation, and should include a structural engineer, mechanical, electrical and plumbing engineers, a civil engineer and a landscape architect. It should also include interpretative planners and exhibit designers.

This project will require a variance from the SOS Ordinance. Because it is an element of an historic site, the team should anticipate a review by the Texas Historical Commission. And because it has been designated a City of Austin Landmark, it will require a Certificate of Appropriateness from the Historic Landmark Commission.

Like all visible changes at Barton Springs, keen public interest should be anticipated and planned for with an appropriate public participation process.

Build New South Bathhouse

The centerpiece of this project is, of course, the construction of a new bathhouse. But an important corollary is its integration into the arrival sequence as it begins in the parking lot and proceeds down to the Pool. If it has not been done previously, that should be included in the scope of this project.

This project should be led by an architect, and should include a structural engineer, mechanical, electrical and plumbing engineers, a civil engineer and a landscape architect. It may also include interpretative planners.

This project will require a variance from the SOS Ordinance. Because it is an historic site, the team should anticipate a review by the Texas Historical Commission.

Like all visible changes at Barton Springs, keen public interest should be anticipated and planned for with an appropriate public participation process.

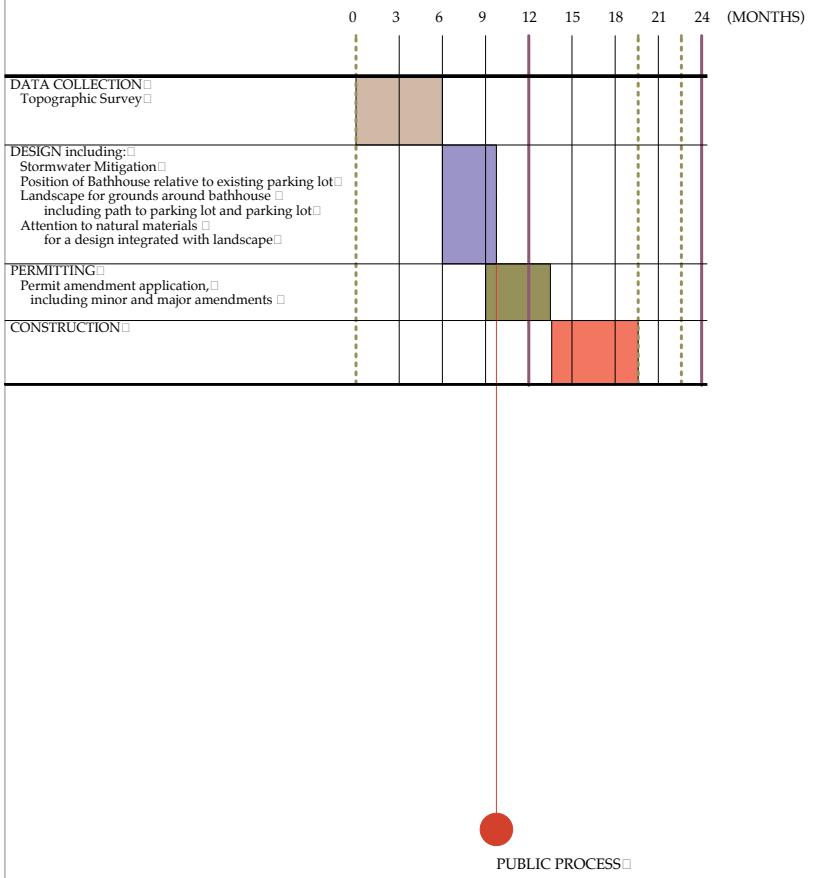
Selected Schedules

The purpose of this section is graphically portray the sequence and interrelationship of tasks required to accomplish the more complex of the proposed projects. It intends to communicate to the public the kinds of disruptions certain projects are likely to have on pool operations. It also suggests project milestones and opportunities for public participation and input.

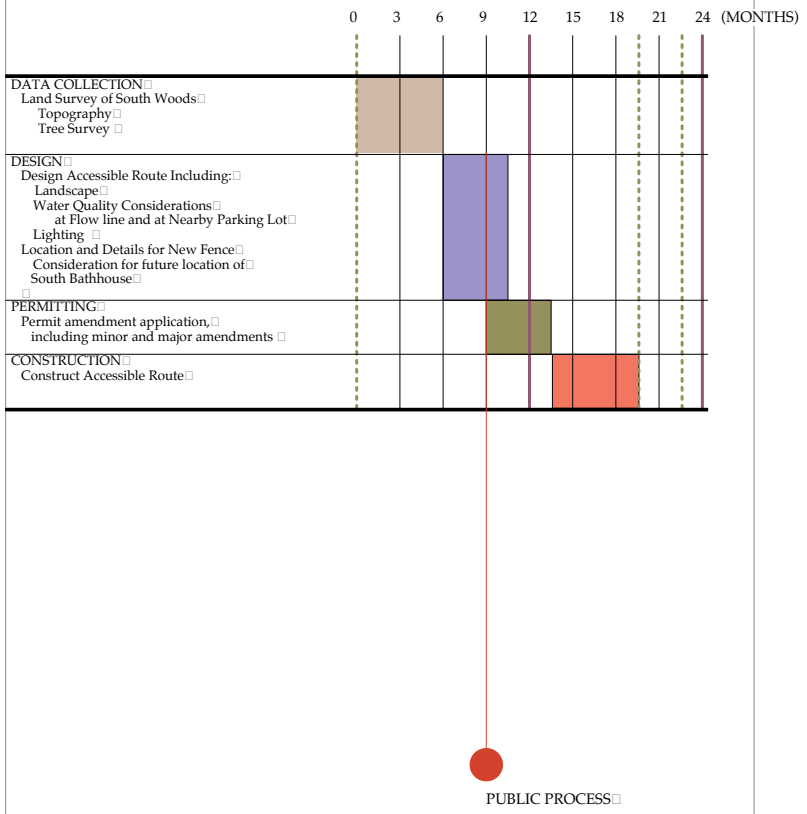
Every project is not represented here. Some projects are sufficiently straightforward that a graphic depiction seemed to be a needless duplication of information conveyed elsewhere verbally. For other projects, the breadth of possibilities for project delivery was so substantial that choosing one for the purposes of depiction was thought to be arbitrary and more than likely not useful. The work "further downstream" is an example where the entire project could be done by a single landscape contractor, or it could be broken into small pieces, with some of it done professionally and some done by volunteers. Moreover, it could all be done at once, or it could be done in bits and spread over a number of years.

All of these schedules are estimates, and they are based on the preliminary understandings of project scope and complexity that exist today. It should be expected that they will not be fully accurate. But their value should be seen, not in their precision or imprecision, but in their ability to convey relationships and an overall vision of a project trajectory.

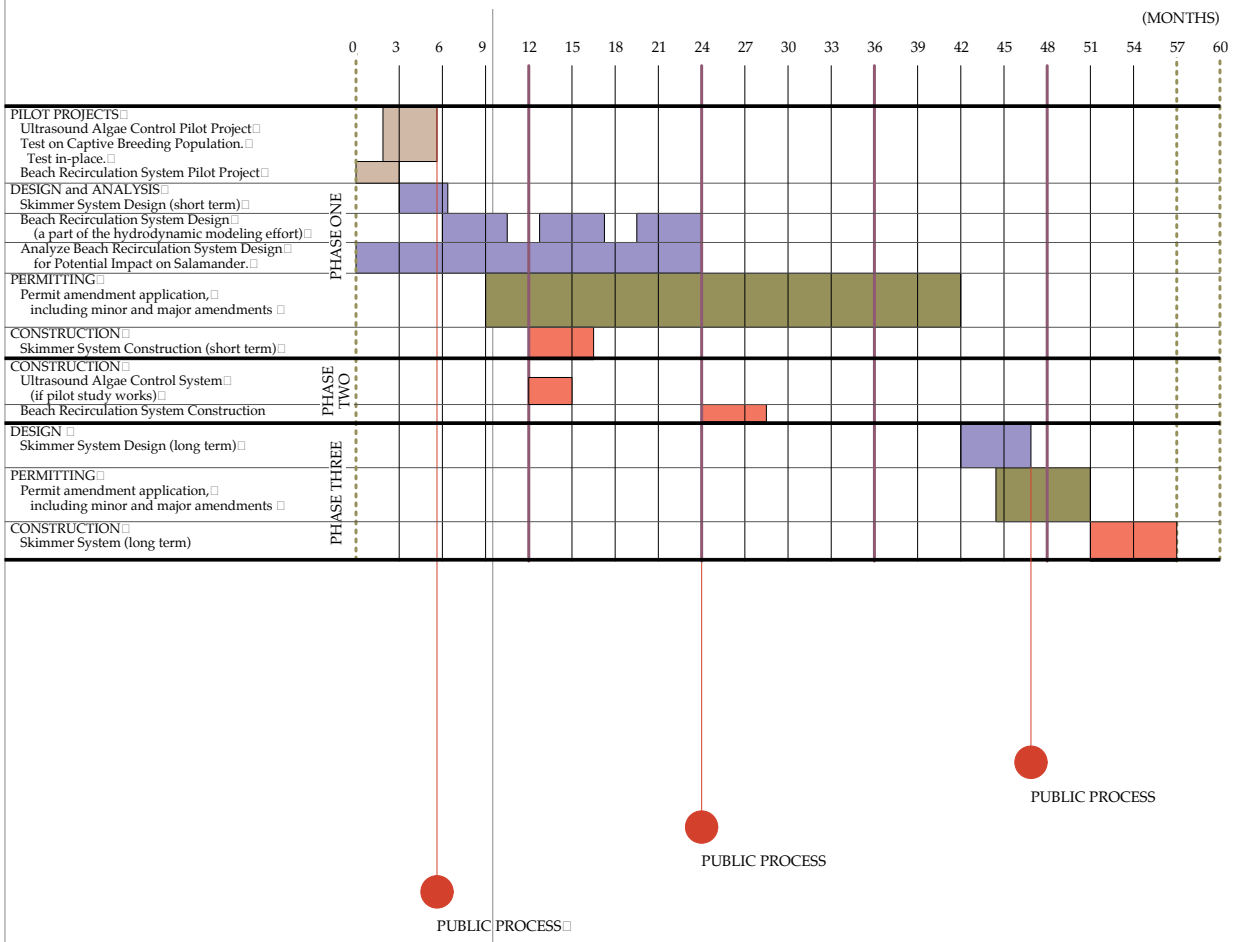
SOUTH BATHHOUSE



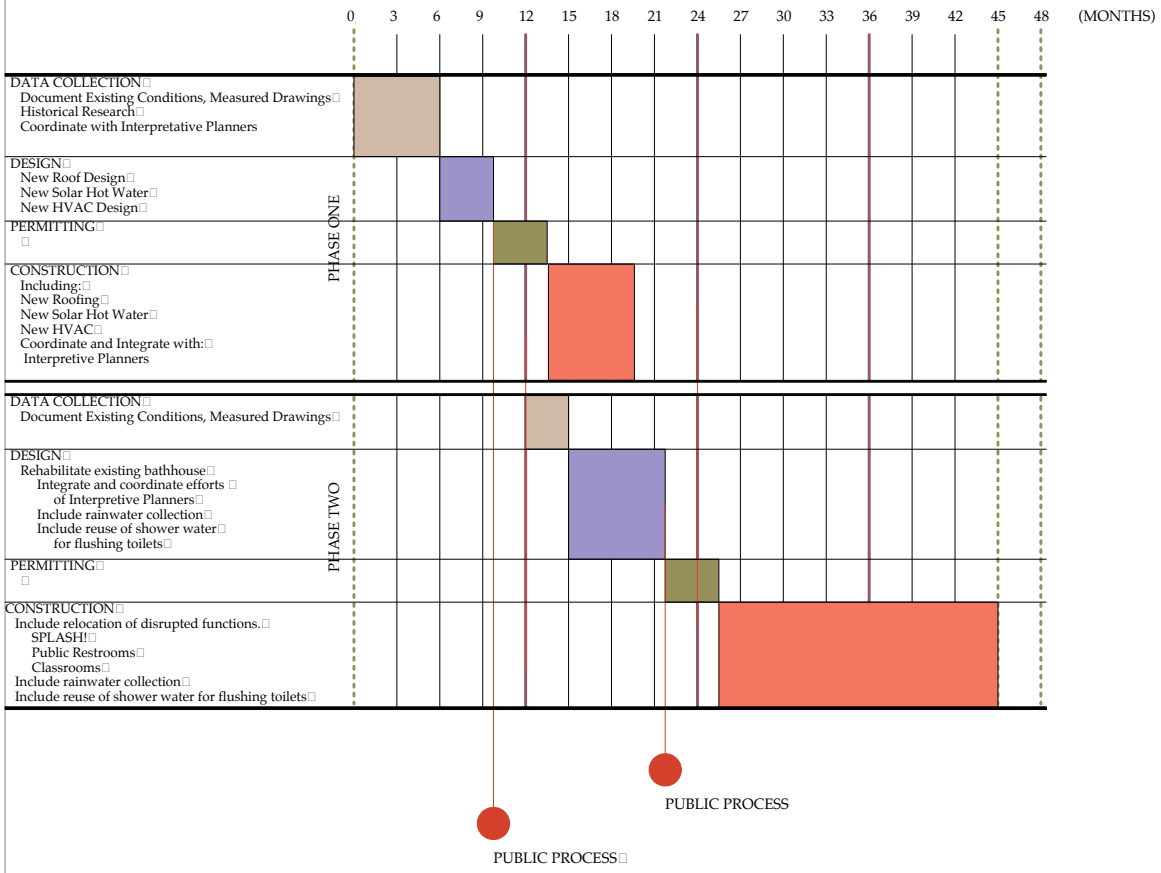
ACCESSIBLE ROUTE



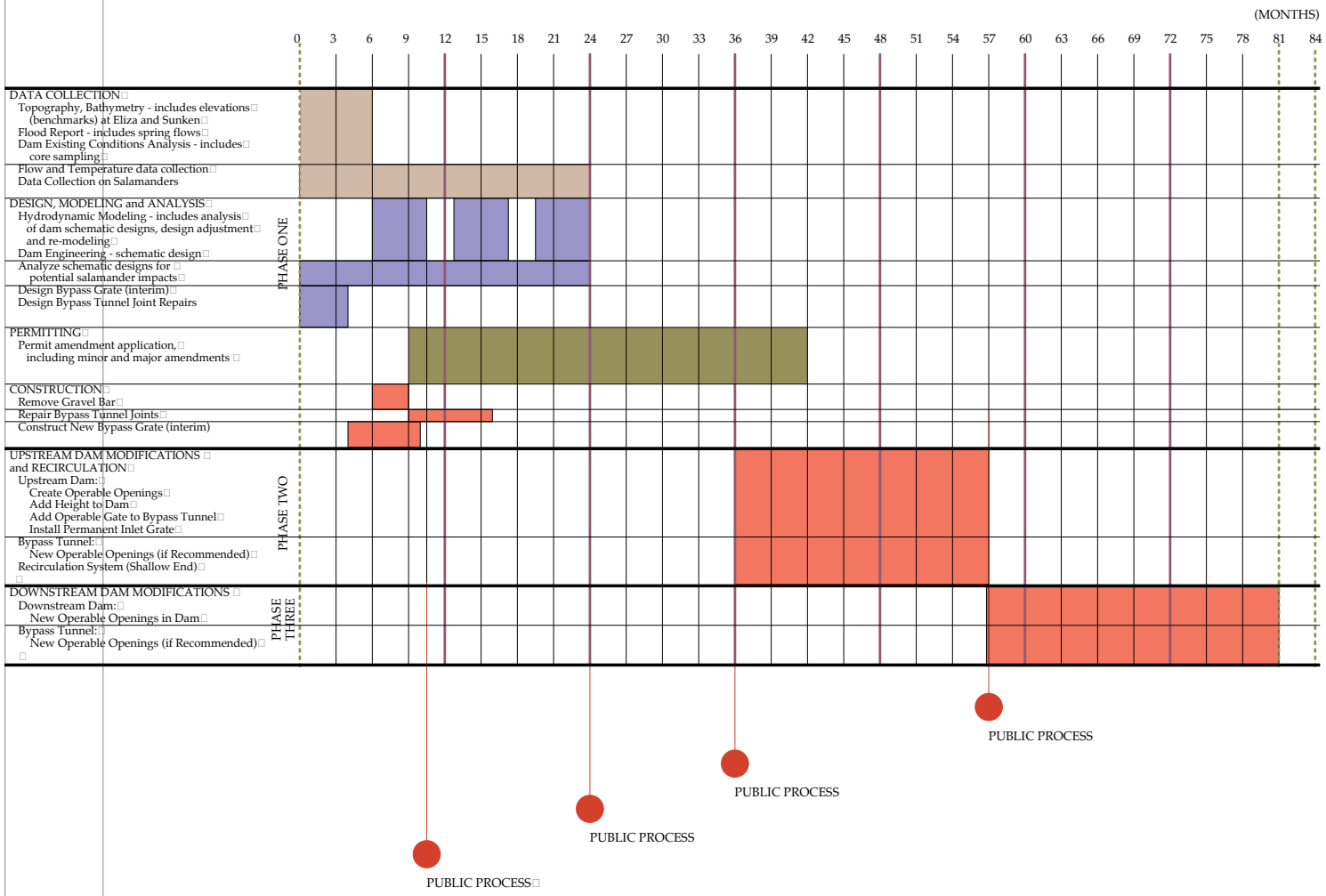
ALGAE CONTROL



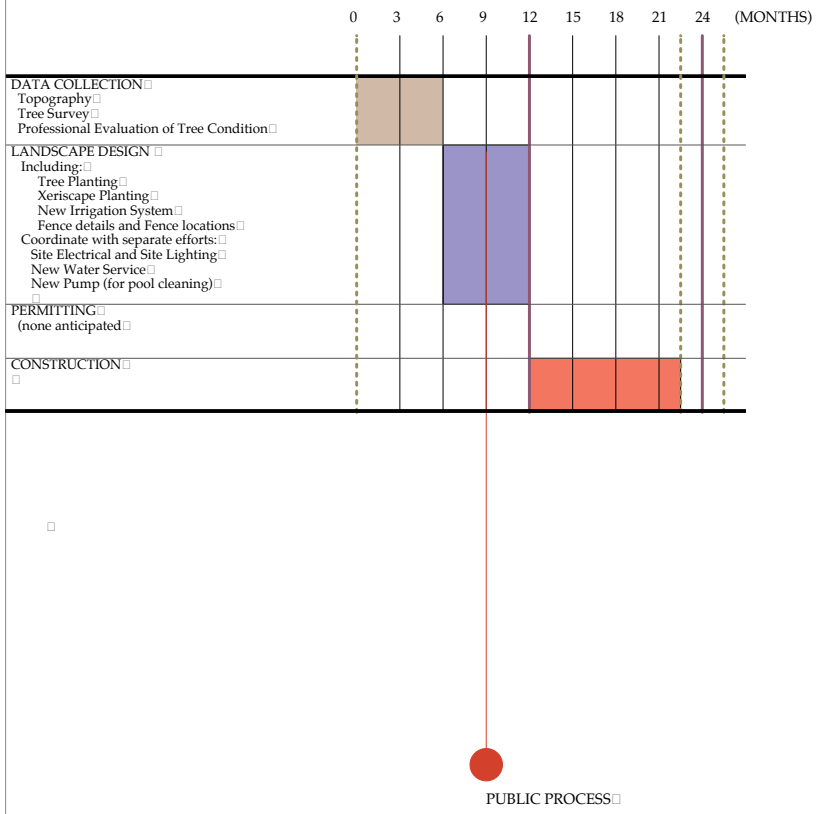
REHABILITATE EXISTING BATHHOUSE



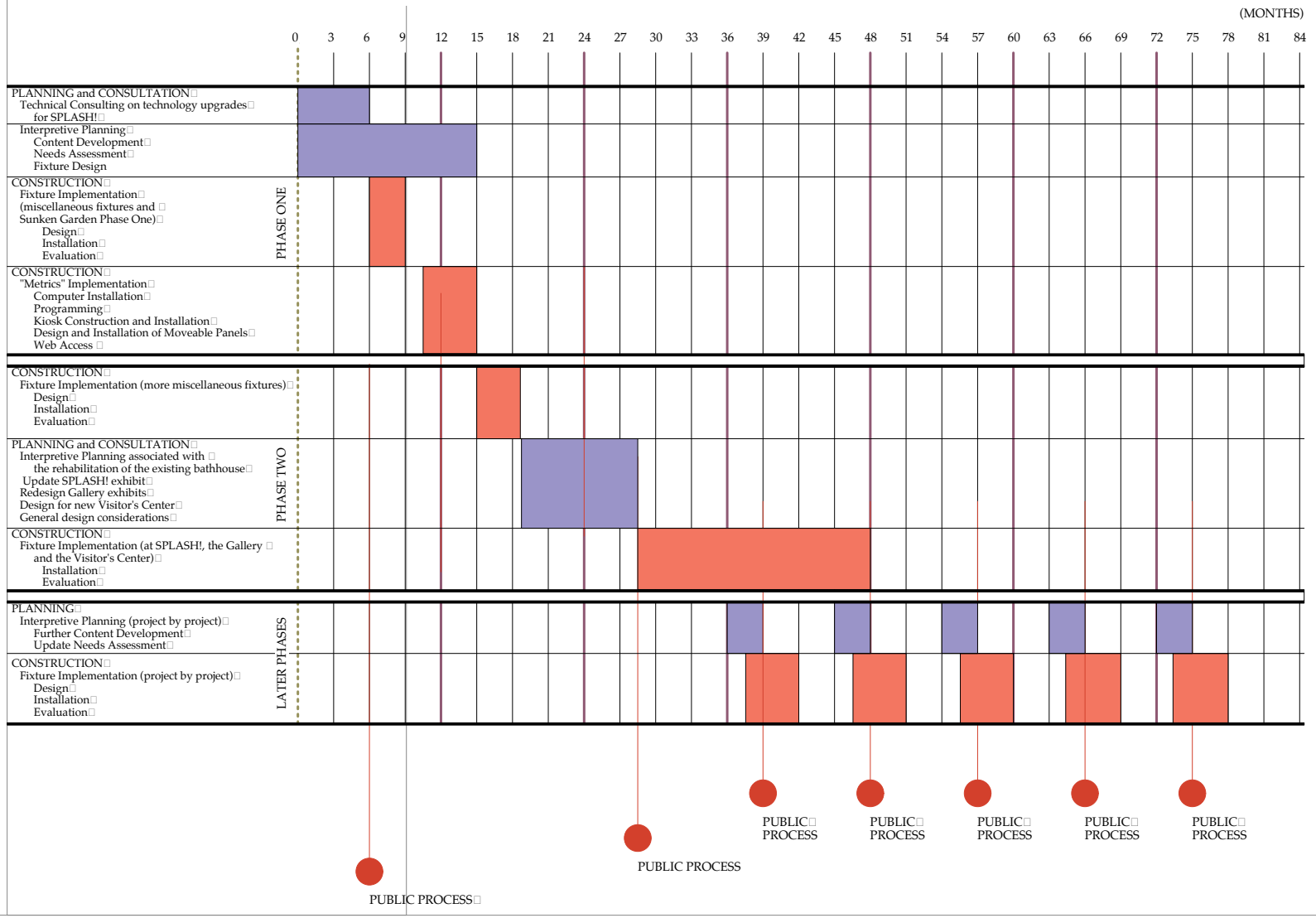
FLOW REGIME


(MONTHS)
0 3 6 9 12 15 18 21 24 27 30 33 36 39 42 45 48 51 54 57 60 63 66 69 72 75 78 81 84
DATA COLLECTION
Topography, Bathymetry - includes elevations (benchmarks) at Eliza and Sunken
Flood Report - includes spring flows
Dam Existing Conditions Analysis - includes core sampling
Flow and Temperature data collection
Data Collection on Salamanders
DESIGN, MODELING and ANALYSIS
Hydrodynamic Modeling - includes analysis of dam schematic designs, design adjustment and re-modeling
Dam Engineering - schematic design
Analyze schematic designs for potential salamander impacts
Design Bypass Grate (interim)
Design Bypass Tunnel Joint Repairs
PHASE ONE
PERMITTING
Permit amendment application, including minor and major amendments
CONSTRUCTION
Remove Gravel Bar
Repair Bypass Tunnel Joints
Construct New Bypass Grate (interim)
UPSTREAM DAM MODIFICATIONS and RECIRCULATION
Upstream Dam:
Create Operable Openings
Add Height to Dam
Add Operable Gate to Bypass Tunnel
Install Permanent Inlet Grate
Bypass Tunnel:
New Operable Openings (if Recommended)
Recirculation System (Shallow End)
PHASE TWO
DOWNSTREAM DAM MODIFICATIONS
Downstream Dam:
New Operable Openings in Dam
Bypass Tunnel:
New Operable Openings (if Recommended)
PHASE THREE
PUBLIC PROCESS
PUBLIC PROCESS
PUBLIC PROCESS
PUBLIC PROCESS
PUBLIC PROCESS

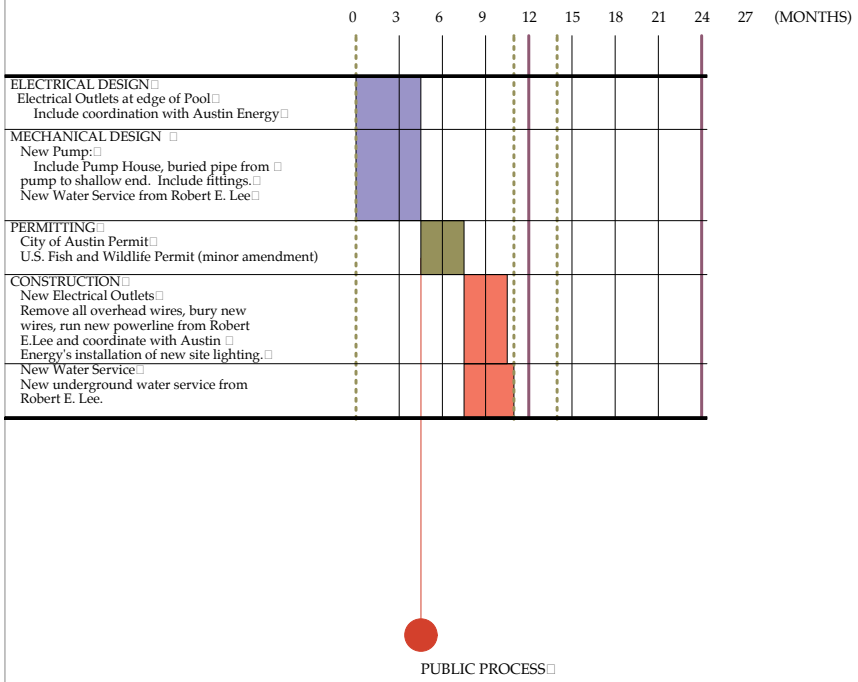
GROUNDS - *general*



INTERPRETIVE PLANNING



SITE WATER and ELECTRICAL



SUNKEN GARDEN