



## Office of the Auditor

# ZOO CAPITAL CONSTRUCTION PROGRAM AUDIT FOLLOW-UP

## BOND PROJECTS ARE WELL MANAGED

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### SUMMARY

In November 2008, Metro-area voters passed a \$125 million bond measure to make capital improvements at the Oregon Zoo. A 2009 audit, *Oregon Zoo Capital Construction: Metro's readiness to construct 2008 bond projects*, found Metro could correct deficiencies and build stronger processes. Of the report's seven recommendations, Metro had implemented six and made progress on the seventh. We found that Metro is now well-positioned to deliver on the promises of the bond.

### BACKGROUND

The Oregon Zoo is one of Oregon's most popular attractions. It is home to more than 2,000 animals from around the world and attended by over 1.6 million visitors annually. Additionally, more than 2,000 individuals donate their time to the Zoo.

In November 2008, Metro-area voters passed a \$125 million bond measure to allow the Zoo to make improvements including larger enclosures, an updated veterinary hospital, a new education center and water conservation measures. The set of projects funded by the bond measure was ambitious and complex. This ballot measure was three times the dollar value of a similar bond measure passed in 1996 and will take at least twice as long to complete. Construction is expected to affect almost every corner of the Zoo.

A report by our office in November 2009 found Metro needed better processes for managing the construction of Zoo bond projects. In the two years since that report, Metro has undertaken three bond-funded construction projects and demonstrated improved management practices over costs and schedules.

### SCOPE AND METHODOLOGY

The objective of this audit was to determine the status of recommendations made in the original 2009 audit. The audit, entitled *Oregon Zoo Capital Construction: Metro's readiness to construct 2008 bond projects*, made seven recommendations to improve how construction projects were managed. These recommendations included creating clear roles, and having better processes for managing costs, schedules, reporting, and documentation.

The 2009 audit looked in-depth at how three Zoo construction projects were managed. Similarly, this audit looked at three construction projects; however, the set of projects differed. Exhibit 1 describes the three projects reviewed for this report. All three projects were funded by the bond and were completed or were nearing completion.

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**Exhibit 1: Construction projects reviewed**

PROJECT	DESCRIPTION
Veterinary Medical Center	A new center replaces substandard veterinary and quarantine facilities. The cost is estimated to be about \$9 million.
Penguin Life Support System	A new water filtration system in the penguin exhibit will reduce water use by recycling water. The project's budget is \$1.8 million.
Water Main Building	This building makes possible harvesting rainwater onsite, which will reduce water use and improve quality. The project's budget is \$267,000.

Source: Oregon Zoo Bond Program

To accomplish our objectives, we reviewed each project in depth. We assessed the planning, scheduling and contracting information. We verified spending data. We interviewed management and staff and attended meetings. We reviewed project files, status reports, consultant reports and other documents to assess progress made.

We conducted our follow-up audit work in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

## RESULTS

Based on our review of three bond-funded projects, Metro had implemented six of the seven recommendations in the 2009 report and had made progress on the seventh. Processes for creating clear roles, controlling costs, and managing schedules were working well. The area that still needed attention was the content and clarity of the Bond Program's progress reports to a Citizen Oversight Committee and the Metro Council. A list of the 2009 recommendations and their status is on page 8.

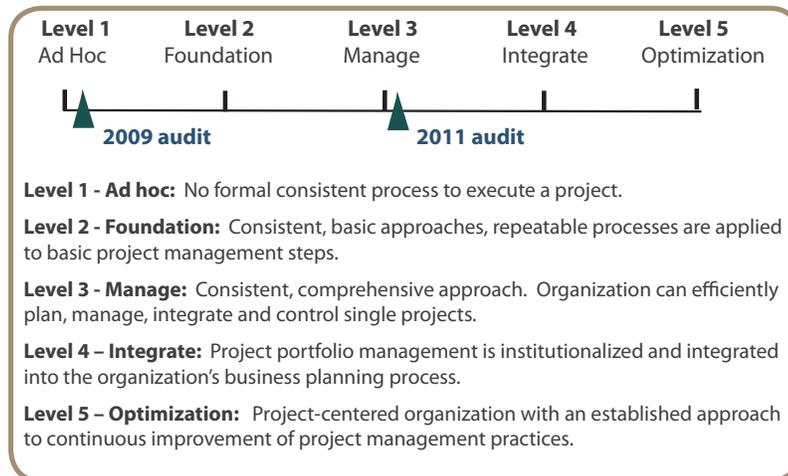
### **The Zoo Bond Program effectively managed projects**

In the 2009 audit, we used a project management maturity model to assess the management of construction projects. The model is shown in Exhibit 2 and outlines five maturity levels. In order to successfully manage construction while maintaining operations, Metro needed to move toward a Level 4 organization. At this level, institutionalized processes are in place to efficiently plan, manage and control multiple interrelated projects.

Overall, results were positive. In 2009, we found the processes to be at Level 1, Ad-Hoc. We now find Metro at Level 3 and able to manage individual projects successfully. As of June 30, 2011, approximately 12% of the bond funds were spent or committed. The Zoo

Bond Program had effectively managed three separate construction projects. Furthermore, Metro was in the process of developing a master plan that would provide a blueprint for the complex series of future projects to come.

**Exhibit 2: Level of project management capability and maturity  
2009 and 2011 audits**



Source: Auditor's Office analysis

Going forward, we would expect to see continued commitment to the management improvements that have been made. Construction will be underway through 2019 and in time, key staff may change. It will be important to have project management processes that are institutionalized and integrated into the organization.

**Reports could be improved to be more useful**

The 2009 audit found reports to Metro Council on Zoo construction projects were not adequate. The bond measure created a Citizen Oversight Committee to review progress, monitor spending and recommend changes if projects cost more than expected. To perform its function, the Oversight Committee needed current and accurate information on the status of individual projects and the Bond Program as a whole. The Metro Council required similar information to provide adequate oversight.

The Bond Program had established regular reports to these groups. However, the content of these reports could be improved. The 2009 audit recommended the Oversight Committee and the Metro Council receive reports on cost, schedule and variance, comparing actual results to planned results. While detailed information was provided about individual projects, the Bond Program could provide a clearer picture of the status of the whole program. During our audit, the Zoo was completing a master plan that would provide a schedule and cost estimates for the remaining projects. With this information, reports should be improved to clearly show if spending and schedule are on track for the whole program.

Exhibit 3 summarizes the information currently provided to these two groups. Much of the information was already collected, but it was located in different places, such as in detailed status reports prepared by project managers. The Bond Program should improve the content in reports to Metro Council and the Citizen Oversight Committee in order to provide better and easier to understand information.

**Exhibit 3: Recommended information reported to Oversight Committee and Metro Council**

Recommended Information	Available		Oversight Committee		Metro Council	
	Actual	Actual to Plan	Actual	Actual to Plan	Actual	Actual to Plan
Cost, by project	●	●	●	●	●	●
Cost, whole program	●	●	●		●	
Schedule, by project	●	●	●		●	
Schedule, whole program	●					

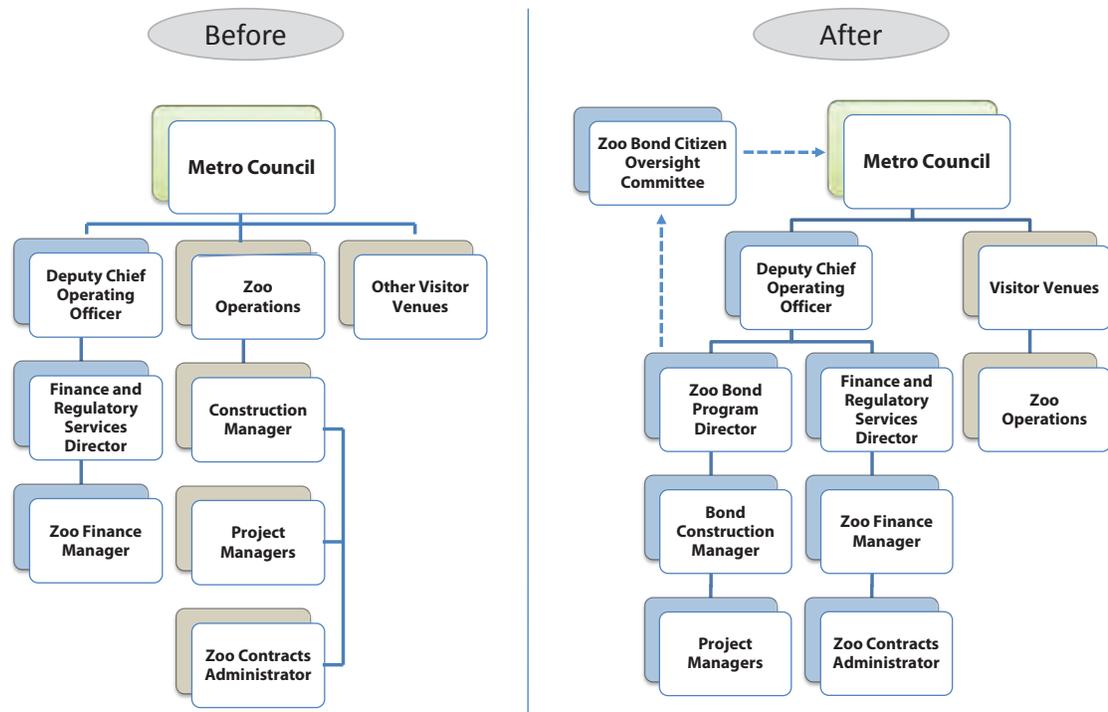
Source: Auditor's Office analysis

### **Organizational structure clarified roles and addressed weaknesses**

In 2009, Metro had not established clear leadership for the Bond Program. Among construction staff and Metro management, roles and responsibilities were uncertain. As a result, there were breakdowns in managing cost, scope and schedules.

Since then, Metro created a well-defined organizational structure. Considering the nature of the work, we found the new organizational structure to be appropriate. Metro improved financial oversight by making some key changes. The two functions, Zoo Operations and the Bond Program were separated organizationally. Exhibit 4 shows the organizational structure before and after the changes.

**Exhibit 4: Organizational structure before and after changes**



Source: Auditor's Office analysis (Note: not all organizational levels are shown)

Reporting relationships were changed to reduce conflicts. In the past audit, the Zoo Contracts Administrator reported to the Zoo Construction Manager, who did not consistently follow policies. This created a difficult situation where a subordinate was supposed to question the actions of their supervisor. Now, the Zoo Contracts Administrator reports to the Zoo Finance Manager, a more appropriate chain of command. This change appeared to be working. We reviewed contracts issued since 2009 and found they complied with key procurement policies.

Clear leadership is important for accountability and we found the Bond Program had assigned clear leadership for construction projects. Each project had a designated project manager. As a result, one person was responsible and accountable for the project.

Separating the Bond Program from Zoo Operations created a separate project management function better suited to address problems seen during the previous audit, such as a history of cost overruns, insufficient information, and over-scheduling of resources. A challenge of this separation is maintaining collaboration. Zoo Operations are affected by construction and will ultimately own the final results. As a result of well-formed project teams and strong communication, we found Zoo Operations and the Bond Program collaborated effectively on projects.

## **Project costs were managed well and within budgets**

In the 2009 audit, we found projects cost more than budgeted. In particular, the Zoo underestimated project costs, began projects without reasonable budgets, and did not monitor the value of contracts signed. It is not uncommon for construction projects to cost more than initially estimated. Even so, when projects cost more than expected, there might not be enough money to complete other projects, and the public can lose trust in government's management ability.

Good budget management has three essential components. The first is a comprehensive cost estimate. Developing a good cost estimate requires planning for the unexpected. In construction, there are often unforeseen changes that cannot be predicted before a project begins. For this purpose, a cost estimate should include some contingency funds set aside for emergencies. The second component is a realistic budget that fits a project's scope and design. The third component is a process to monitor spending that provides an early indication of cost increases.

We found the Bond Program managed its budget well. For the three projects we reviewed, the Program had:

- Created realistic cost estimates with money set aside for emergencies,
- Verified that the amount budgeted for the projects was reasonable, and
- Closely monitored and controlled spending.

As a result, all three projects were expected to be completed within or under budget.

The Bond Program had good processes for developing reliable cost estimates. Cost estimates were developed by experienced professionals. They included contingency funds for emergencies, as well as needed changes. Furthermore, they received rigorous review. For several projects, the Program verified initial estimates with a second independent estimator.

In addition to developing realistic cost estimates, the Bond Program began projects with reasonable budgets. The first project, a new Veterinary Medical Center, will replace the current substandard veterinary and quarantine facilities. In the 2009 audit, we found the original design was estimated to cost \$2 million more than its \$9 million budget. To its credit, the Program did not move forward on this design. Instead, a new design lowered costs by relocating the building and reducing its size by almost 3,600 square feet. As a result, the amount budgeted for the project was reasonable. Moreover, the budget set aside money for unforeseen costs. During excavation, the contractor discovered a prior landslide on the site that required additional work. Due to prudent planning, the project manager was able to cover this work without going over budget.

Similarly, with the other two projects, the Bond Program set aside sufficient funds for emergencies. Both required supplementary electrical work and other minor improvements after construction began. The amount budgeted was sufficient to pay for these additional costs.

Once construction was underway, there were effective processes for monitoring and controlling spending. All project managers followed a standard method for tracking spending as well as forecasting costs. Each month, project managers issued an updated forecast of the total costs for their projects. We found these forecasts accurately predicted costs for the three projects.

### **Schedule delays identified early so action could be taken**

The 2009 audit found schedules developed at the beginning of projects were not kept current. As a result, timelines reported by the Zoo to the Metro Council and staff were not accurate. It was not clear when exhibits would be ready.

During this audit, we found the Bond Program had established effective processes for managing project schedules. Project managers received training in the scheduling software. Before construction began, project managers developed an initial schedule. As construction progressed, they updated the schedule monthly. We found schedules reflected new dates if projects were delayed.

As a result, potential delays were identified early, allowing management to take effective action. For example, during construction on the penguin exhibit, the project manager reported that the contractor may not be able to meet the schedule several months before it would impact operations. The Bond Program notified Zoo staff of the anticipated delay and, as a result, maximized the protection and care for the animals.

Managing projects typically means balancing schedule, cost and scope. These three constraints are commonly referred to as the 'Project Management Triangle' because, for the most part, a change to one is likely to affect another. In the case of the bond projects, we found project managers extended schedules in order to optimize cost and quality. For instance, due to the landslide, the Veterinary Medical Center needed additional engineering to stabilize the location. Rather than trying to meet milestones and pay more or risk poorer quality due to rushed work, the schedule was extended.

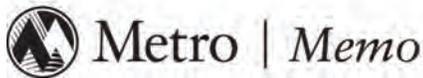
### **Well-organized files provided easy access to information**

During the 2009 audit, we found that staff had not developed a standard way of maintaining project files. As a result, information was lost or located in separate places at the Zoo. As project managers frequently changed, it was difficult for new project managers to obtain accurate information about the status of their projects.

Since then, the Bond Program developed a consistent way for maintaining files, making it easy to understand what was going on with a project. Documentation was handled similarly from project to project, and most documents were available electronically. Information could be easily located because each project had a set of files organized by simple and distinct categories. Furthermore, the program was working with the Metro records manager to develop a records retention schedule that would outline which documents should be kept and for how long.

## STATUS OF RECOMMENDATIONS

2009 Audit Recommendations	Status
<b>To ensure careful stewardship of public resources and encourage realistic expectations for Zoo projects:</b>	
1. Metro should ensure basic cost management processes are in place before it commits to large value construction contracts for bond-funded projects. This includes processes for: <ol style="list-style-type: none"> <li>a. Communicating the project budget to the architect;</li> <li>b. Estimating project costs, including appropriate contingency amounts;</li> <li>c. Verifying the work scope can reasonably be completed within the budget; and,</li> <li>d. Monitoring and controlling spending and encumbrances.</li> </ol>	<i>IMPLEMENTED</i>
2. Metro should improve its knowledge and understanding of estimating project costs.	<i>IMPLEMENTED</i>
3. Metro should develop processes for creating, monitoring and updating schedules for individual projects and the bond program as a whole.	<i>IMPLEMENTED</i>
4. Metro should establish a periodic reporting mechanism that provides the Citizen Oversight Committee and Metro Council with current and accurate information on cost, schedule, and variances by project and for the bond as a whole.	<i>IN PROCESS</i>
5. Metro should develop a consistent system to maintain Zoo bond project documentation.	<i>IMPLEMENTED</i>
<b>To improve accountability, the Chief Operating Officer should:</b>	
6. Clarify the organizational structure by clearly delineating roles and responsibilities and lines of authority.	<i>IMPLEMENTED</i>
7. Clarify the role of the Finance and Regulatory Services Department in providing financial oversight to capital projects.	<i>IMPLEMENTED</i>



Date: October 21, 2011  
To: Suzanne Flynn, Metro Auditor  
From: Scott Robinson, Deputy Chief Operating Officer;   
Kim Smith, Oregon Zoo Director   
Subject: October 2011 Zoo Capital Construction Program Audit Follow-up Report

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This memorandum is Metro management's response to the Zoo Capital Construction Program Audit Follow-up Report published in October 2011.

Management would like to thank-you and your staff for performing this follow-up audit to assess Metro's progress on implementation of the seven recommendations from the 2009 audit, *Oregon Zoo Capital Construction: Metro's readiness to construct 2008 bond projects*. Metro management believes that it is vitally important to effectively manage the Oregon Zoo Infrastructure and Animal Welfare bond program, the largest capital improvement program the zoo has ever undertaken.

Management began taking steps to create a robust governance and oversight structure to ensure careful and diligent stewardship of bond funds upon the passage of the \$125 million Zoo bond measure in November 2008. The audit recommendations provided valuable additional guidance for improving performance and protecting taxpayers. Metro management is pleased with your conclusion that of the prior report's seven recommendations, Metro had implemented six and made progress on the seventh. In particular, we appreciate that the audit noted that the three projects under construction had realistic costs estimates with appropriate contingencies, verified budgets, and that spending was closely monitored and controlled.

For the one recommendation identified as in process, Metro management is committed to providing timely, relevant, and accurate information to the Oregon Zoo Bond Citizens' Oversight Committee and the Metro Council. As the follow-up report states, Bond Program staff collects and documents detailed information for each active project. With the Metro Council adoption of the Bond Implementation Plan on September 22, 2011, the scopes, schedules and budgets for all remaining bond projects are now known and can be used to provide information for the program as a whole. Metro management will work closely with the Oversight Committee and Metro Council to ensure they receive the information they need to perform their important oversight functions.

Metro management and staff appreciate the thoughtful and thorough review conducted by the auditor and welcome ongoing review of the Bond Program in the future. Metro is focused on continual improvement to project management, budgeting, communication, and oversight to ensure that promises made to the public are kept.

