Performance Audit 16-01: Public Works Consent Decree Oversight

August 2016

City Auditor Stan Sewell, CPA, CGFM, CFE

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August 11, 2016

To: Mayor Andy Berke

City Council Members

Subject: Public Works Consent Decree Oversight (Report #16-01)

Dear Mayor Berke and City Council Members:

The attached report contains the results of our audit of Public Works Consent Decree projects. Our audit found the requirements of the Consent Decree have been addressed in the program management contract with Jacobs Engineering Group. Jacobs has developed a project management plan that meets best practice guidelines. However, we found enhancements could be made to the payment review process and consultant's contract language. Also, management should develop performance measurements for consultants.

In order to address the noted areas for improvement, we recommended actions to require additional support for project expenses and enhanced management review of all expenses. Further, we recommended the consultant's contract terms should be more defined for reimbursable expenses.

Even though our report included recommended enhancements to certain areas of the Consent Decree oversight process, we would like to commend the Public Works Department and Jacobs Engineering. We are impressed with their detailed and organized approach to project management oversight.

We thank the management and staff of the Public Works Department and Jacobs for their cooperation and assistance during this audit.

Sincerely,

Stan Sewell, CPA, CGFM, CFE City Auditor

Attachment

cc: Audit Committee Members

Stacy Richardson, Chief of Staff

Maura Sullivan, Chief Operating Officer Justin Holland, Public Works Administrator Daisy Madison, Chief Financial Officer

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AUDIT PURPOSE

This audit was conducted in accordance with the Office of Internal Audit's 2016 Audit Agenda. The objectives of this audit were to determine if:

- The Jacobs contract covers all Consent Decree requirements;
- The Consent Decree projects have proper management oversight; and,
- Public Works management is properly reviewing Consent Decree payments.

BACKGROUND

The City's interceptor sewer system encompasses approximately 1,263 miles of sewer lines, 70 pump stations, approximately 192 residential/grinder stations, 53 miles of force main, eight combined sewer overflow treatment facilities and one regional wastewater treatment plant. With an aging sewer system, the City experienced numerous sewer overflows into the local waterways.

To address the sewer overflows, the City negotiated with several environmental agencies and developed a Consent Decree. The agreement became effective April 2013. The City agreed to rehabilitate the sewer system and eliminate all sanitary sewer overflows. This means eliminating discharge of wastewater to any waters from the sewer system, as well as any overflow, spill, or release of wastewater to public or private property.

The comprehensive, two-phase plan is expected to cost \$250 million over a 16-year period. The first phase is a 5-year program of specific projects identified by the City. Based on the success of phase one projects, the second phase will include projects determined necessary by management to meet the intent of the Consent Decree. The City contracted with Jacobs Engineering Group to oversee and manage phase one projects.

The five year agreement with Jacobs provides program management services. Some services included in the contract are program development, project planning, administration, and construction management. The overall goal is to ensure the City meets all Consent Decree requirements.

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¹ Source: City of Chattanooga 2015 CAFR

Financial Information

As shown in Exhibit 1, phase one currently has forty-eight projects. The budget for current projects is \$191.6 million. With 41.6% of projects completed, the City has spent in excess of \$86 million.

Exhibit 1: Phase One Project Status

Status of Project	Number of Projects
Completed	20
Construction	10
Bidding	4
SRF/TDEC Review*	4
Design	10
Total Projects	48

^{*}State Revolving Fund and TN Dept. of Environment and Conservation

Source: Jacobs "CD Program (Funded) Financial Summary - May 2016 Update"

FINDINGS AND RECOMMENDATIONS

Project management encompasses the organization of resources. Whereas, project oversight assures projects are completed according to plan. The two work in concert to make certain projects in process are completed according to specifications, budget and timeframe. In general, the steps include project planning, defining timelines, executing the plan, and monitoring the performance of the projects and contractors.

There are significant risks with performing a program of this proportion. City management recognized a need for outside assistance to strategically implement and manage the multiple projects. A significant goal of this audit is to determine if the hired contractor (Jacobs) has delivered contracted services as intended.

To ensure all aspects of the Consent Decree were addressed, we reviewed the contract between Jacobs and the City. We determined the contract incorporated all compliance issues. The details of the requirements, and steps taken by Jacobs, are located in Appendix B.

Performance evaluations of consultants are needed. Our research to establish best practices found Federal guidelines for project management oversight². We compared the contractor's project management plan and processes to these criteria. We found Jacobs has competent staff, well developed written policies and procedures, quality control and assurance guidelines. We found adequate communications with Public Works through weekly progress meetings. Overall, as shown in Appendix C, the contractor has met these best practices.

One area for improvement noted during our review related to the quality control and assurance guidelines. The contractor's policy includes evaluating the performance of consultants at the completion of their work. Although Jacobs recognized the need to evaluate consultant's performance, they have not developed performance standards for evaluations. The standards could incorporate compliance with contract terms, as well as, scope, schedule and budget. These evaluations help management decide the eligibility of consultants for future projects.

Recommendation 1:

We recommend Public Works ensure the contractor develops and implements performance evaluations for consultants.

Auditee Response: We concur with the audit finding and recommendation. Jacobs has agreed to develop this measurement and provide a draft to the City within 30 days.

Strengthen internal controls over reimbursable expenses.

A common practice in professional contracts is the reimbursement of miscellaneous expenses referred to as *reimbursable expenses*. We reviewed several consulting contracts. We found numerous types of expenses could be included under this category. Types of allowable expenses include travel, supplies, subcontractor payments, subsistence, field equipment, communications, etc.

These categories are not clearly defined as to limits or specific allowable expenses. For instance, there are no limits on travel reimbursements (e.g. vendors could fly first class rather than coach). Also, the contracts failed to address ownership of equipment purchased. Since the City reimbursed the vendor, ownership should revert to the City at the end of the contract.

² 49 U.S. Code § 5327 – Project Management Oversight

When contracts have broad terms and reimbursements require minimal documentation, consultants could easily misinterpret or abuse this area. Contract terms should be specific to ensure costs are only those reasonably necessary for the project. For instance, out of town travel should receive prior approval and reimbursements made using GSA rates. Also, the language could include limits on and/or preapproval of purchases such as printing, equipment, and supplies.

Recommendation 2:

We recommend Public Works ensure contract terms for reimbursable expenses are detailed and specific.

Auditee Response: We concur with the audit finding and recommendation.

Documentation to support reimbursable expenses should be more detailed.

We reviewed a statistical sample of payments made during the audit period. Overall, we found payments had proper approval signatures and the invoice and payment amounts matched. Although the payment packets included some supporting documentation, we noted payment vouchers for reimbursable expenses were missing detailed receipts.

Reimbursable expenses are reported on a Reimbursable Expense Summary form. In our sample selection, we noted reimbursements for subcontractor payments of \$505,000 were submitted by Jacobs. In addition, \$261,000 in reimbursements for subcontractor payments was requested by other vendors. Neither Public Works nor Finance has required receipts to support these reimbursable expenses.

As a best business practice, all reimbursement requests should be supported by receipts to document the expenses are valid and accurate. The documentation should be sufficient to determine the expenditure is for a valid municipal (project) purpose. This would require the consultants submit receipts to support the charges on the Reimbursable Expense Summary.

As part of the review process, Public Works should ensure all payments are properly supported. The review should include, at a minimum, matching the amount submitted for payment to the original receipt and ensuring the work performed or goods purchased is reasonable for the project.

Recommendation 3:

We recommend Public Works thoroughly review each vendor's reimbursable expenses and obtain the required support documentation.

Auditee Response: We concur with the principle behind the audit finding and recommendation. A thorough review and follow-up of each vendor's expenses would require a considerable level of effort that would likely require additional internal staff and/or outside contract assistance. We would propose a random review of selected projects to satisfy this recommendation.

Auditor Comment: City policies on internal controls and payments as mandated by the State's Compliance Manual require a review of supporting documentation to ensure the accuracy of invoices. They further require invoices provide sufficient detail to verify charges are appropriate. We agree proper internal controls could be ensured by randomly selecting billings for on-site testing of support documentation. However, to ensure a proper level of pre-payment review is conducted by management, the vendors should be required to provide line item descriptions on their invoices for all reimbursable expenses. This information should be readily available for inclusion on the invoices as the vendors should be tracking these expenditures in order to accurately charge them in summary form.

Recommendation 4:

We recommend management consider requesting the support documentation for previous subcontractor payments to ensure payments were accurate and valid.

Auditee Response: We concur with the principle behind the audit finding and recommendation. A thorough review and follow-up of each vendor's expenses would require a considerable level of effort that would likely require additional internal staff and/or outside contract assistance. We would propose a random review of selected projects to satisfy this recommendation.

Auditor Comment: With respect to previously billed expenses, we agree a few limited scope on-site reviews of documentation may be sufficient. Upon request, our office may be able to assist with these reviews.

Improvements to support documentation will assist with the review process.

We reviewed a sample of contractor payments to determine if the documentation supported the expenditure. In general, the documentation provided limited and brief summaries of work performed. Enhancements to the progress report and including additional documentation will provide management the necessary tools to perform a thorough review of charges.

The Progress Report summarizes the project's monthly and upcoming activities. As part of the review process, Public Works uses the progress report to support and approve monthly contract payments. Specific knowledge of the ongoing projects enables the reviewer to verify charges are valid and accurate. We identified two areas in which the progress report could be enhanced.

Our review of contract payments found, in some instances, the progress report lacked detailed explanations of services performed. For instance, the progress report included a line item stating "RPR Services" with no further explanation or hours charged. We also noted the organization of the activities reported on the progress report did not align with the charges submitted on the invoice. The combination of these factors makes it difficult for the reviewer to verify charges.

In addition, we found supplemental services were not properly supported. Because supplemental services require special approval, the payment packet should include either the approval letter, or number, as a reference. Adding detail and providing approval references will assist with the current review process.

We also noted invoices submitted didn't provide a detailed number of hours worked by consultants. By including detailed time reports, the reviewer could easily verify the amount charged to the project is accurate. In addition, we noted compliance checks were not performed on consultant's time records. Random or select time record audits could be performed periodically for a portion of payments.

Recommendation 5:

We recommend Public Works require the Consulting Engineers provide detailed explanations of charges and work completed on the Progress Report, listing the monthly activities by task number which should correspond to task billing amount.

Auditee Response: We concur with the audit finding and recommendation. We would note that the implementation of this finding will result in additional administrative costs being passed on to the City by the consultants.

Auditor Comment: City policies on internal controls and payments as mandated by the State's Compliance Manual require a review of supporting documentation to ensure the accuracy of invoices. We noted some firms provide sufficient detail and/or task numbers to easily link work performed to line items on the invoices and determine the appropriateness of the billing. However, a thorough review is time consuming for firms that do not. If management is conducting an appropriate review of invoices, the inclusion of task numbers with a brief explanation on the progress reports should result in a more efficient process. Although providing organized information may require more administrative time by a consultant, several are already investing this time. Further, we would expect the necessary information to be readily available to the consultant as it should be utilized to develop the invoices they are currently providing.

Recommendation 6:

We recommend Public Works require consultants include the Supplemental Services Approval letter or number in the details of the Progress Report.

Auditee Response: We concur with the audit finding and recommendation.

Recommendation 7:

We recommend Public Works perform a random review of consultants hours billed for projects. Further, we recommend Public Works consider requiring consultants submit time logs for hours charged per month along with their invoices, Progress Reports and Reimbursable Expense Summary.

Auditee Response: We concur with the audit finding and recommendation.

APPENDIX A: SCOPE. METHODOLOGY AND STANDARDS

Based on the work performed during the preliminary survey and the assessment of risk, the audit covers Consent Decree projects July 2013 to April 27, 2016. When appropriate, the scope was expanded to meet the audit objectives. Source documentation was obtained from Jacobs Engineering firm, Public Works and Finance Departments. Original records as well as copies were used as evidence and verified through physical examination.

To achieve the audit objectives, interviews were conducted, payments were reviewed, and policy and procedures were tested. Interviews were conducted with Public Works Engineering and Waste Resources as well as Jacobs staff. Information was used from interviews to understand the processes and workflow of the CD projects and Jacobs oversight management program.

Jacobs has developed and implemented numerous policies and procedures used by vendors, Jacobs and CoC staff. All CD documents as well as the numerous policies and procedures are housed in SharePoint. SharePoint is a site used to upload and store data as well as share it with those authorized such as consultants, SFR, City and Jacobs' staff. This site was used extensively to review procedures, approvals, inspection reports, daily reports etc.

Policies and procedures were reviewed from the Finance Department, State of TN and the US Government. US Code 49 5327 specifically addresses project management oversight for large projects. The criteria established in this code were used to determine if Jacobs is providing proper oversight.

A sample was selected from CD payments and Jacobs' payments for the scope period. The sample payments were reviewed to ensure they were properly supported following the City and Jacobs requirements. The sample size and selection were statistically generated using a desired confidence level of 90 percent, expected error rate of 5 percent, and a desired precision of 5 percent. Statistical sampling was used in order to infer the conclusions of test work performed on a sample to the population from which it was drawn and to obtain estimates of sampling error involved. When appropriate, judgmental sampling was used to improve the overall efficiency of the audit.

We conducted this performance audit from *January 2016* to *July 8*, 2016 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.

APPENDIX B: CONSENT DECREE COMPLIANCE REQUIREMENTS

Consent Decree Requirements	Method of Compliance
Community Input to establish a 7 member WasteWater Regulations and Appeals Board.	The Board's information is located on the City's website http://www.chattanooga.gov/boards-commissions. This Board has been established for a number of years. It is used for regional users and industrial customers to submit appeals. The Board is provided an annual update.
Capacity, Management, Operation & Maintenance (CMOM) programs.	This requirement is covered under scope of services Task 5: Development of CMOM plans in Jacobs contract.
Sewer Overflow Response Protocol ("SORP") includes staff communication and duties, prompt response to Sanitary Sewer Overflow (SSO), public notification, assessment of cause and impact, elimination of cause and mitigation of impact, cleanup of SSO, regulatory reporting, and training of CoC staff and contractors.	This requirement is covered under scope of services Task 5: Development of CMOM plans (a) in Jacobs contract.
Emergency Response Plan including emergency operating procedures for sewer system, notification to public and regulatory authorities.	This requirement is covered under scope of services Task 5: Development of CMOM plans (b) in Jacobs contract.
Fats, Oils and Grease ("FOG") Management Program establish a public education program to reduce amount of grease entering into sewer system from private residences, establish methods to identify persistent sources of FOG and address these sources, establish performance indicators to measure effectiveness of FOG program.	This requirement is covered under scope of services Task 5: Development of CMOM plans (c) in Jacobs contract.
Gravity Line Preventive Maintenance Program includes routine hydraulic cleaning of gravity sewer lines, root control component, manhole preventive maintenance, and a process for addressing gravity sewer lines with repeated SSOs	This requirement is covered under scope of services Task 5: Development of CMOM plans (d) in Jacobs contract.
Pump Stations Operations Program including routine pump station operations, emergency pump station operations, and preventive maintenance program.	This requirement is covered under scope of services Task 5: Development of CMOM plans (e), (f) in Jacobs contract.
Hydraulic Model Development requires development of a computerized module of the wastewater collection and transmission system (WCTS) to use in the assessment of the hydraulic capacity of the WCTS and to provide detailed understanding of the response of the WCTS to wet weather events and an evaluation of the impacts of proposed remedial measures and removal of I/I flow.	This requirement is covered under scope of services Task 6: CD Project Planning (a) in Jacobs contract.
Capacity Assurance Program shall identify each sewershed or part of it with insufficient capacity under either one hour peak flows, or average conditions, or both; shall analyze all portions of the sewer system that hydraulically impact all wet weather related SSOs and all portions of the WWTP that may contribute to violations of the NPDES permit.	This requirement is covered under scope of services Task 5: Development of CMOM plans (g) in Jacobs contract.
Sanitary Sewer Evaluation Study (SSES) Work Plan to assess, analyze and rehabilitate the infrastructure of the WCTS to address I/I, structural defects, and other conditions causing SSOs.	This requirement is covered under scope of services Task 4: Sewer system evaluation survey program in Jacobs contract.

APPENDIX B: CONSENT DECREE COMPLIANCE REQUIREMENTS

Consent Decree Requirements

Early Action Capital Improvement Projects – CoC has identified certain rehabilitation and other projects that are intended to address conditions currently causing SSOs in the WCTS and other violations. CoC agrees to complete each of these projects.

East Bank/West Bank Outfall Assessment and Rehabilitation Plan shall include expeditious schedules for specific assessment and rehabilitation projects for the elimination of SSOs and/or the potential permitting of the East Bank and/or West Bank Outfall as a CSO outfall.

Long Term Control Plan Updates updated an older plan which will now satisfy requirements of the combined sewer overflow (CSO) Control Policy. This plan includes an additional operational plan for Chattanooga Creek CSO outfall. The plan will also include post construction compliance monitoring program for the CSO outfalls that discharge into the Chattanooga Creek.

Moccasin Bend WWTP Process Controls Program minimizes the frequency, duration, and volume of any bypass and violation of an effluent limit at MBWWTP through proper management, operation and maintenance controls

Green Infrastructure Plan shall identify green infrastructure control measures that store, infiltrate or evapotranspirate precipitation and reduce wet weather flows into the CSS, identify maintenance requirements for the control measures identified, develop a land use policy, public participation program, and set a schedule for measures to be implemented.

Inter-Jurisdictional Agreement Program develops agreements with other municipalities for the collection, conveyance and treatment of sewage by Chattanooga.

Method of Compliance

There are 25 approved projects agreed upon by the City to implement. They are all in some phase of implementation. These projects are listed in the SharePoint and fall under Task 8 Oversight and Coordination of Design Services & 9 Oversight and Coordination of Construction Mgt Services.

This plan is a requirement of Phase II of the CD. It comes into play once Phase I is complete. If after one year of the completion date, if there is just one wet weather overflow then the City must adhere to this requirement. Phase I will be complete by 2020.

This requirement is covered under scope of services Task 6: Consent Decree Project Planning ((c) step 2 & 3)) in the Jacobs contract.

This requirement is covered under scope of services Task 6: Consent Decree Project Planning ((c) step 4) in the Jacobs contract.

This requirement is covered under scope of services Task 6: Consent Decree Project Planning ((c) step 5) in the Jacobs contract.

This requirement is covered under scope of services Task 5: Development of CMOM plans (h) in the Jacobs contract.

APPENDIX C: PROGRAM MANAGEMENT STANDARDS

US Code Project Management Standards

Adequate staff organization with well-defined reporting relationships, statements of functional responsibilities, job descriptions and job qualifications.

Budget covering the project management organization, and all project costs.

Construction schedule for the Consent Decree projects, as applicable.

Document Control procedures and recordkeeping system

Change order procedure

Quality Control and Quality assurance functions, procedures, and responsibilities for projects (vendors, structures)

Material testing policies and procedures

Reporting Requirements

Inspection policies and procedures

Safety and security procedures for projects

Steps taken by Jacobs and Public Works

Jacobs provide staff who are responsible for the oversight of the projects. Specifically, Jacobs has multiple staff who work directly on the projects. Jacobs has detailed procedures and policies for their staff with their roles and responsibilities outlined. In addition, a Memorandum of Understanding between City's Engineering Department and Waste Resources (WRD) included definition of roles and responsibilities for Jacobs, WRD, and Engineering. The City also provides oversight and inspections of the projects.

Jacobs and the City maintain an up-to-date budget which lists the projects, budgets, consulting engineers, and expenses YTD and since inception.

Jacobs has provided a full schedule of all projects with a timeline and current status.

Jacob uses SharePoint to house all the project documents and procedures. SharePoint is a site used to upload and store data as well as share it with those authorized such as consultants, SFR, City and Jacobs' staff. Jacobs has a custom built database to store and report on all technical, financial and schedule data for each project. This system is Practical Information Management Solution (PIMS). Jacobs has developed a "Program Controls Update Checklist" which shows all projects and their document workflow and status.

Jacobs has developed detailed change order (CO) procedures. The consultant must submit a Change Request Form (CRF) when there is a need to deviate from the original contract task amounts or scope. A CO is needed when the CRF requires a change in the contract amount. For construction projects, a CO is only needed when the change in contract amount also exceeds the allowable contingency. This is when Council approval is needed. Jacobs has developed a change request workflow which shows all the steps in the process.

Jacobs has very detailed procedures and processes as a part of their project management plan. They are easily accessible to City staff when they have questions or concerns. They have weekly progress meetings with WRD staff. They have biweekly meetings with City Engineer's staff. They have established monthly progress meetings for every project. Some of the procedures and control documents are: Jacobs Flowchart which details the CD projects workflow and procedures, "Overall Program Execution and QA/QC Flowchart". These procedures show a step for a Consultant Evaluation (M3) at the end of a project. They have not implemented this step yet. They are working on a form or checklist which will provide performance measures or compliance with contract terms or deliverables. They plan to have a form to the City for review within the next 30 days. This information could also be used when considering the consultant for future projects. They also have detailed internal procedures for review and responsibilities "NA Infrastructure QA/QC Procedures." Jacobs requires the Consulting Engineering firm to submit a quality management plan for their project.

The Consulting Engineer's Resident Project Representative (RPR) is responsible for the construction inspection and materials testing. Some material tests will be outlined in the contractor's agreement. Jacobs is responsible to ensure all necessary materials test are performed.

The Consent Decree has specific reporting requirements laid out in the document. Jacobs has met all these requirements and the City has not been fined for late reporting. Jacobs has developed report templates used by vendors. These templates are used for vendors invoices, Progress Reports, Reimbursable expenses, schedule updates, Change Requests Forms, Daily reports and Inspection forms are some examples of documents developed to ensure standard information is captured.

Jacobs requires all Consulting Engineer RPR's to provide a daily written log with pictures, progress labor, equipment used and names of site visitors, consultant RPRs, and contractor superintendents. The daily report is to be uploaded to SharePoint the next day by 10 a.m. If the project is a rehabilitation project then a cured in ground pipes (CIPP) Inspection form and a weekly progress report is required. Jacobs has two inspectors on staff. One inspector handles the CIPP which is about 25% of all the CD projects. The other inspector handles the plant projects, pumps stations and is assigned the East Brainerd project. They have used Earthworx staff to perform some inspections when necessary. All Jacobs' inspection reports are filed on SharePoint. CoC staff from both WRD and Engineering office visit their assigned CD projects on a weekly basis. They observe the project's progress and note any issues in their own logs. These logs are not a part of SharePoint. They are maintained in the respective City offices. If they note any issues they report them to either Jacobs or the RPR. If the project is funded with State Revolving Funds (SRF) then the project is also inspected and monitored by TDEC.

It is the responsibility of the contractor to ensure safety and security procedures are followed. The requirements are set in the contractor's agreement. Ultimately, the City is responsible for the safety at the project site. The Engineering firms submit safety plans for each project.

City of Chattanooga Fraud, Waste, and Abuse Hotline

Internal Audit's Fraud, Waste, and Abuse Hotline gives employees and citizens an avenue to report misconduct, waste or misuse of resources in any City facility or department.

Internal Audit contracts with a hotline vendor, The Network, to provide and maintain the reporting system. The third party system allows for anonymous reports. All reports are taken seriously and responded to in a timely manner. Reports to the hotline serve the public interest and assist the Office of Internal Audit in meeting high standards of public accountability.

To make a report, call 1-877-338-4452 or visit our website: <u>www.chattanooga.gov/internal-audit</u>