

Water Department
Water Conservation Division
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MEMORANDUM

To: Taryn Hutchins-Cabibi, Colorado Water Conservation Board

From: Lyle Whitney, Water Conservation Supervisor, Aurora Water

Date: September 20, 2012

Subject: 50% Progress report for Aurora Water's Water Use Inefficiency Mapping and Identification Integrated with the System Incentive Program (SIP) Project

The City of Aurora Water Department with the assistance of AMEC Earth and Environmental is developing a Citywide Water Use Inefficiency and Identification Map integrated with a System Incentive Program per the March 2011 grant application to the Water Conservation Board (CWCB). The final goal of project is to create a map of the entire city, grading each tax parcel based on their water use in categories ranging from very high use to very low use. The data generated from the mapping portion of this project will be incorporated into a spatial database linking land cover information to tax parcel, and water bill information. Aurora Water and AMEC Earth and Environmental are currently 50% complete with the specified tasks and activities to be funded by the Grant.

Land Cover Analysis

The timeline presented in the original grant application is a couple of months behind due to a Delay in receiving grant authorization by the City of Aurora. For this reason an amended grant schedule will be presented within this 50% completion report. AMEC Earth and Environmental are currently finishing the land cover Analysis portion of the grant. It was scheduled to be finished at the end of April, but has been extended up to now due to the quality assurance quality control (QA/QC) process catching major classification errors during the automated the land cover classification. Getting an accurate auto classification is crucial for the accuracy the project and the creation of the geodatabase. Aurora Water has assisted AMEC Earth and Environmental by supplying the necessary GIS layers and creating a new street centerlines layer. Aurora Water Conservation has also helped by providing 179.5 hours of land cover QA/QC. We estimate that we are about 95 percent complete with the land cover analysis, and should have this portion of the grant wrapped up by the end of September.

Database Development and Geoprocessing

In addition, to finishing the cover Analysis, Aurora Water Conservation has been working closely with AMEC Earth and Environmental to develop the frame work for the spatial database that will link tax parcel information to the cover Analysis as well as water bill consumption history. The bulk of this work is happening now alongside the final stages of the land cover analysis. We anticipate the database development and geoprocessing to be completed by November.

A modified Gantt chart was created to reflect the changes in scheduling for the remainder of the grant. Even though the land cover analysis and the database development and geoprocessing portions have taken longer than expected, Aurora Water Conservation should be able to get back on onto the Gantt chart schedule presented below, by shortening the length of the project implementation timeline. The bulk of the project implementation will happen during the winter months, which are off season months, so we can dedicate more time to project implementation. Aurora Water Conservation is aiming to start contacting inefficient water users by December 2012.

Water Use Inefficiency Mapping and Identification Integrated with the System Incentive Program (SIP) Project Gantt Chart	2011			2012												2013									
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
A. Project Setup and Initiation																									
1. Contract negotiation and setup																									
2. Project kickoff meeting																									
3. Collect data from City; assess condition, completeness																									
4. Work with AWC staff to refine specs based on actual data																									
5. Internal kick-off / project-team meeting																									
B. Land Cover Analysis																									
1. Data and imagery preparations																									
2. Landcover Mapping																									
3. Digital Water Use Map																									
C. Database Development and Geoprocessing																									
1. Database Preparations																									
2. Geoprocessing																									
3. Summary Documentation																									
4. Conservation Database Creation																									
D. Project Implementation																									
1. Mailings																									
2. Customer Contact (Phone Calls)																									
3. Customer Audits																									
4. Rebate Form Creation																									
5. Conservation Calculator																									
6. Rebate Processing																									
7. Customer Follow-up (survey)																									
E. Landcover Maintenance																									
1. Prep new imagery																									
2. NDVI, OBIA prep																									
3. Change detection, OBIA mapping																									
4. Manual review, incorporate landcover changes																									
5. Prep and deliver updated data																									
F. Project Administration																									
1. Contract Setup and Management																									
2. Financial Mgmt, Budget Review & Documentation, Invoicing																									
3. Required Internal Project Reviews (2)																									
G. Reporting and Analysis																									
1. Progress Reports (50% and 75%)																									
2. Final Report																									
3. Project Analysis																									

Project Implementation

As soon as the spatial database is complete the City of Aurora Water Conservation Division will target the most inefficient water users until we have 200 voluntary participants. We will work with the customers to help make necessary changes, by auditing each customer's system and helping them complete the conservation calculator. This will allow Aurora Water Conservation to change our rebate program from a reactive program to a targeted rebate program based on replacing items with the highest return on investment. We are currently working on a new Rebate form that will prioritize water saving measures within a household based on the customer's return on investment from the Aurora Water Calculator. The return on investment will be the basis of the in the system incentive program. The table below shows replacing sink aerators and showerheads has a much quicker return on investment than toilet or washer rebates. In the system incentive program customers must complete the water conservation upgrades that have the highest ROI before they qualify for a toilet rebate. The toilet rebate amount has been increased to help offset some of the costs of sink aerators and showerheads. The table below also shows both options of rebating a 1.28 gallon per flush toilet or a higher rebate for a .8 gallon per flush toilet.

Item	Cost	Rebate	Water Saved/Yr (gal)	Money Saved/Yr (\$)	ROI W/O Rebate	ROI W/Rebate
Primary Bathroom Sink	\$5.00	\$0.00	1,643	\$13.52	4.4 Months	4.4 Months
Secondary Bathroom Sink	\$5.00	\$0.00	1,643	\$13.52	4.4 Months	4.4 Months
Third Bathroom Sink	\$5.00	\$0.00	1,643	\$13.52	4.4 Months	4.4 Months
Secondary Shower	\$20.00	\$0.00	5,110	\$42.06	5.7 Months	5.7 Months
Kitchen Faucet	\$5.00	\$0.00	575	\$4.73	12.7 Months	12.7 Months
Primary Shower	\$20.00	\$0.00	2,190	\$18.02	13.3 Months	13.3 Months
Fourth Bathroom Sink	\$5.00	\$0.00	548	\$4.51	13.3 Months	13.3 Months
Third Shower	\$20.00	\$0.00	1,825	\$15.02	16.0 Months	16.0 Months
Second Extra Faucet	\$5.00	\$0.00	329	\$2.70	1.9 Years	1.9 Years
Primary Toilet (1.28 gpf)	\$195.00	\$75.00	2,431	\$20.01	9.8 Years	6.0 Years
Second Toilet (1.28 gpf)	\$195.00	\$75.00	2,431	\$20.01	9.8 Years	6.0 Years
Washing Machine	\$700.00	\$0.00	2,694	\$22.17	31.6 Years	31.6 Years
[Total Savings]	\$1,180.00	\$150.00	23,062	\$189.77		
Primary Bathroom Sink	\$5.00	\$0.00	1,643	\$13.52	4.4 Months	4.4 Months
Secondary Bathroom Sink	\$5.00	\$0.00	1,643	\$13.52	4.4 Months	4.4 Months
Third Bathroom Sink	\$5.00	\$0.00	1,643	\$13.52	4.4 Months	4.4 Months
Secondary Shower	\$20.00	\$0.00	5,110	\$42.06	5.7 Months	5.7 Months
Kitchen Faucet	\$5.00	\$0.00	575	\$4.73	12.7 Months	12.7 Months
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Third Shower	\$20.00	\$0.00	1,825	\$15.02	16.0 Months	16.0 Months
Second Extra Faucet	\$5.00	\$0.00	329	\$2.70	1.9 Years	1.9 Years
Primary Toilet (0.8 gpf)	\$270.00	\$150.00	2,957	\$24.33	11.1 Years	4.9 Years
Second Toilet (0.8 gpf)	\$270.00	\$150.00	2,957	\$24.33	11.1 Years	4.9 Years
Washing Machine	\$700.00	\$0.00	2,694	\$22.17	31.6 Years	31.6 Years
[Total Savings]	\$1,330.00	\$300.00	24,114	\$198.43		

Budget Summary

The original budget

Task	AMEC (\$)	AMEC Hours	Grant (\$)	Aurora (\$)	Aurora Water-Hours	Aurora Water In-Kind	Total Cost
Project Setup	\$6,901	60	\$5,401	\$1,500	8	\$296	\$7,197
Land Cover Analysis	\$70,813	793	\$57,813	\$13,000	13	\$481	\$71,294
Database Dev/Geoproc.	\$35,802	384	\$35,802	\$2,750	79	\$2,923	\$41,475
Project Implementation	\$0	0	\$0	\$0	620	\$23,940	\$23,940
Land Cover Maintenance	\$9,969	133	\$9,969	\$0	0	\$0	\$9,969
Project Administration	\$8,756	72	\$8,756	\$0	0	\$0	\$8,756
Reporting and Analysis	\$0	0	\$0	\$0	120	\$4,440	\$4,440
TOTAL	\$134,991	1,442	\$117,741	\$17,250	840	\$32,080	\$167,080
						Cash	\$17,250
						In-Kind	\$32,080
						CWCB Grant Monies Requested	\$117,750
						TOTAL	\$167,080

Money used to date

Task	AMEC (\$)	AMEC Hours	Grant (\$)	Aurora (\$)	Aurora Water-Hours	Aurora Water In-Kind	Total Cost
Project Setup	\$7,096	63	\$4,991	\$2,104	6	\$222	\$7,317
Land Cover Analysis	\$66,943	926	\$62,330	\$4,622	148.5	\$5,495	\$72,438
Database Dev/Geoproc.	\$6,604	71	\$4,980	\$1,624	0	\$0	\$6,604
Project Implementation	\$0	0	\$0	\$0	0	\$0	\$0
Land Cover Maintenance	\$0	0	\$0	\$0	0	\$0	\$0
Project Administration	\$5,165	45	\$3,180	\$1,985	0	\$0	\$5,165
Reporting and Analysis	\$0	0	\$0	\$0	0	\$0	\$0
TOTAL	\$85,808	1105	\$75,481	\$10,335	154.5	\$5,717	\$91,533
Cash							\$10,335
In-Kind							\$5,717
CWCB Grant Monies Used							\$75,472
TOTAL							\$91,533

Money remaining *(\$red) denotes amount over budget.

Task	AMEC (\$)	AMEC Hours	Grant (\$)	Aurora (\$)	Aurora Water-Hours	Aurora Water In-Kind	Total (\$) Left
Project Setup	(\$195)	(3)	\$410	(\$604)	2	\$74	(\$120)
Land Cover Analysis	\$3,870	(133)	(\$4,517)	\$8,378	(135.5)	(\$5,014)	(\$1,153)
Database Dev/Geoproc.	\$29,198	313	\$30,822	\$1,126	79	\$2,923	\$34,871
Project Implementation	\$0	0	\$0	\$0	620	\$23,940	\$23,940
Land Cover Maintenance	\$9,969	133	\$9,969	\$0	0	\$0	\$9,969
Project Administration	\$3,591	27	\$5,576	(\$1,985)	0	\$0	\$3,591
Reporting and Analysis	\$0	0	\$0	\$0	120	\$4,440	\$4,440
TOTAL	\$49,183	337	\$42,260	\$6,915	686	\$26,363	\$75,538
Cash Remaining							\$6,915
In-Kind Remaining							\$26,363
CWCB Grant Monies Remaining							\$42,260
TOTAL							\$75,538

For the most part our estimates of money allocation have been fairly accurate. Due to auto classification errors in the Land Cover Analysis portion of the project Aurora Water Conservation has devoted many in-kind hours earlier than expected. As stated earlier it is crucial that we get an accurate auto classification for the Database Development and Geoprocessing portion of the grant. Since we are slightly behind our original timeline Aurora Water Conservation and AMEC Earth and Environmental believe that we will be able to make up some lost time during the project implementation phase of the grant. Attached is an Excel Version of the updated Gantt chart that was presented above.