CITY OF PALMER ACTION MEMORANDUM NO. 10-054

SUBJECT: Authorize the City Manager to Execute Amendment 1 to Ecological Engineering Group, Inc. (EEG) for the Palmer Waste Water Treatment Improvements, Phase I in the amount of $357,011

AGENDA OF: August 24, 2010

Council action: Authorized

Approved for presentation by B. B. Allen, City Manager B B Allen

Route To:	Department/Individual:	Initials/Date:	Remarks:
X	Originator – PW	8/4/2010	
X	City Clerk	8/18/10	
X	City Attorney	8/18/10	
X	Director of Administration		
	Director of Community Development		
	Director of Community Services		
	Director of Public Safety		
	Director of Public Works		

Attachment(s): Ecological Engineering Group, Inc. (EEG) Proposal dated July 31, 2010

Certification of Funds:

	No fiscal impact.	
X	Funds are budgeted from this account number: 24-20-xx-6xxx & 24-40-xx-6xxx	$357,011
	Funds are not budgeted. Budget modification is required. Affected account number:	
	Unrestricted/undesignated fund balance (after budget modification):	

Director of Administration Signature: _____

Summary statement: Ecological Engineering Group, Inc. (EEG) has provided a proposal for the blower and piping modifications and upgrades and the preparation of the Alaska Pollutant Discharge Elimination System (APDES) Permit Renewal for a total amount of $357,011. These are ongoing improvements of Phase I needed at the Waste Water Treatment Plant.

Task 1 is the preparation of the APDES permit renewal. The wastewater discharge at the Palmer Wastewater Facility is currently obligated to meet the standards outlined in National Pollutant Discharge Elimination System (NPDES) Permit AK002249-7 issued in December 2006 which expires in 2011.

Two major changes which will be completed by 2011 are:

- The permitting program was regulated by Environmental Protection Agency (EPA) as the NPDES and is now regulated by the Alaska Department of Environmental Conservation (ADEC) as the Alaska Pollutant Discharge Elimination System Program (APDES) permit.
- The wastewater must meet state regulations as outlined in AAC72 including new regulations for freshwater mixing zones. The APDES wastewater discharge permit will require consideration of mixing due to seasonal flow fluctuation, channel migration, and presence of the main channel on the other side of the riverbed from the facility.

Task 2 is the design for piping and blower modifications include engineering services as described in the proposal.

Funding:

Task 1 is funded using the ADEC Municipal Matching Grant (MMG) 67114 in the amount of $75,000; thereafter, ADEC American Recovery and Reinvestment Act (ARRA) Alaska Clean Water Fund (ACWF) 671161 will fund the match and the remaining balance of $147,608. This will exhaust ADEC 67114 grant funds.

Task 2 is funded with ADEC MMG 67107 in the amount of $90,000 and matched with the allocated city funds in the amount of $38,572; thereafter, ARRA 671161 will be used in the amount of $5,831. This will exhaust ADEC 67107 grant funds.

Administration recommendation: Approve action memorandum 10-054.

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where Life informs design®

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Date: August 5, 2010
To: Carter Cole, City of Palmer, Alaska
From: David Del Porto
Subject: Blower and piping modification and upgrade and the preparation of the APDES permit renewal

Per your request, EEG proposes to perform the necessary engineering and environmental tasks for the preparation of the APDES permit renewal and the upgrade to your wastewater treatment plant facility related to the blower and associated piping modification to the aeration system. EEG will prepare a report with these tasks when completed.

We are pleased to have CH2M Hill, Donald Bassler P.E both with their offices in Anchorage, and Chilkat Environmental with offices in Haines, working with us as our local project team partners.

Our fee for	Task 1: APDES Permit Renewal	$134,403
	Task 2: Aeration Piping/Valving Plans and Lagoon 3 By-pass	$222,608

A schedule of payments to be negotiated at a later date.

Task 1 Preparation of the APDES permit renewal

The wastewater discharge from the Palmer Wastewater Facility is currently obligated to meet the standards outlined in NPDES Permit AK002249-7 issued in December 2006, which expires in 2011.

Our approach will be to demonstrate that the recent deficiencies in ammonia removal have been addressed and corrected by the Phase I covering the two lagoons with floating insulation and the upgrade of the aeration system.

- The pollutant removal and energy savings benefits of covering the lagoon have already been demonstrated by dramatically reducing the algae formation due to the covers impeding growth of algae by reducing sunlight and increasing the surface area for the attached growth microorganisms that transform ammonia to nitrate (nitrification).
- The reduction in algae also inhibits the process of converting the decaying algae back into ammonia trapped under the aeration diffusers (ammonification).
- During the winter of 2010 and early 2011 the temperature will remain within the range for the nitrifying bacteria to remove the ammonia during the cold months because the first two lagoons have been insulated and that will keep the heat from the City's influent from being lost.

- ❖ Combined with the energy savings realized by installation of the new blowers and controls, we are confident that Palmer has resolved the issues of concern and the permit will be renewed.

In addition, we will inform the ADEC of the intent to develop a Phase II and III approach to increase the pollutant removal as flows increase from the presently permitted sewage flow to the next phase of 2-4 million gallons per day. As you know, we have proposed a third phase which will convert the third lagoon to a tertiary subsurface flow constructed wetland should ADEC require advanced treatment prior to discharge. We will inform ADEC that we will be submitting information regarding the aforementioned upgrades during the 5 year period before the next permit will need to be renewed in 2016.

Two new facts will be recognized in the scope of work to prepare a new permit.

- The first is the recognition that ADEC rather than EPA now manage the permitting program.
- The second is that wastewater must now meet state regulations as outlined is AAC72 including new regulations for freshwater mixing zones. The APDES wastewater discharge permit will require consideration of mixing due to seasonal flow fluctuation, channel migration, and presence of the main channel on the other side of the riverbed from the facility. The Matanuska River is popular for fishing, subsistence and rafting which may also influence the new mixing zone requirements. EEG's approach to the drafting the permit application will be developed by considering how these new changes impact ADEC's decisions.

The scope of our services for preparation of the permit anticipates that all required information about the facility will need to be provided about the current and proposed facility.

Project activities include:

- ❖ Literature review to include but not limited to other permits approved by ADEC under the new requirements and other information that can be gathered to determine new permit requirements.
- ❖ Organization of meetings with ADEC to determine new permit requirements. EEG will coordinate with EEG team members and the City of Palmer as to our findings.
- ❖ Preparation of draft permit for ADEC review; and Task organization assumes EEG will provide a detailed request for information to the City of Palmer regarding current upgrades that will be included in the permit application.
- ❖ Upon review of requested information, EEG project team will complete the draft permit application as far as available information allows and then
- ❖ Organize a meeting with ADEC. During the meeting, remaining itemized issues will be discussed to address the information requirements of the permit. If required, a second meeting will be held.
- ❖ Preparation of a final permit application (or) preparation of a scope of work defining research activities required by ADEC prior to their consideration of the permit application such as hydrological or mixing zone studies.

Assumptions:

Preparation of the permit application will be completed under the assumption that Phase 1 of the facility improvements has been implemented or contracted to be completed and that effluent quantity will not exceed 2 mgd. This draft permit application prioritizes permitting of the current facility under the new wastewater requirements and state jurisdiction. Future considerations to further increase the facility effluent are dependent on ADEC acceptance of the present outfall in the permit application under discussion but the requirement that ammonia discharge limits will be met. Upon acceptance by ADEC that the current facility meets the new wastewater requirements, it is our plan to propose an expansion of the facility in Phases II and III.

ADEC Issues:

The draft permit application will be submitted to ADEC who may approve or deny aspects of the permit based on many specific issues that do not involve the services of permit preparation. The deliverable for this project will be one of two phased events. The first is that the permit application is submitted and accepted as-is in which case this project will be considered complete. The second possibility is that at the draft stage ADEC identifies substantive issues that necessitate research be conducted prior to permit consideration in which case the product for this project will be preparation of a scope of work defining research activities required by ADEC such as hydrological or mixing zone studies.

EEG team's wastewater specialist, Bill Stokes lives in Palmer and is prepared to attend meetings as required.

Schedule: The schedule is driven in large measure by ADEC and cannot be estimated as of this writing. Schedule estimates will be provided as new information is developed but the permit will be filed in time to secure the permit by the December 2011 ADEC guidelines.

Task 2 Blower and piping modification and upgrade and the Lagoon Number 3 By-pass and Valving plan

Scope of Work

Blower and piping modification and upgrade and the Lagoon number 3 By-pass and Valving plan includes the following Tasks:

1. Finalize design flow objectives 2 or 4 mgd. (Blower system will not be increased in size beyond upsizing piping in the plant, above ground).
2. Layout Blower equipment footprint.
3. Design - revised pipe headers - Demo and New. Include manufacturer's recommended components and controls devices. Move headers to accommodate larger equipment. Upsize headers for future flow increases. Provide additional tapings off of header for future addition of an additional branch. This would allow adding another lateral to Pond #1.
4. Demo existing air intake pipes, replace with alternate building air intake.
5. Coordinate with TecPro for completion of Blower controls with auto duplex operation and failure alarms (possibly building light).

6. Review cooling exhaust system against new loads. Upsize airflow if needed to match equipment heat gain.
7. Drawings to indicate work by others: Blower supply and startup, and Controls parts, installation, and startup.
8. Design - Foundation Pad Alterations for New Footprints (Currently shown as isolated thickened pad w/rebar).
9. Develop/Design for wall (or roof) removal and replacement for equipment change-out. Double wall construction with Metal siding. Indicate Demo and Replacement of any associated mechanical/electrical. We are assuming temporary air will be provided, so the system can be completely shut down. Either the other blower building or a contractor provided temporary supply will be provided. Use of one or two of the existing blowers would be allowed.
10. Analyze Electrical Service for load increase from 2- 50 Hp and 3-20 Hp to 2 ea 37 kW and 2 ea 110 kW (approx).
11. Provide Demo and new Electrical design. Power for blowers and controls. Currently power from wall to blowers is in the slab.
12. Some existing wire/devices are explosion proof. This appears not to be a code requirement.
13. Review existing electrical heat and lighting layout for conflicts with new equipment.
14. Develop a workable approach for equipment and header replacement, while minimizing down time. Possibly set up temporary blower system.
15. Develop the wet-test protocol
16. Develop the start-up and commissioning protocol

Lagoon - 3 Bypass

17. Site Plan Demo and new: Extend a valved branch around pond-3. Currently as-builts show a 12" inlet and outlet. There are 24" mains and 24" bypass drainage around Pond-1 and Pond-2 only. Upsize for future flow increases.

Products:

18. Drawings and specifications (Some specs may be on the drawings)
19. As-built exhibit drawings.
20. Blower Product data, O & M Data, and Supply contracts. Include in bid package for proper coordination.
21. Controls shop drawings and supply contract (by others). Include in bid package for proper coordination.
22. Submittals: 35%, 65%, 100%
23. Schedule of meeting and presentations

Schedule:

Start Design:	Sept-1
35%	Oct-1 + Review
65%	Nov-1 + Review
100%	Dec-1

Bid documents	December
Submittals	January
Construction	March-May
Substantial Completion	May 31

Engineering Services will include:

- Site Visits/Data gathering
- Design
- Bid Assistance
- Submittal Review
- Respond to Contractors Questions
- Site Inspections
- As-Builts
- O & M manual review

Coordination Assumptions:

- Perform any cost estimates required.
- Provide document assembly, printing, and production. Email drawings and specs to team members for inclusion.
- Provide title page/index for drawings and specifications.
- Include documents from TecPro and Lemna in the bid documents.
- Provide AutoCAD floor plan and Blower Equipment Layout.

_____ End of Proposal _____