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Brian Janes
10509 Professional Circle, Suite 102
Reno, NV 89521
February 18, 2015

Andy Hummel, P.E.
City Hall
431 Prater Way
Sparks, NV 89431

Re: City of Sparks Sewer Model Update Scope

Dear Andy:

Atkins is pleased to submit for your review this scope and fee for the City's Sewer Model Update. The sewer model update will evaluate the City's sanitary sewer system, collect additional flow monitoring data, review the City's GIS database, develop Capital Improvement Projects, and summarize in a final technical report.

The fee estimate for the base tasks (Tasks 1 through 5) is based on a time and materials basis not-to-exceed $372,930 unless written authorization is provided by the City of Sparks. Follow-on analysis is anticipated to be required after preliminary results are developed. Upon coordination and approval from City staff, specific tasks will be developed and executed. The fee estimate for all project tasks (Tasks 1 through 6) is based on a time and materials basis not-to-exceed $407,604. We anticipate that given a notice to proceed of March 1, 2015 the analysis can be completed by March 1, 2016. The scope of work is detailed on Attachment A. A fee summary is provided on Attachment B, and a 2015 fee schedule is provided in Attachment C.

Please call me if you have any questions at 789-9831.

Sincerely,

Brian Janes, P.E.
Project Manager for Water Resources

Enclosures:
Attachment A, Scope of Services
Attachment B, Fee Summary
Attachment C, 2015 Fee Schedule

Attachment A

Scope of Services for City of Sparks

Sewer Model Update

February 2015

Project Description

The City of Sparks (City) is likely to experience increased growth in the near future from development/redevelopment. Additionally, since the last sewer master plan in 2005, improvements have been made to the sewer trunk lines and sewage flows have not substantially increased. The City desires an updated sanitary sewer model that is land-use based which integrates data from the City's GIS database. The sewer model will be used to update City planning data, projected sewer flows, existing and future capacity evaluations, and needed system improvements. The City's last sewer master plan utilized a steady state model. This model update requires an updated master plan using the latest unsteady flow sanitary sewer software, collection of additional flow monitoring data, GIS database review, Capital Improvement Project (CIP) development, and select field verification of GIS data for the North Interceptor which serves the City of Sparks.

Atkins will provide the engineering services identified to estimate existing condition and future development sanitary sewer flows for the City. The project includes up to 350 miles of gravity sewer pipeline from less than 8 inch diameter to 60 inch diameter. Seven permanent monitoring locations have been collecting flow data within the City which will be utilized for flow calibration. In addition to City sanitary flows, the North Interceptor also conveys sanitary flows from Sun Valley, and portions of the City of Reno and Washoe County. These flows will be estimated based on the seven permanent monitoring locations. The updated sewer model will identify existing and future sanitary flows for the capacity analysis. Development and redevelopment land-use changes will be focused to areas within the McCarran Boulevard loop and downtown areas near Victorian Avenue. The final product will be a comprehensive sanitary sewer master plan.

Scope of Work

Task 1 – Project Management, Data Collection, Criteria Development, and Model Software

Project management will include project budgeting, invoicing, coordination, meeting preparation, development and distribution of meeting agendas/minutes as necessary. Atkins will coordinate and participate in meetings with the City and other stakeholders as requested. It is anticipated that progress

meetings may be needed every two months after the data collection is completed. One meeting may require City planning staff to help identify future growth areas and one meeting may require City maintenance staff to identify existing problem areas. For the remainder of the meetings it is anticipated that City Community Services staff will attend.

Data collection will be focused on obtaining the following available data from the City:

- Current City GIS database checkout (sanitary sewer, parcel, zoning, utilities, etc.)
- Available sanitary sewer as-built plans
- Existing City flow monitoring data
- City of Sparks Current 5-year Capital Improvement Plan
- Current City sewer design criteria
- Truckee Meadows Regional Planning Agency (TMRPA) GIS land-use data
- Truckee Meadows Water Reclamation Facility (TMWRF) inflow data
- TMWRF per-capita flow reduction study
- City of Reno analysis for Greg Street line
- Sun Valley GID Current and Build-out Flow Data
- Washoe County Current and Build-out Flow Data for the Spanish Springs Northwest Interceptor

The following data is anticipated to be needed and will be obtained by Atkins:

- Truckee Meadows Water Authority (TMWA) water use data
- Other population data sources

Atkins will work with the City to confirm existing GIS database accuracy, identify data gaps, and specify areas requiring field survey. This scope assumes that up to 120 hours of a two man survey crew may be needed for the duration of the project. Atkins will obtain and perform a detailed review of the City's sewer database information. As data is collected it will be used to update the check-out version of the database. At appropriate intervals, the check-out versions will be submitted back to the City for review and inclusion into the overall database.

Model and criteria identification will consist of developing a technical memo for the City recommending a sanitary sewer model software for the sewer model update and identifying capacity criteria to be used to determine if the system has capacity. The recommendation will be made considering the City's specific modeling needs and anticipated future uses.

Task 1 Deliverables:

1. *Meeting agendas and minutes as necessary*
2. *GIS database check-ins*
3. *Survey field data sheets*
4. *Model Selection and Sanitary Sewer Criteria Memorandum*

Task 2 – Model Development and Capacity Analysis

The selected and approved model software from Task 1 will be used to analyze the existing capacity of the sanitary sewer system and predict future flows for the future development analysis. The model will be populated with attributes from GIS database. Existing sanitary sewer pipes, manholes, and pump stations will be linked to the model using the GIS database. The model limits are expected to cover the entire City system. Within the McCarran Boulevard loop, it is assumed that 8" and larger pipes will generally be modeled. Beyond the McCarran Boulevard loop, it is assumed that 12" and larger pipes will be modeled.

Up to eight (8) existing lift stations are located within the project area. It is anticipated that operational information for these stations will be limited. Atkins will perform a site visit with City operations/maintenance staff, survey critical elevations of the lift station and identify the pump's capacity. This information will be added to the model and refined as necessary to mimic the desired operational capability.

The model will then be loaded using population estimates, unit generation factors, and diurnal curves. Population estimates are anticipated to be generated from the Truckee Meadows Regional Planning Agency's (TMRPA's) land-use based parcel data and cross checked with other population data. Unit generation factors will be based on industry standard values and available flow monitoring data. Diurnal curves will be developed from existing flow monitoring data and refined with flow monitoring data collected under Task 3. Dry weather sanitary sewer flows will then be loaded into the model at manhole locations and routed through the system to evaluate system capacity. Wet weather sanitary sewer flows will be developed by identifying inflow and infiltration (I&I) to be added to the dry weather flows. Atkins anticipates using a storm roughly equivalent to the 2-year, 24 hour storm if flow monitoring data is available.

Based on the City's 2005 Sewer Master Plan, sewer flows from Sun Valley, and portions of Reno and Washoe County may account for over 30% of the North Interceptor's sewer flow. Existing flow monitoring data will be used to determine the existing condition analysis. Future development flows from Sun Valley, Reno, and Washoe County will be included based on previous analyses completed for those entities as indicated in Task 1.

The existing condition capacity analysis will then be performed using the identified sanitary sewer flow loading and criteria developed in Task 1. Criteria violations will be identified and used to guide Task 4, CIP Development.

The future development capacity analysis will require input from City staff on anticipated future development and potential time frames of that development. Since the City is nearly built out, some land-use changes are anticipated to be redevelopment zones. Prior to beginning the future development model, a meeting will be held with City Community Services and Planning staff to identify the

development and redevelopment areas to be used for the model. Atkins will also need the Planning staff's guidance on assigning a likely development year to these areas to guide Task 4, CIP Development.

Deliverables:

1. *Existing condition model and capacity analysis (dry and wet weather)*
2. *Future development model and capacity analysis (dry and wet weather)*

Task 3 – Flow Monitoring and Model Calibration

In addition to the City's existing seven (7) flow monitoring locations, additional flow monitoring will be required to ensure the models created in Task 2 are appropriately calibrated to current conditions and to develop flow per capita or flow per EDU rates. Upon the City's approval, Atkins will sub-contract with ADS Environmental Services (ADS) to provide temporary flow metering services for a maximum of 10 locations for a period of 2 weeks. The locations will be coordinated with City staff in a Proposed Flow Monitoring Plan Memorandum prior to execution. Generally, the additional sites will be situated to confirm suspect existing flow monitoring data and to define land-use specific unit generation rates. Upon the City's approval of the memorandum, ADS will be scheduled to complete the monitoring at the identified locations. It is anticipated that this will be one of the first tasks completed for the project. This will increase the efficiency of the model development and calibration effort.

Preliminary calibration will include refining unit generation factors based on existing flow monitoring data and adjusting diurnal curves to closely match observed flows. Final calibration may be required when the additional flow monitoring data is completed. Calibration will be conducted for both dry weather and wet weather conditions.

Deliverables:

1. *Proposed Flow Monitoring Plan Memorandum*
2. *ADS Flow Monitoring Report(Data Delivery and Final Report)*

Task 4 – Capital Improvement Project (CIP) Development

Prioritized CIPs will be developed based on existing system capacity deficiencies, condition assessment data, operation and maintenance input, and future growth. Two (2) CIP matrixes will be developed to identify priority CIPs in a 5-year plan and also a longer range 20-year plan. Each plan will rank and phase CIPs as necessary to account for projected City budgets. Additionally, CIPs that are dependent on development or other factors will be identified with conditions to facilitate future planning decisions.

Probable cost estimates will be developed for each CIP based on current (2015) construction estimates. CIPs identified to for future construction will include a price inflation percentage to attempt to accurately project CIP cost vs. City budget in future years. CIPs will be prioritized based on the severity of the problem they address and the relative importance of the system. General conclusions will be formulated to determine whether the identified CIP plans appear to outpace City budgets or whether

City budget estimates appear to support the CIP plans. It is anticipated that the City will provide future budget information based on their currently completed sanitary sewer rate study.

Deliverables:

1. *5-year (priority) CIP plan matrix*
2. *20-year (long range) CIP plan matrix*

Task 5 – Technical Report

Tasks 1 through 4 will be summarized in a final technical report for the City's review and comment. The criteria used, analysis methodology, City goals, data collected, existing and future capacities, CIPs needed, etc. will be summarized as a complete and comprehensive document. User friendly figure and tables will be developed to highlight existing and future capacity problem areas as well as the 5-year and 20-year CIP plans. The final technical report will be delivered in hard copy with a data CD that will include a PDF version of the report and all pertinent electronic files and models.

Deliverables:

1. *Draft technical report, summarizing Tasks 1 through 4 (2 hard copies)*
2. *Electronic versions of models and PDF version of report and figures*
3. *Final technical report (2 hard copies, 1 PDF copy)*

Task 6 – Follow-on Analysis

Follow-on analysis will include refinements to Tasks 1 through 5 as directed by the City. This task may also include additional meetings, stakeholder coordination, and flow monitoring not to exceed 5 locations for a duration of 2 weeks. This task is intended to allow the City to further direct the analysis after reviewing the preliminary results. This task will not be executed without written agreement from the City and Atkins on the specific scope of the tasks to be performed.

Deliverables:

1. *To be determined*

Schedule and Fee

Given the above scope and a notice to proceed of March 1, 2015 Atkins estimates that the project can be completed by March 1, 2016. The proposed fee for identified scope (Tasks 1 through 6) is $407,604 based on a time and materials basis.

Fee estimates for services not included above can be provided as requested by the City prior to services being performed. If Atkins encounters out-of-scope analysis/services are required, written approval will be obtained from the City prior to advancing that analysis/service.

Sewer Model Update Fee Summary

Task	Description	Hours	Fee
1	Project Management, Data Collection, Criteria Development, and Model Software *Deliverables: Meeting agendas and minutes, GIS check-ins, survey field sheets, Model Selection and Sanitary Sewer Criteria Memo*	650	$ 101,622
2	Model Development and Capacity Analysis *Deliverables: Existing and future development models and capacity analyses*	850	$ 116,726
3	Flow Monitoring and Model Calibration *Deliverables: Proposed Flow Monitoring Plan Memo*	224	$ 34,408
4	Capital Improvement Project (CIP) Development *Deliverables: 5-year and 20-year CIP plan matrixes*	244	$ 34,756
5	Technical Report *Deliverables: Draft report, final report, electronic copies of models and report*	424	$ 55,264
	Support Services *Deliverables: Flow monitoring data*	N/A	$ 28,189
	Sub-consultant 5% Markup *Deliverables: N/A*	N/A	$ 1,409
	Direct Costs (mileage, graphics printing, etc.)	N/A	$ 556
	Total for Base Tasks	**2,392**	**$ 372,930**
6	Follow On Analysis Support Services *Deliverables: TBD*	120 N/A	$ 17,640 $ 16,222
	Sub-consultant 5% Markup *Deliverables: N/A*	N/A	$ 811
	Total	**2,512**	**$ 407,604**

ATTACHMENT C

SEWER MODEL UPDATE

ATKINS FEE SCHEDULE

OFFICE PERSONNEL

Project Director	219.00/hr.
Project Manager	172.00/hr.
Sr. Engineer III	157.00/hr.
Lead Modeler/Sr. Engineer II	133.00/hr.
Sr. Engineer I	125.00/hr.
Support Modeler/Engineer II	117.00/hr.
CIP Development & Cost Estimator/Engineer II	102.00/hr.
Engineer II	79.00/hr.
Engineer I/Graphics Support	75.00/hr.
Clerical	60.00/hr.

SURVEY PERSONNEL

Professional Land Surveyor-Group Manager	$180.00/hr.
Two Man Survey Crew	$175.00/hr.

EQUIPMENT

Mileage	$0.56/mi.
Photocopies (8-1/2" x 11" B&W)	0.04/page
Photocopies (8-1/2" x 11" Color)	0.21/page
Photocopies (11" x 17" B&W)	0.08/page
Photocopies (11" x 17"Color)	0.32/page
22"x34" B&W Prints	3.00/sheet
Mylar	10.00/sheet

NOTES:
(1) Hourly rates for positions not listed will be negotiated on an as needed basis.
(2) Hourly rates are applicable for 2015.