Council Meeting Date: May 18, 2015 **Agenda Item:** 7(c)

CITY COUNCIL AGENDA ITEM

CITY OF SHORELINE, WASHINGTON

AGENDA TITLE:	Authorize the City Manager to Execute an Agreement with AltaTerra Consulting LLC for the Puget Sound Drainages Surface Water Basin Plan
DEPARTMENT:	Public Works
PRESENTED BY:	Dan Repp, Public Works Operations Manager
ACTION:	____ Ordinance ____ Resolution __X_ Motion ____ Discussion ____ Public Hearing

PROBLEM/ISSUE STATEMENT:

The Puget Sound Drainages Surface Water Basin Plan consists of studies to assess surface water, drainage, and infrastructure conditions within the Puget Sound Drainage areas (which includes large portions of the City's Richmond Beach, Innis Arden, and Highlands neighborhoods) and three smaller drainage areas adjacent to City boundaries: portions of the Edmonds Way, Densmore and West Lake Washington Basins. This basin plan will complete the City's drainage basin planning efforts to identify problems and develop and prioritize management actions to address drainage, infrastructure, water quality, and habitat issues. Staff requests Council to authorize the City Manager to execute a contract with AltaTerra Consulting LLC for $430,000 to provide consultant services for the 2015 basin plan that will include assessment of surface water and pipe infrastructure.

FINANCIAL IMPACT:

The total budget for the Puget Sound Drainages Surface Water Basin Plan is $445,000. This consultant services contract is budgeted to use $430,000 of this amount. The total cost is budgeted for in the Surface Water Capital Fund.

RECOMMENDATION

Staff recommends that Council move to authorize the City Manager to execute an agreement with AltaTerra Consulting LLC for $430,000 to provide consultant services including a surface water infrastructure condition assessment for the Puget Sound Drainages Surface Water Basin Plan.

Approved By: City Manager ***DT*** City Attorney ***MK***

BACKGROUND

The Puget Sound Drainages Surface Water Basin Plan is part of the citywide basin planning program in the Surface Water Master Plan, which was adopted by Council in 2011. This basin plan consists of studies to assess surface water, drainage, and infrastructure conditions within the Puget Sound Drainage areas (which includes large portions of the City's Richmond Beach, Innis Arden, and Highlands neighborhoods) and three smaller drainage areas adjacent to City boundaries: portions of the Edmonds Way, Densmore and West Lake Washington Basins. This plan will complete the City's drainage basin planning efforts. The goal of these studies is to develop and prioritize management actions to be completed in these basins that will address flooding, aquatic habitat, and water quality problems.

DISCUSSION

In February, the City solicited consultants to provide their qualifications for the Puget Sound Drainages areas basin plan. Four submittals were received from the following Consultants:

Consultant Name
Otak
Anchor QEA
Louis Berger
AltaTerra

City staff reviewed the consultant submittals and selected AltaTerra as the most qualified for the Basin Plan Project. AltaTerra scored highest in both the technical approach and in related project experience. AltaTerra's work on previous basin plans (Boeing, Storm, McAleer and Lyon Basins) has resulted in good quality products as well as good technical analysis of the City's drainage system. Staff is confident that the City will continue to receive similar service from Alta Terra for this project.

The consultant's scope of work consists of the following major tasks:

- Review and assess drainage, water quality, and habitat conditions in the basins
- Perform a video condition assessment of City owned and maintained pipes in these basins
- Update the City's stormwater infrastructure GIS mapping for each area
- Identification of drainage, water quality and habitat issues and management actions (including CIPs) to address those issues

The proposed scope of work is provided as Attachment A. A significant effort for the project will be a video condition assessment of all storm water pipes more than eight (8) inches in diameter within the basin (s). The assessment will provide a condition rating for each pipe and potentially add to the list of storm pipes needing repair or replacement.

COUNCIL GOAL(S) ADDRESSED

This project supports Council Goal #2 to improve Shoreline's utility, transportation, and environmental infrastructure. This project will meet this goal by assessing the surface water systems – both natural and manmade - within basin boundaries, identifying ongoing or potential issues, and proposing solutions. This project will focus especially on assessing then making recommendations for repairing or replacing the City's storm water infrastructure.

RESOURCE/FINANCIAL IMPACT

The total budget for the Puget Sound Drainages Surface Water Basin Plan is $445,000. The 2015-2020 Capital Improvement Program allocated $200,000 for this plan, with this cost estimate originating from a very basic cost estimate created over five years ago. A $245,000 budget amendment was determined to be necessary after the project cost estimate was updated using comparable costs from recent basin plans. This 2015 budget amendment was adopted by the Council on April 20, 2015.

The project budget and revenue sources are as follows:

EXPENDITURES

Project Administration:	
Staff and other Direct Expenses	$15,000
Consultant Design Contract	***$430,000***
Total Project Cost	$445,000

REVENUE

Surface Water Capital Fund	$445,000
Total Revenue	$445,000

RECOMMENDATION

Staff recommends that Council move to authorize the City Manager to execute an agreement with AltaTerra Consulting LLC for $430,000 to provide consultant services including a surface water infrastructure condition assessment for the Puget Sound Drainages Surface Water Basin Plan.

ATTACHMENTS

Attachment A: Basin Plan-Puget Sound Basins City of Shoreline Scope of Work

Basin Plan—Puget Sound Basins
City of Shoreline
Scope of Work
May 7, 2015

Introduction and Background

The City of Shoreline (City) is embarking on its final Surface Water Basin Plan. This Basin Plan will encompass several drainage areas on the City's perimeter that are not contained by the City's larger drainage basins. Most of these basins are located on the western edge of the City conveying surface water to Puget Sound. Potential issues in these basins include steep topography that could contribute to challenging conditions for managing stormwater conveyance infrastructure as well as mixed types and ages of stormwater infrastructure that have been constructed as the area has developed.

Goals and Objectives

The specific project objectives for this basin plan includes:

- Condition assessment of stormwater pipes 8 inches and greater owned by the City;
- Condition assessment of stormwater catch basins and manholes owned by the City;
- Update GIS drainage infrastructure inventory;
- Identification and evaluation of management actions for surface water and infrastructure problems (flooding, erosion, water quality);
- Evaluation of stormwater treatment strategies for future development and redevelopment (regional facilities, alternative standards, etc.); and
- Prioritized list of structural and programmatic strategies including a repair and replacement schedule.

Project Tasks

The tasks below describe the general work flow and elements that will be conducted to accomplish the project goals.

Task 1- Project Management

Project management will include communications with the City of Shoreline project manager and the consultant team; scheduling and oversight of the various project activities; and budget tracking and oversight, including preparation of monthly invoices and progress reports. The primary consultant point of contact for this project will be Erin Nelson.

Assumptions:
The following assumptions are associated with this task.

- The project will be 12 months in duration, from mid-May 2015 through mid-May 2016.

- Bi-weekly phone calls to discuss project progress with appropriate staff for the phase of the project being discussed. The meetings will be no more than ½ hour.

- A project charter will be developed jointly by the City project manager and the Consultant team project manager, outlining scope, schedule, budget, responsibilities, and communication.

- A project kick-off meeting will be held with key team members and City staff. The meeting will last no more than 2 hours.

Deliverables:
- Twelve monthly progress reports and project invoices

Task 2- Review Existing Information

This task involves reviewing relevant information that will be used to evaluate existing conditions, identify data gaps, inform the field assessment, and develop capital and programmatic solutions.

Assumptions:
- The City will provide the Altaterra team with the following information for review prior to the start of this task:

    - City of Shoreline GIS and CAD layers showing location of stormwater drainage features and attributes (type, diameter, inverts, length, and age).
    - City of Shoreline GIS layers for geology or soils, zoning, property types and boundaries, impervious areas (buildings, transportation and other), topography water features (streams, and lakes), subbasin boundaries and wetlands.
    - Digital aerial photographs and LiDAR maps.
    - All available water quality monitoring data.
    - As-builts or design drawings for stormwater facilities
    - Maintenance, flooding, and stormwater complaint records.
    - Hydraulic and hydrologic models developed by others.

- The Altaterra team will also acquire and review the following publically available information:

- Booth, Derek B., Troost, Kathy Goetz, and Shimel, Scott A. 2005. Geologic Map of Northwestern Seattle (part of the Seattle North 7.5' x 15' quadrangle), King County,
  Washington: U.S. Geological Survey Scientific Investigations Map 2903, 1:12,000
  Available from The Pacific Northwest Center for Geologic Mapping Studies (GeoMapNW) and at http://geomapnw.ess.washington.edu/index.php.
- Geological boring log data available through Washington State Department of Ecology of GeoMapNW.
- United States Department of Agriculture, Soil Conservation Service (USDA SCS). 1973. *King County Soil Survey*.
- United States Department of the Interior (USDI). 1987a. *National Wetlands Inventory,*
- King County wetlands inventory data (1990) as available in county GIS mapping (iMAP).
- Stream and wetland information available from WDFW on line (PHS on the web, SalmonScape).
- United States Department of the Interior (USDI). 1987b. *National Wetlands Inventory, Seattle North, West, Washington 7.5-minute USGS Quadrangle*.
- Washington State Department of Ecology (Ecology). 2004. *Shoreline Slope Stability in Coastal Zone Atlas*. Washington State Department of Ecology, Shorelands and Coastal ZoneManagement Program. Olympia, WA.

Deliverables:
There are no deliverables for this task. A summary of background information and document review will be included in the Basin Plan Report, Task 8.

Task 3- Infrastructure Condition Assessment and Update GIS Coverages

Stormwater infrastructure will be assessed through a video inspection survey of the publicly owned and maintained piped conveyance system. This includes CCTV inspection of pipes eight inches in diameter and larger and culverts, which is approximately 18 miles of pipe. Additionally, manholes and catch basins will be assessed and rated. Approximately 900 manholes and catch basins are estimated to be included. All reports and videos will then be hyperlinked with the GIS data, and ratings will be associated with each pipe. Pipes will be categorized for replacement, maintenance or other management actions in the development of projects and strategies in Task 6.

This task also includes collection of elevation data at the rims of catch basins and manhole structures using a handheld GPS. This effort would be conducted independently of the condition assessment vendor.

Assumptions:
The following assumptions are associated with this task.

- Approximately 900 structures will require collection of rim elevations. It is assumed this effort will take approximately 4 weeks.
- Pipes that cannot be inspected without cleaning will be cleaned. However, pipe jetting attempts will only be two to three passes per pipe. An incomplete report and CCTV video will be recorded up to the point that the blockage is reached in the pipe.
- Vendor will procure all required City right-of-way use permits and provide traffic control as needed to complete inspections.
- City will request right-of-entry from property owners for which access may be needed.
- Consultant will complete field assessments prior to kicking off the CCTV vendor to note any discrepancies between GIS data. All discrepancies including, additional discrepancies found by the vendor will be noted (see next assumption).
- City will provide numbering system for the Consultant team to use when new infrastructure (pipe or structure) are identified. GIS layers will be updated with new infrastructure by the consultant team. A list of new infrastructure (including identification number and type) will be provided to the City.
- GIS maps of pipes and structures within the basin will be created on ArcGIS online. The Vendor will utilize Wi-Fi in the field to view the maps. No physical maps will be provided.
- The NASSCO rating system (PACP and MACP) will be used for all pipes and modified for the Manholes and Catch Basins with CCTV inspection.
- The CCTV data files will be in the PACP (Pipeline Assessment and Certification Program) Microsoft Access database format for future input into the City's asset management program, CityWorks.
- City will provide Consultant with log-in information to cloud server in order for consultant to make dynamic updates to the GIS data base and access GIS data.
- Pipe and structure location updates will be made available on the cloud server. All updates to ratings, pipe diameters, pipe materials, etc. will be provided to the City in an Excel spreadsheet to be transferred to GIS by City GIS staff.
- CCTV video files, PDF reports and PACP/MACP databases will be transferred from the CCTV Vendor weekly via portable hard drives.
- Condition Assessment is a time and materials not to exceed budget with the following assumptions:

Deliverables:

- Map and GIS inventory database of all structures and pipes inspected.
- Videos inspection in MP4 format and inspection data in PACP/MACP compliant Microsoft Access format for all City-owned structures and pipes 8 inches in diameter and larger within the Puget Sound basins.
- Updated GIS stormwater inventory database with industry standard condition or rating identified.

Task 4- Assess Physical and Biological Basin Characteristics

This task involves a qualitative field assessment of geomorphology, fisheries, aquatic habitat, wetlands and infrastructure conditions and problem identification. A field team consisting of a geomorphologist, fisheries biologist and wetland ecologist will walk the in-city open channel portions of the stream channels in the Puget Sound basins from the mouths (generally Puget Sound) to the headwaters (generally wetlands, seeps, or surface water pipes in the uplands). Blue Heron (~1.3 miles) and Coyote (~0.5 miles) creeks in the Innis Arden North and Innis Arden South basins will be walked and additional time will be reserved to walk at least half of the 1.5 miles of stream channel that are mapped in the City's GIS system.

During the stream walks, physical and biological conditions will be noted in a field notebook and on maps with geographic references, such as road crossings. Current conditions will be compared to documented conditions described in previous reports. Results of the field assessment will be used to identify problems and potential solutions and opportunities. Streams included in the field evaluation will also be typed according to SMC 20.80.470, which relies in part on the criteria for fish passability established by the Washington Department of Fish and Wildlife. The field assessment of in-stream conditions will also include:

- General vegetation conditions (type, density, size, width of vegetation corridor adjacent to stream channel)
- In-stream and hillslope erosion processes (incision, aggradation and landslides) and geologic units
- Stream channel widths and passage barriers as needed to assist with stream typing
- Aquatic habitat conditions (pools, riffles, large woody debris, flow)
- Location of riparian wetlands
- Location of stormwater outfalls, pipes and groundwater seeps
- Potential pollution sources
- General in-stream sediment distribution throughout stream channel
- Wildlife activity (presence of beaver dams)
- Estimates of Manning's roughness coefficients for future hydraulic models

- Stream channel geometry estimates for input into future hydraulic models, if needed.

Overall biological and physical characteristics in the rest of the project area (outside the stream corridors) will be documented through targeted field visits by the team wetland ecologist, stormwater engineer, and/or technical lead to identified wetlands, open spaces, road networks and neighborhoods.

Assumptions:
The following assumptions are associated with this task:

- The City will obtain right-of-entry permission from private property owners for the stream walk and field investigation.
- The City will provide access to stormwater infrastructure as needed.
- The stream walk will take no more than 3 days.
- Upland field assessment will take no more than 2 days.
- The field crew will decontaminate boots and field gear according to recognized protocol in order to reduce the transport of New Zealand mudsnails from one location to another.
- Identification of pollutions sources will be limited to routine observable conditions noted in the field. No water, soil or other testing or sampling will be conducted for the purposes of identifying potential pollutant sources.
- Determinations of jurisdictional stream status for roadside ditches and other small watercourses outside of the 3 miles of open channels mentioned above are not included.

Deliverables:
None. Field evaluation data, including field notes, forms and photos will be summarized in the Basin Plan Reports and presented in an Appendix (Task 8).

Task 5- Hydraulic Modeling
This task involves developing an EPASWMM model to simulate existing and potential future surface water run-off and routing conditions in the Richmond sub-basin. The model will be used to identify current stormwater capacity issues in the existing conveyance system and size potential future infrastructure upgrades.

Assumptions:
The following assumptions are included in this task:

- City-provided GIS layers identified in Task 2 will be used to perform hydrologic and hydraulic modeling.

- The existing Richmond Basin boundary is accurate and will not require revision for the modeling effort. Up to 20 sub-basins will be delineated to generate runoff throughout the various reaches of the system.
- Existing land use impervious areas will be based on City provided GIS. Pervious (forest, grass, and pasture) areas will be measured in GIS based on aerial photography (2012 or more recent, if available). Future land use assumptions will be based on City of Shoreline zoning.
- Total impervious area (TIA) will be converted to effective impervious area (EIA) based on estimated percent connected factors in accordance with the guidance provided in the Snohomish County Drainage Needs Reports 2002.
- The model will be used to assess existing and future storm drainage pipe conveyance capacity.
- Everett gage 15-minute precipitation data will be used.
- Flow frequency analysis will be performed to determine 2-year, 10-year and 25-year events. These events will be used to determine pipe capacity level of service.
- Calibration of simulated flows to flow gage data will not be necessary.

Deliverables:

- Draft hydrologic and hydraulic modeling memorandum documenting modeling data inputs, assumptions, and results. The final memorandum will be included as an appendix in the Basin Plan Report (Task 8).
- Electronic copy of modeling files.

Task 6- Develop Projects and Strategies

This task involves the development of alternative management strategies including structural and non-structural solutions to problems identified in Tasks 2, 3 and 4 and identified by City staff. A brainstorming session will be held with members of the consultant team and City staff to discuss problems and potential solutions. Challenges and opportunities for each identified strategy will be assessed, including permitting, community acceptance, cost, funding possibilities, and technical feasibility. Conceptual designs (location, layout and section) of potential structural solutions will be developed along with planning level cost estimates.

Assumptions:

- One ½ day brainstorming session will be held with up to 5 members of the consultant team, and relevant City personnel including the project manager, and maintenance and operations staff.
- Programmatic solutions will include evaluation of existing drainage easements and potential need for additional easements according to protocol developed by the City.
- Stormwater solutions will also be developed with a focus on future development and redevelopment opportunities, and coordination with other City projects

proposed by Parks and Transportation. Solutions may also include companion habitat improvement projects.
- Capital projects identified as a result of the Infrastructure Condition Assessment will be prioritized and packaged according to protocol being developed simultaneously as part of another project.
- Conceptual designs will be developed for up to 10 capital projects at an approximate 30% design level, including location, general size and layout, and cross sections. Surveyed elevations will not be included in the conceptual design.
- Planning level cost estimates will be provided for each capital project and management alternative.

Deliverables:
- Consolidated list of projects and strategies.

Task 7- Implementation Schedule (OPTIONAL)

This task involves prioritization and development of an implementation schedule for projects (a) within the areas encompassed by this basin plan, and (b) city-wide.

Assumptions:
The following assumptions are associated with this task.
- Projects and strategies will be prioritized using protocol established during previous basin planning efforts.
- Implementation schedules will be jointly developed by the City and the Consultant team, with significant input from the City on budgetary considerations, priorities, and funding mechanisms.
- Puget Sound basin implementation schedule will be included in the Basin Plan report (Task 8)
- There will be two review cycles for the City-wide implementation schedule.
- The City will provide a consolidated set of review comments to the consultant team for both the preliminary draft and final draft city-wide implementation schedule.

Deliverables:
- Preliminary draft city-wide implementation schedule.
- Revised draft city-wide implementation schedule.
- Final city-wide implementation schedule.

Task 8- Basin Plan Report
This task involves development of a draft and final Basin Plan Report that includes the following:
- General description of the basin planning area, including topographic, climatic, geologic and land use conditions.

- Field assessment photographic log for use in future comparisons
- Hydraulic Modeling Memorandum, which will include modeling results and documentation for future use of the model(s).
- Detailed descriptions of surface water management strategies including potential partners, funding mechanisms, challenges and opportunities, and planning level cost estimates for strategies that reduce flooding, or improve water quality and aquatic habitat.
- Capital improvement project conceptual design sheets.
- Updated GIS maps with stormwater infrastructure, and links to condition assessment videos and documentation.
- Summary of water quality data provided by the City.
- Description of public outreach events and public comments received during public or council meetings (Task 9).

Assumptions:
The following assumptions are associated with this task.

- One annotated outline of the basin plan report will be prepared for review and approval prior to report preparation.
- There will be two review cycles for the basin plan report, including a preliminary draft report and final draft report. The draft reports will be submitted electronically.
- The City will provide a consolidated set of review comments to the consultant team for both the preliminary draft and final draft reports.
- Draft deliverables associated with previous tasks (Tasks 3, 5 and 6) will be finalized in the basin plan report.

Deliverables:

- One annotated basin plan report outline (electronically submitted).
- One preliminary draft basin plan report (electronically submitted). It is anticipated that this report will be approximately 100 pages, including text, tables, figures and appendices.
- One final draft basin plan report (electronically submitted) that addresses comments made on the preliminary draft report. This report will be submitted in track changes format and as a clean copy so the City can easily see how comments were addressed.
- Final Basin Plan Report incorporating changes requested in previous submittals. This report will be submitted electronically as a pdf.

Task 8- Public Meetings and Stakeholder Involvement

This task involves the following items:

- Development of presentation materials for public meetings

- Participation at public meetings.

Assumptions:
The following assumptions are associated with this task.

- Up to four public meetings will occur.
- Only one member of the consultant team will participate in each public meeting.
- Public meeting presentation materials will include a power-point presentation and one large presentation board per meeting.
- The City will identify key stakeholders who may have an interest in the basin plan outcome.
- Assume one person per meeting.

Deliverables:
- Public meeting presentation materials.
- Summary notes from public meetings, including comments received.

Task 9- Management Reserve
This task includes a management reserve for additional tasks or scope items requested during this project.

Assumptions:
The following assumptions are associated with this task.

- The management reserve will not be used without written authorization from the City's project manager.

BUDGET

The estimated budget for this project is $445,150. The condition assessment portion of the project is estimated to be $183,750. See Table 1 on next page for summary and potential options for reducing the overall project cost through modification of scope items.

Table 1 Summary of Estimated Budget and Potential Options

Task	Description	Estimated Cost	Option 1	Estimated Cost	Option 2	Estimated Cost
Project Management	Monthly summary reports/invoices, kick-off meeting, bi-weekly phone calls	$14,270	No additional options			
Review Documentation	Review existing reports and data	$17,660	No additional options—may take less time, depending on amount of information available.			
Condition Assessment and GIS Update	Condition assessment of pipes >/= 8" dia. and structures	$236,640	No video on structures	$223,515	No structures (CCTV or elevation data)	$175,024
Assess physical and biological basin characteristics and field work	Streams, wetlands, facilities, upland characteristics in support of projects	$33,370	Eliminate stream typing	$30,240		
Hydraulic Analysis-Richmond Basin	Develop hydraulic model	$29,710				
Develop Projects	Includes up to 10 conceptual designs	$49,160	Reduce number of conceptual designs to 5	$38,144		
Implementation Schedule	Puget Sound Basins and City-wide Implementation Schedule	$11,720	Eliminate City-wide implementation schedule	$2,169.50		
Documentation	Basin Plan Report	$43,840	No additional options			
Public Meetings	4 public meetings	$8,780	No additional options			
	Total	$445,150	Total w/Option 1 condition Assessment	$432,025	Total w/ Option 2 Condition Assessment	$383,534