Questions and Answers
Port Granby Waste Water Treatment Plant
Solicitation No.: EQ139-131604

1. **These field instrument devices are regularly applied in similar applications as specified in this project within the water and wastewater industry.**

Please accept this request to provide Krohne magnetic flow meters; Krohne turbidity analyzer; and Pulsar Process Measurement ultrasonic level transmitters; Magnetrol capacitance level switches; and Winters pressure gauges & bi-metal thermometers for the Port Granby Water Treatment Plant Project, that are represented by our company. Since we are not named, we would like to have an opportunity to bid the product devices on the subject project on sections of your spec as follows:

Answer

Article 1.8 of Section 40 90 00 has been revised (See Attachment 8). It is the Contractor's responsibility to select the equipment and instruments in the WWTP. Equipment/instruments that satisfy the requirements outlined in the specification will be accepted.

2. **Section 43 21 13 and 43 21 39 & 43 30 10: please specify Pump flow and TDH**

3. **Section 43 30 10 and 43 21 39: please specify Material of construction for major components.**

Answer:

It is the bidder's responsibility to assess and evaluate the provided bid information (e.g. Process and Instrumentation Drawings, Design Rationale and Process Control Description [Appendix S], and Pilot Trial Report [Appendix R]) and size and select the appropriate pump systems including any ancillary equipment. The bidder must provide design justification (i.e. process calculation) for the selection.

Material selection is the responsibility of the General Contractor. All materials selected must be compatible for the type of environment the equipment is exposed to (e.g. rating of room) and material to be conveyed.

4. **Please confirm the following:**

a. **We do not have to be ISO 9001 certified to bid this project.**

b. **We have to provide documentation from a third party that we meet or exceed ISO 9001 requirements as noted on Appendix 2 Qualification form.**

c. **That this documentation must be provided before we start on site and not be part of our tender submission.**

A) You do not have to be ISO 9001 certified to bid, provided you commit you will meet the alternative requirement (item b),
B) Yes, if you are not already ISO 9001 certified.

C) Yes, this third party documentation must be provided before you start on site.

5. **What is the anticipated start on site date?**

ANSWER: February 25, 2013 - Refer to specification Section 01 32 16, Article 1.6.3.2.

6. **Section 43 85 25 - Soda Ash System**

EnPro recommends a dehumidifier for the storage area and a grinder on top of the feeder to eliminate clumps. Soda ash tends to draw in moisture.

ANSWER: It is the Contractor's responsibility to size and select the dosing system including any ancillary equipment. A Soda Ash System that meets the design intent and performance requirements will be accepted. The bidder must provide design justification (i.e. process calculation) for selection. Note that the Soda Ash storage is shown outside (refer to Drawing WWTP-D-02).

7. **Section 46 85 20 - Package Lime Storage and Feed System**

a. The spec states hydrated lime but it requires a slaker. Is the chemical pebble quick lime or hydrated lime?

ANSWER: The chemical is hydrated lime.

b. What are the pounds per hour required of lime?

ANSWER: The Process Instrumentation Drawings and the Design Rationale and Process Control Description (section 7.18) provide information relevant to the lime storage and feed system with regards to chemical, application point and dosing quantities and silo capacity. However, the Contractor is required to select the system and provide justification for process selection.

8. **The following information is being requested as it was not clear in all cases the exact requirements of listed equipment. All information requests listed below are for the equipment which we are considering an offer to bidding contractors. The following request for information has been broken down per specific sections of the bid documents.**

A. **Section 43 21 15 – Progressive Cavity Pumps**
- Design Criteria (% solids, RPM, Flow rates min-max & pressure)
- Process and Instrumentation Drawings
- Process Control Description
- Pilot Study Report

ANSWER: It is the Contractor's responsibility to select all the pumps. Pumps that meet the design intent and performance requirements will be accepted. The Contractor will be required to provide justification (e.g. calculations) for the selection.

Process and Instrumentation Drawings are provided in the drawing package.

Design Rationale and Process Control Description is provided as Appendix S to the Specifications.

Pilot Study Report in provided as Appendix R to the Specifications.

B. **Section 43 36 13 - Drawing WWTP-DI-28 – Methanol Metering Pumps Skid-Mounted:**
(TAG: DP-12210 / DP-11220 /DP-11230)

- There is no specification about the piping. For a recent project, we had to use SS316 and respected the B31.1 and B31.3 standards…Do the same standards apply here?
- Diaphragm pumps are required…Can we use gear pumps instead (Isochem)?
- Discharge pressure and the flow required for the dosing pumps?
- Methanol storage tank – capacity?
- Are we providing Nitrogen cylinders or is it by contractor?
- Are we providing the discharge line/ filling line from the truck discharge point to the methanol tank or is it by contractor?
- On P&ID, it is mentioned "located outdoor", what does it mean: is the skid physically outdoor, exposed to cold weather? The specs ask for heat tracing and thermostat - do we have to provide a shed too to completely enclose the dosing equipment?

ANSWER: The Process and Instrumentation Drawings and the Design Rationale and Process Control Description provide information relevant to the methanol storage and dosing system with regards to application point, storage capacity and pump capacity.

Piping specifications are provided in Section 40. The methanol double walled tank specification as well as nitrogen equipment is provided in Section 46.

The Owner will supply the Nitrogen cylinders.

The methanol tank discharge/fill line is to be provided as part of the Contractor. Who supplies and installs the line(s) is the Contractor's responsibility.

Methanol storage tank and dosing equipment (pumps, flowmeter) are located outside, external to the WWTP (Refer to dwg WWTP-DI-28). Nitrogen equipment is located inside (Refer to WWTP-D-02). Spec 46 33 13 calls for an enclosure for the dosing pumps

C. **Section 43 85 15 - Drawings WWTP-DI-25 / WWTP-DI-30 – Antiscalant Chemical Feed System**
(TAG: ASTS-10700 / ASFA-11500)

- Diaphragm pumps are shown on P&ID, is it what is required
- Discharge pressure & Flow for the pumps selection
- 2.1.2 ''The contractor is to provide chemical spill containment pallet''. Could you confirm that it is not in our scope? As there is a spill containment included by contractor, we won't provide skid with containment integrated unless otherwise indicated from you?
- Control panel – Any specification?
- 2.3.2.3.1 – motor and drive DC: We would like to supply 120VAC and **AC VFD**, is this acceptable?
- Do we provide the tote/ and **mixing tank AST-10700**** and the instruments + **control panel LCP-10750?**

ANSWER: The Process instrumentation drawings and the Design Rationale and Process Control Description (section 7.18) provide information relevant to the Antiscalant System with regards to application point, storage capacity and pump capacity. It is the Contractor's responsibility to select the System. A system that meets the design intent and performance requirements will be accepted. The Contractor will be required to provide justification (e.g. calculations) for the selection.

Control panel: The P&IDs indicate the switches, pushbuttons and indicator lights which are required on the controller, as well as the I/O signals which are required to and from the controller. Some vendors may have a standard controller somewhat different from what the P&IDs indicate, but will be acceptable if the design intent is met. As an example, if the standard controller utilizes a HAND- OFF-AUTO switch instead of a LOCAL-OFF-REMOTE switch in conjunction with START and STOP pushbuttons, this would be acceptable because it meets the design intent of providing local manual control, as well as remote control by the plant PLC.

D. **Section 43 85 18 - Drawing WWTP-DI-23 - Sodium Hydroxide Feed System**
(TAG: SHFS-10300)

- Diaphragm pumps are shown on P&ID. Is it the requested type of pumps?
- Discharge pressure & Flow for the pumps selection?
- 2.1.2 ''The contractor is to provide chemical spill containment pallet''. Could you confirm that it is not in our scope? As there is a spill containment included by contractor, we won't provide skid with containment integrated unless otherwise indication from you?
- Control panel – Any specification?
- 2.3.2.3.1 – motor and drive DC: We would like to supply 120VAC with AC VFD, is this acceptable?
- Do we provide the tote** and low level sensor? If yes:
  - 2.1.5 - Hydrochloric acid tank to be provided with **unloading scrubber system** to suppress fumes. Could you please provide more information about this system
  - 2.2.3.2: Recommended storage capacity based on 14 days and based on average flow conditions. - Need to be defined?

ANSWER: The Process and Instrumentation Drawings and the Design Rationale and Process Control Description (section 7.18) provide information relevant to the Sodium Hydroxide storage and dosing System with regards to application point, storage capacity and pump capacity. A system that meets the design intent and performance requirements will be accepted. The Contractor will be required to provide justification (e.g. calculations) for the selection.

Tote/level sensor: The supply of some items called for in the contract documents could be provided by the equipment vendors as part of their package, or by the General Contractor. It is the Contractor's responsibility to ensure that all of the equipment is provided; the choice of who provides it (equipment vendor or General Contractor) is up to the Contractor to determine. The specification for the low level sensors is included in Section 40 90 00.

Control panel: The P&IDs indicate the switches, pushbuttons and indicator lights which are required on the controller, as well as the I/O signals which are required to and from the controller. Some vendors may have a standard controller somewhat different from what the P&IDs indicate, but will be acceptable if the design intent is met. As an example, if the standard controller utilizes a HAND- FF-AUTO switch instead of a LOCAL-OFF-REMOTE switch in conjunction with START and STOP pushbuttons, this would be acceptable because it meets the design intent of providing local manual control, as well as remote control by the plant PLC.

E. **43 85 19 -Drawing WWTP-DI-23- Hydrochloric Acid Feed System**
(TAG: SHFS-10400)

- Diaphragm pumps are shown on P&ID. Is it what is requested?
- Discharge pressure & Flow for the pumps selection?
- 2.1.2 ''The contractor is to provide chemical spill containment pallet''. Could you confirm that it is not in our scope? As there is a spill containment included by contractor, we won't provide skid with containment integrated unless otherwise indicated from you?
- Control panel – Any specification?
- 2.3.2.3.1 – motor and drive DC: We would like to supply 120VAC with AC VFD, is this acceptable?
- Do we provide the tote** and low level sensor? If yes:
    - 2.2.3.2: Recommended storage capacity based on 14 days and based on average flow conditions. - Need to be defined?

ANSWER: The Process and Instrumentation Drawings and the Design Rationale and Process Control Description (section 7.18) provide information relevant to the Hydrochloric Acid storage and dosing System with regards to application point, storage capacity and pump capacity. A system that meets the design intent and performance requirements will be accepted. The Contractor will be required to provide justification (e.g. calculations) for the selection.

Tote/level sensor: The supply of some items called for in the contract documents could be provided by the equipment vendors as part of their package, or by the General Contractor. It is the Contractor's responsibility to ensure that all of the equipment is provided; the choice of who provides it (equipment vendor or General Contractor) is up to the Contractor to determine. The specification for the low level sensors is included in Section 40 90 00.

Control panel: The P&IDs indicate the switches, pushbuttons and indicator lights which are required on the controller, as well as the I/O signals which are required to and from the controller. Some vendors may have a standard controller somewhat different from what the P&IDs indicate, but will be acceptable if the design intent is met. As an example, if the standard controller utilizes a HAND-OFF-AUTO switch instead of a LOCAL-OFF-REMOTE switch in conjunction with START and STOP pushbuttons, this would be acceptable because it meets the design intent of providing local manual control, as well as remote control by the plant PLC.

Unloading scrubber system: vent line and overflow line of the storage tank shall be directed to a gas absorption system (i.e. scrubber installed inside the containment area).

The selected scrubber needs to absorb the gases generated during unloading. The acid washing liquid has to be drained and to be neutralized. A system that meets the design intent and performance requirements will be accepted. The Contractor will be required to provide justification (e.g. calculations) for the selection.

F. **Section 43 85 20 - Drawings WWTP-DI-24 / WWTP-DI-29 - Orthophosphoric Acid Feed System**
(TAG: PATS-10600 / PATS-11300)

- Diaphragm pumps are shown on P&ID. Is it what is requested?

- Discharge pressure & Flow for the pumps selection?
- 2.1.2 ‘’The contractor is to provide chemical spill containment pallet’’. Could you confirm that it is not in our scope? As there is a spill containment included by contractor, we won’t provide skid with containment integrated unless otherwise indicated from you?
- Control panel – Any specification?
- 2.3.2.3.1 – motor and drive DC: We would like to supply 120VAC, is this acceptable?
- Do we provide the tote** and low level sensor? If yes:
    - 2.2.3.1: Recommended storage capacity based on 14 days and based on average flow conditions. - Need to be defined?

ANSWER: The Process and Instrumentation Drawings and the Design Rationale and Process Control Description (section 7.18) provide information relevant to the Orthophosphoric Acid storage and dosing System with regards to application point, storage capacity and pump capacity. A system that meets the design intent and performance requirements will be accepted. The Contractor will be required to provide justification (e.g. calculations) for the selection.

Tote/level sensor: The supply of some items called for in the contract documents could be provided by the equipment vendors as part of their package, or by the General Contractor. It is the Contractor’s responsibility to ensure that all of the equipment is provided; the choice of who provides it (equipment vendor or General Contractor) is up to the Contractor to determine. The specification for the low level sensors is included in Section 40 90 00.

Control panel: The P&IDs indicate the switches, pushbuttons and indicator lights which are required on the controller, as well as the I/O signals which are required to and from the controller. Some vendors may have a standard controller somewhat different from what the P&IDs indicate, but will be acceptable if the design intent is met. As an example, if the standard controller utilizes a HAND-OFF-AUTO switch instead of a LOCAL-OFF-REMOTE switch in conjunction with START and STOP pushbuttons, this would be acceptable because it meets the design intent of providing local manual control, as well as remote control by the plant PLC.

G. **Section 43 85 21 - Drawing WWTP-DI-25 – Urea feed System**
(TAG: VFS-10800)

- Diaphragm pumps are shown on P&ID?
- Discharge pressure & Flow for the pumps selection?
- 2.1.2 ‘’The contractor is to provide chemical spill containment pallet’’. Could you confirm that it is not in our scope? As there is a spill containment included by contractor, we won’t provide skid with containment integrated unless otherwise indicated from you?
- Control panel – Any specification?
- 2.3.2.3.1 – motor and drive DC: We would like to supply 120VAC with VFD, is this acceptable?
- Do we provide the tote** and low level sensor? If yes:
    - 2.2.3.1: Recommended storage capacity based on 14 days and based on average flow conditions. - Need to be defined?

ANSWER: The Process and Instrumentation Drawings and the Design Rationale and Process Control Description (section 7.18) provide information relevant to the Urea storage and dosing System with regards to application point and storage capacity. A system that meets the design intent and performance requirements will be accepted. The Contractor will be required to provide justification (e.g. calculations)

for the selection. Regarding the capacity, a dosing flow of 2 L/h for a 50 % solution is suggested as a guide.

Tote/level sensor: The supply of some items called for in the contract documents could be provided by the equipment vendors as part of their package, or by the General Contractor. It is the Contractor's responsibility to ensure that all of the equipment is provided; the choice of who provides it (equipment vendor or General Contractor) is up to the Contractor to determine. The specification for the low level sensors is included in Section 40 90 00.

Control panel: The P&IDs indicate the switches, pushbuttons and indicator lights which are required on the controller, as well as the I/O signals which are required to and from the controller. Some vendors may have a standard controller somewhat different from what the P&IDs indicate, but will be acceptable if the design intent is met. As an example, if the standard controller utilizes a HAND-OFF-AUTO switch instead of a LOCAL-OFF-REMOTE switch in conjunction with START and STOP pushbuttons, this would be acceptable because it meets the design intent of providing local manual control, as well as remote control by the plant PLC.

H. **Section 43 85 22 - Drawings WWTP-DI-26 / WWTP-DI-29 – Biocide feed System**
(TAG: BFS-11000/BFS-11400)

- Diaphragm pumps are shown on P&ID. Is this what is requested?
- Discharge pressure & Flow for the pumps selection
- 2.1.2 ''The contractor is to provide chemical spill containment pallet''. Could you confirm that it is not in our scope? As there is a spill containment included by contractor, we won't provide skid with containment integrated unless otherwise indicated from you?
- Control panel – Any specification?
- 2.3.2.3.1 – motor and drive DC: We would like to supply 120VAC, is this acceptable?
- Do we provide the tote** and low level sensor? If yes:
    - 2.2.3.1: Recommended storage capacity based on 14 days and based on average flow conditions. - Needs to be defined??

ANSWER: The Process and Instrumentation Drawings and the Design Rationale and Process Control Description (section 7.18) provide information relevant to the Biocide storage and dosing System with regards to application point and storage capacity. A system that meets the design intent and performance requirements will be accepted. The Contractor will be required to provide justification (e.g. calculations) for the selection.

Tote/level sensor: The supply of some items called for in the contract documents could be provided by the equipment vendors as part of their package, or by the General Contractor. It is the Contractor's responsibility to ensure that all of the equipment is provided; the choice of who provides it (equipment vendor or General Contractor) is up to the Contractor to determine. The specification for the low level sensors is included in Section 40 90 00.

Control panel: The P&IDs indicate the switches, pushbuttons and indicator lights which are required on the controller, as well as the I/O signals which are required to and from the controller. Some vendors may have a standard controller somewhat different from what the P&IDs indicate, but will be acceptable if the design intent is met. As an example, if the standard controller utilizes a HAND-OFF-AUTO switch instead of a LOCAL-OFF-REMOTE switch in conjunction with START and STOP pushbuttons, this would be

acceptable because it meets the design intent of providing local manual control, as well as remote control by the plant PLC.

I. **Section 43 85 23 - Drawing WWTP-DI-27 – Polymer Feed Pumps Skid-Mounted**
(TAG: PFS -11100)

- Consumption of dry make-up system (dry kg/hr)
- Diluted polymer consumption and concentration?
- Diaphragm pumps are shown on P&ID but in the spec they describe progressive cavity pumps. What is the plant preference?
- 2.1.1.1Tanks mixing aging in Polypro – HDPE ok? 2.2.2.3.2 FRP tanks or 304 SS?
- Polymer system described is Siemens with the tank divided in three parts. It is possible to be specify with our system – "Hydra-Pol" with two stacked tanks? We can provide the spec of our system if required.

  Hydra-Pol – stacked version
- Polymer capacity required for the process and flow/pressure of each pump if not the same on each injection point.

ANSWER: The Process and Instrumentation Drawings and the Design Rationale and Process Control Description (section 7.18) provide information relevant to the Polymer System with regards to application point and storage capacity. A system that meets the design intent and performance requirements will be accepted. The Contractor will be required to provide justification (e.g. calculations) for the selection.

The dry polymer feed system has to provide storage for 14 days consumption under average conditions. The storage may include hopper volume and storage at the dosing system.

J. **43 85 24 -Drawing WWTP-DI-26 – Soda Ash Feed System**
(TAG: SABS-10900)

- Diaphragm pumps are shown on P&ID. Is this the type of pumps required?
- Discharge pressure & Flow for the pumps selection?
- 2.1.2 ''The contractor is to provide chemical spill containment pallet''. Could you confirm that it is not in our scope? As there is a spill containment included by contractor, we won't provide skid with containment integrated unless otherwise indicated from you?
- Control panel – Any specification?
- 2.3.2.3.1 – motor and drive DC: We would like to supply 120VAC with AC VFD, is this acceptable?
- Truck unloading system: are we providing? (blower/conveying piping/truck unloading panel)
- Silo dimensions or capacity required? – seismic data?
- 2.10 Soda ash solution tank: instruments not shown on the P&ID…do we have to supply flow meter, pressure regulation valve…?
- Mixing tank recommended tank size or retention time?
- Do we need to provide a local panel with local PLC or only the control philosophy?

K. **Section 43 85 25 - Drawing WWTP-DI-26 – Soda Ash System**
(TAG: SABS-10900)

- Consumption (dry kg/hr) MIN / MAX?
- Diluted soda ash consumption MIN / MAX and recommended make-up concentration?

ANSWER: For Questions J and K: The Process and Instrumentation Drawings and the Design Rationale and Process Control Description (section 7.18) provide information relevant to the Soda Ash storage and dosing System with regards to application point and storage capacity. A system that meets the design intent and performance requirements will be accepted. The Contractor will be required to provide justification (e.g. calculations) for the selection.

The Soda Ash systems and Soda Ash Feed system and the scope of supply are described in the individual chemical feed specifications.

Control panel: The supply of some items called for in the contract documents could be provided by the equipment vendors as part of their package, or by the General Contractor. It is the Contractor's responsibility to ensure that all of the equipment is provided. The choice of who provides it (equipment vendor or General Contractor) is up to the Contractor to determine.

The local control panel CP-10950 may be equipped with a PLC, or can be based on relay circuits, as long as the design requirements are met.

L. **Section 46 11 33 – Drawing WWTP-D1-15 - Packed Tower Wet Scrubber System**
- Contaminants to remove (with SG and granulometry for each type)
- Percent of each contaminants?
- Incoming temperature of gases?
- Presence of dust?
- Presence of CO2?
- Hardness of the water available on site

ANSWER: The Process and Instrumentation Drawings and the Design Rationale and Process Control Description (section 7.16) provide information relevant to the Slurry Dryer Exhaust Scrubber. A system that meets the design intent and performance requirements will be accepted. The Contractor will be required to provide justification (e.g. calculations) for the selection.

Information and performance will depend on the dryer manufacturer selected by the Contractor. Service water for scrubber system is provided by RO permeate.

M. **Section 46 35 10 - Drawing WWTP-D1-19 – Centrifuge System**
- Type of sludge?
- Daily hours of operation?
- Flow rate (min-max)
- Solids % at inlet?
- Solids % at discharge?
- Process Control Description

ANSWER: The Process and Instrumentation Drawings and the Design Rationale and Process Control Description (section 7.9.1) provide information on flow and capacity for Biosolids dewatering. A system that meets the design intent and performance requirements will be accepted. The Contractor will be required to provide justification (e.g. calculations) for the selection.

N. **Section 46 45 10– Drawing WWTP-D1-13 - Packaged Evaporation Unit**

i. Type of stream to be processed (Feed):
   - How is the feed generated,
   - Composition (% dissolved solids, % Suspended solids, analysis, if available):
   - Feed flow capacity (lbs/hr or kg/hr):
   - Feed Temperature:
   - Feed Viscosity (If not known – high or Low):
   - Boiling point of feed solution at atmospheric pressure

ii. Concentrate (or Slurry):
   - Composition (% Dissolved solids):
   - Flow quantity (lbs/hr or kg/hr):
   - Viscosity at a given temperature:
   - Top operating temperature & pressure:
   - Boiling point of concentrate solution (or in case of crystallization, B.P. of saturated solution) at atmospheric pressure
   - Product discharge temperature:

iii. Water (or others) evaporation (lbs/hr):

iv. Continuous operation 24 hours a day (or not): Yes (No)

v. Preferred materials of construction (if known):

vi. Preferred type of evaporator (if known)

vii. Space available (any Limitations on Height, Length, or Width):

viii. Do you prefer a steam unit or an MVR (Mechanical vapour recompression)?

ix. Utilities available:
   - Power: 3P, VOLTS, HZ, Cost USD/KWHR
   - Steam: Quantity available:
   - Pressure: Cost: USD/1000 LBS
   - Cooling water: Quantity available:
   - Temperature In/Out

x. Automation: Half Automated, Fully Automated, Computerized (PLC)

xi. Preferred scope of supply:
   - Skid mounted system, or
   - All Equipment shipped loose, or
   - Drawings for complete system supplied

ANSWER: The Process and Instrumentation Drawings and the Design Rationale and Process Control Description (section 7.15.) provide process information for flow and capacity for the Evaporation process. The Evaporation unit is an electrically heated Mechanical Vapor Compression Evaporator (MVCE). A system that meets the design intent and performance requirements will be accepted. The Contractor will be required to provide justification (e.g. calculations) for the selection.

O. **Section 46 65 13 – Drawing WWTP-D1-19 - Filter Press**

- Expected flow rates or solids throughput
- Specific Gravity of dry solids and/or slurry
- Expected feed and air blow time

P. In general, is it acceptable to quote a standard unit rather than exactly complying with the specifications? Some specific examples:

- The number of chambers, chamber volume, and total volume listed in the spec don't add up. The chamber volume and number of chambers suggest a 39ft³ press, rather than 30ft³. Also, our standard plates may have a slightly different volume. Is it acceptable to quote a 30ft³ unit with less than 47 chambers?

- Section 46 65 13, 2.1.2.1: our standard 1000mm filter press is designed for a maximum internal operating pressure of 116psi. Our standard cylinder for this unit would be 7" in diameter, providing appx 5,000psi clamping pressure with a 7% safety factor. Since your internal operating pressure is only expected to be 25psi, our standard cylinder would provide a safety factor of about 400%. Is it acceptable to quote our standard unit?

- Section 46 65 13 p4, 2.1.2.2: Our standard design uses a 4" thick head and follower, and UHMW sliding shoes rather than rollers; is this acceptable?

- Section 46 65 13 p4, 2.2.3: Our standard design is not integrally mounted in the leg; is this acceptable?

- The specification calls for a pneumatic dampening device, presumably for the feed piping. I'd like to get some clarification on this. Dampening devices are generally not required or included in a filter press system, especially if the feed pressure is as low as 25psi. If the customer is concerned about the effects of surges on a hard-piped system, we would generally recommend a flexible hose plumbed in such a way to reduce "whipping," but even this should not be necessary with such a low feed pressure. Is this acceptable?

ANSWER: Sections O and P: The Process and Instrumentation Drawings and the Design Rationale and Process Control Description (section 7.17.) provide process information relevant to the dewatering unit (filter press FP-07500). A system that meets the design intent and performance requirements will be accepted. The Contractor will be required to provide justification (e.g. calculations) for the selection.

Q. **Section 46 85 20 - Drawing WWTP-DI-24 - Package Lime Storage and Feed System**

- Silo capacity
- Lime consumption (dry kg/hr.)
- Is it quick lime or hydrated lime?
- Diluted lime consumption (min-max & pressure)
- Specs calls for lime slaker however, pid shows only dilution/mixing tank and storage tanks only. Are the pid correct or the specs?
- Diaphragm pumps are shown on P&ID- not sure if it is the best pump for this application
- Need the seismic data for the silo (Quick lime)
- Discharge pressure & Flow for the pumps selection

- 2.1.1- Storage silo: field erected – bolted: need the capacity required - *The silo shall be designed based on 14 days of storage capacity at average conditions.* Based on quick lime or hydrated lime…?
- 2.7 Volumetric feeder: one 25-11 helix-type feeder required from W&T. We would like to provide HAPMAN, 320-CV Feeder.
- Containment (SS or concrete) to be provided by us or contractor?
- Truck fill panel to be provided by us or contractor?

ANSWER: The chemical is hydrated lime. The Process and Instrumentation Drawings and the Design Rationale and Process Control Description (section 7.18) provide information relevant to the lime storage and feed system with regards to chemical, application point and dosing quantities sand silo capacity. A system that meets the design intent and performance requirements will be accepted. The Contractor will be required to provide justification (e.g. calculations) for the selection.

R. **Drawing WWTP-DI-22 - Sodium Hypo (TAG: SHFS-10100) & Citric acid (TAG : SHFS-10200)**

- No spec??
- Diaphragm pumps are shown on P&ID. Is it the type of pumps requested?
- Discharge pressure & Flow for the pumps selection
- For Sodium Hypo – Chem flare PFA piping or PVC?
- Do we provide the tote** and low level sensor?

ANSWER: The Process and Instrumentation Drawings and the Design Rationale and Process Control Description (section 7.18) provide information relevant to the Sodium Hypochlorite and Citric Acid storage and dosing system with regards to application point, storage capacity and pump capacity. A system that meets the design intent and performance requirements will be accepted. The Contractor will be required to provide justification (e.g. calculations) for the selection.

Tote/level sensor: The supply of some items called for in the contract documents could be provided by the equipment vendors as part of their package, or by the General Contractor. It is the Contractor's responsibility to ensure that all of the equipment is provided; the choice of who provides it (equipment vendor or General Contractor) is up to the Contractor to determine. The specification for the low level sensors is included in Section 40 90 00.

Normally these two chemical dosing systems would be supplied by the Membrane Bioreactor Package supplier.

S. **** Is the section 43 41 16 Process tank specification applicable for the totes?**

ANSWER: Yes. Totes have to be compatible with storage chemical.

9. Section 43 41 23 - Stainless Steel Tanks

1.1.1 - The tank tag numbers given do not coincide with the tank tag numbers shown on the drawings.

Please confirm that the following is correct:
Clarifier Effluent Tank - PHT-09000
Filtered Effluent Tank - PHT-05100

RO Permeate Tank - T-05600
RO Concentrate Tank - T-05800
Slurry Tank - ST-09600

Answer: Specification 43 41 23 was intended to be just for the slurry tank ST-09600. An updated specification is provided.

The following TAG numbers are used for the process tanks identified in the question. The names are listed as identified in the Process & Instrumentation Drawings.

- Slurry Tank: ST-09600
- Evaporation pH adjustment tank (receives supernatant from Clarifier): PHT- 09000
- Permeate tank : T 05600
- Final pH adjustment tank : PHT-06300
- Brine Reaction Tank: T-05800

10. <u>All Chemical Feed Systems</u>

Clarify what pump types are required. Section 43 21 20 references Peristaltic Pumps. The drawings all show Metering Pumps. The individual specifications refer to Hydraulic Diaphragm Metering Pumps. The **Port Granby WWTP Design Rational and Process Control Description** refers to a number of different pump types including Metering Pumps, Piston Diaphragm Pumps, Air Operated Diaphragm Pumps, and Progressive Cavity Pumps. We need to be clear on what is required.

Answer: It is the Contractor's responsibility to select all the chemical feed pumps. Chemical feed systems that meet the design intent and performance requirements will be accepted. The Contractor will be required to provide justification (e.g. calculations) for the selection.

11. <u>Section 43 85 23 - Polymer Feed System, Dry</u>

General - After discussions with the Account Manager of a major polymer supply company, three different polymers will most likely be required for the three specified applications. It is advisable that three different polymer systems be specified rather than leaving it too contractors/equipment suppliers to provide what they think is required. Due to the number of "unknowns", it is also advisable to design the polymer makedown system to accommodate both dry and emulsion/dispersion polymers. Emulsion/dispersion polymer offerings are more variable and maybe required to achieve the desired results.

Answer: It is the Contractor's responsibility to select the polymer feed systems. Systems that meet the design intent and performance requirements will be accepted. The Contractor will be required to provide justification (e.g. calculations) for the selection.

1.1.1 - It is very likely that the three application points will require different types of polymer and therefore three different dry polymer makedown systems will be required. Although it is stated that this may be required, I feel that the design should be based around this assumption. This will ensure a more level playing field for both the bidding contractors and the equipment suppliers. Furthermore, this will prevent cost over runs after project award.

Answer: It is the Contractor's responsibility to select the polymer feed systems. Systems that meet the design intent and performance requirements will be accepted. The Contractor will be required to provide justification (e.g. calculations) for the selection.

2.1.1.1 - The three compartment tank configuration with baffles contradicts section 2.2.2.6 and drawing WWTP-DI-27, both of which show a mix tank overtop of a day tank with a dump/transfer valve. Using a three compartment tank is not advisable since there is no way to prevent short circuiting. Furthermore, there is no way to ensure all the polymer solution receives the proper amount of mix time required to achieve full activation/hydration. It is better to have the mix tank and the day tank completely separate as shown on the drawing.

Answer: Noted. It is the Contractor's responsibility to select the system. System(s) that meet the design intent and performance requirements will be accepted. The Contractor will be required to provide justification (e.g. calculations) for the selection.

2.1.1.3 - The system we represent uses mechanical mixing, which contravenes this part of the specification. With respect to dry polymer wetting, high shear mechanical mixing is the best available technology. First, dry polymer is not susceptible to high shear damage at the Moment of Initial Wetting (first contact with dilution water) as the polymer molecule is coiled in a ball and not fully extended. Second, high shear energy is required at the Moment of Initial Wetting in order to provide adequate dry polymer dispersion in the water. The better the polymer is dispersed, the less chance of forming agglomerations and the less time it takes to fully hydrate. Third, venturi's do not provide high shear polymer wetting and are a common source of plugging as a result. We ask that the statement "Motor driven in-line mixing devices .... shall not be allowed..." be removed from the specification.

Answer: A mechanical mixing system for polymer wetting will be accepted if the Contractor demonstrates the equipment meets the design intent and performance requirements.

2.1.3.1.1 - Does this refer to the storage area or to the size of the dry polymer storage hopper?

Answer: The dry polymer feed system has to provide storage for 14 days consumption under average conditions. The storage may include hopper volume and storage at the dosing system.

2.2.2.1.8 - The design of the dry polymer makedown system will be greatly impacted by the type of polymer used. Generally, the amount of mix time and the makedown concentration is very dependent on the type of polymer used, both of which will impact on the size of the system.

Answer: It is the Contractor's responsibility to select the polymer feed systems. Systems that meet the design intent and performance requirements will be accepted. The Contractor will be required to provide justification (e.g. calculations) for the selection.

2.2.2.3.2 - Are 304 stainless steel tanks acceptable?

Answer: The Contractor is to select the system(s), including tank material selection for chemical compatibility with the polymer used.

Port Granby WWTP Design Rational and Process Control Description, 7.18.5 - Please advise at what polymer concentration the feed pumps were designed for.

Answer: AECOM assumed a 0.5 % strength solution. However, it is the Contractor's responsibility to select the pumping system(s). The Contractor will be required to provide justification (e.g. calculations) for the selection.

Drawing WWTP-DI-27 - The pumps shown on this drawing are motorized metering pumps. This contradicts Table 7-79 of Port Granby WWTP Design Rational and Process Control Description which calls for Air Operated Diaphragm Pumps. Please clarify.

Answer: The Process and Instrumentation Drawings and the Design Rationale and Process Control Description provide information relevant to the polymer feed systems with regards to chemical, application point and dosing quantities. The Contractor is required to select the pumping system(s). The Contractor will be required to provide justification (e.g. calculations) for the selection.

12. **Section 46 35 10 - Centrifuge System**

2.11.1, 2.12.7 and 2.14- I do not see the purpose of Explosion Proof motors and panels. Where is the centrifuge and panels mounted, in a classified area? Why not mount in a de-classified area? This is adding on extraordinary costs. Yet the vibration switches, junction boxes and temperature sensors have no such restrictions.

Answer: The equipment does not need to be explosion proof. A revised specification is attached.

13. **Section 46 69 00 - Clean-In-Place System**

2.6.4 - Please provide tank dimensions and tank volumes.

Answer: The Clean-In–Place (CIP) systems are dedicated to the evaporator and dryer systems. The volume and dimensions of the tank will depend on the dryer and evaporator system selected by the Contractor.

14. **What are the design Flow rates for the MBR?**

ANSWER:

The Process and Instrumentation Drawings and the Design Rationale and Process Control Description (Section 7.8) provide information relevant to the membrane bioreactor system with regards to equipment and capacities. Design Flows for the WWTP can be found in section 2.2.2.

15. **Biology In/out, TKN, P, BOD, TSS**

ANSWER:

The Process and Instrumentation Drawings and the Design Rationale and Process Control Description (Section 2.2.4.) provide information relevant to loads and concentrations to be treated by the WWTP.

16. **In section 46 43 38, 1.4.4 states that the design flux rates shall not exceed: 10 LMH @ 20 C under peak daily flow conditions. I believe that this is supposed to be for 8 C (the design bottom temp range given in section 46 43 39, 2.1.3) rather than 20 C. Can you confirm that this is correct?**

ANSWER:

The design flux for the membrane filtration system is 10 LMH @ 20o C. For the lower temperature this flux will have to be temperature corrected and will be lower at 8o C.

The bidder must provide design justification (i.e. process calculation) for design basis.

17. **When is our final proposal due?**

ANSWER: The closing date for this solicitation is December 11, 2012

18. **How many addendum are there?**

ANSWER:The total number can only be known at the end because most of the addendums are driven by questions received from potential bidders.

19. **On DWG E-20 on the single line diagram the diesel generator has a rating of 1000kVA. Is it rated in kVA or kW?**

ANSWER:

1000KVA (800KW).

20. **ON DWG E-20 on single line diagram it shows DP-01, where is the panel schedule for that distribution panel? It is not on DWGs E-90 and E-91.**

ANSWER:

All the information required for DP-01 is shown in single line diagram WWTP-E-20.

21. **On DWG E-36, there is no scale for the conduit runs. Please provide.**

ANSWER:

Drawing WWTP-E-36 does have a scale bar. Refer to WWTP-E-17 for more information about installation of conduits.

22. **We are unable to find the specification for variable frequency drives? Please provide**.

ANSWER:

Specification 26 29 23 for VFD drives provided as part of Addendum 2.

23. **On DWG E-52 Fire Alarm Riser Diagram, Shows Initiating Circuits being 1 Pair #16 AWG Twisted Unshielded and in the specs of DIV 28 it shows #18 R90. Which is correct?**

ANSWER:

The drawing is correct. Specification 28 31 01 Fire Alarm Systems is provided as part of Addendum 2.

24. **Specification 28 13 00 Access Control And Security: Part 1.1.1 Work Included: Furnishing, Installing, Calibrating, Adjusting, Testing, Documenting, Starting Up, And Training For A Complete Electronic Security System (ESS) Will Be Completed By Others.**
Please Identify Others. Is there any work related to security system to be done by Div 26?

ANSWER: Power for security system equipment and CCTV cameras are shown in electrical drawings.

25. **On DWGs E-11, 20, and 36 there is a 3000A Outdoor Bus Duct and a 2000A Indoor Bus Duct. In Division 26 there is no specification for it.**

ANSWER:

Specification 26 25 00 Bus Ducts is provided as part of Addendum 2.

26. **ON DWG E-22, there is panel DP-E01. Where is the panel schedule for that? It is not located on DWGs E-90 and E-91**.

ANSWER:

All the information required for DP-E01 is provided in the single line diagram WWTP-E-22.

27. **DWG E-35 shows 6 panels in the Electrical Shaft two indicated as RP-E1C and RP-E1F. They are not on the panel schedules?**

ANSWER:

RP-E1C and RP-E1F should be labeled PP-E1C and PP-E1F which are shown on panel schedules. Updated drawing WWTP-E-35 is provided as part of Addendum 2.

28. **DWG E-70 shows two LIT-9001 near each other on the bottom right corner of the drawing but only one LE-9001. Is there a mistake here?**

ANSWER:

There should only be one LIT-09001. Updated drawing WWTP-E-70 is provided as part of Addendum 2.

29. **In Section 40 90 00 1-M Page 5 of 5 have two Hydrogen Sulphide Gas Monitor Device Tags AIT-01030 and AIT-01040. Section 40 90 00 1-O Page 4 of 4 has two Methane Gas Monitors with the same Device Tags. Which is correct?**

ANSWER:

In Attachment 1-O (Methane), change tag AIT-01030 to AIT-01032, change tag AIT-01040 to AIT-01042. In Attachment 1-M (Hydrogen Sulphide), change tag AIT-01030 to AIT-01031, change tag AIT-01040 to AIT-01041. These tags are shown in dwg WWTP-DI-32 and dwg WWTP-E-70). The updated Specification attachments are provided in Addendum 2.

30. **DWG E-37 Note 3 says: Install Heating Cables After Piping Has Been Successfully Pressure Tested Prior To Pipe Installation. On Specification 23 05 33 in the HVAC specs, 3.1.1 Installation: Install Heating Cables In Accordance With Manufacturers Written Instructions.**
    What Division is to supply and install the heat tracing cables?

ANSWER:

The Division that installs heat tracing is up to the Contractor.

31. **Please refer to Division 40 05 23 Process valves Page 1 1.2**
    Actuators: Where it states refer to sections 43 21 05 and division 26 for detailed specifications and actuator types. *We are unable to find this section in the specification:*

ANSWER:

Instead of Section 43 21 05, please refer to Section 40 05 25 (Actuators, Division 40). The updated specification 40 05 23 is provided as part of Addendum 2.

32. **Typically there would be an Equipment List for valves and references to drawings of where to find the valves such as Butterfly valves, gate valves; plug valves, globe etc. We specifically cannot find where the butterfly valves are located and the drawings illustrating them. Can you provide a valve list with flows etc. and which ones are required to be AWWA C504 and the drawings for these?**

ANSWER:

Valves are indicated in the Process and Instrumentation Drawings WWTP – DI-00 to WWTP-DI-30. It is anticipated that many valves will be part of the scope of package vendor equipment (e.g. MBR system, evaporator system, Reverse Osmosis system etc.). The actual number and type of valves will be known once the vendor packages have been selected. Section 40 05 23 identifies requirements for valves, but there is no dedicated valve list.

33. **In Division 43 85 20 through to 43 85 25 for the chemical feed systems there is a reference several times to The Vendors Package, but I do not see anywhere that there is a preferred vendor for the skids. Do these just fall under the contractors responsibility or is there an actual preferred vendor listed for these skids/packages.**

ANSWER:

The Contractor is to select the vendor for the chemical feed systems.

34. **We hereby request a 90 day extension to the closing date for this tender. Grounds as follows:**

    The process mechanical for this project is design/build. In order to submit a tender, first we need to find and hire a mechanical engineer who has the staff available immediately to work on the preliminary design to size and source the appropriate equipment, piping, etc. We expect this to take approximately 2 months. Secondly, once we have this information, a detailed estimate can be prepared by soliciting quotes from suppliers and finalizing installation costs. This second step is expected to take 1 month, hence the request for a 3 month extension to the closing date.

ANSWER: The tender was posted on MERX on October 15 and the closing date was set to November 27th, 2012 for a total tendering period of approximately 43 days. A further 14 days extension is hereby added for an overall tendering period of approximately 57 days. Detailed work outline will only be required after award.

35. **We expect to incur substantial costs in preparing a bid for this project. If this project had been fully designed, we are prepared to absorb this as part of the normal cost of doing business. However, as you are aware, the process mechanical for this project is design/build. The additional cost to hire a mechanical engineering firm just for the tender phase is estimated to be $150,000.00. We respectfully request the Owner consider an honorarium for the bidders to compensate for the design/build mechanical portion of this project. Should you deny this request, we would have to reconsider our interest in participating in this tender. A suggested alternative and perhaps the most cost effective solution, would be to have AECOM complete the mechanical design (Similar to your previously tendered Port Hope Water Treatment Plant.)**

ANSWER: There will not be any consideration, compensation or honorarium for bidders.

36. **Regarding Section 01 32 16, 1.6.3: Key Milestone Dates**
    It is our opinion that the milestone dates identified are impossible to achieve. The schedule does not reflect the time necessary to complete the process mechanical design and approval process. This may take 4 - 6 months depending on the number of any resubmittals required. It is only after we have an approved design that purchase orders for the equipment can be issued, followed by shop drawing submittals and approvals (approximately 2 months for this step). Our experience in this industry tells us that key pieces of equipment delivery, after shop drawing approval, will take up to 26 weeks. In conclusion, we expect this project will require 24 months to complete "the clean water and

murky water commissioning" rather than the 12 months identified, based on Peak's experience with projects of a similar size and complexity.

ANSWER: The plant is required to be constructed and ready for commissioning in 12 months as per the current tender documents. In other words, the 12 months period does not include the subsequent 3 phase commissioning period (of 5 months).