



# PUBLIC WORKS DEPARTMENT

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CITY OF PORTSMOUTH

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April 30, 2013

Mark Pollins  
USEPA Region One  
Post Office Square, Suite 100  
Boston, MA 02109-3912

Re: Consent Decree 09-cv-283-PB  
Quarterly Report No. 14  
Portsmouth, New Hampshire

Dear Mr Pollins.:

In accordance with Consent Decree 09-cv-283-PB, Section V, item paragraph 20, dated August 12, 2009, and as amended by Consent Decree Modification filed July 2, 2012 and approved by the Court February 15, 2013, the City of Portsmouth is submitting this quarterly status report.

The modified Consent Decree requires the filing of quarterly reports as follows:

Within 30 days after the end of each calendar quarter (i.e., by April 30, July 30, October 30, and January 30) after the Effective Date of this Consent Decree, until termination of this Decree pursuant to Section XVI, the City shall submit a written report for the preceding calendar quarter that shall include a description of the following: i) the status of any construction or compliance measures, including whether any such construction or compliance measure could be completed prior to relevant milestones contained herein consistent with sound engineering practice and normal construction practices; ii) the status of all Consent Decree milestones, including whether any have been achieved prior to the date for doing so; iii) any problems encountered or anticipated, together with the proposed or implemented solutions; iv) the status of permit applications; v) operation and maintenance operations; and vi) reports to State agencies.

The following is the list of compliance requirements listed in Section IV of the Consent Decree including additional requirements listed in the Consent Decree Modification. For clarity the requirements are listed in plain text and the status of the item is shown in ***Bold Italics***.

## Preface

Since filing the last report on January 30, 2013, the City has received communications from EPA which appear to seek commitments from the City greater than, and inconsistent with, the City's obligations under the Consent Decree. The Consent Decree currently, as modified by Order of the Court dated February 15, 2013, requires the City to upgrade its 4.8 MGD Peirce Island chemically enhanced primary treatment (CEPT) Wastewater Treatment Facility (WWTF) to

providing secondary treatment by May 2017. EPA suggested in a letter dated January 30, 2013 (a response to the City's Piloting Technical Memo dated September 27, 2012) that it had two main issues to resolve: 1) the design capacity of the new plant (6.13 MGD) appeared inadequate, and 2) the new plant must be built to include nitrogen treatment to 8 mg/L total nitrogen (TN) monthly average for both dry weather and blended wet weather effluent. This letter prompted an exchange of correspondence between the parties (City to EPA 3/1/13; EPA to City 3/6/13; City to EPA 3/15/13) in which the City pointed out that the 6.13 MGD design capacity was adequate and that the Consent Decree clearly did not require nitrogen treatment to be operational at the plant by May 2017. The parties met on April 1, 2013 to discuss these and other design and permitting issues.

Regarding the design capacity, the City is proceeding to design and construct a 6.13 MGD WWTF. Concerning the latter issue, the NPDES permit to which the Consent Decree applies does not impose nitrogen limits and EPA has not provided the City with a proposed draft new permit to the City which includes nitrogen limits. As discussed during the meeting, the City anticipates designing any new WWTF to meet a total nitrogen of 8 mg/L on a seasonal rolling average. The City will be continuing to explore how it can best accomplish its existing obligations under the Consent Decree as expeditiously as practicable as well as meet potential obligations under the yet to be issued NPDES permit.

Under the current Consent Decree, the City could proceed to complete current secondary plant design and construction on schedule and undertake the yet to be imposed nitrogen treatment project as part of a new Consent Decree and compliance schedule. The City's view at this time is that it will likely be more efficient to attempt to incorporate a possible nutrient requirement into the current design and construction undertaking rather than to add nitrogen control in a future modification project. However, such an approach will add significant costs and complexities to the current project being implemented under the Consent Decree. From a cost perspective alone, the project costs would increase from an estimated \$30 million to about \$60 million. From a scheduling perspective, the substantial increase in design and construction activities will likely require extending the Consent Decree time for completion of a WWTF (one that provides both secondary and nitrogen treatment) by approximately 18 months. See attached letter to the City from AECOM regarding schedule impacts. The City believes that proceeding with two separate projects would likely take more time and be more expensive than incorporating both goals in one project. Accordingly, the City expects to provide a proposed new schedule for completion of the new plant with both secondary and nitrogen treatment capability prior to the next quarterly report due July 30, 2013. In the interim, the City stands ready to provide EPA with any additional information it may need to evaluate this situation.

#### Specific Consent Decree Items

8. Nine Minimum Controls Compliance Plan. Attached (*in the referenced CD*) as Appendix A is the Nine Minimum Controls Compliance Plan. The City shall implement the Nine Minimum Controls Compliance Plan in accordance with the schedule specified in Appendix A.

*i) There are no construction related activities with this item. The compliance measures associated with this item are on-going.*

- ii) There is no Consent Decree milestone associated with this item.*
- iii) There have been no problems encountered or anticipated with this item.*
- iv) There are no permit applications associated with this item.*
- v) Operation and maintenance is on-going*
- vi) There are no reports to State Agencies associated with this item.*

9. Wastewater Master Plan. Attached as Appendix B is the WMP SOW dated May 17, 2007. The City shall implement the WMP in Appendix B, and comply with all milestones and schedules in Appendix B.1.

*The Schedule listed in Appendix B.1 has been modified by the Consent Decree Modification to include additional tasks and a revised schedule. The Consent Decree Modification includes a schedule for completion of secondary treatment upgrades at the Peirce Island Treatment Plant as well as adjustments to the Long Term Control Plan project schedule. Final completion for the wastewater treatment plant upgrades, including compliance with permit requirements, is scheduled for May 2017; however, see comments contained in the Prefac. The additional requirements of the amended Consent Decree are listed below as items g through n:*

g. By June 30, 2012, the City shall complete pilot testing of potential treatment technologies for achieving secondary treatment, including, but not necessarily limited to: Biologically Aerated Filters (BAF), BioMag, Moving Bed Biofilm Reactors (MBBR) w/ Dissolved Air Flotation (DAF), and Conventional Activated Sludge with BioMag. By July 30, 2012, the City shall complete a data summary relative to the pilot testing.

*This milestone has been met. No further action required.*

h. By October 1, 2012, the City shall submit a Piloting Technical Memorandum that includes data from piloting and a recommendation on the design and capacity of secondary treatment facilities.

*This milestone has been met. The final engineering report was submitted September 28, 2012 to State Agencies concurrent with submission to the EPA as part of the milestone deadlines. The results of this work were presented to representatives of EPA and NHDES on December 18, 2012. Formal comments were received from the EPA by letter dated January 30, 2013. Additional comments were exchanged between the City and EPA by letters dated March 1, 2013 (City to EPA), March 6, 2013 (EPA to City) and March 15, 2013 (City to EPA). The City met with representatives of EPA and NHDES on April 1, 2013 to discuss correspondence. The City is proceeding to design and construct a 6.13 MGD secondary treatment plant. No further action is required of the City.*

i. By July 1, 2013, the City shall commence final design of secondary treatment facilities.

*i) The City received Statement of Qualifications for Design Engineering Services on January*

*17, 2013. The City performed interviews and is currently developing a scope and budget with the selected consultant, AECOM. The City Council voted to move forward with the BAF technology, which may stay within the fence line on April 8, 2013. There are no construction activities with this item.*

- ii) The City anticipates that this Consent Decree milestone will be met.*
- iii) Meeting the deadline to commence final design is contingent on the City and AECOM negotiating a mutually agreeable contract for this design work. Negotiations are underway and expected to be completed soon.*
- iv) The Peirce Island WWTF NPDES permit reapplication was submitted in December, 2011. A draft permit has not yet been received.*
- v) There are no operation and maintenance activities with this item.*
- vi) There is no report associated with this milestone to be submitted to State Agencies.*

j. By August 31, 2014, the City shall complete design of secondary treatment facilities.

- i) The City received Statement of Qualifications for selection of Preliminary and Final Design Engineering Services on January 17, 2013. The City performed interviews and is currently developing a scope and budget with the selected consultant. The City Council voted to move forward with the BAF technology, which may stay within the fence line, on April 8, 2013. There are no construction activities with this item.*
- ii) If the City proceeds to design for nutrient removal as explained in the above Preface, this Consent Decree milestone is unlikely to be met. The additional level of design effort will likely require an additional six months. As a further note, completion of final design is to some degree contingent on federal, state and local permitting decisions. If necessary approvals are not received in timely fashion, or permits contain unanticipated or objectionable terms and conditions, the design schedule will likely be impacted.*
- iii) See response to ii above. The City is continuing to explore with AECOM whether there are components of the design effort that can be moved forward or expedited so as to lessen impacts to the schedule. As stated in the preface, the City hopes to have furthered its review prior to the next quarterly report.*
- iv) The Peirce Island WWTF NPDES permit reapplication was submitted in December, 2011. A draft permit has not yet been received. Additional permitting related activities will include a review of the National Register of Historic Places as required per Section 106 of the National Historic Preservation Act. If the proposed impacts extend outside the existing fence line, the City will need to reconcile Land and Water Conservation Funds and Coastal Zone Management Funds used in development of recreational facilities on the island. Additional natural resource type permits will be required and will be defined as the final layout is developed and finalized.*
- v) There are no operation and maintenance activities with this item.*
- vi) There is no report associated will this milestone to be submitted to State Agencies.*

k. By March 1, 2015, the City shall commence construction of secondary treatment facilities.

- i) There are no construction activities with this item yet. Construction schedule will be*

- finalized as part of Consent Decree requirement j above. The City expects to provide a proposed new schedule for completion of the new plant prior to the next quarterly report.*
- ii) If the City proceeds to design for nutrient removal as explained in the preface, this Consent Decree milestone is unlikely to be met. As described above in the Preface, the additional level of design and construction effort will likely require approximately an additional eighteen months.*
  - iii) See response to ii above. The City is continuing to explore with AECOM whether there are components of the design and construction effort that can be moved forward or expedited so as to lessen impacts to the schedule. Proposed schedule modifications will be consistent with sound engineering practice and normal construction practices. As stated in the preface, the City hopes to have furthered its review prior to the next quarterly report.*
  - iv) The Peirce Island WWTF NPDES permit reapplication was submitted in December, 2011. A draft permit has not yet been received.*
  - v) There are no operation and maintenance activities with this item.*
  - vi) There is no report associated with this milestone to be submitted to State Agencies.*

l. By March 1, 2017, the City shall complete construction of secondary treatment facilities.

- i) There are no construction activities with this item yet. The construction schedule will be finalized as part of Consent Decree requirement j above. The City expects to provide a proposed new schedule for completion of the new plant prior to the next quarterly report.*
- ii) The completion of construction will be impacted by resolution of the issues raised in the preface and for the reasons outlined in the responses to j(ii) and k (ii) above.*
- iii) See response to ii above. The City is continuing to explore with AECOM whether there are components of the design and construction effort that can be moved forward or expedited so as to lessen impacts to the schedule. As stated in the preface, the City hopes to have furthered its review prior to the next quarterly report.*
- iv) The Peirce Island WWTF NPDES permit reapplication was submitted in December, 2011. A draft permit has not yet been received.*
- v) There are no operation and maintenance activities with this item.*
- vi) There is no report associated with this milestone to be submitted to State Agencies.*

m. By May 1, 2017, the City shall achieve compliance with secondary treatment limits in the Permit.

- i) There are no construction activities with this item yet. Construction schedule will be finalized as part of Consent Decree requirement j above. The City expects to provide a proposed new schedule for completion of the new plant prior to the next quarterly report.*
- ii) Achieving secondary compliance will be impacted by resolution of the issues raised in the preface and for the reasons outlined in the responses to j(ii) and k (ii) above.*
- iii) See response to i) and ii) above. The City is continuing to explore with AECOM whether there are components of the design and construction effort that can be moved forward or expedited so as to lessen impacts to the schedule. As stated in the preface, the City hopes to have furthered its review prior to the next quarterly report.*
- iv) The Peirce Island WWTF NPDES permit reapplication was submitted in December, 2011.*

*A draft permit has not been received.*

v) *There are no operation and maintenance activities with this item.*

vi) *There is no report associated with this milestone to be submitted to State Agencies.*

n. Whenever feasible, the City shall commence work in advance of milestones and complete such work as expeditiously as practicable consistent with sound engineering practice and normal construction practices.

*The City understands this measure and when consistent with sound engineering practice and normal construction practices will strive to meet its intent.*

10. Combined Sewer Overflow Facility Upgrades. The City shall implement its April 2005 Final CSO Long Term Control Plan in accordance with the following schedule and shall complete all construction for implementation of the 2005 LTCP by October, 2012:

*A revised schedule was included with the Consent Decree Modification which was filed on July 2, 2012.*

Planning Area I.D.	Contract I.D.	Project Start Date	Project Completion Date
Lincoln 3	Phase I	In Progress	10/1/2011
Lincoln 3	Phase II	In Progress	10/1/2012
Lincoln 3	Phase III	In Progress	10/1/2013
Court/State	Court #3	1/1/2008	1/1/2012
Islington	Islington #1	Under Design	10/1/2010
Islington	Islington #2	Under Design	1/1/2012

**Revised LTCP Schedule \***

<i>Planning Area I.D.</i>	<i>Contract I.D.</i>	<i>Project Status</i>	<i>Project Completion Date</i>
<i>Lincoln 3</i>	<i>Phase I</i>	<i>Substantially Complete</i>	<i>6/1/2012</i>
<i>Lincoln 3</i>	<i>Phase II</i>	<i>In Design</i>	<i>10/1/2014</i>
<i>Lincoln 3</i>	<i>Phase III</i>	<i>Under Construction</i>	<i>10/1/2013</i>
<i>Islington</i>	<i>Islington #2</i>	<i>Under Construction</i>	<i>7/30/13 6/1/2013</i>

\* As filed July 2, 2012 Consent Decree Modification.

i) *The construction related activities with this item are shown on the table above. The compliance measures associated with this item are on-going. With the exception of the Islington #2 project, construction on these projects is anticipated to be completed on schedule. As required by paragraphs 36 and 37 of Consent Decree the City notified the EPA by letter dated November 16, 2012 that the Islington #2 project may be delayed as a result of petroleum contaminated soils encountered during construction. The City received follow-up*

- correspondence from EPA dated November 30, 2012 recognizing the unforeseen condition. The City executed Change Order 2 with the Contractor, Albanese D&S, for a time extension of 35 days on April 17, 2013. The City will continue its best efforts to keep the Islington #2 Project on schedule. The Construction on the other projects will be completed earlier if possible and consistent with sound engineering practice and normal construction practices.*
- ii) With the exception of Islington #2, the Consent Decree milestones associated with this item will meet the revised schedule and earlier if possible and consistent with sound engineering practice and normal construction practices.*
  - iii) With the exception of Islington #2, there are no problems encountered or anticipated with this item. See Item i) above for action taken to resolve unforeseen conditions encountered on the Islington #2 project.*
  - iv) Wetland and Shore-land permit applications for Lincoln Area Contract 3 Phase III are completed and approved.*
  - v) There are no operation and maintenance activities with this item.*
  - vi) There are no reports to State Agencies associated with this item.*

11. Interim Emissions/Effluent Limits. Until the City completes construction of and achieves full operation of secondary treatment facilities in accordance with the schedule contained in this Consent Decree, the City shall comply with the interim limits and measures set forth in Appendix C. (See Current AO effluent limits). Thereafter, the City shall comply with the applicable NPDES permit limits then in effect.

- i) The Peirce Island WWTF has met the interim permit limits for the Quarter covered by this report. The compliance measures associated with this item are on-going. There are no construction related activities with this item.*
- ii) There are no Consent Decree milestones associated with this item.*
- iii) The wastewater BOD<sub>5</sub> strength coming to Peirce Island appears to increase in the soluble form during periods of low flow and high temperature. This occurred this past summer and early fall of 2012 (see Quarterly Report 12 and 13). The soluble component passes through the physical CEPT process and makes it difficult to meet permit limits. The City and its consultant reviewed additional BOD<sub>5</sub> sampling data and attached a summary of the analysis to Quarterly Report 13. There were no permit exceedances in the latter part of the 4<sup>th</sup> quarter of 2012 and this quarter of 2013, which supports the data analysis. The City anticipates that this issue will be resolved by construction of the new facility.*
- iv) There is no permit application pending associated with this item.*
- v) There have been no exceptional operation and maintenance activities outside of routine wastewater treatment facility operation associated with this item.*
- vi) There are no reports to State Agencies associated with this item that have not also been submitted to the EPA as part of the milestone deadlines.*

12. Post Construction Monitoring Plan.

*This item was submitted as part of the June 4, 2010 Wastewater Master Plan Draft submission. The implementation schedule will be adjusted to reflect the new schedule listed in item 10 above.*

- i) There are no construction related activities or compliance measures associated with this item.*
- ii) The Consent Decree milestones associated with this item will be met subject to the concerns raised above under paragraph 9, item iii.*
- iii) The Consent Decree milestones associated with this item will be met subject to the concerns raised above under paragraph 9, item iii.*
- iv) There is no permit application pending associated with this item.*
- v) There are no operation and maintenance activities associated with this item.*
- vi) There are no reports to State Agencies associated with this item.*

As required by the Consent Decree:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Please call me at 603-766-1416 if you have any questions or require additional information.

Very truly yours,



Peter H. Rice, P.E.  
Deputy Director of Public Works

Encl.

cc: Chief, Environmental Enforcement Section w/encl.  
Joy Hilton, USEPA Region 1 w/encl.  
Tracy L. Wood, P.E., NHDES Wastewater Engineering Bureau w/encl.  
Allen Brooks, Esq., Department of Justice, Environmental Protection Bureau w/encl.  
Mr. John P. Bohenko, City Manager, City of Portsmouth w/o encl.  
Robert P. Sullivan, City Attorney w/encl.  
Suzanne Woodland, Assistant City Attorney w/encl.  
David S. Allen, P.E., Assistant City Manager w/o encl.  
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J-60223731

April 30, 2013

Mr. Terry Desmarais, P.E.  
City Engineer  
Department of Public Works  
680 Peeverly Hill Road  
Portsmouth, NH 03801

Subject: Peirce Island Wastewater Treatment Facility (WWTF) Upgrade  
Consent Decree Compliance Schedule

Dear Mr. Desmarais:

As we have discussed, if the WWTF upgrade is to be revised to include nitrogen removal, we do not believe this can be accomplished within the current schedule in the Consent Decree without employing uncommon construction practices. This letter offers details on the major concerns that we have on the schedule.

When the Consent Decree compliance schedule was negotiated and agreed upon, the level of treatment to be achieved at the WWTF was the secondary treatment limits contained in the 2007 NPDES permit. The ability to remove nitrogen from the wastewater effluent was considered as a future step to be implemented at an undetermined time well after the upgraded WWTF was completed. Recent correspondence from EPA received by the City to date has indicated that a nitrogen limit will be included in the next permit cycle, but it has not firmly indicated what the proposed nitrogen limit will be. You have indicated that the design should be based on an assumed seasonal rolling average of 8 mg/L nitrogen.

The change from implementing nitrogen removal as a future process modification to one that is incorporated into the current WWTF upgrade design has a significant impact on the effort to upgrade the existing WWTF. A treatment facility capable of nitrogen removal takes more time to design and construct than a secondary facility. A nitrogen removal facility has more and larger components than a secondary process and this makes it harder to fit within the existing plant fence line, increases the amount of design work because the site is that much more confined, and lengthens the construction period because of the increased tank size and greater care that must be taken when working close to existing structures. This change will significantly increase the scope and cost of the project. The total project cost, which includes engineering and contingencies, would rise from the \$30.5 million in the Final Wastewater Master Plan Supplement to \$60.5 million, as a result of the inclusion of nitrogen removal. The estimated construction cost would rise over 100% from approximately \$20 million to approximately \$42 million. If this project were to be constructed with the current compliance schedule, it would require construction production rates that average nearly \$2 million per month, with some months well in excess of \$2 million per month, over the construction period. We do not believe this is achievable without employing uncommon construction practices. For comparison, typical water and wastewater treatment facility construction projects of this magnitude expend on the

order of \$1 million per month. Table 1 identifies a number of recent projects and the cost expended per month.

**Table 1. New England Water and Wastewater Treatment Facility Project Costs and Durations**

<b>Project</b>	<b>Construction Cost (\$MM)</b>	<b>Duration (Months)</b>	<b>Construction Cost Per Month (\$MM)</b>
Manchester, CT	\$44	42.5	\$1.0
Meriden, CT	\$35	25	\$1.4
Jaffrey, NH	\$13	22	\$0.6
Cheshire, CT	\$26	25	\$1.0
Nashua, NH	\$27	28	\$1.0
Branford, CT	\$22	24	\$0.9
Westfield, MA	\$18	21	\$0.9
N. Attleborough, MA	\$22	29	\$0.8
Carroll WTP – Ware, MA	\$30	30	\$1.0

To meet the current compliance schedule with the \$45 million construction cost, in which construction is to be completed by March 2017, it is likely that the construction contractor would need to employ on the order of 75 to 100 workers on-site at times. It is also likely that there would need to be multiple shifts at times, which is not a normal construction practice. This level of construction activity would result in numerous adverse impacts to the City which are discussed below:

- First, continuous construction with large numbers of construction workers on the small Peirce Island WWTF site raises both safety and quality control issues. Existing plant operations are likely to be compromised throughout the duration of construction due to the distractions and interruptions of the plant staff that reduces the amount of time they have to operate and maintain the existing facility. Lastly, attempting to increase the level of construction activity on-site and the speed at which work must be performed increases the chances of mistakes which may impact plant operations.
- Second, access to the plant site is through one road (Peirce Island Road) which is shared with the public pool, park, state fish pier, boat launch, and other public spaces. Equally concerning is that Peirce Island Road begins in the middle of the Strawberry Banke Museum, and is immediately adjacent to Prescott Park. Strawberry Banke is an outdoor history museum located in the City's South End historic district. It features more than 40 restored buildings built between the 17th and 19th centuries. Strawberry Banke is a heavily used tourist destination that attracted 77,000 visitors in 2012. Stretching along the Piscataqua River from lower State Street to Peirce Island Road, Prescott Park consists of over ten acres of flower gardens, walkways, seating, docking and grass areas all designed for public use and recreation. The Prescott Park Arts Festival presents numerous music, art, theater, and

dance events during the day and at night from June through September that attracted over 18,000 people in 2012.

- Third, there is limited parking on-site at the existing treatment facility. It is likely that during construction of the upgrade the contractor will need to bus workers in, which reduces the amount of time personnel can work per shift, slows the work and will result in the contractor bringing larger numbers of personnel to the job to make up for the lost time. There is an additional safety risk associated with having a large amount of construction traffic share a road that is frequently used by pedestrians.
- Fourth, access to the WWTF must go through downtown Portsmouth or adjacent residential neighborhoods. Multiple shift operations will result in an increase in truck traffic in these areas throughout the day and night. Although a mandatory construction traffic route will likely be required as part of construction, there is no way to access the site by road without traversing heavily developed residential or commercial areas.
- Fifth, the WWTF site has a limited area available for material storage and staging. This situation may require the contractor to have a remote staging area which would likely impact the rate of construction due to the need to bring materials and supplies in as-needed. Additionally, this situation would likely increase truck traffic because the contractor will only be able to bring small loads of construction material on-site and store it there until it is needed.
- Sixth, the speed at which the construction would have to take place would likely result in inefficiencies, which would likely result in added cost to the City. The contractor's ability to effectively manage the work would likely decrease due to the large numbers of multiple crews on-site and multiple deliveries that may be required to arrive daily.
- Finally, multiple shift construction by nature will cause noise and light impacts during the evening and night hours due to heavy equipment operation and illumination needed for work when daylight is not present. This will impact the residences nearby on Shapleigh Island as well as the residential areas in the South End of the City that overlook Peirce Island. It may also impact events at Prescott Park.

For all of the above reasons, we would not recommend multiple shifts as it would expose the City and its residents to risks associated with such activity.

A longer construction schedule is warranted for adding a nitrogen removal facility when compared to a secondary treatment facility due to the increased amount of site work and concrete that will be required with the larger project. Additional tank volume is required for nitrification and denitrification which increases the amount of excavation and concrete placement that must be completed before the project is finished. These activities are expected to require an extended period of construction due to the presence of extensive rock on Peirce Island, limitations on the size of a concrete pour, and the need for concrete to cure.



Mr. Terry Desmarais, P.E.  
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Once the project reaches substantial completion, startup of a nitrogen removal plant will also take longer than startup of a traditional secondary treatment plant. The startup of the nitrification and denitrification processes will be completed in two-steps because the denitrifying bacteria will not have a food source until the nitrification process is working. The bacteria required for nitrification grow and reproduce slowly which results in a longer time for them to take hold in the process in large enough numbers.

For these reasons, we suggest that the City discuss with EPA and NHDES granting an extension of the consent decree dates for both design and construction for a period of approximately 18 months.

As we have discussed, AECOM and the City will be collaborating to develop an overall project schedule for the upgrade that minimizes the extent of a schedule extension needed to complete the larger project. It may be possible within the construction contract to establish an interim milestone that would prioritize completion of the BAF, the selected technology, facilities ahead of upgrade work on the existing plant facilities. This approach would allow completion of the treatment process earlier than if there were only one completion date for the entire upgrade project. This and other potential schedule acceleration options will be assessed in the initial design phase of the project.

If you should have any questions, please feel free to contact us.

Very truly yours,

A handwritten signature in black ink, appearing to read "Jon R. Pearson". The signature is fluid and cursive, with a large initial "J" and "P".

Jon R. Pearson, P.E.  
Vice President  
AECOM

JRP/enm