

SECTION 8

# Project Implementation

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# Project Implementation

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## Description of Proposed Project

The proposed project consists of constructing a new pressure membrane water treatment plant on either the Tree Farm or River Drive site. Water will be supplied to the plant from a new intake on the Santiam Canal, one that is located upstream of the city's existing canal intake. In addition to the plant and intake, the third component of construction will be new finished water pipelines to connect the plant to the city's distribution system. The individual project elements are more specifically described in Section 7.

## Project Phasing

Phase one of the project will consist of a WTP sized to produce 6 mgd. The design of the plant will allow a future expansion to 14 mgd, which equals the buildout demand that was projected for Lebanon in the May 2007 *Water System Master Plan*.

The phase one intake will be sized for 7 mgd, so that a second intake of the same size can be added in the future to provide the buildout demand of 14 mgd. The in-water work for the intake complicates construction and generally suggests that it is better to limit construction to two large increments. The plant can be expanded in 2, 3, or 4-mgd increments from 6 mgd to 14 mgd. However, it is recommended, at least for planning purposes, that the intake expansion consists of a single jump from phase one (7 mgd) to the buildout capacity (14 mgd).

The finished water transmission pipelines will be sized to allow for at least the 6 mgd phase one plant. The actual capacity of the finished water transmission pipelines will be 9 mgd, as discussed in Section 4 of this report, to allow for pumping rates from the plant to be 150 percent of the plant production capacity.

Depending on the city's available budget, the city may include only one 2 million gallon clearwell as part of the phase one construction or alternatively, two 2 million gallon or one 4 million gallon clearwell. The additional capacity to reach a total of 4 million gallons for the phase one project would be provided to meet the city's distribution storage needs. If only one 2 million gallon clearwell is included initially, then the second 2 million gallons of storage should be added within 5-10 years.

A cost-saving measure that could be considered is to delay the installation of the administration/operations building that has been included with the project. It may be possible to include a small operations room and restroom facility as part of the membrane building so as to delay the larger building until a later date. The larger building was sized to include other people spaces (operator locker rooms, lunch room, office, etc.) and other functions (maintenance shop area, parts storage area, etc) that will eventually be needed.

## Permitting Needs

Several federal, state, and local permitting and environmental review requirements may apply to the City of Lebanon's drinking water system expansion project. Steps necessary to strategically position the project to be "shovel-ready" and to receive any infrastructure investment funds that become available upon passage of the anticipated federal economic stimulus package are outlined.

## Revolving Loan Fund Requirements

A funding source for this project may be Oregon's Safe Drinking Water Revolving Loan Fund (SDWRLF). This program is administered by the Oregon Department of Human Services Drinking Water Program (DWP). The program provides funds for water utility projects. It is also the expected conduit for distribution of funds related to the proposed 2009 federal economic stimulus package.

To be eligible for funds through the SDWRLF, the City of Lebanon must submit a Letter of Interest with project and financial information to DWP.

If eligible for funding, the proposed project will be placed on the DWP's Project Priority List, and the City of Lebanon can submit a final application for funds. This application must include, among other items, certification that the project conforms to local comprehensive plans and land use regulations (detailed below). The City of Lebanon must also demonstrate to the DWP that the project will conform to all applicable state and federal requirements. Because the funds originate from a federal source, the project must comply with a variety of "cross-cutting" federal laws, executive orders, and federal policies (detailed below).

Finally, prior to beginning construction or certain non-construction activities (final design, real estate acquisition, and contract bids), the project must undergo review in accordance with the State Environmental Review Process (SERP) (detailed below). The SERP program is equivalent to the federal National Environmental Policy Act (NEPA) review.

## Local Requirements

Because both the Tree Farm and River Drive sites currently are zoned for residential use, a zoning change will be required for either site to allow WTP development. In addition, because the River Drive site is outside Lebanon's city limits, a conditional use permit will be needed for this site. **Exhibit 8-1** summarizes the anticipated land use planning requirements for each site.

**EXHIBIT 8-1**

Summary of Land Use Requirements for the Tree Farm and River Drive Sites  
*City of Lebanon Water Improvement*  
*Lebanon, OR*

Site	Current Land Use Status	Requirement	Estimated Time
Tree Farm	Inside city limits; zoned residential, low density. Does not allow WTP development.	The city will need to amend the Water Master Plan based on this conceptual design report. The site development can then be approved by a staff-level review.	3-4 months
River Drive	Outside city limits; zoned rural residential. Does not allow WTP development.	City will need to submit an application to Linn County for a conditional land use change.	4-6 months

## Federal “Cross-Cutting” Requirements

**Exhibit 8-2** identifies the primary federal “cross-cutting” requirements as they apply to the City of Lebanon’s proposed drinking water system expansion.

**EXHIBIT 8-2**

Summary of Federal “Cross-Cutting” Requirements  
*City of Lebanon Water Improvement*  
*Lebanon, OR*

Requirement	Synopsis
National Environmental Policy Act	The State Environmental Review Process meet’s federal NEPA requirements. Because the project is not a modification of an existing system, a categorical exclusion may not apply. Oregon’s Drinking Water Program will review the City of Lebanon’s Environmental Information Document (EID) and issue either a Finding of No Significant Impact (FONSI) or require a more comprehensive Environmental Impact Review.
National Historic Preservation Act	Need to determine if the project has the potential to cause effects on historic properties (appearing on the national register or otherwise meeting national register criteria) by consulting with the Oregon Historic Preservation Officer. This includes evaluating potential visual aesthetic impacts. Other requirements are triggered if historic properties are affected.
Archeological and Historic Preservation Act	May need to conduct a preliminary survey of the construction site and preserve any historical and archeological data (including relics and specimens) which might otherwise be irreparably lost.
Protection of Wetlands	Per Executive Order 11990, federally financed projects will avoid new construction in wetlands. Proposed projects in wetlands will be open to public comment.  Work in any wetlands would require a dredge/fill Joint 404 permit under the Clean Water Act and issued jointly by the Army Corps of Engineers and the Oregon Department of State Lands. Measures must be taken to mitigate any wetland disturbance.  Depending on the site that is selected, the presence of wetlands, and the footprint of the plant facilities, it may be possible to avoid wetlands permitting. Alternatively, if wetlands are present but they can be avoided in the phase one construction, it may be possible to conduct the wetlands permitting subsequent to the phase one construction.
Flood Plain Management	Per Executive Order 11988, federally financed construction in floodplains should be avoided. This is further discussed in the site selection chapter of this report.

**EXHIBIT 8-2**

## Summary of Federal "Cross-Cutting" Requirements

*City of Lebanon Water Improvement**Lebanon, OR*

<b>Requirement</b>	<b>Synopsis</b>
Farmland Protection Policy Act	Conversion of important farm land to non-agricultural uses should be avoided. Applicant needs to determine if the construction site is on prime farm land.
Endangered Species Act	The city would need to consult with the Oregon Natural Heritage Program, the Fish and Wildlife Service (FWS), and/or the National Marine Fisheries Service (NMFS) (for salmon and steelhead) to see if threatened or endangered species are in the area of the proposed project. If threatened or endangered species are in the area, concurrence from FWS and/or NMFS would be required before concluding that the project wouldn't adversely affect the species. This is not likely to apply if the Santiam Canal is used as the source and the intake is constructed on the canal.
Wild and Scenic Rivers Act	The city would need to demonstrate that the proposed project doesn't adversely affect any designated Wild and Scenic Rivers. This does not appear to apply to the city's project.
Clean Water Act	The city will need to discuss the effect of developing their water right on water quality in the appropriated stream. This does not appear to apply as the city's point of diversion is at the entrance to the canal.
Clean Air Act	No impacts on air quality are anticipated as part of this project.
Transportation	The city may have to evaluate the impact of the proposed facility on local traffic and the impact of any elevated structures (such as water towers) on nearby airports.
Noise	The city may have to evaluate the impact of noise on neighboring properties.
Environmental Justice	Identify potential effects on minority or low-income populations per Executive Order 12898.
Non-discrimination	Discrimination on the basis of race, color, national origin, sex, handicap or age is prohibited. This applies to the city and contractors hired by the city to work on the proposed project. The city and contractors may be required to undertake affirmative action programs. The city will encourage participation of disadvantaged businesses in the project.

Notes: Requirements based on compilation in EPA's *Cross-Cutting Federal Authorities: A Handbook on Their Application in the Clean Water and Drinking Water State Revolving Loan Programs*. October 2003.

## State Environmental Review Process

The State Environmental Review Process (SERP) would be initiated after the city submits the application for a loan under the State Revolving Fund program. At the request of the city, the DWP can determine if the proposed project is categorically excluded from further environmental review. Categorical exclusions typically only apply to upgrades and modifications of existing infrastructure and projects in small communities, so the city's project may not be excluded. If the project is not excluded, the city would have to prepare and submit to the DWP an Environmental Information Document that identifies environmental impacts of the project. Based on the review, DWP may issue an Environmental Assessment (EA) finding no significant impact (FONSI), or concluding that a more comprehensive Environmental Impact Report is needed. Findings are published as a public notice and are open to public comment. There are provisions for partitioning the SERP so that smaller parts of the overall project are evaluated.

## Positioning the Project as Shovel Ready

According to a posting on the DWP website, projects that are able to enter into a loan agreement by June or July 2009 would be best positioned to receive economic stimulus funds from the proposed 2009 federal economic stimulus package. The city will have needed to submit a letter of interest by February 2, 2009, to qualify for the stimulus package money according to recent information issued by the DWP. DWP personnel indicate that the SDWRLF has funds available for any eligible project during 2009, regardless of time, should an applicant wish to enter into a loan agreement. Positioning for shovel ready status includes the following activities:

- Scheduling and conducting a pre-application meeting with DWP representatives to discuss the scope of the project and level of environmental review required (1-2 months).
- Prepare the Environmental Information Document (assuming that there is no categorical exclusion) by consulting with responsible agencies such as the Fish and Wildlife Service and the State Historic Preservation Office (2-6 months).
- Compiling agency findings and environmental information into the Environmental Information Document and submitting for DWP review (2-6 months)

The city can work concurrently with this process to obtain local land use approvals as described previously. The final design documents (drawings and specifications) will need DWP plan approval. This process can sometimes be accelerated by submitting 90 percent level documents to the state. Appropriate city and county building department reviews will also be needed based on the final design.

## Project Implementation Options

Oregon allows three commonly practiced project delivery models for public works projects, each offering various advantages.

- Design-Bid-Build (D-B-B) – The engineer prepares contract documents for bidding, bids are advertised, and the lowest, responsible/responsive bidder is selected. This was the only approach used for public works projects for many years and is still the most common delivery method.
- Construction Manager/General Contractor (CM-GC) – A contractor is selected early in the design process (typically, once the design is 30-60 percent completed). The selected contractor works closely with the owner and engineer during the remainder of the final design, providing value engineering and cost estimating. The contractor develops a guaranteed maximum price (GMP) from the final contract documents. This approach has been used frequently for construction of schools and prisons in Oregon and has recently been applied more and more commonly to public works projects such as water treatment plants.
- Design-Build (D-B) – A single entity is responsible for the engineering and construction activities. D-B can provide time savings and, in some cases, cost savings. However, the procurement of a D-B firm is a more complicated process than for the selection of an engineering or construction firm for either D-B-B or CM-GC. It requires the city to

complete about a 20 percent level design to ensure that a common understanding of the project is agreed to by D-B firms. To receive the maximum benefit of potential overall project cost savings, clients must relinquish control over many of the details of the design and final product.

### **Design-Bid-Build (D-B-B)**

The D-B-B scenario is the traditional approach and very familiar to the city and common within the municipal waterworks industry. With this scenario, the following sequential activities are required:

1. Finalize the 100 percent complete contract documents for the purpose of bidding and for construction
2. Advertise for bids
3. Open bids
4. Issue notice of intent to award, followed by notice of award
5. Execute agreement with contractor
6. Construct facilities
7. Start-up and test facilities
8. Place facilities into operation

Under this scenario, the design is performed by an engineering firm, and the procurement of materials and construction are provided by a construction contractor.

A variation of D-B-B is to include owner pre-purchase of specific equipment items. In this approach, the owner is responsible for the procurement of certain materials or equipment, and then furnishes them to a contractor for installation as part of a larger contract. The items that are usually considered for pre-purchase include major treatment components such as plate settler mechanisms or membrane filtration equipment because pre-purchase gives the city more control over the selection of important equipment items and because the final design drawings will be specific to the equipment that is selected. It may also be appropriate to pre-purchase equipment items that have unusually long delivery times.

#### **Advantages of D-B-B**

- D-B-B allows the owner to be presented with a set bid price for the work before making a complete commitment to proceed with the project.
- D-B-B is a familiar process to the city and the engineering and construction industry.
- There are several well-qualified contractors within the Willamette Valley area who would provide competitive bids on a project of this size.

#### **Disadvantages of D-B-B**

- Of the alternatives presented herein, this approach has the longest implementation schedule

- The city has less control over the contractor selected. The quality of construction may be more variable than with a method that allows more owner-input on the contractor selection.
- The potential for change orders during construction is greater than with a CM-GC or D-B approach.
- If equipment pre-purchase is included within a D-B-B approach, it introduces the risk of 'finger-pointing' between the contractor and the equipment supplier over the scope and conditions of supply. For example, it is not uncommon for there to be disagreements about terminating wiring or testing and startup services.

### Construction Manager-General Contractor (CM-GC)

In this approach a CM-GC contractor is selected on qualifications through a proposal process similar to how engineering services are procured. The CM-GC contractor works collaboratively with the engineer under a professional services contract during the design period. Once the design progresses far enough to negotiate a cost of construction, typically to at least the 90 percent complete point, the CM-GC contract converts to a construction contract with a Guaranteed Maximum Price (GMP).

Depending on how contract payment and total contract value numbers are reached, the project cost can be higher than what a D-B-B process would have produced at bid time. However, contract cost changes are rare with CM-GC contracts, while change order amounts on design-bid-build contract can range from 2 percent to 5 percent of the original contract bid amount. In addition, value engineering savings are identified throughout the project when a CM-GC approach is used, potentially resulting in a lower overall project cost. Therefore, the general conclusion is that a CM-GC process is cost-neutral or may provide cost savings as compared to a conventional D-B-B process.

#### Advantages of CM-GC

- CM-GC allows the city to consider a contractor's qualifications to a greater extent than with D-B-B.
- A CM-GC delivery approach brings the contractor into the process at an earlier stage, which benefits the city in at least the following two ways: a) the contractor provides some value engineering centered around constructability, and b) the contractor develops an understanding of the design resulting in less reason and opportunity for change orders during construction.
- CM-GC is a flexible delivery approach. It can be converted to a D-B-B approach if the city and the contractor cannot reach agreement on the GMP.
- Allows for competitive procurement of subcontract trades and equipment.

#### Disadvantages of CM-GC

- The CM-GC process is less familiar to the city. This may result in some additional effort as part of the learning curve.



## Design-Build (D-B)

D-B is most appropriate when the work scope can be well defined and is not expected to change over the life of the project. A D-B process allows the city to select one firm for both engineering and construction.

### Advantages

- D-B provides the best method of reducing the overall delivery time for many types of projects.
- With a scope of work defined primarily in performance related terms, overall project costs can be less than with other delivery methods. This is primarily because the design build firm has the flexibility to be innovative with the design of facilities to meet the scope requirements while minimizing the cost of the constructed facility.

### Disadvantages

- The D-B approach reduces the owner's control over the final product. It is not recommended for projects that are expected to require a considerable amount of input from the owner for detail definition or aesthetic features.
- A D-B process may result in a lower quality product. This may not be the case with highly reputable firms and procurement processes, but in the open marketplace it is a real risk for the owner. This concern places additional effort on the city to develop an extensive design definition and to implement a thorough D-B firm selection process.

## Oregon Laws for Project Delivery

The Oregon Legislature has encouraged public agencies to consider alternative and innovative contracting methods. Under Oregon Revised Statute (ORS) 279C.335(2), a local contract review board may exempt certain contracts from the traditional D-B-B approach by showing that an alternative contracting process is unlikely to encourage favoritism or diminish competition, and that it will result in substantial cost savings to the public agency. Because of the reasons enumerated above, CM-GC has consistently been found to meet these criteria. In fact, based on conversations with an Oregon attorney experienced with public works bidding and CM-GC projects, he was not aware of a single agency that had not adopted CM-GC when it had been seriously considered for a project (personal communication, April 2008).

## Recommendation

Lebanon may wish to consider any of the three project delivery approaches, although there does not appear to be a driving factor that would make D-B a preferred process. Instead, either a D-B-B or CM-GC approach is recommended for Lebanon's WTP project. A D-B-B process is familiar to the city and should provide acceptable results. However, in discussions with city staff during preparation of this conceptual design report, city staff indicated a preference for a CM-GC process. A CM-GC process may be beneficial on this project for the following reasons:

- **Contractor Qualifications** – The CM-GC process will allow the city to select a contractor experienced in water treatment plant construction. The city can also consider the contractor’s proposed approach, schedule, change order history, and safety record, as well as cost factors such as general conditions costs, subcontractor markups, and general overhead and profit factors, in making a selection.
- **Contractor Input During Design** – Selected early in the design, the contractor becomes a member of the team, performing value engineering reviews and providing cost estimates at various design milestones (to be reviewed and endorsed by the engineer and city). Through the contractor’s involvement during design, the contractor develops an understanding of the project and ‘buys into’ the design, factors that typically reduce change orders during construction.
- **Equipment Pre-Purchases** – CM-GC facilitates contracting of pre-purchased equipment and reduces uncertainty about the general contractor’s role in this process. The CM-GC contractor can help to establish terms and conditions for the equipment, which can clarify responsibilities between the contractor and the supplier. This factor becomes especially important if there is a large equipment package to be pre-purchased such as membrane filtration equipment.

Many owners have concluded that the CM-GC process results in an overall project cost that is equal to or lower than using a conventional D-B-B approach. They point to the reduced risk contingencies in the contractor’s GMP and value engineering during the design to account for the better cost management.

A CM-GC process does not preclude a conventional D-B-B process if the selected CM-GC contractor and city do not agree on an acceptable GMP. Thus, a CM-GC approach offers the greatest flexibility of the three delivery methods.

## Project Design and Construction Schedule

**Exhibit 8-3** illustrates possible project schedules for implementation of the city’s new intake and water treatment plant. Two schedules are shown, one illustrating a conventional design-bid-build delivery and one illustrating a CM-GC delivery.

Neither schedule includes the time required to process land use zoning change or for the preparation and processing of permits. Additionally, the city will need to consider the following tasks in planning for the project:

1. Property purchase, including boundary survey to confirm available land
2. Confirm electrical power needs and enter into negotiations with Pacific Power for Pacific Power to extend their high voltage service conductors to the project site
3. Negotiate purchase or easements for the intake facility and transmission pipelines

## Federal Infrastructure Stimulus Package

During the time when this study was being conducted, the federal government was in the midst of seriously considering adoption of an infrastructure stimulus package. The exact

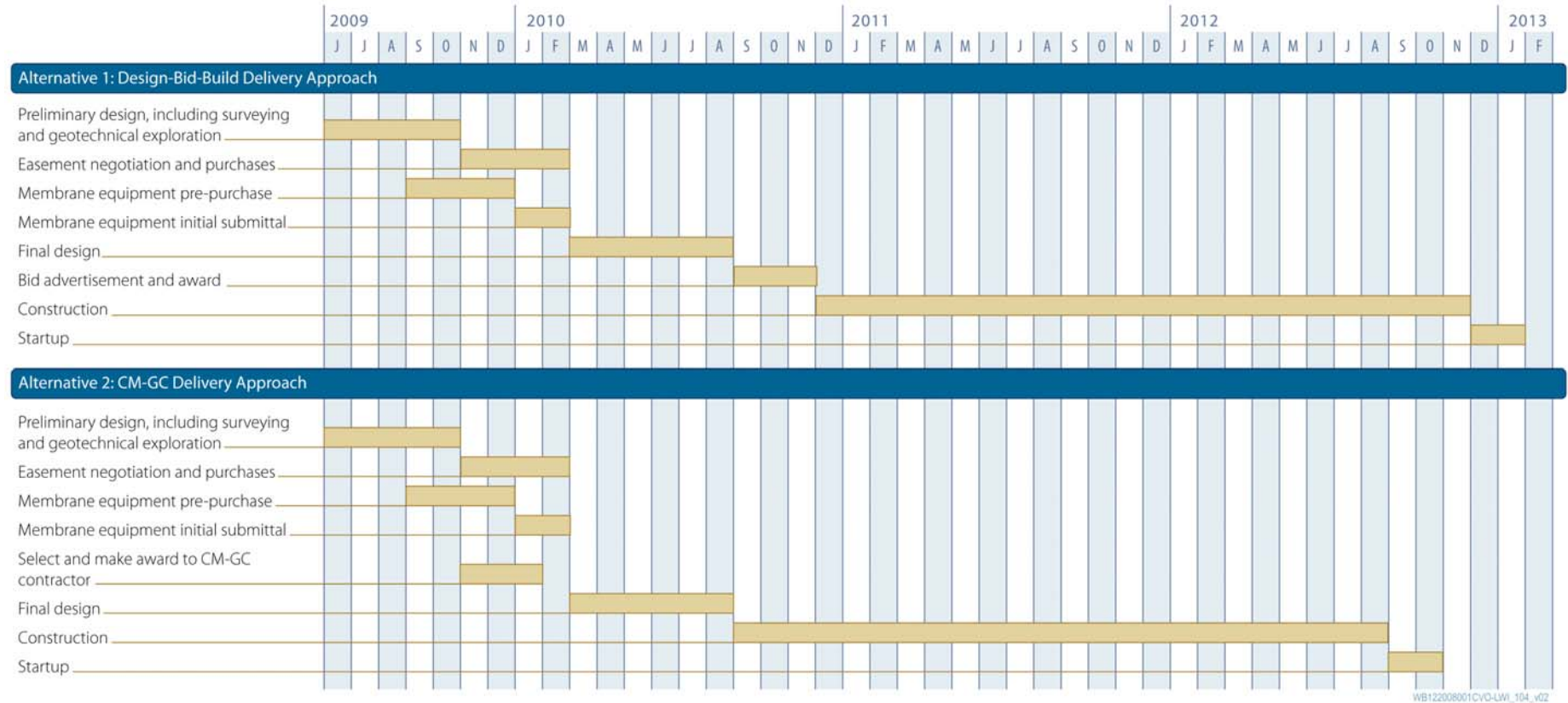
nature of this package and even whether it would be enacted or not were uncertain at the time that this report was being prepared. The following information summarizes preliminary criteria that have been suggested to qualify for this stimulus package:

1. Project planning is complete
2. Project design is complete
3. Necessary permitting is in place or will be in place when the funds are available
4. Local cost share is available
5. Project may not proceed without the federal cost-share
6. Project could proceed to construction within 60-120 days of receiving the federal funding
7. Project can be completed within 12-24 months from date of receipt of federal funds

It appears that Lebanon's Water Improvements Project qualifies on most of these criteria. The ones that would be the most challenging to meet are the completion of the project design, obtaining necessary permits, and proceeding to construction within 60 to 120 days of the federal funding. A discussion of Oregon's proposed disbursement methodology and associated permitting requirements has been presented previously in this chapter. Compliance with the permitting criterion would require the city to fast-track the purchase of the property and then rapid completion of the zoning (or conditional use) change, wetlands survey, and the environmental assessment in compliance with the Oregon Revolving Loan Program.

Completion of the project design would also pose a challenge. This criterion may be satisfied through pre-purchase of the membrane equipment and/or the use of a CM-GC process. An additional strategy may be to fast-track the site work component of the project construction. A CM-GC delivery approach may be beneficial by allowing early construction to occur so that the city can meet the stimulus package funding requirements.

**EXHIBIT 8-3**  
**Project Design and Construction Schedules**  
*City of Lebanon Water Improvement*  
*Lebanon, OR*



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