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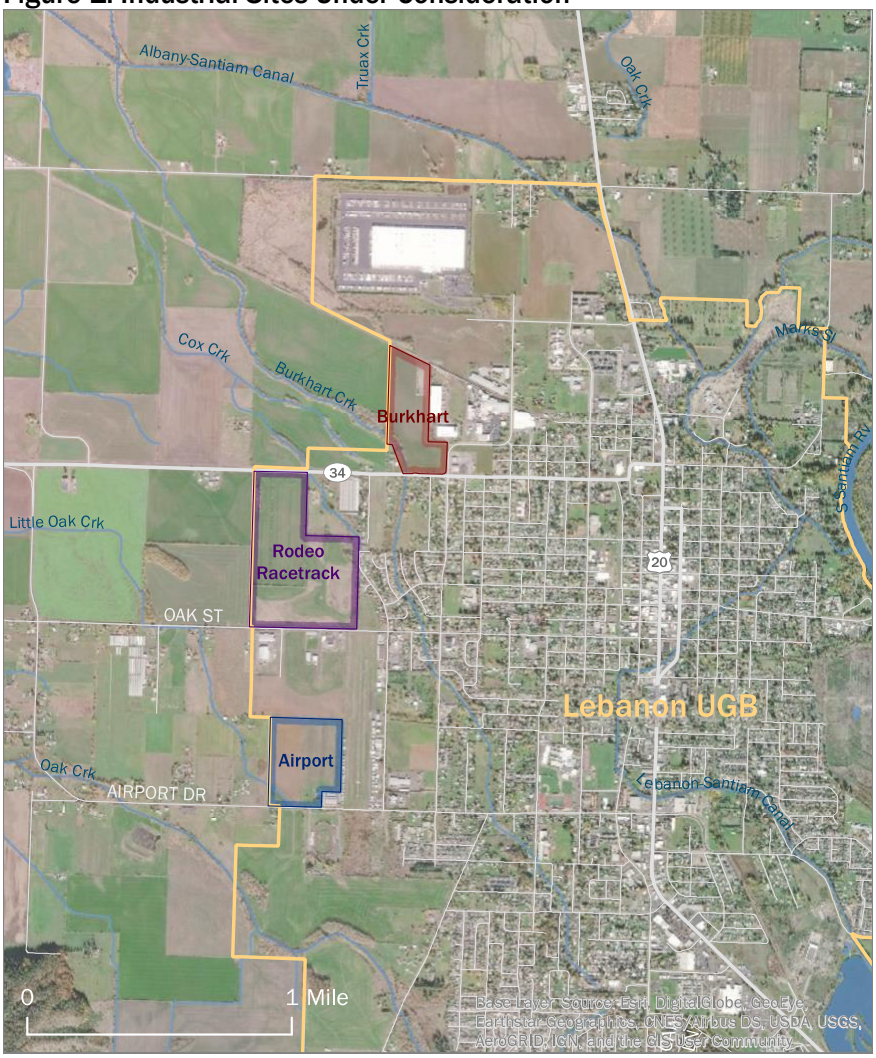
DATE: July 9, 2019
TO: Walt Wendolowski and Alysia Rodgers, City of Lebanon
FROM: Laura Marshall, Sarah Reich, and Mark Buckley, PhD, ECONorthwest
SUBJECT: FINAL—WETLAND MITIGATION OPTIONS FOR THE CITY OF LEBANON, OREGON

Introduction and Background

The City of Lebanon, Oregon (City) has identified three sites within its urban growth boundary which will require wetland mitigation to be fully developed. Impacts to wetlands must be mitigated in accordance with Oregon Department of State Lands (DSL) and U.S. Army Corps of Engineers (USACE) requirements. The City contracted with specialists to prepare wetland delineation reports for each of the three sites. The total wetland area across the three sites is estimated at 134.32 acres, ranging from 37 percent to 77 percent wetlands at each site. Figure 1 shows the location of the three sites and nearby water resources.

Figure 1: Industrial Sites Under Consideration



Source: Created by ECONorthwest using ArcGIS and data from Linn County and the City of Lebanon

Mitigation of wetlands can be costly. State regulations require mitigation to occur within a hydrologically functional area proximate to the lost wetlands to maintain ecological function within the watershed. Creating new wetlands requires not only available land, permitting, restoration, maintenance, and monitoring, but created, restored, or enhanced wetlands must be certified to ensure they are functioning properly. This certification process typically requires several years to complete.

To streamline the wetland creation process and respond to private and public demand for mitigation of potentially developable wetland acres, private companies have established wetland mitigation banks. These banks hold a reserve of certified wetland acres, created exclusively for the purpose of mitigation within certain designated areas. Several mitigation banks operate in the mid-Willamette Valley, and offer credits at a market rate of approximately $90,000 per credit. However, supply remains constrained: within the Lebanon service area there are only approximately 15 credits available immediately – these credits would mitigate only 15 acres of the 134.32 acres of wetlands at the three sites.

Fully aware of these challenges to developing these industrial parcels, the City asked ECONorthwest to assess the options for wetland mitigation and provide preliminary cost information for each option. The City will use this information to develop a strategy for addressing the wetland issues on the newly zoned industrial properties. This memo provides background and contextual information and summarizes our analysis of wetland mitigation options available to the City.

Regulatory Context for Wetland Mitigation in Oregon

Both federal and state law recognize the importance of wetlands and dictate that impacts to wetlands be mitigated through minimization of disturbance, restoration, and compensation for unavoidable losses. Oregon's Removal-Fill Law (ORS 196.795-990) was established in 1967 and requires permitting before filling any wetlands or waterways in the state. The Oregon Mitigation Bank Act, enacted in 1987, created the system of mitigation banking in place today that facilitates compensatory mitigation of wetland losses. DSL is responsible for wetland permitting throughout the state. Federally, the USACE and the Environmental Protection Agency (EPA) regulate fill and removal of wetlands under Section 404 of the Clean Water Act (CWA). Wetland mitigation that satisfies DSL requirements generally also satisfies USACE requirements (with the exception of payment-in-lieu mitigation, discussed later).

The federal and state governments' motivation for regulating wetlands has been the historical loss of wetland acreage to promote agricultural, commercial, residential development, and mosquito control. In Oregon, an estimated 38 percent of the state's wetlands have lost their functionality through land conversion and development.[1]

[1] Environmental Law Institute. (2008). *State Wetland Protection: Status, Trends, & Model Approaches*.

DSL defines mitigation as "a sequenced approach that considers avoiding any impacts to aquatic resources, minimizing the magnitude of the impacts, repairing or restoring impacted areas after the project is complete, and finally, compensating for any unavoidable losses."[2] This definition of mitigation means that it is not limited to replacement of lost resources, but also avoiding impacts.

Compensatory Wetland Mitigation Options

When avoidance is not feasible and wetland damage or loss does occur, land owners or developers must perform compensatory wetland mitigation. The options for compensatory mitigation include:

1. Purchasing credits from a mitigation bank;
2. Creating new wetlands either off-site or on-site (Permittee-responsible mitigation); and
3. Paying a fee in lieu of directly purchasing or creating mitigation credits (Payment-in-lieu mitigation, which USACE does not recognize as a mitigation strategy).

1. Purchasing Credits from a Mitigation Bank

Purchasing credits from a certified mitigation bank is a commonly utilized option for small-scale compensatory mitigation. For the City, the number of credits that are required to mitigate for losses on the three parcels is much larger than the number of credits available within the relevant geography. The price of mitigation credits is not regulated by DSL and is determined by each mitigation bank in response to cost factors and market demand for credits. In addition to purchasing land and performing the mitigation, banks also charge a premium for assuming the liability involved with the uncertainty of credit generation.[3]

2. Permittee-Responsible Mitigation

Permittee-responsible mitigation can occur on-site or off-site and is a process by which the fill-and-remove permit applicant would generate their own credits for mitigation. The level of credits generated on the land used for mitigation depends on the credit ratio. The credit ratio is established through OAR 141-085-0692 as:

> *(3) Minimum Requirements. Except as otherwise provided in this section, the following minimum ratios must be used in the development of compensatory mitigation (CM) plans:*
>
> > *(a) One acre of restored or created wetland or tidal waters for one acre of impacted wetland or tidal waters (1:1);*

[2] Oregon Department of State Lands Website. (No Date). *Mitigation*. Retrieved from https://www.oregon.gov/DSL/WW/Pages/Mitigation.aspx

[3] More information about purchasing credits can be found at: https://www.oregon.gov/dsl/WW/Documents/PurchaseMitigationCredits.pdf

(b) One credit from a bank, in-lieu fee, or advance mitigation project for one acre of impacted wetland or tidal waters (1:1);

(c) Three acres of enhanced wetland or tidal waters for one acre of impacted wetland or tidal waters (3:1); and

(d) There is no established ratio for compensatory wetland mitigation (CWM) using preservation. Minimum requirements will be determined on a case-by-case basis by the Department.

Based on this, the amount of land required to mitigate for an acre of impacted wetland is one acre when new wetlands are created or damaged wetlands are restored and up to three acres when existing low-function wetlands are enhanced. Table 1 provides a summary of the definitions of each of the methods for minimum ratios from the EPA.

Table 1: Definition of Methods to Calculate Minimum Mitigation Ratios

Method	Description
Restoration	Re-establishment or rehabilitation of a wetland or other aquatic resource with the goal of returning natural or historic functions and characteristics to a former or degraded wetland. Restoration may result in a gain in wetland function or wetland acres, or both.
Establishment	The development of a wetland or other aquatic resource where a wetland did not previously exist through manipulation of the physical, chemical and/or biological characteristics of the site. Successful establishment results in a net gain in wetland acres and function.
Enhancement	Activities conducted within existing wetlands that heighten, intensify, or improve one or more wetland functions. Enhancement is often undertaken for a specific purpose such as to improve water quality, flood water retention or wildlife habitat. Enhancement results in a gain in wetland function but does not result in a net gain in wetland acres.
Preservation	The permanent protection of ecologically important wetlands or other aquatic resources through the implementation of appropriate legal and physical mechanisms (i.e. conservation easements, title transfers). Preservation may include protection of upland areas adjacent to wetlands as necessary to ensure protection or enhancement of the aquatic ecosystem. Preservation does not result in a net gain of wetland acres and may only be used in certain circumstances, including when the resources to be preserved contribute significantly to the ecological sustainability of the watershed.

Source: Environmental Protection Agency. (No Date). Wetlands Compensatory Mitigation. EPA-843-F-08-002

In April 2019, Oregon implemented the Aquatic Resources Mitigation Framework, which changes the requirements for what land can be used for compensatory mitigation in the state. The change is motivated by a 2008 federal ruling which promotes a watershed and function-based approach to compensatory mitigation.[4] While the compensatory mitigation framework described above is based only on acreage, the Aquatic Resources Mitigation Framework establishes the level of mitigation required based on acreage, functions, and value.[5] The Oregon Rapid Wetland Assessment Protocol is the new assessment tool to determine the number of credits generated through a compensatory mitigation project.

[4] Environmental Protection Agency. (2008). 40 CFR Part 230. Federal Register Vol. 73, No. 70. April 10. Retrieved from https://www.epa.gov/sites/production/files/2015-03/documents/2008_04_10_wetlands_wetlands_mitigation_final_rule_4_10_08.pdf

[5] More information about the Aquatic Resources Mitigation Framework can be found at: https://www.oregon.gov/dsl/WW/pages/aquatic-resources-mitigation-framework.aspx

For permittee-responsible mitigation, DSL generally only approves projects within the same 8-digit Hydrologic Unit Code (HUC) watershed, although there is the possibly for exceptions "if justified by ecological principles."[6]

Wetland mitigation is a permanent process—the land is expected to remain a wetland in perpetuity. DSL requires that land used for compensatory wetland mitigation have a protection instrument, such as a deed restriction or conservation easement, as a guarantee the land will remain as a wetland. A financial security instrument is also required for all permittee-responsible CWM projects, except those that are conducted by government agencies for mitigation. These financial security instruments take the form as a certificate of deposit or letter of credit and provide insurance against the risk of a default in the mitigation obligation.

DSL and USACE approve a release schedule of credits upon approval of a mitigation plan. Annual inspections and monitoring occur for a period of 5 to 10 years with credits being released incrementally throughout that period. Plans and funding for long-term protection, management, and monitoring at the mitigation site are required.

Payment-in-lieu Mitigation

If no bank credits are available and if an applicant cannot identify a suitable mitigation project within the relevant geography, DSL may accept payment-in-lieu of mitigation. The applicant pays a fee to DSL to transfer the mitigation obligation to the agency for the amount of needed credits. This option is not recognized by USACE, so it is not recommended for the City.

Other Relevant Policies

The development of industrial land requiring wetland mitigation is common throughout the Willamette Valley. The state and local governments are currently examining policy options to address this burden as wetland mitigation opportunities become scarcer and more expensive.

Regionally Significant Industrial Site

In 2013 the Oregon State Legislature authorized the creation of the Regionally Significant Industrial Sites (RSIS) program. Administered by Business Oregon, this economic development tool offers state income tax reimbursements for approved activities on industrial sites.[7] The program will reimburse 100 percent of preparation costs for land zoned industrial that is enrolled in the program. Wetland mitigation is included as eligible preparation cost. Other eligible costs include infrastructure for electricity, natural gas, telecommunications, water,

[6] Oregon Department of State Lands. (No Date). Aquatic Resource Management. Retrieved from https://www.oregon.gov/dsl/WW/Documents/EstablishMitigationBank.pdf

[7] More information about the RSIS program can be found at: https://www.orinfrastructure.org/Infrastructure-Programs/Industrial-Development/RSIS/ and https://secure.sos.state.or.us/oard/displayDivisionRules.action?selectedDivision=201

sanitary sewer or storm sewer services, and transportation. Business Oregon is accepting applications for the RSIS until Spring 2023.

Once approved for the RSIS program, the applicant[8] completes the development plan projects and then recruits a company to locate at the site(s). Industrial developers must hire a minimum of 50 new full-time employees on urban sites and 25 full-time employees on rural sites. The average wages must be 150 percent of the county wage or state wage, whichever is less. Once this occurs, then then up to 50 percent of the state income taxes that are paid each year by employees working on the RSIS will be reimbursed to the applicant.

Other areas in Oregon have used the RSIS designation to encourage industrial development on sites with wetlands. In 2015, the North Coast Business Park in Warrenton, Oregon near Astoria was designated as a RSIS, but development was delayed years because wetland mitigation was not planned for.[9] Land has been sold for a brewery distribution center and data center at the site, but neither has broken ground yet due to wetland mitigation delays.[10] In 2012, Business Oregon evaluated three sites in Douglas County for inclusion in the program.[11] Wetland mitigation had been performed at one of the sites but it is unclear if reimbursement occurred.

House Bill 2438

Oregon lawmakers are considering House Bill 2438 during the 2019 legislative session. As of June, the bill has passed out of the House committee and referred to the Ways and Means Committee. The bill would direct DSL to conduct a study on issues related to wetlands mitigation in the region served by Oregon Cascades West Council of Governments (OCWCOG) and submit a report to the Legislative Assembly. The study would answer and address the following:

- whether there is a sufficient quantity of mitigation banks and credits available in Oregon;
- the current geographic distribution of, and need for, mitigation banks and credits;
- strategies for lowering the cost of mitigation credits;
- strategies for reducing risks for the private sector to invest in the creation of mitigation banks; and

[8] Applicants must be public entities and are also known as sponsors.

[9] Spurr, K. (2015). "Wetlands plan first, then open for business". *The Daily Astorian*. December 4. Retrieved from https://www.dailyastorian.com/news/local/wetlands-plan-first-then-open-for-business/article_a678ac32-2553-5fb9-ab47-454c14f2f5a8.html

[10] Stratton, E. (2018). "County sells land for data center". *The Daily Astorian*. August 9. Retrieved from https://www.dailyastorian.com/news/local/county-sells-land-for-data-center/article_1001e6eb-71de-591a-9789-c3302b1d5815.html

[11] The Staff Analysis by the Economic Recovery Council can be found at: https://www.orinfrastructure.org/Infrastructure-Programs/Industrial-Development/RSIA/nominations/SA-PartEcDevCentDouglas.pdf

- whether the state should play a role in the creation or ownership of mitigation banks.

HB 2438 could lead to development of a public wetland mitigation bank by OCWCOG, providing compensation for unavoidable wetland impacts. Lebanon is in Linn County and is served by OCWCOG.

Cascades West Regional Consortium 2010 Business Plan

In December of 2010, the Cascades West Regional Consortium (CWRC), a non-profit with a board of directors composed of representatives from local governments in Linn and Benton Counties, created a business plan (Plan) "to address economic development barriers related to wetlands on industrially-zoned land while concurrently working for environmental and social good." The Plan includes an analysis of projected demand for industrial land to 2030 and the number of industrial sites and acreage needed to meet that demand. Based on the total demand of 1,287 acres required by 2030, between 100 to 300 acres of wetlands would require mitigation. The proposal in this Plan was for the CWRC to hold at least 50 credits at all times.

The costs projected by the Plan assume a 2 to 1 credit ratio, meaning that a 200-acre site would be required to mitigate 100 acres of wetlands. In a two-phase process, the estimated cost to generate 50 credits is $1.97 million ($2.4 million with interest) over ten years (2010 dollars). Another 50 credits would be generated in the next ten years for an estimated cost of $890,000 (a lower cost because land had already been purchased). Administration and management costs for the bank are estimated as $265,000 for three years.

OCWCOG has proposed to revise the Plan to support the creation of a mitigation bank for Linn and Benton Counties to provide below-market credits through a publicly sponsored mitigation bank. It is unclear at this point how the bank would be funded, if it will receive any public financing, and when credits would be available. For these reasons, it is currently an uncertain option for the City, but something the City could participate in to shape policy.

Economic Challenges for Wetland Mitigation in Oregon

The regulated market for wetland mitigation in Oregon includes multiple structural factors that influence the supply and demand conditions in ways that directly impact availability and price of wetland mitigation in undesirable ways. Although markets exist for wetland mitigation, they can be inefficient in terms of allocation of resources and delivery of services at reasonable prices relative to expectations. One might expect that competitive market activity would drive credit prices down substantially, but this has not always been the case. Market challenges that exist for wetland mitigation in Oregon generally stem from thin markets (defined below), scarcity of land, and long intervals for return on investment. This section discusses these economic factors.

Thin Markets

Although there is some competition among mitigation banks in the same service areas, the market for mitigation banks is not perfectly competitive. Similarly, for off-site permittee responsible mitigation there are limited suitable sites. There are geographic and hydrologic

constraints in terms of the necessary proximity of mitigation to impact site, which can limit the total number of potential buyers and sellers. This leads to the "thin" nature of most wetland mitigation markets (low numbers of buyers and/or sellers). Besides constraints to sell within a designated service area, mitigation is also differentiated based on wetland class (e.g. forested, scrub-shrub, emergent, unconsolidated bottom, etc.). Thin markets are one factor that can lead to variability in market prices from one service area to another.

Economies of Scale and Barriers to Entry

Producing a large number of wetland mitigation credits should allow a producer to achieve economies of scale, whereby per-unit production costs decline at higher levels of production. Economies of scale occur because wetland mitigation involves significant fixed costs, including certification, management of transactions, and long-term stewardship, as well as costs to physically perform the mitigation which may require earthmoving equipment and other heavy machinery. Interviewees from the Department of State Lands and mitigation banks stressed the importance of working with experienced mitigation bankers because of the significant knowledge required to perform mitigation.[12] Due to the phenomenon of economies of scale, the price of mitigation credits can be lower if obtained from a bank than if done independently by the property owner or sponsor (permittee-responsible mitigation). Credit prices will potentially decline with increases in the scale of production, assuming suitable sites are readily available, which is not always the case. The high start-up costs involved with wetland mitigation, including the knowledge and capital required, can create barriers for new mitigation bank entrants, which reduces competition and can increase the prices of credits.

Mitigation banks are assuming some risk and uncertainty because the number of credits to be generated is not known until capital costs have been paid for land, surveys, and performing the mitigation. This assumption of risk allows for a risk premium to be built into the wetland mitigation credit price. Because of this imperfect competition, mitigation banks are able to charge an additional premium and profit from mitigation banking. Currently, the mitigation banks do not advertise the number of credits they have or their price, so transaction costs to obtain this information can be high for potential buyers of credits, and difficult to assess for prospective producers of credits.

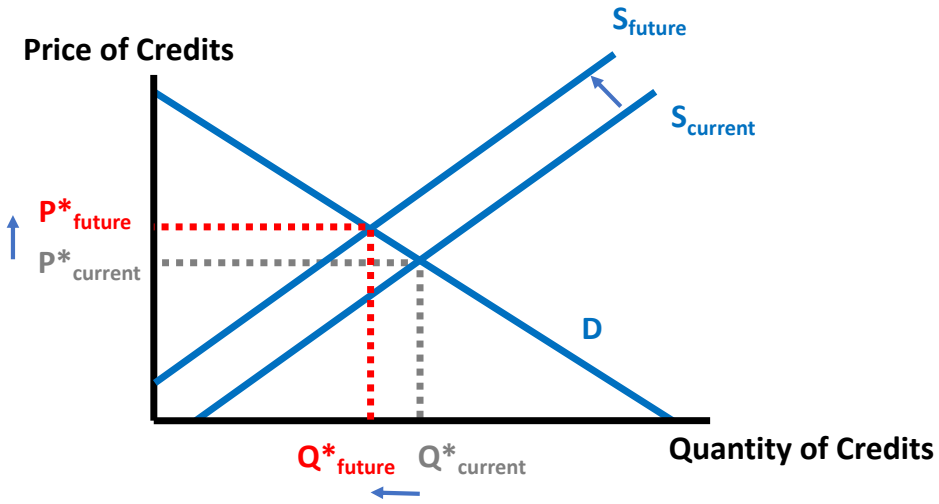
Creating and selling mitigation credits requires a long time-lag from initiation of the endeavor to revenue generation. This can place heavy burden on financing and access to capital. Even if the financial benefits on paper should easily cover the financial costs, the time-scale of production can generate substantial costs and barriers to entry.

[12] The list of people interviewed is available at the end of this document.

Scarcity and Opportunity Costs

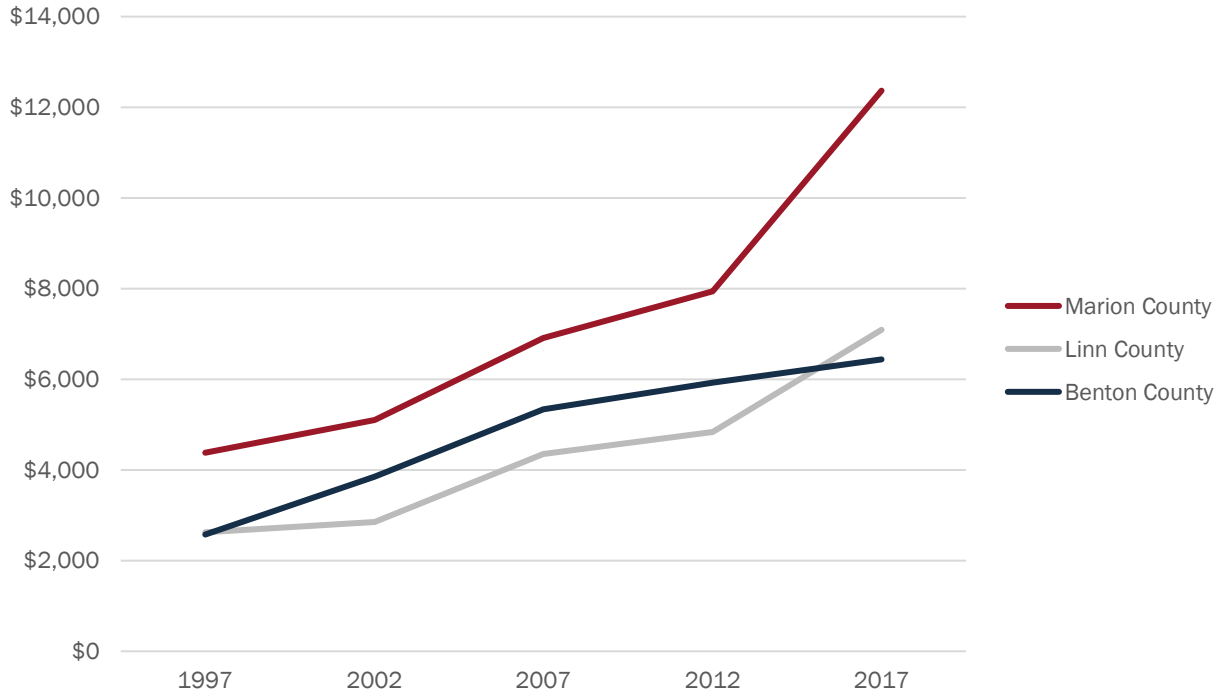
The quantity of land available for wetland mitigation is limited, so sites to perform mitigation will become increasingly scarce (assuming no policy changes) as land most suitable for wetland mitigation is converted and less suitable land remains. This increasing scarcity will drive the price of mitigation credits up as supply declines and/or costs increase (Figure 2).

Figure 2: Shift of Supply Curve for Mitigation Credits with increased Land Scarcity



Agricultural land is the primary land type used to satisfy compensatory wetland mitigation requirements in the Willamette Valley. Agricultural land prices in the region have been increasing in recent decades (Figure 3). If this trend continues, the opportunity cost of converting agricultural lands to wetland mitigation sites will also increase, leading to more expensive wetland mitigation credits.

Figure 3: Value of Agricultural Land in Benton, Linn, and Marion Counties (1997-2017)



Source: Created by ECONorthwest using data from the U.S. Department of Agriculture, National Agricultural Statistics Service, Quick Stats

The *Off-Site Compensatory Mitigation Fiscal Year 2017 Report* completed by DSL provides both a summary of current mitigation bank prices and agrees with our assessment that mitigation bank prices will likely rise in the future:

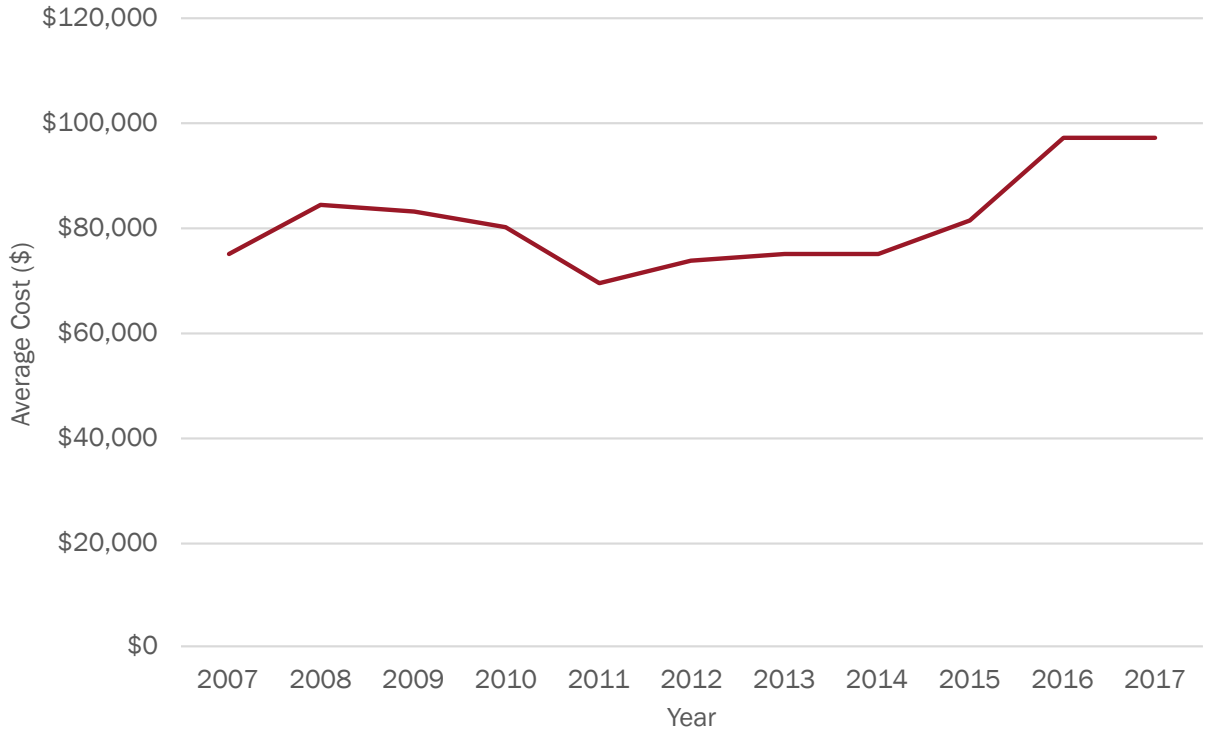
> *Fiscal Year 2017 Mitigation Bank prices ranged from $56,086 to $250,000 per acre of impact, the same range as in FY 2016, but some banks in the middle of the spectrum raised their rates. The weighted average price per credit in FY 2017 was $97,327 for the 35.56 credits sold, which is practically the same as the weighted average of $97,340 per credit for the 32 credits sold in FY 2016. The price per credit at the banks closest to Portland was about three times the price as elsewhere in the Willamette Valley. Mitigation bankers have noted that costs for agricultural land have been rising.* ***Because agricultural land is frequently used for mitigation banks, credit prices are expected to rise in the future****.*[13] (p.4)

The average of all active mitigation bank prices declined beginning in 2008, corresponding to the Great Recession, but has been increasing since 2012 to the current high of $97,327 in 2017 (Figure 4). Costs of permittee-responsible mitigation are not reported to DSL. Anecdotal information about costs for permittee-responsible mitigation suggests it can be as much as $150,000 per credit, excluding land costs.[14]

[13] Oregon Department of State Lands. (2017). *Aquatic Resource Management Program: Off-Site Compensatory Mitigation Fiscal Year 2017*. Retrieved from https://digital.osl.state.or.us/islandora/object/osl:77285

[14] Personal communication with Ray Fiori, Oregon Wetlands Mitigation Bank manager.

Figure 4: Average Cost of Mitigation Bank Credits in Oregon (Fiscal Years 2007–2017)



Source: Created by ECONorthwest using data from Oregon Department of State Lands. (2017). Aquatic Resource Management Program: Off-Site Compensatory Mitigation Fiscal Year 2017. Retrieved from https://digital.osl.state.or.us/islandora/object/osl:77285

Another opportunity cost of wetland mitigation results from the time value of money. The time value of money means that a dollar today is worth more than a dollar in the future. It takes years to generate a positive return on investment from performing wetland mitigation. Since money to perform mitigation could be used for other purposes, such as invested to earn interest, the value of mitigation would need to be higher than the alternative investments to be feasible.

Analysis of Options for Lebanon

Three parcels in the City of Lebanon are zoned industrial but require wetland mitigation before they can be developed. Wetland inventories have identified a total of 134.32 acres of wetlands across all three sites that would need to be mitigated. The City wants to encourage industrial development on these sites to bring jobs and tax revenues to the community, so is exploring ways to address the mitigation requirement and lessen the costs and timeline for privately developing the parcels. This section outlines the strategies available to the City. While changes in regulations and policies are under consideration could change the situation in the future, this section focuses on options available under current market and regulatory conditions.

As a first step to lowering the wetland mitigation liability, both DSL and USACE recommend avoiding impacting wetlands. Should future development plans on the parcels reduce the acres of wetlands impacted, the number of acres that would need to be mitigated would decline. Compensatory mitigation should be used for only "unavoidable losses," so the City and developers should consider opportunities to minimize wetland impacts wherever possible.[15]

The following strategies assume that some degree of wetland impact would be required to develop the parcels in an economically feasible way. These strategies provide a roadmap for the City to pursue development in a least-cost way, recognizing that there is no silver bullet for mitigating all acres on the Parcels cheaply.

Strategy 1: Regionally Significant Industrial Site (RSIS) Designation

Regardless of the mitigation options pursued, the City could benefit from designating one or all three of the industrial sites through the RSIS program (described earlier in this document). Other than the labor required to submit the application, there is no cost to obtain this designation for the sites and the City would not be required to use the program once designated. While RSIS could benefit the City through repayment of public expenditures on the site, it does have some features which may create difficulties for reaping the full benefits of the program.

While a local government can sponsor private property from RSIS, the program will reimbursement only public expenditures, meaning that the City would be responsible for the costs of wetland mitigation and any other infrastructure costs eligible under the program. This would require a capital investment by the City that would not be paid back until a business locates at the site that pays at least 25 employees 150 percent of the average wage of Linn County. Currently there are only 8 sectors of 50 in Linn County that pay this level of wage.[16] These sectors are:

[15] Oregon Department of State Lands Website. (No Date). *Mitigation*. Retrieved from https://www.oregon.gov/DSL/WW/Pages/Mitigation.aspx

[16] Personal communication with Daniel Holbrook, Business Oregon

- Chemical Manufacturing
- Plastics and Rubber Products Manufacturing
- Primary Metal Manufacturing
- Software Publishers
- Computer Systems Design and Related Services
- Management, Scientific, and Technical Consulting Services
- Scientific Research and Development Services
- Management of Companies and Enterprises

Currently, the RSIS program does not have a grant or loan funding mechanism to assist with the up-front cost investments. Business Oregon does have a Special Public Works Fund that provides loans and grants for industrial site development and for feasibility studies, but sites must be publicly owned.

Strategy 2: Mitigation Bank Credits for All Sites

There are six mitigation banks that include Lebanon in the service area, from which wetland mitigation credits would be eligible to offset wetland impacts on the Parcels (Table 2 and Figure 5). Based on conversations with the mitigation bank owners, we estimate that across all six banks, 15 credits are currently available at a price of $89,000 each, for a total cost of $1,335,000. Based on the current average prices, if available credits were sufficient to cover the full compensatory mitigation requirement, the cost to obtain 134.32 mitigation credits for all three sites would be approximately $12 million.

Table 2: Current Mitigation Banks and Credits Serving the City of Lebanon

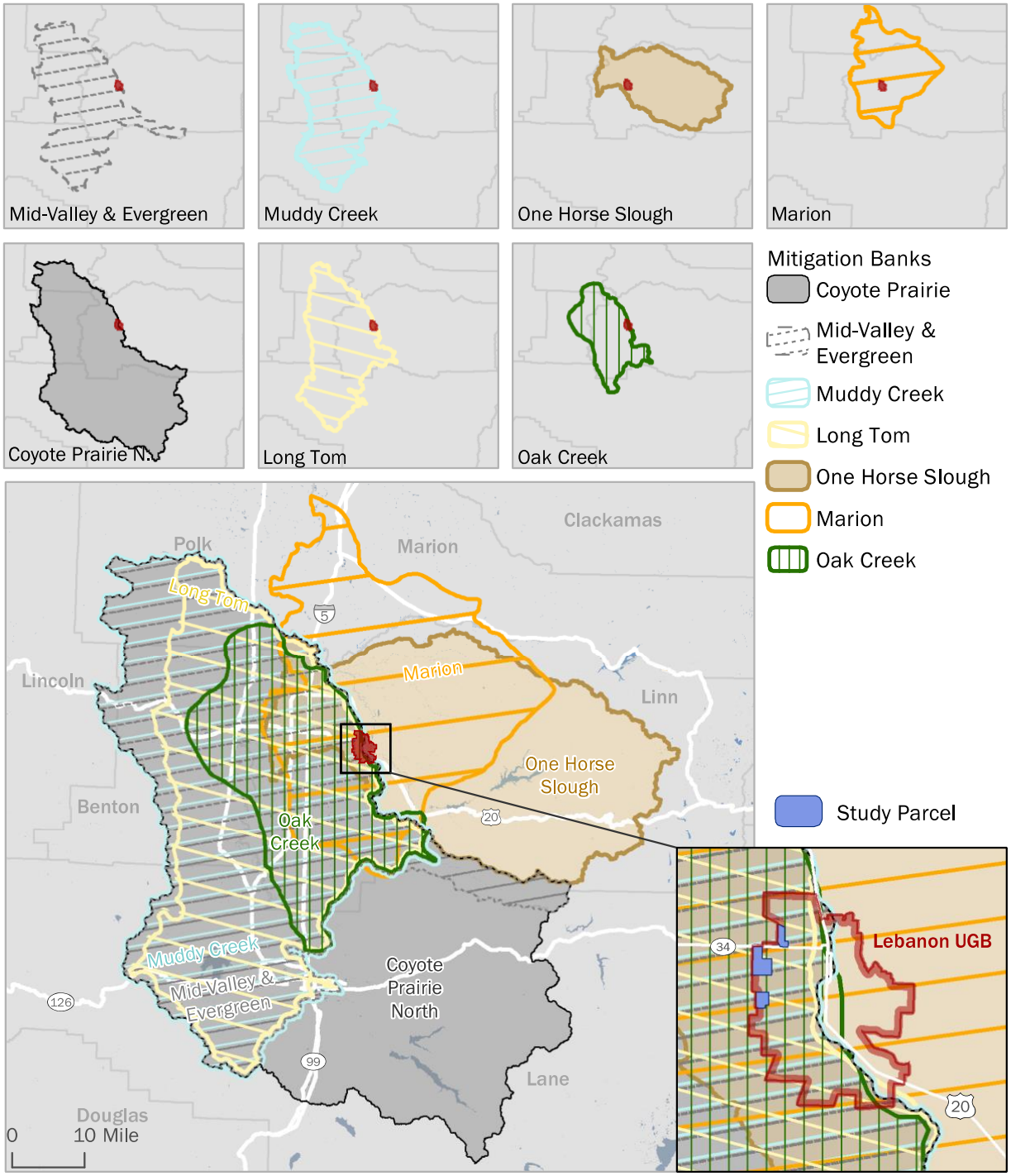
Mitigation Bank	Bank Owner	Number of Credits Available	Price
Coyote Prairie North	City of Eugene	0	N/A
Oak Creek	Richard Novitzki	0*	N/A
Marion	Green Banks LLC (C. Jonas Moiel)	0*	$87,000
One House Slough, Mid-Valley & Evergreen	Oregon Wetlands (Ray Fiori)	15*	$89,000
Muddy Creek	Turnstone Environmental (Jeff Reams)	0	N/A
Long Tom	Tim Acker	0	N/A

Source: Created by ECONorthwest based on information from mitigation bankers (see interview notes at the end of this document)
*More credits are planned to be released in upcoming years.

As Table 2 illustrates, the set of mitigation banks serving the City do not currently have sufficient credits available to supply the demand that developing the parcels would generate. Although bank owners suggested that the supply of credits may increase in the future, the availability, timing, and price of those credits is uncertain. The City may influence the development of credits by clearly advertising its demand for credits. DSL has experimented with this approach in other parts of Oregon, with some success. The City might also spur generation of additional credits from these banks with an agreement involving a pre-purchase commitment or even financing support. These banks have already addressed the upfront costs

that can make entry into the market challenging, which would suggest this to be a more cost-effective strategy than a new effort by a new entity or the City itself.

Figure 5: Mitigation Banks Map near Lebanon



Source: Oregon Department of State Lands, Waterways and Wetlands, Mitigation Bank Map
https://www.oregon.gov/dsl/WW/Pages/MitigationMap.aspx

One mechanism DSL has used is a Requests for Proposals (RFP) process. The benefit to the City of using an RFP is that it provides more certainty regarding the price and number of credits obtained. RFPs for the Umpqua region have previously been issued by DSL for both a specific number of credits available within 5 and 10 years (RFP #141-1174-17) as well as for a wetland manager, with costs of implementing the mitigation paid by DSL (RFP #141-1175-17). The City should consider expertise as well as cost to award the project because of the uncertainty involved with wetland mitigation credit creation and the importance of using an experienced mitigation banker. The success of these prior RFPs has been limited. Mitigation bank owners do not have an incentive to sell credits below market value and are assuming significantly more risk if they are locked in to a sale price. RFPs for wetland managers, with the cost of mitigation paid by the City, would likely be more successful.

Strategy 3: Perform Permittee-Responsible Mitigation for All Sites

Because an insufficient number of credits are currently available to satisfy the need for all sites from existing mitigation banks, the City may need to perform permittee-responsible mitigation to obtain the needed amount of mitigation. An RFP could be used to identify a project manager to oversee and implement the wetland mitigation outside of a current mitigation bank. This might even be in partnership with an existing wetland mitigation bank, particularly if the City has access to lower cost financing options than a private entity. The process would be similar to the RFP process DSL led, as described in the previous section.

The cost of permittee-responsible mitigation would depend largely on the parcel of land selected to do the mitigation. The City has several options: use land the City already owns, or acquire new land.

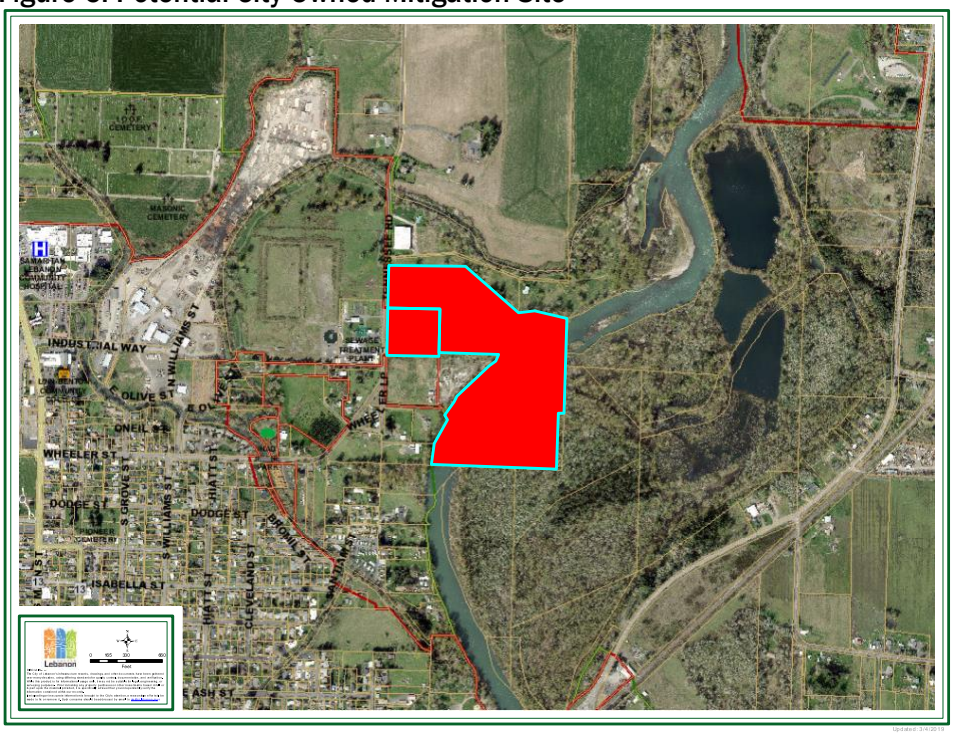
City-Owned Land

The City has identified a 48-acre City-owned property near the City's sewage treatment plant (Figure 6). A soils study has not been completed on this land. The per-acre estimate to complete the restoration work and regulatory monitoring would be at least $7,000 per acre, with increased cost if significant earthwork is required and depending on past/present uses of land and species composition.[17] The estimated ratio of mitigation on this land is likely between 3:1 to 7:1 since it is not currently in agricultural production.[18] Given those ratios, this parcel is estimated to offset only between 6.5 and 16 acres of impacted wetland at a cost of at least $336,000 for only mitigation activities. There is also currently a trail on this site, which would likely need to be closed for an extended period of time to perform the mitigation.

[17] Personal communication with Ray Fiori, Oregon Wetlands Mitigation Bank manager.

[18] Note that although minimum ratios are between 1:1 and 3:1, informational interviews suggest that the ratio can be much higher for land not currently in agricultural production because not all of the acreage can be used for mitigation.

Figure 6: Potential City-Owned Mitigation Site



Source: Provided by the City of Lebanon

The City does not own another site that would be suitable for wetland mitigation, which would mean that they would need to obtain land elsewhere to mitigation for the approximately 100 additional acres of impacted wetlands, assuming they first bought mitigation bank credits and performed mitigation at the city-owned site.

Acquisition of Land for Compensatory Mitigation

The value of agricultural land in Linn County is approximately $7,000 per acre as of 2017.[19] For 100 acres, assuming a 2:1 mitigation ratio and agricultural land is purchased, the City would need to purchase 200 acres suitable for mitigation for at least $1.4 million. Note that not all acres of agricultural land would be suitable for mitigation, so the actually acquisition cost would likely be higher. Based on the $7,000 per acre cost of performing the mitigation, another $1.4 million would be needed for a total cost of at least $2.4 million. This estimate is likely a low-end figure and does not include transaction costs or unknown costs, so actual costs would likely be much higher.

Strategy 4: Using One Site to Mitigate for the Other Two Sites

Mitigation could be performed at one of the sites to provide credits for the other two sites. Because of the size of the parcels, the Rodeo Industrial site is the most obvious choice of where to perform the mitigation. If a 2:1 ratio could be obtained for the 118.82 acres, approximately 59 acres could be mitigated which would cover the 58.61 acres needed to be mitigated at the other

[19] U.S. Department of Agriculture, National Agricultural Statistics Service. *Quick Stats.*

two sites. However, because the Rodeo Industrial Site is zoned industrial, the land acquisition costs would likely be higher than for agricultural land and this option would require taking potential industrial land out of production to create permanent wetlands. The mitigation ratio generated is also unknown, meaning that mitigation may be for less than 59 acres. The City would need to work with DSL to determine the number of acres that could be mitigated for at the site.

The Rodeo Industrial site is adjacent to homes on the west side of the property. Recreation benefits could be obtained from implementing trails and other recreation opportunities at the site. This public benefit should also be considered as part of the weighing of benefits and costs of potential sites. If the site was used for both wetland mitigation and as a city park, there could be substantial benefits to the community.

Strategy 5: Prioritization of Parcels

The 134.32 acres of wetlands that need to be mitigated on the three sites pose a challenge because of the scale of mitigation needed and the difficulty of generating that level of mitigation in an affordable way. Prioritizing the parcels may be required to provide for development opportunities in a timely fashion.

In prioritizing the parcels, elements that could be considered to elevate the priority of one of the parcels include:

- Site is large enough to facilitate development of 25 employees at the site required for reimbursement for the RSIS program;
- Number of acres required to be mitigated is small enough to be obtained through existing mitigation bank credits or generated by the City owned-land;
- Location of site is closer to trucking routes or other trade-related amenities; and
- Existing infrastructure that could be expanded for industrial use, such as sewer, water, electricity, fiber, etc.

Summary of Costs & Recommendations

The position that the City of Lebanon is facing whereby wetland mitigation costs appear cost-prohibitive to development is not unique. Other communities in the Willamette Valley are encountering similar obstacles. Based on our understanding of the underlying economics and statements from DSL, the cost of wetland mitigation is only expected to increase in the future unless a major regional public effort is successful, such as that proposed by OCWCOG. If the City would like to ease the cost-burden of wetland mitigation for potential industrial land-owners for all these three sites by paying for the mitigation, **we estimate that the costs could be between $5 and $20 million to mitigate for the wetlands at all three sites and it would likely be at least 10 years before mitigation is fully completed**. Because the scale of needed mitigation is so large, we recommend exploring all strategies as potential mitigation options.

In order to potentially lower these costs, we offer the following recommendations for actions that the City can take now:

- OCWCOG is currently considering creating a regional, public mitigation bank to help address demand for wetland mitigation in Linn and Benton Counties. We recommend the City of Lebanon work with OCWCOG to encourage development of a regional bank and explore mechanisms for state funding.
- Obtain Regionally Significant Industrial Site (RSIS) certification from Business Oregon for at least one of the sites and work with Business Oregon to find potential employers who would meet the income threshold.
- Support efforts by Business Oregon to lower the income threshold for RSIS reimbursement to less than 150 percent of the average county or state wage.
- Coordinate with DSL and other regional partners to encourage more transparent pricing of mitigation banks and require reporting of per acre mitigation costs for permittee-responsible mitigation.
- Avoid impacting wetlands on-site by reducing the size of building footprints. If wetland losses are avoided, mitigation requirements—and thus mitigation costs—would be lower. Mitigation costs should be weighed against forgone development benefits.
- For permittee-responsible mitigation, conduct feasibility assessment for potential recreational space in addition to wetland mitigation to create a public asset that brings health, environmental, and quality of life benefits to the community.

Interviews Conducted

ECONorthwest staff conducted multiple interviews in the course of this project to gather the information referenced herein. Table 3 provides a summary of the interviewees who contributed insight and information.

Table 3: Informational Interviews Conducted

Name	Affiliation	Method of Contact	Date of Contact
Dana Field	Oregon Department of State Lands	In Person	February 15, 2019
Paul Gordon	City of Eugene	In Person	February 14, 2019
Richard Novitzki	Oak Creek Mitigation Bank	Phone	April 24, 2019
C. Jonas Moiel	Green Banks LLC	Email	January 22, 2019
Ray Fiori	Oregon Wetlands	In Person	February 15, 2019
Jeff Reams	Turnstone Environmental	Email	January 18, 2019
Melissa Murphy	Oregon Business Council	Phone	April 23, 2019

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ECONorthwest prepared this memorandum for the City of Lebanon. It received substantial assistance from Walt Wendolowski and Alysia Rogers from the City of Lebanon, Dana Field from Oregon Department of State Lands, Ray Fiori with Oregon Wetlands, Paul Gordon with the City of Eugene, and others from the City of Lebanon. Other firms, agencies, and staff contributed to other research that this report relied on.

That assistance notwithstanding, ECONorthwest is responsible for the content of this report. The staff at ECONorthwest prepared this report based on their general knowledge of natural resource economics and on information derived from government agencies, private statistical services, the reports of others, interviews of individuals, or other sources believed to be reliable. ECONorthwest has not independently verified the accuracy of all such information, and makes no representation regarding its accuracy or completeness. Any statements nonfactual in nature constitute the authors' current opinions, which may change as more information becomes available.