



DES MOINES MARINA

Feasibility Study Phase 2 Final Report

OCTOBER 23, 2018



photograph by Gallier Photography

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Background and Overview

Project Overview

THG was engaged by the City of Des Moines to conduct a second phase of analysis for its Marina site. Our team, which also included The Concord Group and Skylab Architecture, assessed the market and financial feasibility of early-phase development at the Marina site, including the potential for development of publicly-accessible stairs that would connect the Marina to downtown Des Moines. Building on our first phase of work from 2017, we updated our market analysis, engaged with key stakeholders (including walking tours with City Councilors and members of the development community), developed concept plans for the stairs, performed financial analyses on various development scenarios, and identified a strategy for early-phase development.

Key Findings and Follow-Up from 2017 Analysis

In May 2017 our team completed our initial work, which included market and site analyses and the creation of potential development scenarios for the whole Marina. That work reached the following key findings and conclusions:

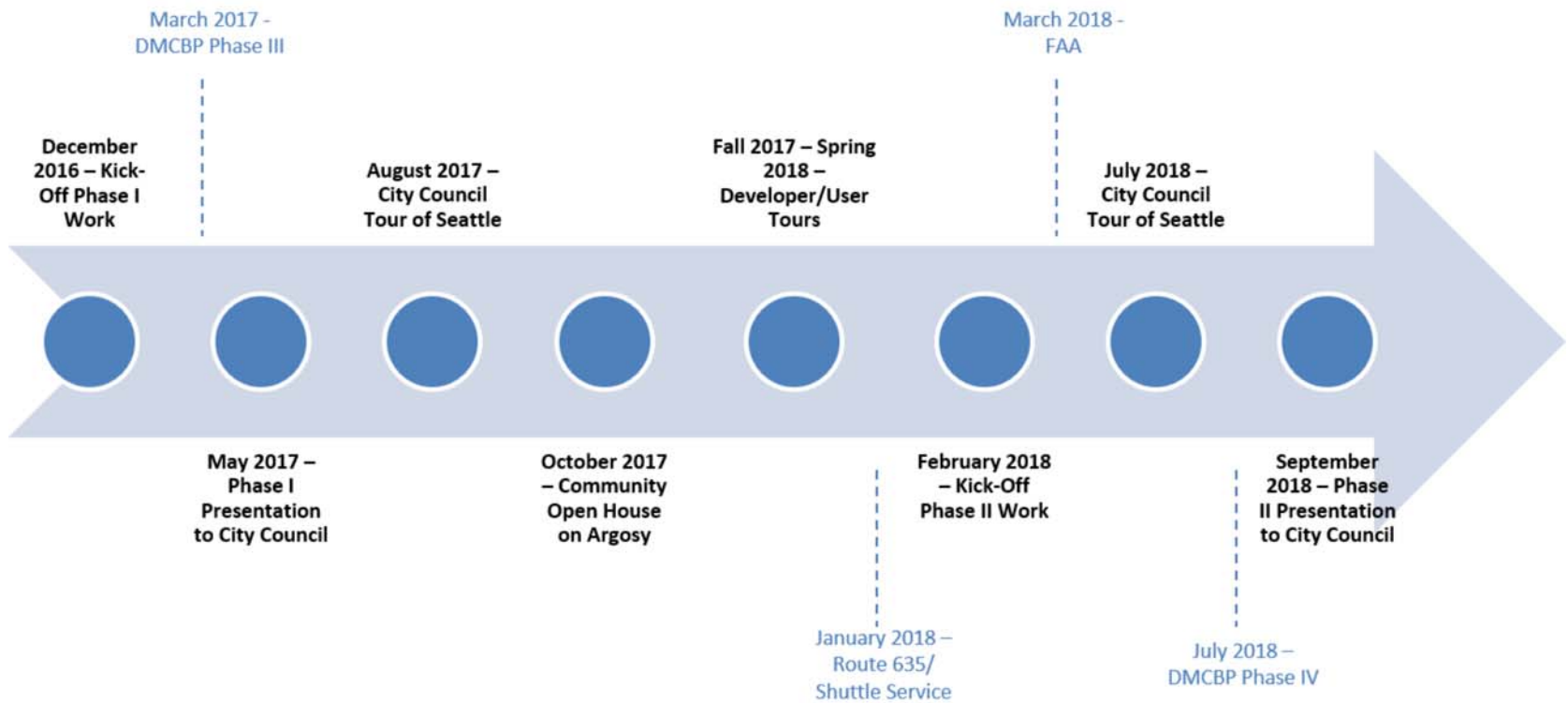
- There is an opportunity to develop various land uses on the Marina given prevailing demand and supply trends and the site's location. The strongest regional trends are for residential and hotel uses.
- Some constraints to development exist at the site, including a building height restriction (35') and location along the Marina where development would impact existing view corridors.
- Development on the Marina has the potential to incorporate public amenities (i.e. Marina Steps, enhanced plaza), with the opportunity to enhance connectivity between the Marina, downtown, and Beach Park.
- 3 development scenarios were identified, as summarized in the following table:

Development Scenarios from 2017 Report

BASELINE	NORTH CONCENTRATION	MULTI-NODAL
<ul style="list-style-type: none">• Development concentrated in north, potential parcel on south end• Boatyard remains in current location• Up to 240,000 developable square feet	<ul style="list-style-type: none">• Development in contiguous zone entirely in north end• Boatyard moves to south end• Up to 240,000 developable square feet	<ul style="list-style-type: none">• Development concentrated on both ends• Boatyard remains in current location• Up to 330,000 developable square feet

Some notable events have taken place since our team's May 2017 report and presentation to City Council; we reviewed these for the purposes of this report:

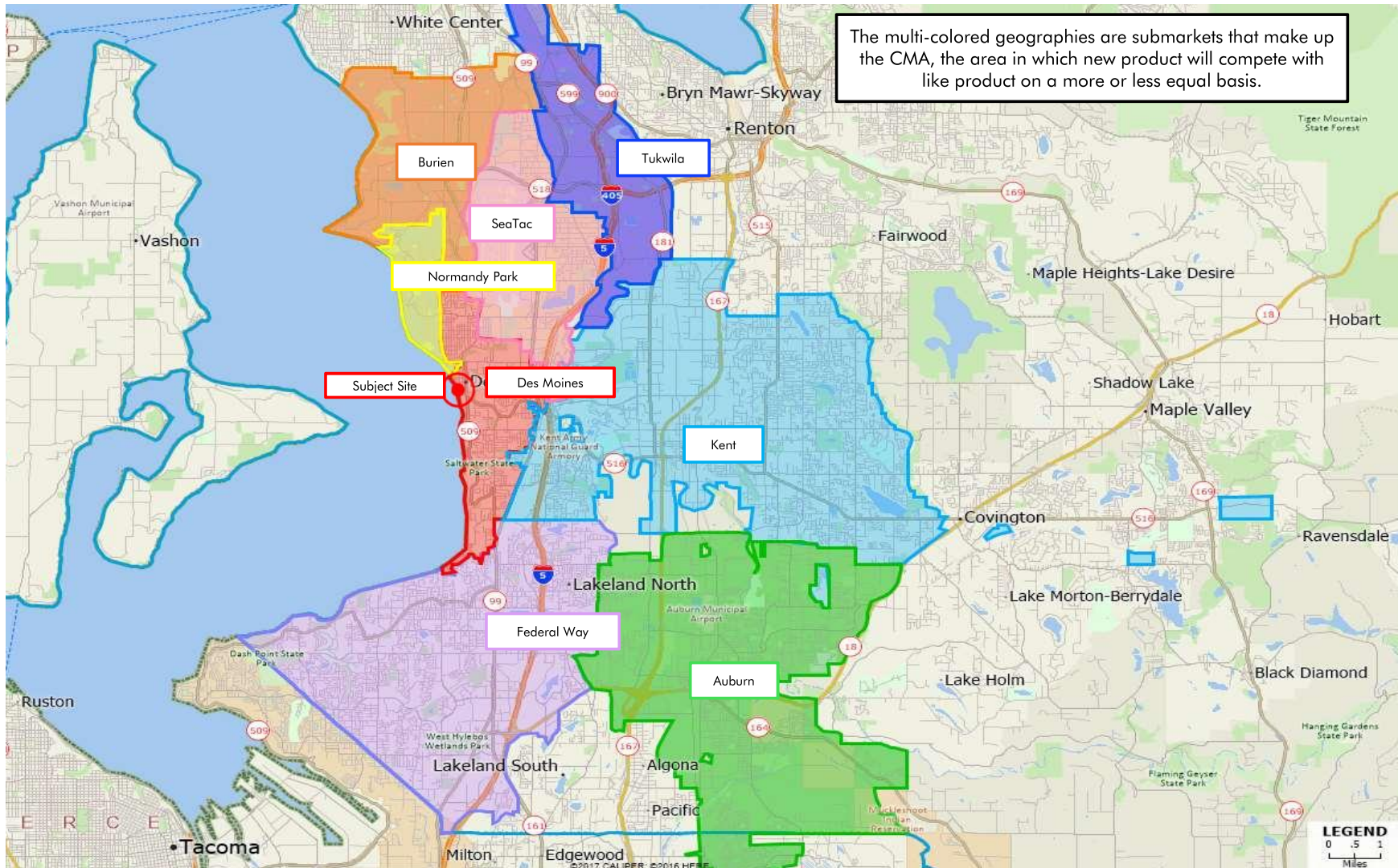
- In October 2017, the City hosted a community open house on the Argosy Goodtime II boat to gather community input into preferences for land uses and locations in and around the Marina. Over 200 members of the community attended the event. The feedback from attendees revealed support for all land uses, including strong support for an all-weather market, casual dining, and a brewpub. Interest for development of any land use was generally clustered around the north end of the Marina, around the Harbormaster House.
- In August 2017 we led a walking tour in Seattle for City staff and City Council members. The purpose of this tour was to present various examples of development types and to get feedback and questions from attendees. A similar tour was also held in July 2018.
- Also in August 2017, the City finalized its purchase of the Van Gasken House with the intention of creating additional publicly-accessible spaces.
- Beginning in the fall of 2017, we and City staff have given tours to over 12 developers and business owners who have expressed potential interest in development at the Marina.
- In January 2018, frequent shuttle service began between downtown and the Angle Lake light rail station. The Des Moines Community Shuttle, known as Route 635, also serves the Des Moines Creek Business Park.
- In March 2018 the FAA moved into its new 300,000 s.f. regional office headquarters. The location will accommodate approximately 1,500 employees.
- In July 2018, Phase IV of the Des Moines Creek Business Park was completed. The phase included 500,000 s.f. of space, mostly for distribution center uses, and was fully leased to Outdoor Research and Bartell Drugs.



Market Area

For the purposes of economic and demographic analysis, we have identified a Market Area that includes the cities of: Des Moines, SeaTac, Tukwila, Kent, Auburn, Federal Way, Burien, and Normandy Park. These cities make up the bulk of

southwest King County and include the submarket's top employment nodes. The boundaries of the cities within the Market Area are defined in the map below:



Market Analysis Conclusions

Our analysis of regional and local demand drivers and of the five land uses under consideration revealed trends that should support development in Des Moines and at the Marina site:

- Very strong metro-area employment growth driven by the technology sector
- Significant local employment growth driven by Des Moines Creek Business Park development
- Strong growth in air passenger traffic at SeaTac and of travel-related spending in the local submarket
- Relative value of rents and sales prices compared to region, especially close-in areas (may encourage demand from residents, businesses, and travelers seeking better value)

- Development activity in downtown Des Moines and surrounding neighborhoods and around Angle Lake station
- Strong regional trends for residential and hotel land uses
- Multi-modal transportation options, including light rail and shuttle service, and proximity to SeaTac Airport

The following table summarizes the key findings from the land use analysis. Additional information on demographic, employment, and land use trends can be found in the Appendix.

	Residential (Attached)		Commercial (Lease)		
	Rental	For-Sale	Office	Retail	Hotel
Regional Trends (last 5 years)	Very Strong	Strong	Moderate	Moderate/Weak	Strong
Des Moines Market (current supply)	Dated product, mostly 1970s/1980s vintage	Dated product, mostly 1970s/1980s vintage	Dated product, small tenants	Dated product, small centers	Mostly dated product, new Sheraton
Key Demand Drivers	Employment growth; Millennial and empty nester preferences; amenities	Pent-up demand, especially from move-down/empty nesters; site-specific opportunities	Office-using employment growth; executive preferences	Household and income growth; consumer preferences	Employment growth; leisure trends; airport traffic; visibility
Pipeline - Supply Forecast (future supply)	Moderate supply	Minimal supply	Moderate supply, some large conceptual projects	Minimal supply, some large conceptual projects	Significant supply

Development Considerations

Critical to developing our scenarios and recommendations were the City's stated goals for the Marina site, which include:

- Public access
- Working marina
- Revenue-generating
- Mix of uses
- Human scale
- Assets for the community
- Destination location

In addition to the City's goals, we also considered the following elements when developing our recommendations:

- Market-based demand (both current and future) for various land uses
- Site constraints and strengths
- Phasing and timing of development
- Early phase successes
- Creating critical mass and activating the site

Site Opportunities

Our site analyses revealed that the Marina site has a number of important characteristics that are likely to appeal to developers and users/tenants:

- Proximity to water
- West-facing views of the Puget Sound and the Olympics
- Existing surface parking options
- A relatively large parcel that is owned by one entity
- Proximity to downtown and to Beach Park

Marina Steps

Our team examined the potential for the development of stairs connecting the Marina with downtown Des Moines. These stairs will be referred in the rest of this report as the Marina Steps.

Reasons for Consideration

Our overall assessment is that the Marina Steps can help the City achieve many of its goals. Importantly, the Steps can:

- Connect the waterfront/Marina to downtown
- Be a publicly accessible amenity
- Attract locals and tourists (both regional and out-of-market tourists)
- Act as a catalyst for private investment and development
- Be integrated with other elements desired by the community (i.e. restaurants, additional Marina parking)

Design

In consultation with City staff, our team worked through various potential designs of the Marina Steps. Ultimately a design was chosen that could be built as stand-alone amenity or integrated with concurrent private development. A geotechnical consultant was engaged to better understand foundation requirements for the design. This consultant's report can be found in the Appendix.

Cost

After preliminary design drawings were developed, our team engaged a cost estimator to develop cost estimates to build the Marina Steps. Two options were analyzed by the cost estimator – one with and one without an elevator as part of the Steps design. For the scenario with no elevator in the design, our team assumed that an elevator would be included as part of an adjacent private

development and so would not need to be borne by the Steps.

Direct construction costs for these scenarios ranged from \$1.96 million to \$2.26 million for the scenario without an elevator and from \$2.74 million to \$3.17 million for the scenario with an elevator. These cost estimates included Washington State sales tax but did not include “soft costs” such as architectural and design fees, permits, and various other fees associated with development. Estimating the soft costs at 30% of the direct construction costs, the concluded total cost estimates are:

- Scenario 1 (no elevator): \$2.5 to \$3.0 million
- Scenario 2 (with elevator): \$3.5 to \$4.1 million

The detailed cost estimates can be found in the Appendix.

The following image represents the preliminary design drawing for the Steps:





The Marina Steps are envisioned as a connector between the Marina and downtown, via 223rd Street.

Development Strategy

Our recommended development strategy consists of 5 key steps:

1. Create a vision
2. Identify a focus for early-phase development
3. Determine how to best leverage City-owned assets
4. Develop a parking strategy and identify other ways to incentivize and catalyze private development
5. Identify potential tenants, user, and partners

I. Create a Vision

A clear vision will help to unify development concepts and attract developer interest to the site. The vision includes the development of various public amenities in conjunction with parcels for private development. Potential public amenities include:

- Marina Steps, adding a pedestrian-friendly connection to downtown
- Boardwalk, improving the connection to Beach Park
- Expanded esplanade, enhancing the connection to the southern part of the Marina
- Improvements and connections to the Van Gasken House

Working with City staff, our team created the following images to reflect the current vision for the Marina site:



Potential Vision



Potential Vision



- | | | | |
|---|-----------------------|----|-------------------|
| 1 | MARINA STEPS | 7 | BOARDWALK |
| 2 | PARCEL A | 8 | BEACH |
| 3 | PARCEL B | 9 | EXISTING BOATYARD |
| 4 | GREEN SPACE | 10 | GREEN WAY |
| 5 | EXISTING HARBOR HOUSE | 11 | WATER'S EDGE |
| 6 | MARKET | 12 | TRANSIENT PARKING |

Potential Vision



Marina Steps and Development Parcels



Pike Place Market, Seattle WA

AN ACTIVE PEDESTRIAN CONNECTOR

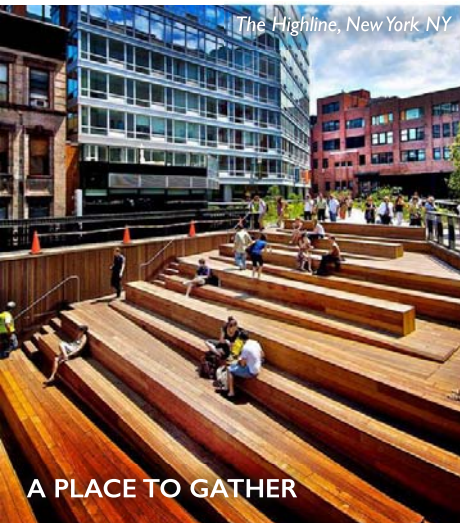


CREATING A DESTINATION

Harbor Steps, Seattle WA

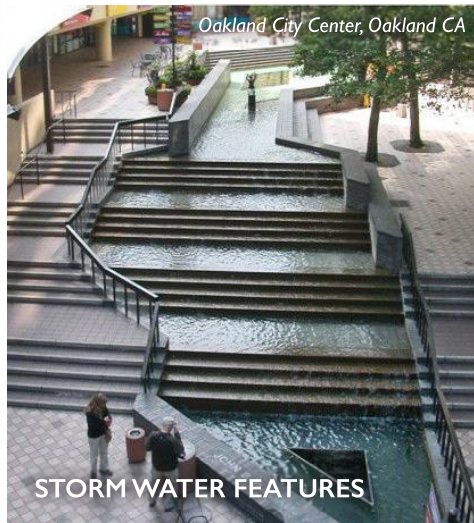


The Goods Line, Sydney AU



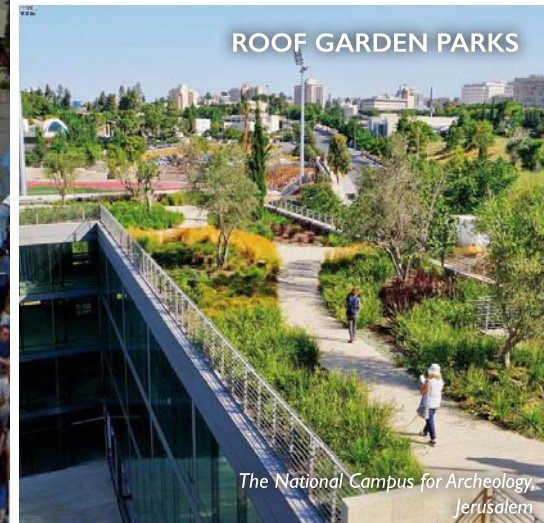
The Highline, New York NY

A PLACE TO GATHER



Oakland City Center, Oakland CA

STORM WATER FEATURES



ROOF GARDEN PARKS

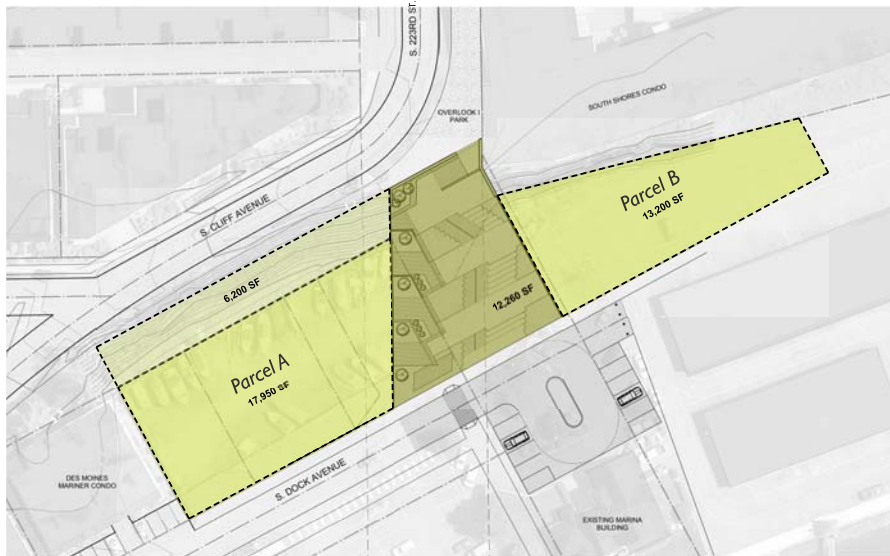
The National Campus for Archeology, Jerusalem

Marina Steps Inspiration

2. Identify Early-Phase Focus

Our team recommends focusing early-phase development efforts at the north end of the Marina. This reflects feedback from the community following our work in 2017 (from the October 2017 Community Open House as well as from City Councilors and City Staff) and ties with our recommendation to focus around the Marina Steps and the connection to downtown.

The Marina Steps, as envisioned, create private development opportunities to the north and south as can be seen in the following image:



The north parcel (Parcel A) is approximately 18,000 s.f. in land size and the south parcel (Parcel B) is approximately 13,000 s.f. Both of these parcels could also be expanded in size – Parcel A could potentially be moved into the eastern right of way, Parcel B could potentially be expanded further south, and both parcels could conceivably be expanded to the west.

Existing zoning allows up to 2.5 FAR. Using this ratio, these two parcels could yield up to 78,000 s.f. of developable space. This developable space is envisioned as conforming to the existing 35-foot height limits (we assume that the elevator and any rooftop uses would be allowed), and would not block existing view corridors.

This space could be integrated into the design and development of the Marina Steps or could be developed separately.

A core planning principle should be applied to this early phase: it must work out financially without needing cash flows from future phases and it should have the right elements to establish ‘critical mass’ from the outset. In other words, plan this project’s first phase as if you won’t do another phase again.

3. Leverage City-Owned Assets

In order to achieve the City’s vision and stated goals for the Marina, it will need to incorporate private development into its plans. The City owns approximately 29 acres at the Marina. There are many options for partnering with private developers, including:

- Sale of parcels
- Ground leases of parcels
- Public-private partnership

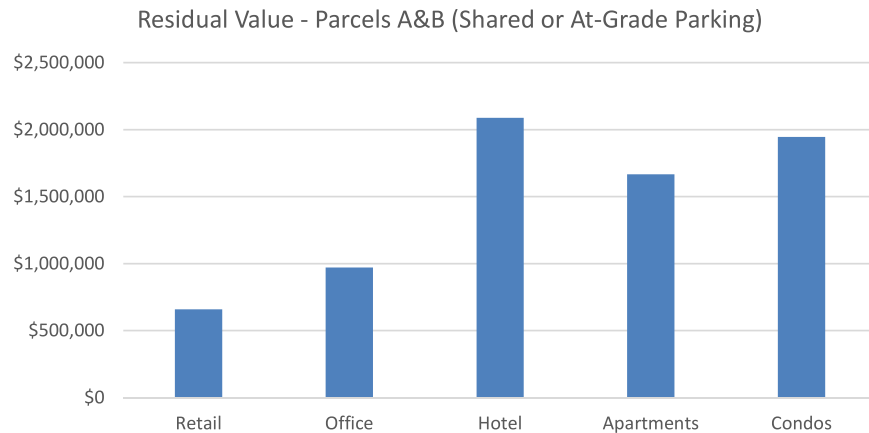
SALE OF PARCEL(S)

An outright sale of a specific parcel or parcels is the most straightforward method for bringing in a private developer. This method is likely to attract the most developer interest, and sales proceeds can help to pay for a portion of the cost of public amenities such as the Marina Steps. Land values depend on variety of factors, including:

- Specific planned land use and resulting lease/sales values
- Development capacity based on zoning and other constraints
- Construction costs
- Parking costs and requirements
- Investor interest
- Market norms and trends

Our team performed a residual land value analysis for each potential land use to determine the projected amount a developer could pay for a parcel given assumptions on lease/sale values, cap rates, construction costs, financing, and expected returns. We also compared these results to land sales and listings in the region and metro area.

For the two parcels identified in Step 2 that would be created to the north and south of the Marina Steps (and totaling 0.72 acres), our residual analysis yielded a combined value of between \$660,000 and \$2.1 million. These values vary by land use as can be seen in the graph below, and also assume that parking is either at-grade or shared with existing Marina parking. Additional detail on the financial analysis can be found in the Appendix.



GROUND LEASE OF PARCEL(S)

Another option available to the City is to ground lease a parcel or parcels to interested developers. This is a less-common method for development deals, and is most commonly associated with hotel development. Typically, ground leases are signed for long periods of time (such as 99 years) and leases may not begin until revenue is earned (although terms can vary). There are various methods utilized for determining the value of ground leases, including:

- Percent of revenue
- Percent of a determined land value
- Other fixed rent amount or a hybrid method

The City should consider the time value of money in its analysis of a ground lease deal – future cash flows are typically discounted (using a ‘discount rate’) to account for inflation and foregone investment opportunities. For example, if a ground lease was arranged at 5% of land value per year and a discount rate of 6% was applied, it would take approximately 30 years of ground lease payments to equal the potential value of selling the parcel today. However, these lease payments can be used to offset debt costs taken on by the City to finance public amenities.

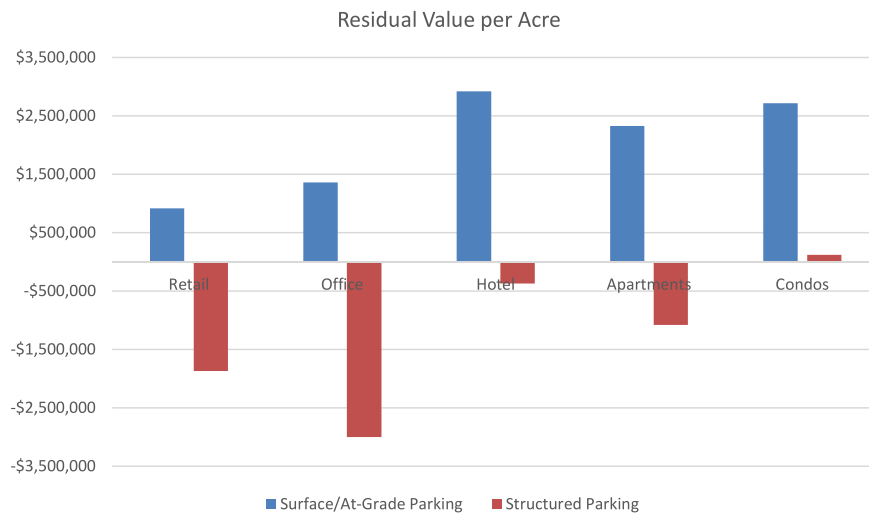
PUBLIC-PRIVATE PARTNERSHIP

A public-private partnership can take many forms, and can also include one of the methods discussed above (sale or ground lease). A partnership with a private development entity can offer the City an opportunity to leverage its assets (i.e. land) and capabilities (i.e. bonding capacity) with the development expertise of an experienced developer. This may be a desirable structure for development of the Marina Steps and adjacent properties, since there are likely cost savings that a developer would have developing both simultaneously, and the City may be able to get a public amenity built at a reduced cost while the developer could better integrate the developments. This partnership structure will not appeal to all developers since it can be more complicated than a more typical land sale.

4. Incentivize Development

There are various ways that the City can incentivize developers, some of which have been discussed in the prior points. An important one for the City to consider is the ability to utilize its existing surface parking to help interest developers and catalyze development.

Parking costs can make development financially infeasible, as structured parking costs average around \$30,000 per stall for above-ground structures and \$50,000+ for below-ground garages. In addition, the need to have parking within a development on a small site may leave too little lease-able or sale-able space remaining. Our financial analysis for the Marina site suggests that none of the land uses can afford to pay for structured garage spaces (beyond at-grade/”tuck-under” spaces) given current values:



The City can use its existing surface parking spaces at the Marina to encourage development by offering developers the ability to use the spaces for some or all of their parking needs. Some potential areas for early-phase uses have been outlined below:



This incentive may not work for all developers or land uses – some developers will want parking to be on-site and some financial partners may require dedicated parking. However, there are likely developers and tenants that will be interested in this incentive.

It should also be noted that none or very few existing parking would be taken up by the development of the Marina Steps or the adjacent Parcels A and B.

5. Identify partners and tenants

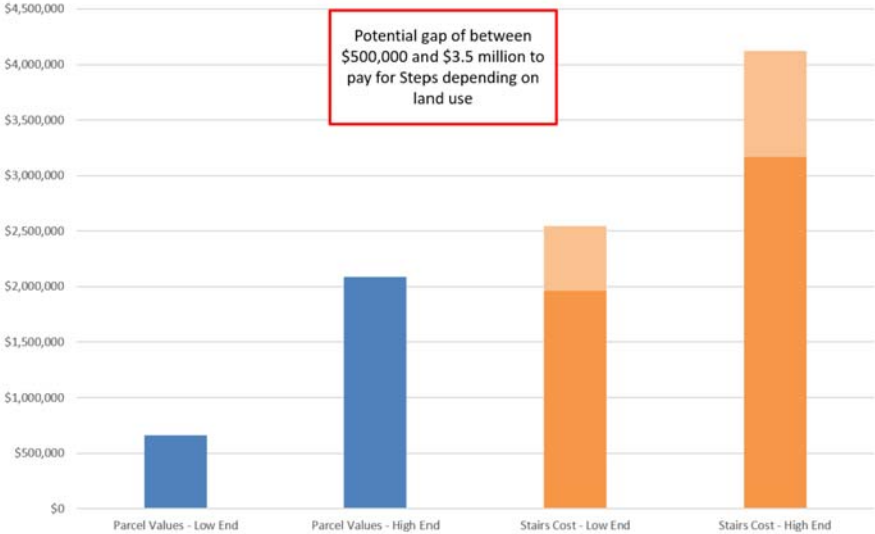
The City has already had some discussions and led some tours with some interested development partners and potential tenants/end users. It will be critical for the City to continue to identify target developers and tenants and to have ongoing discussions with them. Some of the potential tenants that the City has already identified include:

- Office users, including the GSA and the Port of Seattle
- Co-working office model
- A brewpub
- A hotel/inn

Conclusions and Recommendations

The following reflect our team’s key conclusions and recommendations:

1. The Marina Steps should be utilized as a catalyst to encourage private development at the Marina site. The vision of the Steps and other public amenities, combined with a willingness to finance and build this key infrastructure, sends an important message to the development community that the City has a compelling ‘story’ around the future of the Marina and downtown.
2. There is currently a gap between the projected cost to build the Marina Steps and the revenue generated from a land sale or ground lease of the two parcels created adjacent to the Steps. Depending on the cost and revenue scenarios, this gap is projected to be between \$500,000 and \$3.5 million, as seen in the below graph:
3. The City should seek out an interested private developer for a potential public-private partnership. This developer partner can help with the design, development, financing, and construction of the Marina Steps and adjacent private parcels.
4. Investigate other ways to fill the gap to build the Steps, potentially in conjunction with a developer partnership. Bonds or funding from the Port of Seattle are likely avenues to explore.



Next Steps

Recommended next steps include:

- Determine allowable land uses
- Identify the preferred development strategy (i.e. sale vs ground lease) and potential development partners
- Design the Marina Steps (refine costs, constructibility)
- Prepare Requests for Proposals (and concurrently proactively work with users/tenants and developers)
- Draft sources and uses/finance plan
- Create a workplan timeline with assigned responsibilities



Appendix

Demographics

According to Spotlight, the population of Des Moines is approximately 32,000, making up approximately 7.5% of the greater Market Area's population. There are 12,600 households, with an average household size of 2.6 people. The median household income in Des Moines is \$71,200, which is 4% above that of the Market Area but 21% below that of King County. The City's median age of 39 years is older than the Market Area and King County.

34% of households in Des Moines earn under \$50,000 annually, 33% earn between \$50,000 and \$100,000, and 33% earn over \$100,000. These figures are relatively in-line with the Market Area.

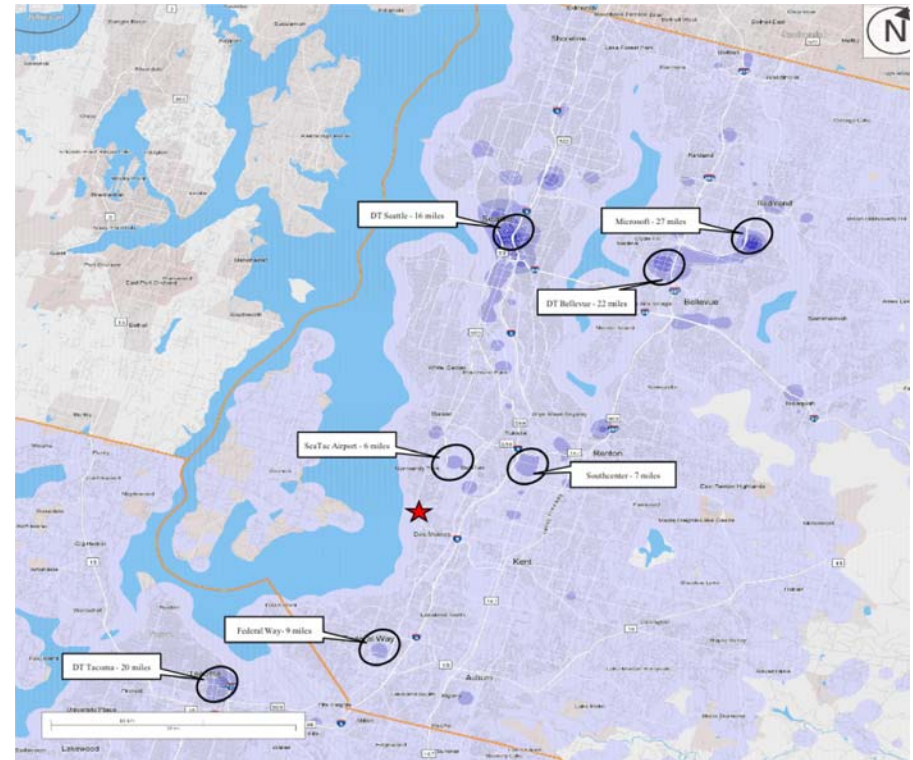
The Puget Sound Regional Council (PSRC) forecasts annual population growth of 1.0% to 1.2% for Des Moines and the Market Area through 2020, and 0.8% per year from 2020 to 2030. These forecasts are similar to the PSRC's forecast for King County.

Employment

The Seattle MSA has seen annual employment growth of 3% from 2014 to 2017, adding 40,000 to 50,000 jobs per year. Many of these new jobs are in the technology sector and are located in downtown Seattle and Bellevue.

Des Moines is located within 20 miles of the region's top employment hubs, including downtown Seattle, downtown Bellevue, and downtown Tacoma.

Employment hubs within the Market Area include the areas around SeaTac Airport (SeaTac), the Westfield Southcenter Mall (Tukwila), the Kent Valley (Kent), and the old Weyerhaeuser campus (Federal Way). The map below highlights the key regional employment hubs – darker areas represent denser employment concentrations:

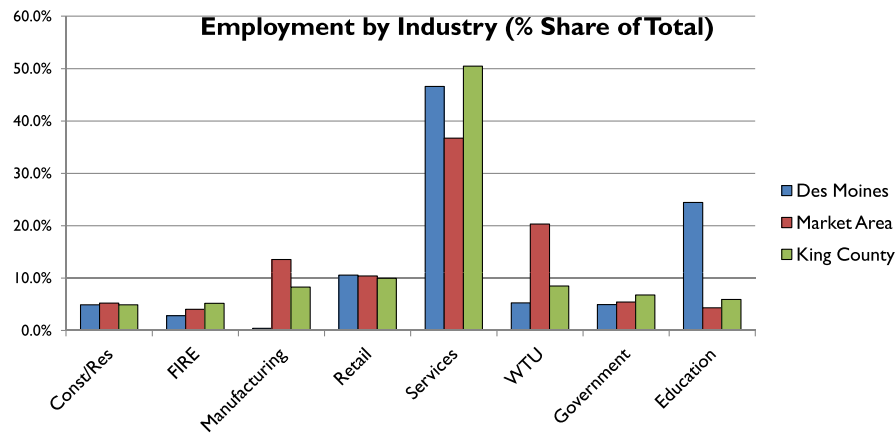


Employment Nodes

According to the Puget Sound Regional Council, Des Moines has total employment of 6,300, while the larger Market Area has employment of 203,000. This implies a jobs-to-housing ratio of 0.5 for Des Moines and 1.7 for the Market Area, indicating that while the Market Area is a submarket that attracts more jobs than housing, Des Moines is a residentially focused city with more housing than jobs.

Employees in Des Moines primarily live in the surrounding area, with the highest percentage of workers commuting from Des Moines, Federal Way, Kent, Seattle, and Tacoma. Top employers in Des Moines include Highline Community College, Highline School District, City government, and a number of retirement centers.

Employment in Des Moines is heavily skewed towards the Education sector, while the greater Market Area's employment is skewed towards Manufacturing and Warehousing as can be seen in the following graph:

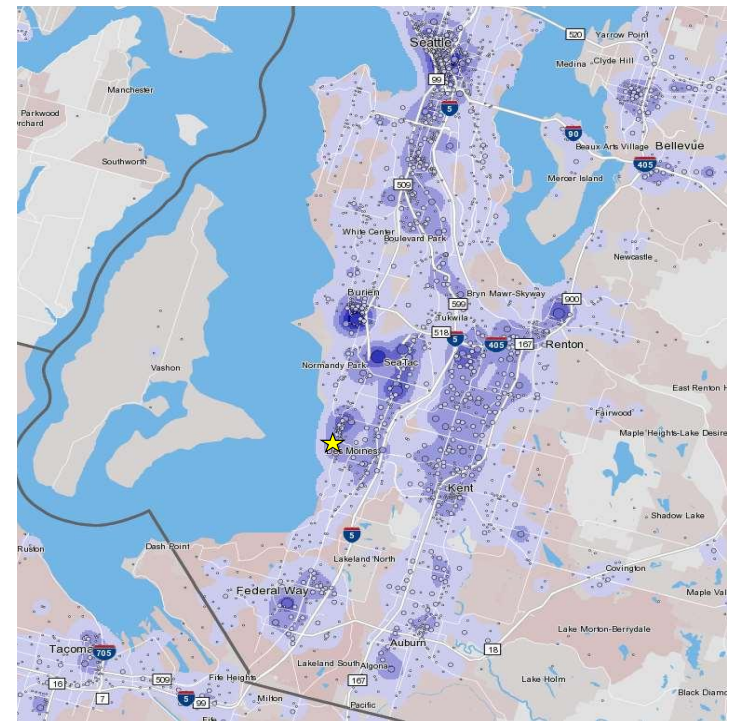


Employment by Industry (Source: PSRC)

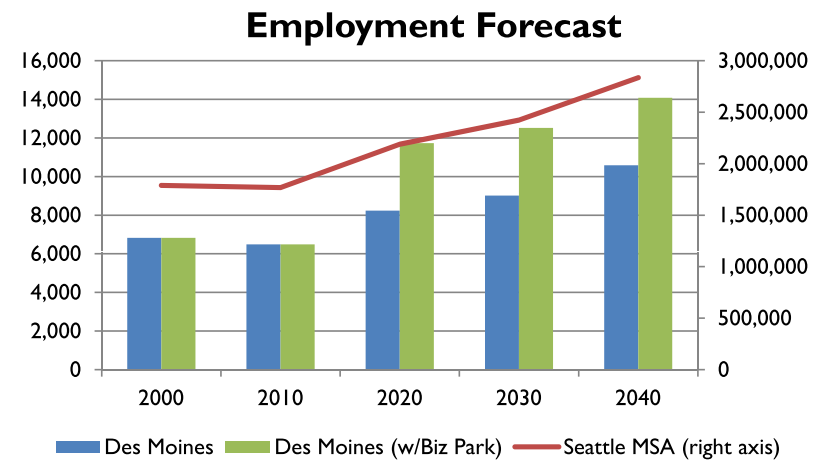
Many Des Moines residents commute up to Seattle and the Eastside market to work, as well as closer by to employment nodes in Kent and SeaTac. 25% of the City's residents commute to Seattle to work. Top employers in the surrounding Market Area include Boeing (multiple cities), Port of Seattle (SeaTac), REI (Kent, planning to move to Bellevue), Macy's (Tukwila), and World Vision (Federal Way).

The Puget Sound Regional Council (PSRC) projects annual employment growth in Des Moines and the Market Area of 2.7% and 2.6%, respectively, through 2020, and 1.0% and 1.4% from 2020 to 2030. On an absolute basis, PSRC projects total job growth of 1,740 jobs in Des Moines between 2010 and 2020. This is likely too conservative of an estimate for Des Moines given the under-development Des Moines Creek Business Park, which is scheduled to bring over 3,500 net new permanent jobs to the City, anchored by the new FAA headquarters. The graph below includes the PSRC estimates (blue bars) and these estimates with the addition of the net new jobs attributable to the business park (green bars).

With the addition of the new jobs attributable to the Des Moines Creek Business Park, Des Moines is projected to have 11,700 workers by 2020, an 80% increase over 2010 estimates. This does not include potential employment multiplier effects that are likely to happen as a result of the net new employment base (i.e. direct, indirect, or induced jobs created as a result of the new employment).



Where Des Moines Residents Work



(Source: PSRC and THG)

Land Uses

APARTMENTS

According to CoStar, there are just over 39,000 apartment units in the Market Area, with 3,000 classified as Class A. Of these units, nearly 2,600 are located in Des Moines (all considered Class B and C).

Trends in the apartment market have been very strong over the past 5-6 years in the Market Area and in King County. Looking at just Class A product, occupancy levels in the Market Area have averaged 94% the last 5 years, and rent growth has averaged over 6% annually over the same time period. Even with this growth, the Market Area remains a value-oriented market relative to the region. Monthly rents for Class A apartments in the Market Area averaged \$1,500 in 2017, versus \$2,150 in King County.

Despite the strong market, there have been few new rental projects developed in the Market Area over the past 10 years. The most recently-built projects include: Airmark Apartments (2018, Tukwila), The Maverick (2017, Burien), and Dwell at Kent Station (2016, Kent). There are no recently developed apartment developments in the City of Des Moines, with most product in the city dating from the 1970s and 1980s.

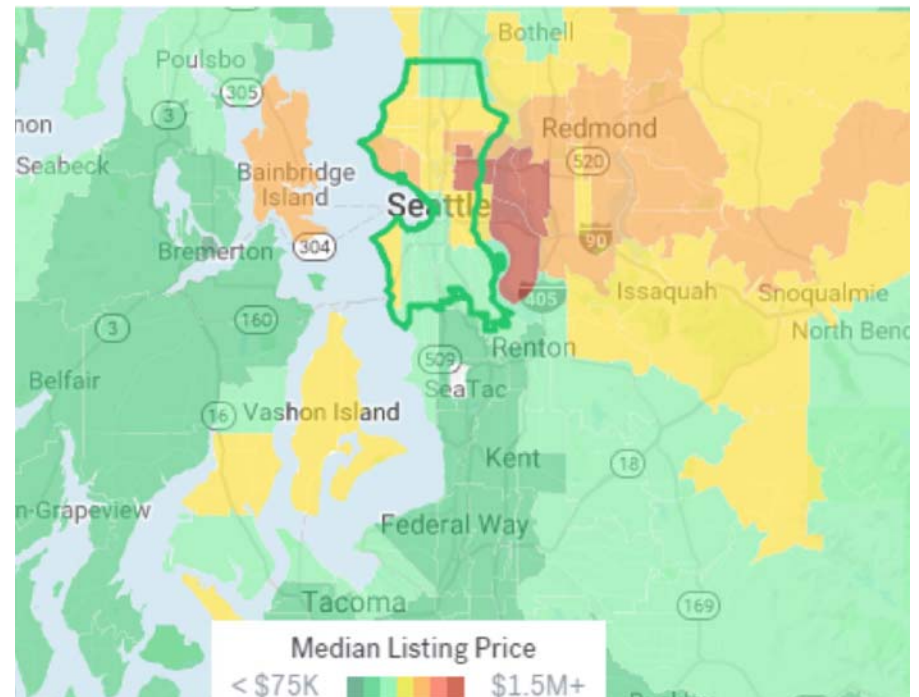
There are over 2,500 units in the development pipeline in the Market Area, which if all completed would represent about a 6.5% increase in overall inventory and a nearly 84% increase in Class A inventory. 770 of these units are within the City of Des Moines, including 150 in the downtown district. Some of these units may be developed as condominium product, and some may not be developed at all, depending on market and site-specific conditions. This does not include some large proposed projects in Des Moines including up to 1,500 units at the historic Landmark site and 600 units at SML @ Redondo (Pacific Highway and S 268th).

FOR-SALE RESIDENTIAL

Annual home price growth in Des Moines has averaged 13% per year the past 5 years, bringing pricing ahead of pre-Recession values. The median home sales price (for all home types) in Des Moines was \$388,000 in the first half of 2018, 4% below that of the Market Area. Single family detached homes averaged \$397,000

in Des Moines (vs \$417,000 in the Market Area), with attached product averaging \$222,000 (vs \$215,000 in the Market Area).

Des Moines and the Market Area offer relatively value compared to the region. The median home sales price in Seattle was \$758,000 in the first half of 2018, and prices have also grown 13% per year over the last 5 years. The following heat map of median listing prices in the region as of September 2018 graphically displays the relative value of the Market Area compared to other areas in the region (green = least expensive, red = most expensive):



(Source: Trulia)

With the exception of a few condominium projects built in the early 2000s, the majority of attached for-sale product in Des Moines was built in the 1970s and 1980s. In the pipeline, there are some smaller residential projects planned in downtown Des Moines that could become condominiums. None of these projects is larger than 10 units. There is also a 77-unit townhome development proposed at the southern edge of the City in the Pacific Heights PUD.

OFFICE

According to CoStar, there are approximately 14.8 million square feet of office space in the Market Area. The majority of this space is concentrated in office nodes in Federal Way, Tukwila, and Kent. Des Moines accounts for 700,000 square feet of the Market Area's office space, including the newly built 300,000 square foot FAA building.

Occupancy rates in the Market Area have been steady the past 5 years at about 87%. The Des Moines occupancy rate stands at 97%, as much of the market's space has been built recently, built-to-suit and fully occupied. Rent growth in the Market Area has averaged 2.7% per year the past 5 years, and average annual rents stand at \$22.50 per square foot, full service gross. Typical rents are between \$20 and \$30 per square foot, gross. Rent rates are similar in Des Moines.

The King County office market's leasing activity has been dominated by technology firms, with heavy concentrations in downtown Seattle and Bellevue. The South County market has not historically attracted these technology clusters and is typically more geared towards smaller tenants seeking relatively affordable space.

Almost no new buildings have been built in the Market Area since 2008, with just 650,000 square feet delivered in this time frame (nearly half of which was due to the FAA Building). Just outside of the Market Area is the 730,000 s.f. Southport development in Renton. In addition to this project, there are approximately 300,000 s.f. of office space in various stages of planning in the Market Area, and a number of significant projects in the pipeline which are at conceptual stages.

RETAIL

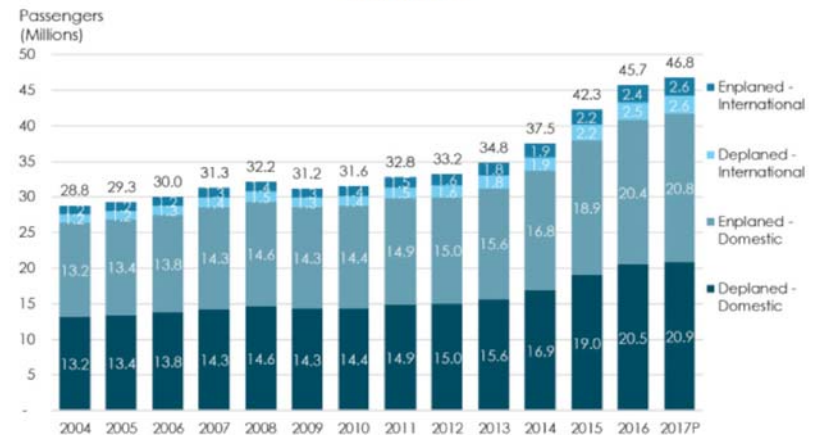
According to CoStar, there are approximately 25 million square feet of retail space in the Market Area, with 540,000 s.f. located in Des Moines. Occupancy rates have been fairly steady the past 5 years, averaging 95% in the Market Area and 97% in Des Moines. Rental rates have seen growth of nearly 3% over the same time period, and rents stand at about \$19 per square foot, triple net. Typical rents in the Market Area are between \$15.00-\$25.00 per square foot, triple net. Rent rates are similar in Des Moines.

There have been no significant deliveries of retail space in the Market Area since pre-Recession (2007-2008). There are few retail projects in the pipeline, although retail space is being considered as a land use in some conceptual projects of scale. In addition, some retail space is also planned to be delivered as part of the ground floor of a few apartment projects in the pipeline.

HOTEL

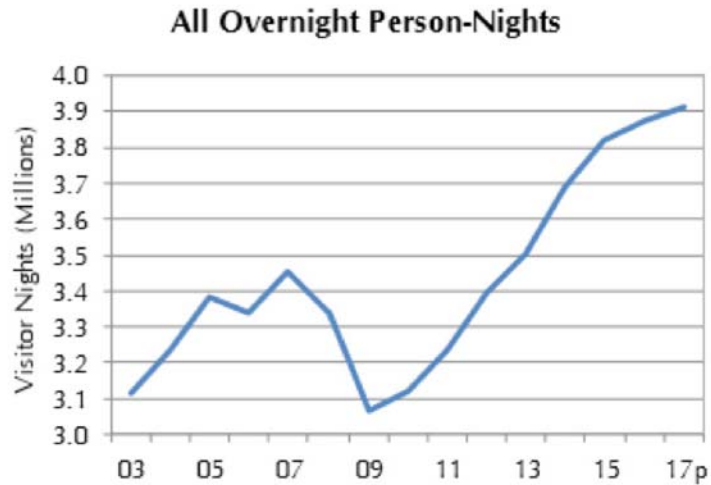
Air passenger growth at SeaTac Airport has been very strong the past 5 years, with nearly 47 million passengers in 2017 setting a new record.

Exhibit 2. Sea-Tac Airline Traffic, Passengers Emplaned and Deplaned, 2004-2017



(Source: Port of Seattle)

The local area of Des Moines, SeaTac, and Tukwila have seen a corresponding increase in travel-related spending, which includes day trips to Southcenter Mall and overnight stays near the airport. Visitor nights in this submarket have increased from 3.2 million in 2011 to over 3.9 million in 2017 according to a study by Dean Runyan Associates.



(Source: Dean Runyan)

Currently, most of the travel-related spending in the local submarket occurs outside of Des Moines, which has few hotels or major attractions.

According to Seattle Southside Regional Tourism Authority, average room rates in the three-city submarket averaged \$104 per night in 2016 versus \$203 per night in downtown Seattle. Looking at a likely competitive subset of hotels with in the Market Area revealed ADRs closer to \$140 to \$150 per night, which were on average \$50-\$60 less than downtown Seattle rates.

There is a significant amount of hotel supply (1,100 rooms) in the development pipeline in the Market Area, most of which is located close to SeaTac Airport. In addition, there are some recently opened projects, including Aloft (144 rooms) and Residence Inn (170 rooms) in SeaTac and Hotel Interurban (189 rooms) and Woodspring Suites (122 rooms) in Tukwila.

Financial Analysis

The following details our team's land residual analysis for the various proposed uses at the site:

I. Income Producing Real Estate							II. For-Sale Residential	
	Commercial			Residential				
Product:	Retail	Office	Hotel	Multi-Family				
Product Summary					Product Summary			
Unit Size (if applicable)			400	750		Home Size	1,500	
F.A.R. or Du/AC	0.70	2.50	100.0	70.0		Du/AC	40.0	
Lease Type	NNN	NNN						
Capitalized Value					Capitalized Value			
	<i>Per FAR Square Foot</i>		<i>Per Room</i>	<i>Per Unit</i>				
Lease Revenue			\$150	\$2.50		Home Price	\$787,500	
Lease Rate (\$/Yr)	\$25	\$25	\$54,750	\$22,500		\$/SF	\$525	
Other Income			\$13,688	\$1,688	25%			7.5%
Occupancy (Stabilized)	90%	90%	70%	95%				
Effective Lease Revenue	\$23	\$23	\$47,906	\$22,978				
Operating Expenses (Non-Recov. including leasing)						Broker Expense		
% of Lease Rate	10%	10%	67%	33%		% Commission	6%	
Operating Expense (\$/Yr)	\$2	\$2	\$32,097	\$7,583		Commission	\$47,250	
Net Income (\$/Yr)	\$20	\$20	\$15,809	\$15,395		Net Sales Revenue	\$740,250	
Capitalization Rate	6.50%	6.00%	7.00%	5.00%				
Capitalized Value	\$312	\$338	\$225,844	\$307,907				
Construction Costs					Construction Costs			
	<i>Per FAR Square Foot</i>			<i>Per FAR Square Foot</i>				
Hard Costs (per net s.f.) 1/	\$135	\$175	\$250	\$225		Hard Costs (Ground-Up) 1/	\$250	
Soft Costs						Soft Costs		
% of Hard Costs	15%	15%	18%	20%		% of Hard Costs	20%	
Soft Costs	\$20	\$26	\$45	\$45		Soft Costs	\$50	
Tenant Improvements/FF&E	\$50	\$40	\$50	\$0				
Total Construction Costs	\$205	\$241	\$345	\$270		Total Construction Costs	\$300	
per Unit/Room			\$138,000	\$202,500		per Unit	\$450,000	
Builder Financing					Builder Financing			
Loan Draw (% of construction costs)	75%	75%	75%	75%			75%	
Loan Fee (% of loan draw)	1.5%	1.5%	1.5%	1.5%			1.5%	
Interest Rate (% per year)	6.0%	6.0%	6.5%	5.5%			5.5%	
Hold Period (years)	1.5	1.5	2.0	2.0			2.0	
Financing Cost	\$14	\$16	\$34	\$22			\$25	
per Unit			\$13,455	\$16,706			\$37,125	
Developer Profit					Builder Profit			
	<i>Per FAR Square Foot</i>		<i>Per Room</i>	<i>Per Unit</i>				
Profit % of Capitalized Value	20%	20%	20%	18%		Profit % of Capitalized Value	25%	
Developer Profit	\$62	\$68	\$45,169	\$55,423		Builder Profit	\$185,063	
Land Valuation					Land Valuation			
Land Value - per Built SF/Room/Unit	\$30	\$12	\$29,220	\$33,277		Land Value - per Unit/Room	\$68,063	
Land Value - per Acre	\$920,000	\$1,360,000	\$2,920,000	\$2,330,000		Land Value - per Acre	\$2,720,000	
Land Value - per Land Foot	\$21	\$31	\$67	\$53		Land Value - per Land Foot	\$62	

Construction Cost Estimate

Des Moines Waterfront Stair Des Moines, Washington Skylab Architecture Portland, Oregon Conceptual/SD Cost Estimate 1.2	ACC Cost Consultants, LLC Stanley J. Pszczolkowski 8060 SW Pfaffle Street, Suite 110 Tigard, Oregon 97223-8489 Phone: (503) 718-0075 Fax: (503) 718-0077 www.ArchCost.com	Estimate Date: 20-Aug-18 Document Date: 16-Jul-18 Print Date: 20-Aug-18 Print Time: 8:12 AM Constr. Start: Spring 2019
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DIRECT CONSTRUCTION COST SUMMARY

Component	Area		\$ / SF	Total	
Option 1 Estimate	12,260	sf	\$152.61 /sf	\$1,871,000	
Washington taxes	10.0%			\$187,100	
TOTAL DIRECT CONSTRUCTION COST	12,260	sf	\$167.87 /sf	\$2,058,100	
			Range -5%/+10%	\$1,956,000 to \$2,264,000	
Option 2 Estimate	12,260	sf	\$213.78 /sf	\$2,621,000	
Washington taxes	10.0%			\$262,100	
TOTAL DIRECT CONSTRUCTION COST	12,260	sf	\$235.16 /sf	\$2,883,100	\$825,000 delta
			Range -5%/+10%	\$2,739,000 to \$3,172,000	

ALTERNATES - None Indicated for Pricing

The above estimates are for direct construction cost only. They do not include furnishings & equipment, architect and engineer design fees, consultant fees, inspection and testing fees, plan check fees, state sales tax, hazardous material testing and removal, financing costs, owners contingency, nor any other normally associated development costs.

The above estimates assume a competitively bid project, with at least three qualified bidders in each of the major sub-trades as well as the general contractors.

The above estimates assume a construction start date of: Spring 2019. If the start of construction is delayed beyond the date above, the estimates must be indexed at a rate of 5% to 7% per year compounded.

This is a probable cost estimate based on in-progress documentation provided by the Architect. The actual bid documents will vary from this estimate due to document completion, detailing, specification, addendum, etc. The estimator has no control over the cost or availability of labor, equipment, materials, over market conditions or contractor's method of pricing, and contractor's construction logistics and scheduling. This estimate is formulated on the estimator's professional judgment and experience. The estimate makes no warranty, expressed or implied, that the quantities, bids or the negotiated cost of the work will not vary from the estimator's opinion of probable construction cost.

**** Totals are rounded to the nearest \$1,000****

Option 1 Estimate

Des Moines Waterfront Stair Des Moines, Washington Skylab Architecture Portland, Oregon Conceptual/SD Cost Estimate 1.2	ACC Cost Consultants, LLC Stanley J. Pszczolkowski 8060 SW Pfaffle Street, Suite 110 Tigard, Oregon 97223-8489 Phone: (503) 718-0075 Fax: (503) 718-0077 www.ArchCost.com		Estimate Date: 20-Aug-18
			Document Date: 16-Jul-18
			Print Date: 20-Aug-18
			Print Time: 8:12 AM
			Constr. Start: Spring 2019

Option 1 Estimate	Quantity	Unit	Cost / Unit	Cost	Sub-totals	Comments
Option 1 Estimate						
Demolition						
no site demo assumed		sum	\$0.00	\$0		
haul & disposal	1	sum	0.00	0		
Sub-total	12,260	sf	0.00 /sf		\$0	
New Work						
flagging, barricades, etc.	16	weeks	1,500.00	24,000		
mobilization / demobilization	1	sum	35,000.00	35,000		
construction staking / surveying	1	sum	6,000.00	6,000		
erosion control & maintenance	1	sum	8,000.00	8,000		
shoring system allowance	2,250	sf	50.00	112,500		allowance
mass excavation & haul off-site	670	cy	45.00	30,150		
geo foam	49,350	cf	0.00	0		NIC, deleted
base course aggregate	2,960	ton	45.00	133,200		
4" conc paving	4,375	sf	8.00	35,000		
conc stairs on grade	1,140	sf	95.00	108,300		
conc seating steps on grade	945	sf	80.00	75,600		
conc thickened slab edge/downturn	224	lf	45.00	10,080		
recessed conc stormwater runnel	425	sf	35.00	14,875		
steel grating cover	370	sf	25.00	9,250		
ipe wood decking	1,346	sf	40.00	53,840		ftgs/framing/decking
conc retaining walls						
12" conc retaining walls + ftgs	346	cy	1,090.00	377,140		
22" conc retaining walls + ftgs	167	cy	1,090.00	182,030		
board formed, premium	5,996	sf	5.00	29,978		
sealer & anti-graffiti coating	5,996	sf	4.25	25,481		
ss stair railing w/integral lighting	96	lf	250.00	24,000		
cable railings	321	lf	135.00	43,335		
landscape planting beds	3,200	sf	4.50	14,400		
irrigation	3,200	sf	2.00	6,400		
ornamental trees, 6" cal.	7	ea	1,500.00	10,500		
ornamental trees, small	6	ea	300.00	1,800		
stormwater planted swale	305	sf	15.00	4,575		
electrical	1	allow	40,000.00	40,000		
Sub-total	12,260	sf	115.45 /sf		1,415,434	
SUB-TOTAL Option 1 Estimate				1,415,434	\$1,415,434	
Estimating/Design Contingency			10.00%	141,543		
Index To Construction Start	Spring 2019		4.50%	70,064		@ ± 6% per year
General Conditions / Insurance / Bond			9.50%	154,569		
General Contractor OH & Profit			5.00%	89,081	455,257	32.16%
TOTAL DIRECT CONSTRUCTION COST						
Option 1 Estimate	12,260	sf	\$152.58 /sf		\$1,870,691	

Option 2 Estimate

Des Moines Waterfront Stair Des Moines, Washington Skylab Architecture Portland, Oregon Conceptual/SD Cost Estimate 1.2	ACC Cost Consultants, LLC Stanley J. Pszczolkowski 8060 SW Pfaffle Street, Suite 110 Tigard, Oregon 97223-8489 Phone: (503) 718-0075 Fax: (503) 718-0077 www.ArchCost.com		Estimate Date: 20-Aug-18 Document Date: 16-Jul-18 Print Date: 20-Aug-18 Print Time: 8:12 AM Constr. Start: Spring 2019

Option 2 Estimate	Quantity	Unit	Cost / Unit	Cost	Sub-totals	Comments
Option 2 Estimate						
Demolition						
no site demo assumed		sum	\$0.00	\$0		
Sub-total	12,260	sf	0.00 /sf		\$0	
New Work						
flagging, barricades, etc.	16	weeks	1,500.00	24,000		
mobilization / demobilization	1	sum	35,000.00	35,000		
construction staking / surveying	1	sum	6,000.00	6,000		
erosion control & maintenance	1	sum	8,000.00	8,000		
shoring system allowance	2,250	sf	50.00	112,500		allowance
mass excavation & haul off-site	1,520	cy	45.00	68,400		
geo foam	33,770	cf	0.00	0		NIC, deleted
base course aggregate	3,090	ton	45.00	139,050		
4" conc paving	4,615	sf	8.00	36,920		
elevated slab	620	sf	35.00	21,700		
conc stairs on grade	1,140	sf	95.00	108,300		
conc seating steps on grade	905	sf	80.00	72,400		
conc ramps on grade	209	sf	25.00	5,225		
conc thickened slab edge/downturn	160	lf	45.00	7,200		
recessed conc stormwater runnel	425	sf	35.00	14,875		
steel grating cover	370	sf	25.00	9,250		
wood decking	1,295	sf	40.00	51,800		
conc retaining walls						
12" conc retaining walls + ftgs	482	cy	1,090.00	525,380		
22" conc retaining walls + ftgs	167	cy	1,090.00	182,030		
board formed, premium	6,110	sf	5.00	30,549		
sealer & anti-graffiti coating	6,110	sf	4.25	25,967		
pier - allowance at elevator fnd.	1	allow	0.00	0		NIC, deleted
elevator						
waterproofing at elevator	1	sum	2,500.00	2,500		
waterproofing walls below grade	1,955	sf	18.00	35,190		includes drainage mat
waterproofing at elevated slab	620	sf	15.00	9,300		
steel structure framing	1.30	ton	6,000.00	7,800		
curtainwall	600	sf	140.00	84,000		
roofing, flashings, etc	104	sf	35.00	3,640		
hydraulic passenger elevator	4	stops	36,250.00	145,000		with glass cab
pit ladder	1	ea	450.00	450		
sump pit, pump, connections	1	sum	4,000.00	4,000		
ss stair railing w/integral lighting	241	lf	250.00	60,250		
cable railings	387	lf	135.00	52,245		
ss double gate on lock timer	2	pair	7,500.00	15,000		
landscape planting beds	2,805	sf	4.50	12,623		
irrigation	2,805	sf	2.00	5,610		
ornamental trees	7	ea	1,500.00	10,500		
ornamental trees, small	6	ea	300.00	1,800		
stormwater planted swale	242	sf	15.00	3,630		
electrical - lighting/power	1	allow	45,000.00	45,000		
Sub-total	12,260	sf	161.75 /sf		1,983,084	
SUB-TOTAL Option 2 Estimate				1,983,084	\$1,983,084	
Estimating/Design Contingency			10.00%	198,308		
Index To Construction Start	Spring 2019		4.50%	98,163		@ ± 6% per year
General Conditions / Insurance / Bond			9.50%	216,558		
General Contractor OH & Profit			5.00%	124,806	637,834	32.16%
TOTAL DIRECT CONSTRUCTION COST						
Option 2 Estimate	12,260	sf	\$213.78 /sf		\$2,620,918	

August 22, 2018

THG LLC
1324 N Liberty Lake Road
PMB 3661
Liberty Lake, WA 99019

Attn: Mr. Robert Holmes

RE: PRELIMINARY GEOTECHNICAL INFORMATION, DES MOINES PUBLIC STAIR CONCEPTUAL DESIGN, DES MOINES WASHINGTON

At the request of Skylab architects, Shannon & Wilson reviewed existing data and participated in a conference call on August 2, 2018 to discuss the foundation conditions and geotechnical considerations for the proposed Des Moines Public Stair project. Our support was provided in accordance with our signed letter proposed dated August 1, 2018 with THG LLC.

PROJECT DESCRIPTION

We understand the City of Des Moines (City) is considering a new public stair adjacent to the Des Moines Marina. A Google Earth™ image of the project location is shown in Exhibit 1.

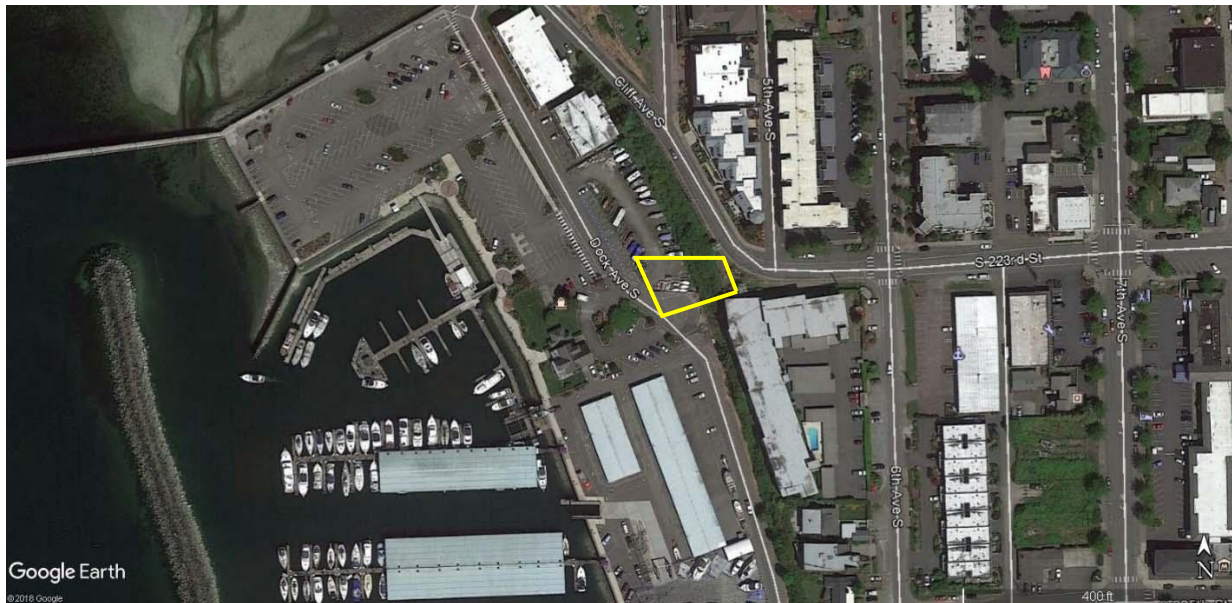


Exhibit 1: Proposed Public Stair Location (reproduced by permission granted by Google Earth™ Mapping Service)

We understand the public stairs will be constructed adjacent to the existing steep hillside below S. Cliff Avenue, connecting to down to S. Dock Avenue along the east side of the marina. The stairs would be located along the approximate alignment of S. 223rd Street if it extended farther to the west. The height of the stair structure would be about 35 feet from the top at S. Cliff Avenue to the bottom at S. Dock Avenue. A concept sketch prepared by Skylab is shown in Exhibit 2.

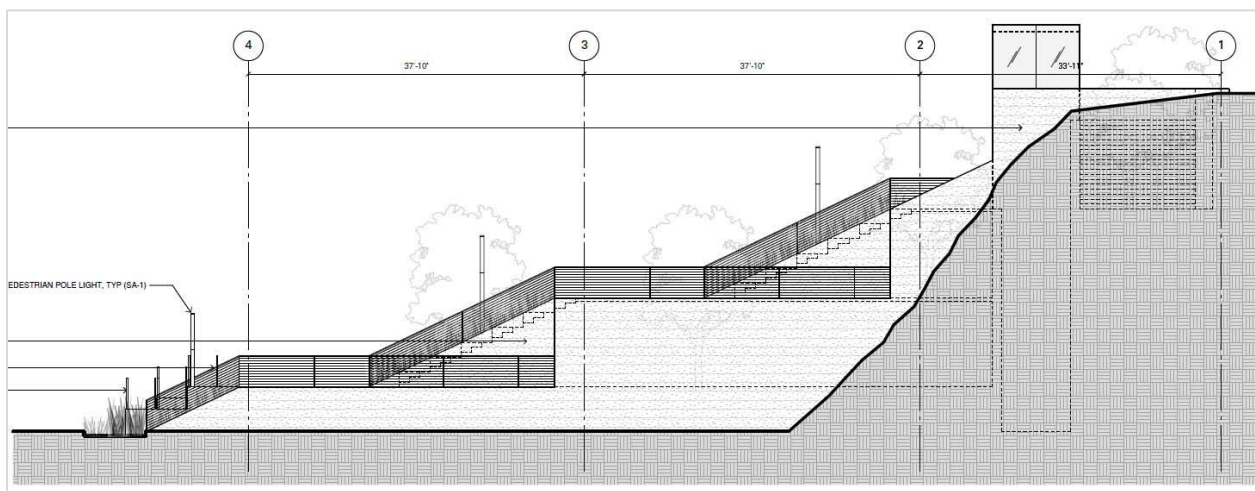


Exhibit 2: Concept profile sketch for Option 2 (prepared by Skylab)

The conceptual options being considered include placing fill against the existing slope and constructing a series of benches for stairs and landings. The north and south sides of the stairs would be supported by vertical retaining walls to allow for future development. Potential structures within the stair system include retaining walls, an elevator structure, an access tunnel, and other surface features (e.g. poles for railings and lighting).

We understand that future private developments are planned for the area to the north and south of the stairs. The geotechnical considerations in this letter would not be changed if buildings or other structures are constructed in future developments north and south of the stairs.

SUBSURFACE CONDITIONS

We performed geotechnical explorations at the site as part of our studies for the Des Moines Marina in 2004 (Shannon & Wilson, 2004). The site plan from our geotechnical report is enclosed (see Figure 2). Generalized subsurface profile C-C', generated for the 2004 studies, is enclosed (see Figure 5).

A 2004 boring, designated B-8, was performed at a location coinciding with the southwest corner of the proposed stairs. The log of boring B-8 is enclosed (see Figure B-9). The boring indicates the subsurface conditions consist of about 7 feet of medium dense sand fill or beach deposits. Very dense sandy gravel is present below 7 feet. As shown in profile C-C' (Figure 5), the elevation of the top of the very dense sandy gravel likely increases towards the east. Based on the steepness of the existing slope, and observations of the slope conditions (where visible through vegetation) we anticipate the slope to consist of very dense, glacially overridden soils. The top of the slope near S. Cliff Avenue may have a surficial layer of fill and/or weathered glacially overridden soil. We do not have subsurface information at the top of the proposed stairs.

Groundwater near the site was measured in 2004 in a well installed boring B-7, located about 250 feet north of the proposed stairs (see Figure 2). We measured the groundwater levels over a series of tide cycles. A plot showing the groundwater variation measurements is enclosed (see Figure B-10). The plot indicates that the groundwater level in boring B-7 ranged from about elevation 8 to 9.5 feet per the Mean Lower Low Water (MLLW) datum. The ground surface elevation at boring B-8 is about 16.5 feet MLLW. Therefore, we expect groundwater at the proposed stair site to fluctuate between about 7 to 8.5 feet below the ground surface (fluctuations due to tide). Seasonal fluctuations may also affect the groundwater level.

GEOTECHNICAL CONSIDERATIONS FOR CONCEPT EVALUATION

The following sections provide geotechnical considerations for use by the City, Skylab, Valar Engineering, and other members of the project team to evaluate concepts and develop preliminary costs. These recommendations may not be used in final design of the project.

Foundations

Based on our understanding of the proposed structure and anticipated loads, in our opinion, the structures along the base of the slope can be founded on shallow, spread footing foundations bearing on the medium dense sand soils indicated by boring B-8. Structures within the stair structure fill could also be founded on spread footings, assuming the fill consists of compacted structural fill placed in a controlled manner.

Slope Stability

Based on the conceptual sketches provided by Skylab, the proposed stairs will have an effective slope of about 3 horizontal to 1 vertical (3H:1V, calculated based on height versus width of entire stair system). We anticipate the overall stair system would be stable under static and seismic loading conditions, provided that compacted structural fill is used to construct the system and that drainage systems are installed to mitigate concentration of surface runoff.

Retaining Walls

We anticipate that standard concrete cantilever walls can be used to retain the north and south sides of the stair structure. Due to the increasing height of the walls towards the east, lateral restraining systems may be required for walls higher than about 12 feet.

Depending on the complexity of the stair system, Mechanically Stabilized Earth (MSE) wall or reinforced slope systems may be considered to support the north and south sides of the proposed stairs, west of the slope. These systems provide soil retention through use of soil reinforcing elements. Use of these systems could eliminate or reduce the need for a large concrete cantilever wall.

The Skylab concept sketches show that a portion of the top of the slope requires excavation to allow for the stair concept to tie in appropriately to the top of the slope. In areas where the existing slope requires excavation, cut walls such as a soldier-pile and lagging wall or a soil nail wall may be considered. This would eliminate the need to excavate a large section of the slope to place a standard concrete retaining wall.

Elevator Structure

We understand that an elevator structure is considered in one of the conceptual options. In our opinion, the elevator structure could be founded on shallow spread footings bearing in the very dense glacial soils. Although these soils were encountered at a depth of about 7 feet in boring B-8, we anticipate the depth of the very dense glacial soils to decrease towards the east, closer to the potential location of the elevator structure (see Figure 5).

We anticipate the proposed elevator structure would need to be designed for unbalanced earth pressures because the ground surface east of the structure would be higher than west of the structure. Lateral restraint systems may be required (e.g. tiebacks).

THG LLC
Mr. Robert Holmes
August 22, 2018
Page 5 of 5

SHANNON & WILSON, INC.

Future Development

We understand the City may sell property north and south of the proposed stairs for future development. Depending on the type of structures that are planned, foundation considerations for the developments would be similar to those discussed for the proposed stairs. Note that the depth to very dense glacial soils increases to about 12 feet at boring B-7 (see Figure 2).

CLOSURE

This report was prepared for the conceptual evaluation of the proposed Des Moines Public Stairs project in accordance with our signed letter proposed dated August 1, 2018. Our opinions are based on our familiarity with the site, existing subsurface information collected in 2004, and understanding of the project provided by Skylab. This report may not be used for final design. I enclose the document "Important Information About Your Geotechnical/Environmental Report" for your review.

We appreciate the opportunity to assist you with this wonderful public feature that is being considered near the Des Moines Marina. As this project proceeds, we hope you will consider Shannon & Wilson to provide the geotechnical expertise needed to complete the project.

Sincerely,

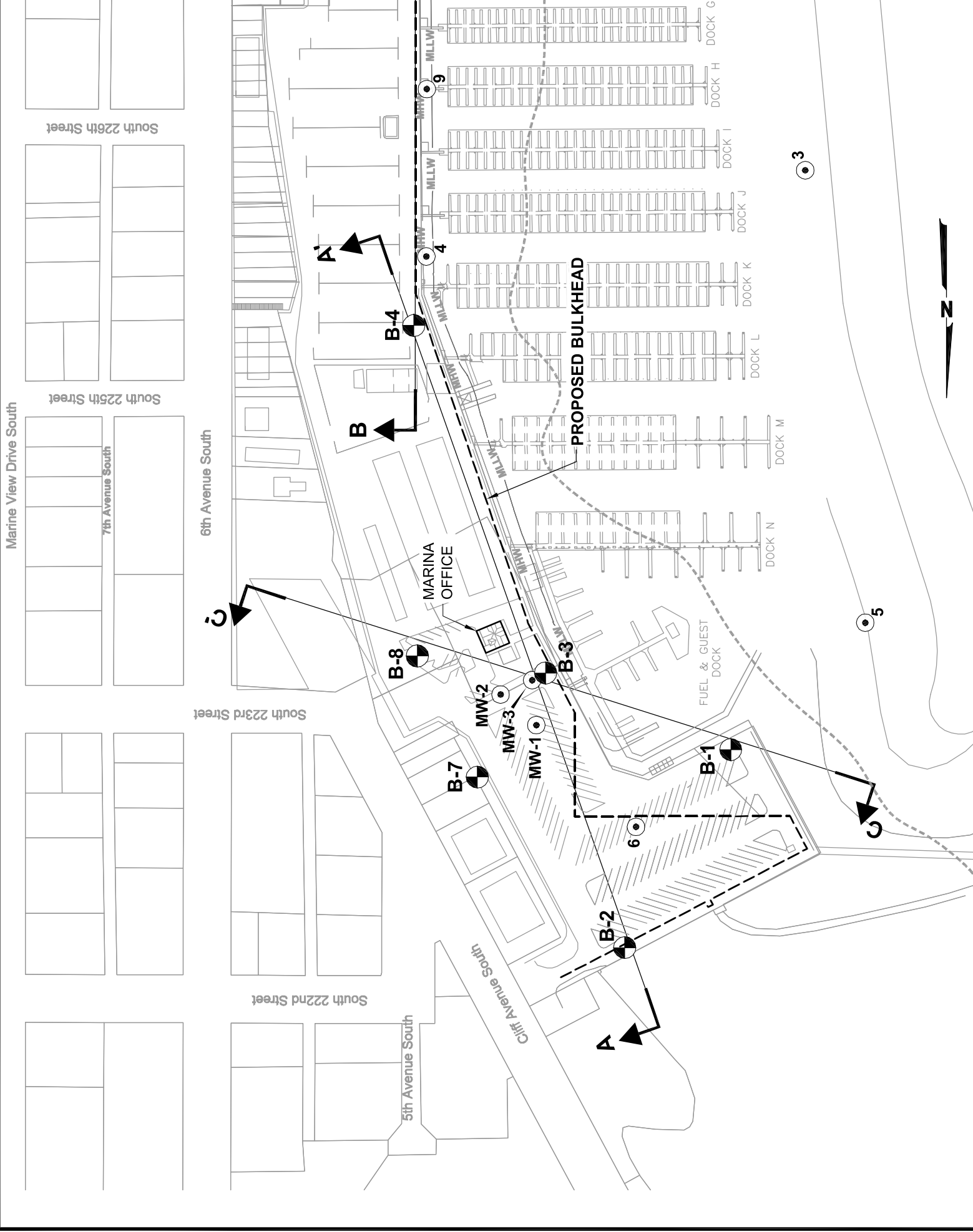
SHANNON & WILSON, INC.

Monique A. Anderson, PE
Senior Associate

MAA:WJP/maa

Enc: 2004 Shannon & Wilson Geotechnical Report Figures 2, 5, B-9, and B-10
Important Information About Your Geotechnical/Environmental Report





C

West

Elevation in Feet (MLLW)

60
40
20
0
-20
-40

B-1
(Proj. 20' S)

B-3
(Proj. 10' N)

MW-2
(Proj. 40' S)

Existing Deadman

Existing Bulkhead

Estimated Mudline

Existing Ground Surface

Very loose to medium dense, trace to slightly silty, slightly gravelly to gravelly SAND (Fill)

Medium dense to very dense, trace to slightly gravelly, trace clean to slightly silty SAND (Beach Deposits)

Very dense, trace to slightly silty, slightly gravelly SAND (Advance Outwash)

Very dense, sandy SILT to silty SAND (Ice-Contact Deposit)

12

12

4

2

29

33

20

44

50/5"

50/6"

50/5"

02-19-04

8

5

5

11

8

23

20

39

47

76

64

02-18-04

45

63

30

22

45

24

08-10-97

0

20

40

0

100

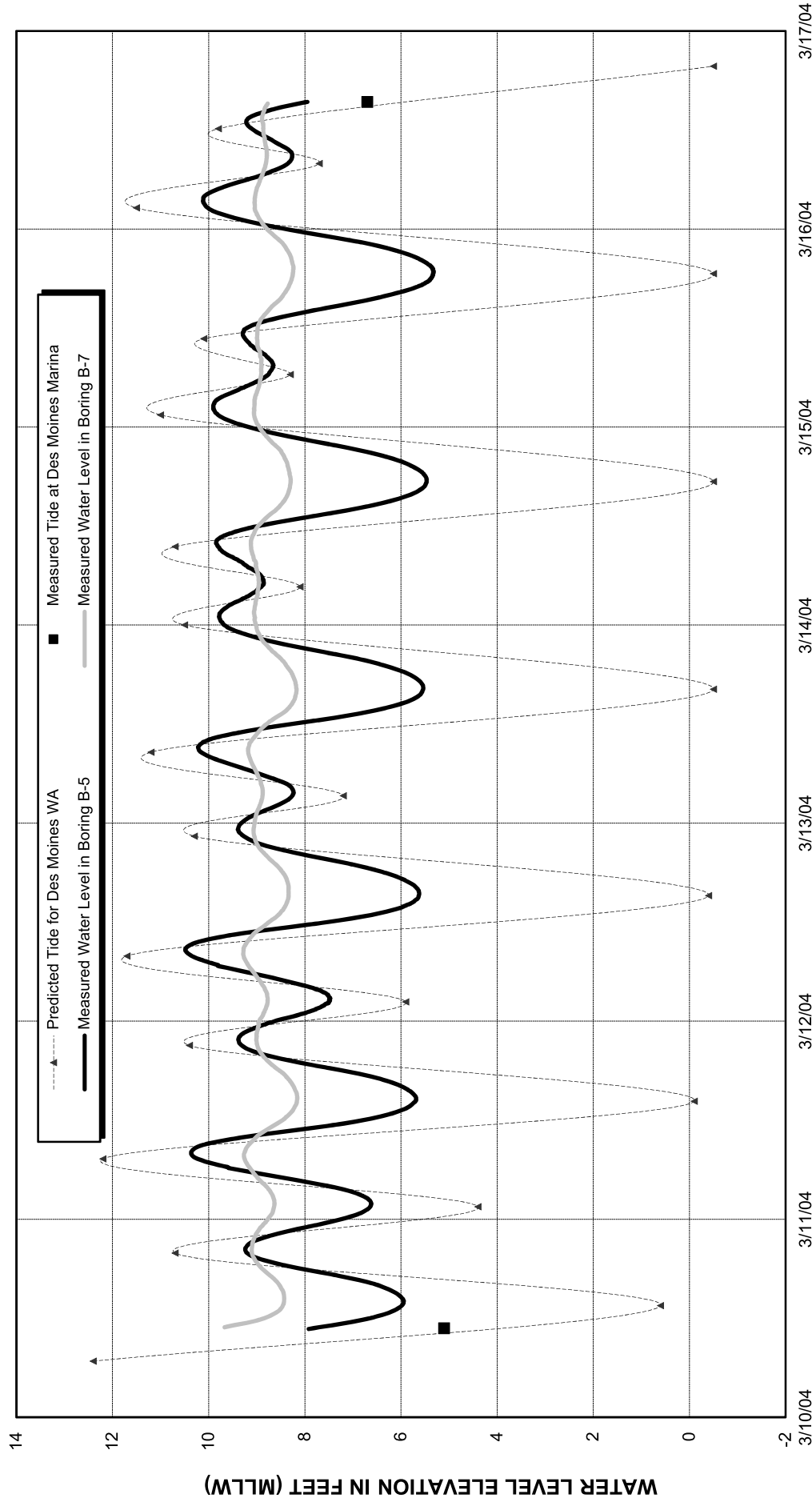
200

Vertical Scale in Feet

Horizontal Scale in Feet

Vertical Exaggeration = 5X

LEGEND



DATE OF MEASUREMENT

Des Moines Marina Guest Moorage Expansion and Bulkhead Replacement Project
Des Moines, Washington

**TIDAL MONITORING
BORINGS B-5 AND B-7**

May 2004 21-1-20057-001

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. B-10

NOTES:

1. Tide measurements at the marina were taken from the observation dock by measuring with a cloth tape to the water surface, and should be considered approximate.
2. Water level measurements in the borings were obtained by using a MiniTroll pressure transducer which collected data at six minute intervals.
3. Predicted tide curves are based on high and low points only (as indicated by triangle symbols). Curves in between points are interpolated by the spreadsheet graphing program and are approximate.



Date: August 22, 2018
To: THG LLC
Attn: Mr. Robert Holmes

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/ ENVIRONMENTAL REPORT

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include: the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used: (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors which were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the
ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland

Project Team

THG

THG provides strategies, global connections and market insights to urban and resort developers, cities, landowners, financial advisors, and family businesses with real estate holdings. THG brings a holistic approach to development, based on the depth and breadth of understanding of a former CEO who has held responsibility for the entire life cycle of a variety of real estate assets. Drawing on real-world experience, THG is able to strategically integrate and mobilize people, ideas and resources at the right time to ensure the success of your project. As a trusted advisor to leadership, THG mitigates the risks inherent in development.

THE CONCORD GROUP

The Concord Group is among the nation's leading real estate strategy consulting firms. We rely on incisive research, accurate interpretation of market trends and creative problem-solving built on decades of on-the-ground experience. The Concord Group provides guidance on a full range of land-uses and product types, including residential, commercial, resort/hospitality and mixed-use development. Our expertise ranges from infill and urban revitalization projects to suburban master planned community developments. The firm is expertly skilled in the analysis of market dynamics impacting financially successful mixed-use development plans that are ready for private investment. Our clients include land owners, developers, builders, financial institutions and public agencies.

SKYLAB ARCHITECTURE

Established almost two decades ago in Portland, Oregon, we are a band of makers—curious, industrious and experimental. We are architects, designers, creators and entrepreneurs working together across a wide range of landscapes and locations. We are futurists, making today what we believe will inspire and connect people tomorrow. We explore, curate and innovate. Always looking ahead, we create today what we believe will shape tomorrow. We reveal the unseen for those willing to seek it. We offer unique and customized services, but our greatest value is in our holistic approach to problem solving across the following disciplines and offerings: Architecture, Interior Design, Branded Environments, Planning.