

DREDGING AND DISPOSAL PLAN

PORT OF OLYMPIA MARINE BERTHS 2 & 3 INTERIM ACTION DREDGING



Contract No.: 2008-0011
Project No. MT0601

Submitted To:

Port of Olympia
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Introduction

Pacific Pile & Marine, L.P. (PPM) has been contracted by the Port of Olympia to provide labor, materials and equipment to conduct maintenance dredging within Berths 2 & 3 of the Port's Marine Terminal in West Bay, South Budd Inlet in Olympia, Washington. This work will be conducted under a Nationwide Permit 38 and is a pilot study phase to assess the potential impacts during construction on water quality and post-dredging residual contamination.

Therefore, careful adherence by PPM to permit conditions and specifications is critical. Herein contains PPM's work plan for dredging and disposal of approximately 9,700 cubic yards of contaminated sediment.

Dredging

PPM will employ the spud barge "Pamtay" for this project together with an American 9310 crawler crane. The Pamtay is a 200-foot long by 50-foot wide by 12-deep scow. The barge is outfitted with two heavy duty spuds for anchoring and stability once it is in the desired location. The spuds on the Pamtay are 90 feet long allowing it to anchor itself in 60+ feet of water. The Pamtay also has a crew quarters and a covered work area with a full complement of tools for making on site repairs and maintenance. All work will be performed in accordance with specifications and permit conditions.



On the deck of the Pamtay will be an American 9310 derrick crane. The 9310 was built in 1979 and is a crawler crane rated to lift 225 tons. It will be outfitted with 120' of boom and is powered by a Cummins 855 diesel engine. The barge and similar crane are shown in the above picture and on the cover of this document. Once mobilized, PPM will commence dredging at the southern boundary of the dredge area. The initial dredge pass will be no greater than 4' in depth to allow for controlled sloughing and will be equal to the width of the barge (approximately 55'). It will progress from the south to the northern limits of the dredge area. Upon completion of the initial pass, the derrick barge will be repositioned to dredge a second 55' wide pass from south to north in a similar fashion. PPM understands that a minimum of 2 and a maximum of 4 passes will be required to dredge along the face of the dock in order to achieve the required grades, clean sloughed material, and minimize cut depth so as to avoid slope destabilization.

Trans-loading

When the material barges are filled they will be positioned near the southern end of the project for trans-loading into railcars. PPM will use a Hitachi 550 Excavator (or similar) with a hydraulic actuated material handling bucket to transfer material directly from the material barge into rail cars for transfer to landfill. The trans-load site will be set up to prevent spillage or effluent runoff through use of filter fabric and a spill apron which is further described in the attached sketch. When the offloading is complete, or at such time that the filter fabric

becomes saturated with sediment, the fabric will be rolled into itself and disposed of at the upland disposal facility.

This trans-load plan negates the need for a separate staging/stockpile area and associated facilities and maintenance. The plan further reduces the chances of accidental or incidental release of contamination by reducing re-handling of the material. All equipment shall be swept/scraped of residual dredge sediment and wiped clean with rags prior to demobilization. All soiled rags, filter fabric and used straw bales will be disposed of along with the final rail car of dredged sediment.

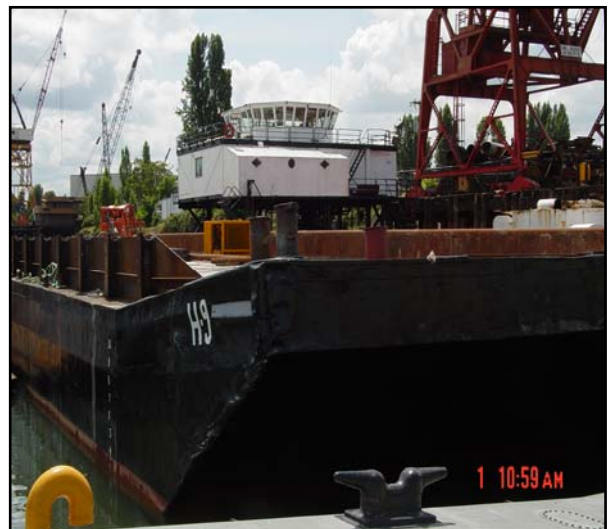
To aid proper loading of rail cars a rubber tire front end loader will be used on the material barge to feed the excavator. It will be outfitted with a “bucket scale” to measure tonnage of material placed in each car. The loader will isolate 100 tons of dredge sediment in a segregated area on the barge. This pre weighed material will then be loaded by excavator into the rail car.

Transport barges used for unsuitable dredge materials will consist of two (2) each 180-foot long by 50-foot wide by 12-foot deep barges equipped with concrete wear decks and 4-foot high steel fences around the perimeter. The fences are equipped with scupper holes to allow water to drain from the dredged material. Barges planned for use are the “KP-1” barge and the “KP-2” barge. A similar flat deck barge is shown in Fig. 7. See Appendix F for Barge Load Tables.

Preparations for each barge will start with performing an on-hire survey to determine barge fitness for use on the project. A secondary purpose of the on-hire survey is to determine the tare draft of the barge and, thus develop barge displacement charts that will ultimately be used to determine the weight of the dredged material.

Material Barge

While payment units are by in-place cubic yards, the material tonnage will ultimately be used for tracking, manifesting, and reporting requirements for the unsuitable material destined for the designated landfill. Following the on-hire survey, 15-foot wide sheets of geo-textile fabric will be draped over the perimeter fence and then down the inside of the fence.. Straw bales will then be laid on top of the geo-textile fabric covering the barge deck and against the vertical perimeter fence where they will be wrapped by the extra geo-textile fabric. This will create a silt barrier that will allow water to decant from the dredged materials while retaining the sediments from re-entering the Puget Sound.



Following this, barges will be ready to receive dredged material. A maintenance plan will be enforced to make repairs of the silt barrier between loading cycles. Prior to placing dredge

material on each barge and prior to offload of that barge, draft will be measured and recorded to enable PPM to track tonnages for each barge. Straw bales and filter fabric will be inspected prior to the start of dredging on each barge cycle and will be replaced as needed.

Dredge Bucket

The dredge conditions at the site are anticipated to be primarily silty sand. A small amount of debris is anticipated. This debris will be removed and transported to the upland disposal facility along with the dredge spoils. The dredge bucket will capture approximately 4 cubic yards per cycle and has teeth measuring 6" to 8" mounted on the digging edge of the bucket. The teeth are ideal for slipping between riprap or penetrating hard ground to loosen it for digging. As the bucket is closed, the material is compressed helping to reduce the amount of water contained in the dredged sediment. A similar dredge bucket to the one employed for this work is shown.



Dredge Sediment Disposal

PPM has contracted with Waste Management to provide rail transport from the site to the Columbia Ridge Landfill and Recycling Facility, located near Arlington, Oregon. The rail cars will have plastic liners to prevent leakage and will be transported directly to landfill. Each rail car will have a maximum 105 net ton capacity. Debris is anticipated to be minimal and will be disposed of in the same manner as the dredge sediment. There is a 4' dimensional requirement for debris at landfill and any longer debris will be cut or broken before transloading to the rail cars.

Working Hours

Working hours for the duration of the project are anticipated to be 6:30am to 7:00pm Monday through Saturday. Please see attached construction schedule for additional sequencing and duration information.

Positioning & Progress Surveys

PPM utilizes a hardware and software package to perform dredging operations and to verify the quality of the work performed. The first step in this process is to perform a pre-construction survey and compare the results with an owner provided, third party survey. In this manner we verify the accuracy of our systems and have an opportunity to resolve any discrepancy before work begins. Upon completion of pre-construction bathymetry survey, the survey data will be entered into the "Dredge Pack" Marine Positioning and Mapping Software Package. Used in conjunction with a state of the art GPS system and electronic tide gauge, Dredge Pack computes the coordinates of both the vessel and the bucket in real time for accurate dredging. Dredge Pack allows the operator to track and record the location of material removed. Frequent calibration and lead line surveys will be made to verify the accuracy of the system.

Since the work will be below the water surface, this system becomes the operator's eyes, showing him what the conditions were at the time of the last survey, along with the design and where the equipment is in relation to the work area. In this way, the system is used to avoid damage to existing structures. The contractor will prevent damage to Port facilities through use of this system at all times while positioning barges. The operator will know at all times what the proximity of the equipment is to the existing facilities.

In addition to the owner provided surveys a single beam hydrographic survey vessel will be used to monitor dredging progress on a weekly basis. The survey vessel will operate with similar GPS and tide monitoring equipment and software as the derrick barge with the addition of a single beam dual frequency depth sounder. The "Hypack" software allows the operator to collect and process survey data as well as create contour drawings, cross section views and volume computations.

Survey frequency is largely a function of the type of work being performed and the conditions found while dredging. Leadline surveys will be performed daily to verify the accuracy of the dredge navigation system and consistency of survey data. Surveys will be run on centerline spacing of 25 feet with soundings no greater than 10 feet apart and will be run perpendicular to the pier face. Once processed, this data will be overlaid with the pre-dredge survey to verify accuracy, and then loaded onto the crane operator's computer for continued dredging.

Once control is established, an electronic tide gauge will monitor tide changes to the nearest 1/10 foot and both display this tide level on its LCD panel and broadcast the tide through use of an on board radio modem. Both the dredge barge and survey boat are equipped with receivers that relay this data to the operator. The receiving units also display the time since the last reading was received as well as the power level of the sending unit and other critical data. In addition to the electronic tide gauge, a "tide board" with markings in tenths of feet will be posted in a place near the electronic tide gauge as a visual secondary reference of the tide.

Dredge Navigation

Navigation of the dredge barge will be achieved through use of 2 differentially corrected GPS units, and a tide receiving unit feeding real time data to an on board computer displayed and controlled in the dredge operators cab. The first of the GPS units is a "Hemisphere V10" USCG Differentially corrected Vector GPS providing sub-meter accuracy of both location and heading of the dredge barge. The second GPS is a differentially corrected unit mounted on the boom tip providing location of the boom tip and dredge bucket in sub-meter accuracy. Vertical location of the bucket is monitored through use of the on board tide receiver displaying the current water elevation and paint striping on the bucket wire. Stripes will be painted at each one foot from the bucket cutting edge with separate differently colored stripes at every 5 and 10 foot levels.

Survey Boat

The ACC survey vessel is a 21' aluminum boat mounted with a "Hemisphere V10" USCG Differentially corrected Vector GPS providing sub-meter accuracy of both location and heading of the vessel. The vessel is also equipped with an "Odom Echotrack" dual frequency survey grade echosounder for recording water depth. Combined with input from the tide receiver, an accurate map of the bottom conditions can be generated in a hydrographic survey software

package such as “Hypack” or “Autocad Land Desktop”. Both software packages are installed on the survey vessel.

Water Quality BMP's

Exceedance of water quality standards are not anticipated during the course of the project due to the nature of the sediment being dredged and the methods employed to dredge them. In the event exceedances do occur, the contractor will adjust work methods if there are exceedances at the 100 foot radius so they will avoid any exceedances of water quality criteria at the compliance boundary. The following is a list of Best Management Practices and contingency measures that may be employed should such an event occur.

- Dredge operator may pause the bucket at the water surface after its ascent through the water column to minimize turbidity by allowing free water to drain from the bucket prior to swinging the bucket to the barge.
- The rate of ascent and decent of the clamshell bucket may be slowed to reduce potential sediment loss.
- PPM owns and may attempt to use a 4 yard enclosed “environmental bucket” if it is determined that the dredge sediment is in a loose state that such a bucket would be effective in dredging.
- An oil absorbent boom will be available on site that may be deployed around the perimeter of the work area should oil sheen or floatable debris appear as a result of the work. The boom will be fastened to the working end of the barge at each corner and anchors will be placed along the perimeter of the work area to hold the boom in place. A 20' steel work skiff will be on site at all times work is in progress. When floatable debris is encountered, the crew will deploy the skiff and retrieve the floatable debris from the work area. A large amount of floatable debris is not anticipated therefore the boom shall be cleared of floatable debris when the barge is shifted requiring adjustment of the boom and/or at the end of each shift to prevent floatable debris from escaping when crew is not present.
- If barge dewatering is believed to be a factor in water quality exceedances, additional filter material may used on the barges in an effort to reduce suspended sediment and contaminates in the decant water.
- The bucket shall be completely closed before raising it when the bucket is filled with sediment. The operator will strive to avoid overfilling the bucket that would cause loss of material over the sides of the bucket as it ascends through the water column.
- If the bucket is not closed completely because of debris obstruction, the operator shall not drop the load at the surface to dislodge the debris, but shall complete the dredge pass and dispose of the debris on the haul barge.
- Dragging the bucket, beam or other items across the dredge surface to meet design grades is not permitted
- No stockpiling of dredge material on the bottom will be done.

PPM acknowledges the Water Quality Monitoring Plan and will modify operations as indicated by the Port if there are exceedances at the 100 or 150 compliance boundary. PPM's Point of Contact for notification of exceedances will be the on-site Superintendent, Marty Locke.

Vessel Traffic and Security

PPM is aware that the Port is a working facility and anticipates being able to coordinate with Port Representatives on how to both avoid interference with vessel traffic and complete the project within the permitted time constraints. PPM will notify the Coast Guard of our activities as required to comply with Coast Guard, MARSEC, and Port regulations for operating within Budd Inlet.

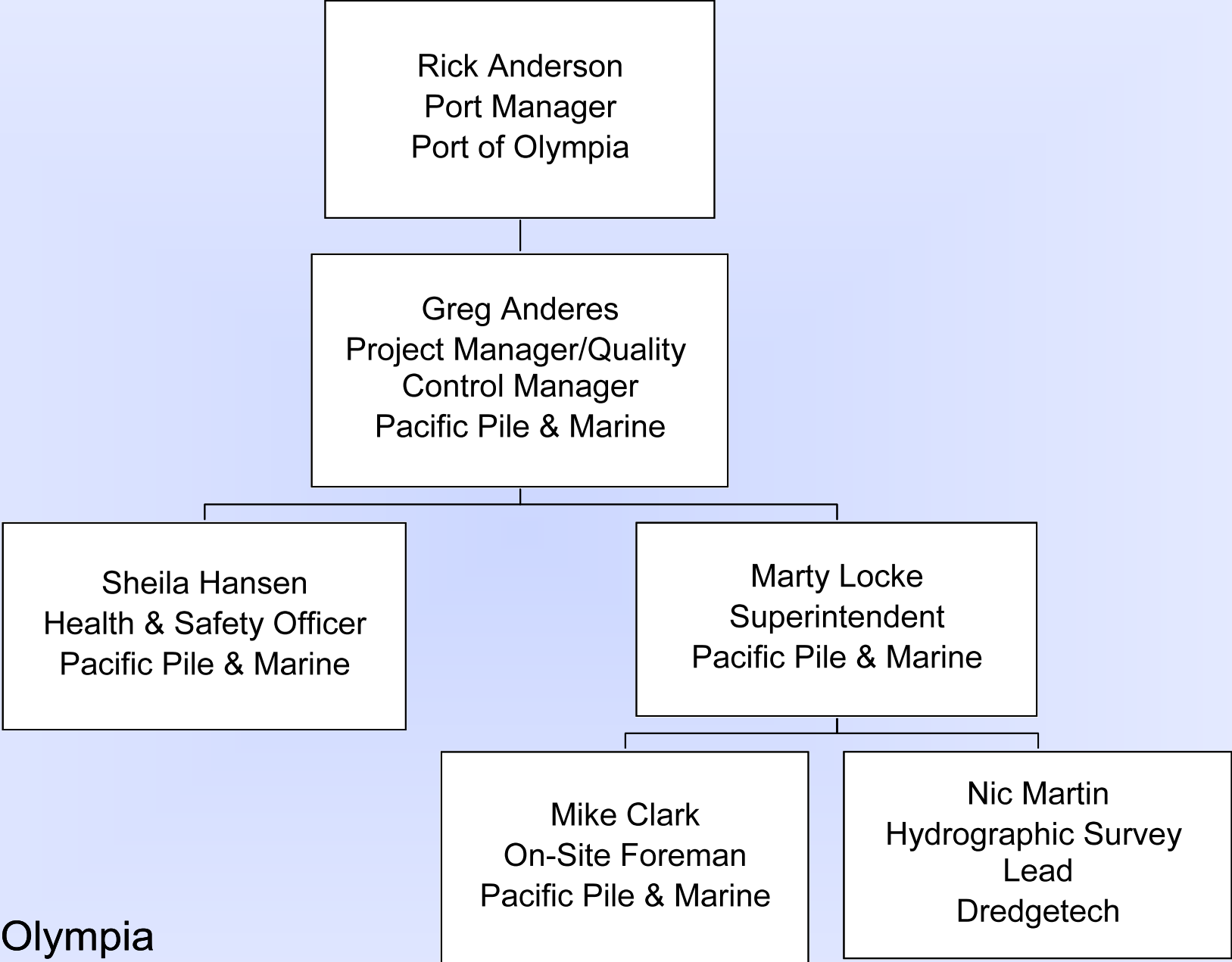
Protection of Port Facilities

PPM will conduct a photographic survey of the Port facilities prior to start of work. The facilities will be returned to the identical condition at project completion as they are found to be at project outset.

APPENDIX A

PROJECT ORGANIZATIONAL CHART

Project Organizational Chart



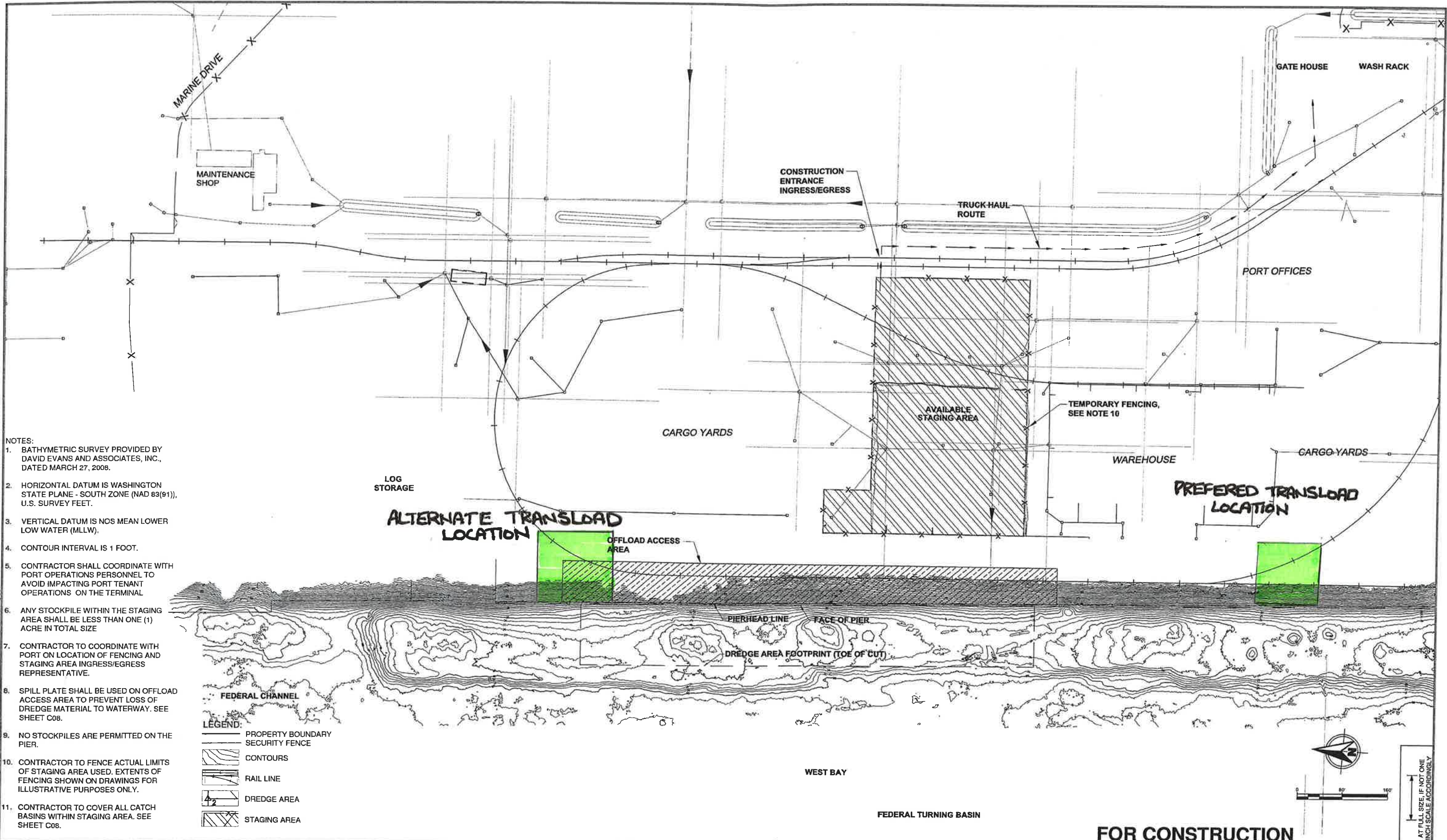
Port of Olympia
Marine Berths 2 & 3
Interim Dredging

APPENDIX B

PPM PROJECT SCHEDULE

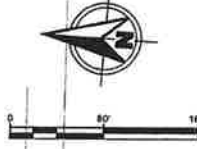
APPENDIX C

SITE PLAN



- NOTES:
- BATHYMETRIC SURVEY PROVIDED BY DAVID EVANS AND ASSOCIATES, INC., DATED MARCH 27, 2008.
 - HORIZONTAL DATUM IS WASHINGTON STATE PLANE - SOUTH ZONE (NAD 83(91)), U.S. SURVEY FEET.
 - VERTICAL DATUM IS NOS MEAN LOWER LOW WATER (MLLW).
 - CONTOUR INTERVAL IS 1 FOOT.
 - CONTRACTOR SHALL COORDINATE WITH PORT OPERATIONS PERSONNEL TO AVOID IMPACTING PORT TENANT OPERATIONS ON THE TERMINAL.
 - ANY STOCKPILE WITHIN THE STAGING AREA SHALL BE LESS THAN ONE (1) ACRE IN TOTAL SIZE.
 - CONTRACTOR TO COORDINATE WITH PORT ON LOCATION OF FENCING AND STAGING AREA INGRESS/EGRESS REPRESENTATIVE.
 - SPILL PLATE SHALL BE USED ON OFFLOAD ACCESS AREA TO PREVENT LOSS OF DREDGE MATERIAL TO WATERWAY. SEE SHEET C08.
 - NO STOCKPILES ARE PERMITTED ON THE PIER.
 - CONTRACTOR TO FENCE ACTUAL LIMITS OF STAGING AREA USED. EXTENTS OF FENCING SHOWN ON DRAWINGS FOR ILLUSTRATIVE PURPOSES ONLY.
 - CONTRACTOR TO COVER ALL CATCH BASINS WITHIN STAGING AREA. SEE SHEET C08.

- LEGEND:
- PROPERTY BOUNDARY
 - SECURITY FENCE
 - CONTOURS
 - RAIL LINE
 - DREDGE AREA
 - STAGING AREA



AT FULL SIZE IF NOT ONE INCH SCALE ACCORDINGLY

FOR CONSTRUCTION



**PORT OF OLYMPIA BERTHS 2 AND 3
INTERIM ACTION DREDGING
EXISTING CONDITIONS**

NO.	REVISION	DATE	BY

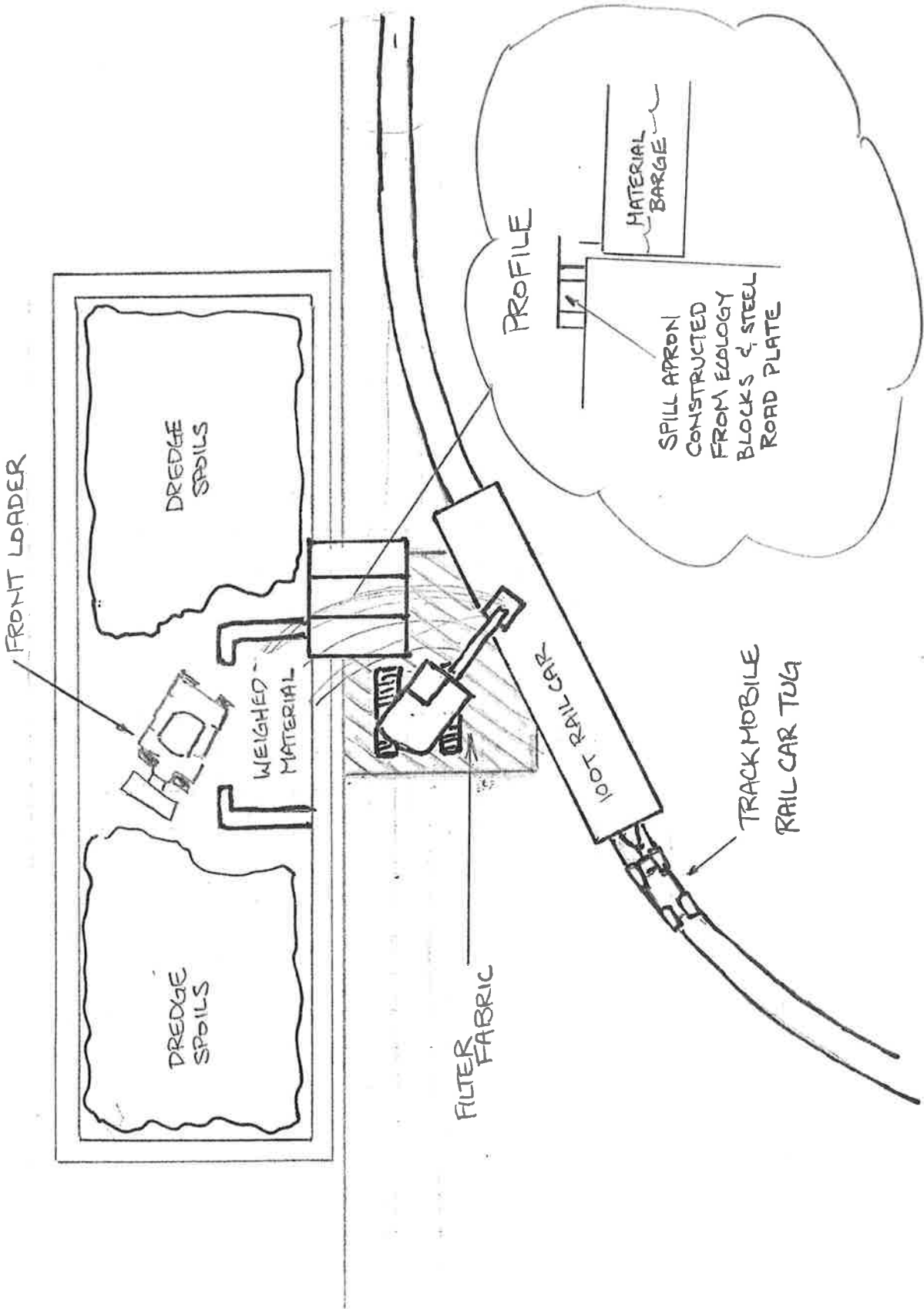


SCALE: 1"=80'	DATE: 10/28/2008
DESIGNED BY: B. PATTERSON	DATE: 10/28/2008
DRAWN BY: D. HOLMER	DATE: 10/28/2008
APPROVED BY: T. WANG	DATE: 10/28/2008

DRAWING NO.
G01

APPENDIX D

TRANSLOAD PLAN



PACIFIC PILE & MARINE
 TRANSLOAD PLAN