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DIVISION 02 - SITE WORK

SECTION 02000

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**02/99**

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PART 3 EXECUTION (Not Applicable)

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SECTION 02000

MOBILIZATION AND DEMOBILIZATION  
02/99

PART 1 GENERAL

1.1 SUBMITTALS

None

1.2 MOBILIZATION AND DEMOBILIZATION

Mobilization and Demobilization shall include transporting the dredge and all items of attendant plant to the site of the work, setting up the dredge and other equipment, and laying of pipelines and otherwise placing the entire plant in condition for effective dredging. Upon completion of the work, the dredge and all attendant plant shall be removed from the site.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

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DIVISION 02 - SITE WORK

SECTION 02002

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**05/00**

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PART 3 EXECUTION (NOT APPLICABLE)

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## SECTION 02002

SET-UP AND SET-DOWN  
05/00

## PART 1 GENERAL

## 1.1 SUBMITTALS

None

## 1.2 SET-UP AND SET-DOWN

## 1.2.1 Set-Down for First Cycle Dredging

Set-down for first cycle dredging shall be required if the contract is not terminated at the end of the first cycle of dredging. Set-down for the first cycle dredging shall include removing the dredge, attendant plant, and discharge pipeline at the end of the first cycle. If the contract is terminated at the end of the first cycle, set-down will not be required and demobilization shall occur. No set-up is included for the first cycle dredging instead mobilization shall occur. Mobilization and demobilization shall include all items listed in SECTION 02000: MOBILIZATION AND DEMOBILIZATION and shall be paid for under bid item 0001 "MOBILIZATION AND DEMOBILIZATION".

## 1.2.2 Set-Up for Second Cycle Dredging

Set-up for second cycle dredging shall include returning the dredge, attendant plant, and discharge pipeline to the site of work and placing it in operation at the beginning of the second cycle of dredging.

## 1.2.3 Set-Down for Second Cycle Dredging

Set-down for second cycle dredging shall be required if the contract is not terminated at the end of the second cycle of dredging. Set-down for second cycle dredging shall include removing the dredge, attendant plant, and discharge pipeline at the end of the second cycle. If the contract is terminated at the end of the second cycle, set-down will not be required and demobilization shall occur. Demobilization shall include all items listed in SECTION 02000: MOBILIZATION AND DEMOBILIZATION and shall be paid for under bid item 0001 "MOBILIZATION AND DEMOBILIZATION".

## 1.2.4 Set-Up for Third Dredging

Set-up for third cycle dredging shall include returning the dredge, attendant plant, and discharge pipeline to the site of work and placing it in operation at the beginning of the third cycle of dredging. No set-down is included for third cycle dredging instead demobilization shall occur. Demobilization at the completion of the third cycle of dredging shall include all items listed in SECTION 02000: MOBILIZATION AND DEMOBILIZATION and shall be paid for under bid item 0001 "MOBILIZATION AND DEMOBILIZATION".

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

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## DIVISION 02 - SITE WORK

## SECTION 02020

## DREDGING

**02/99**

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## SECTION 02020

DREDGING  
02/99

## PART 1 GENERAL

## 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

## CORPS OF ENGINEERS (COE)

EM 1110-1-1003 (August 1996) Navstar Global Positioning System Surveying

EM 1110-2-1003 (October 1994) Hydrographic Surveying

## 1.2 SUBMITTALS

Government approval is required for all submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with SECTION 01330 SUBMITTAL PROCEDURES:

## SD-01 Data

Dredge Sample Data Form; FIO

## SD-08 Statements

Dredge and Disposal Plan; GA

Hydrographic Surveyor; GA

## SD-09 Reports

Daily Report of Operations; FIO

## SD-14 Samples

Sediment Samples; FIO

## 1.3 REQUIRED WORK

In the area to be dredged, all materials shall be removed and disposed of as indicated. Should material which cannot be removed without unreasonable methods be encountered, the Contractor shall remove all overlying material which in the judgment of the Contracting Officer Representative, can be removed. Nothing in this paragraph shall be construed as prohibiting the removal of excepted material by special means at prices agreed upon and approved in accordance with the CONTRACT CLAUSE: DIFFERING SITE CONDITIONS.

The dredging area shall be dredged to the indicated depths below mean lower low water (MLLW). Debris shall become the property of the Contractor and shall be removed from the site.

### 1.3.1 Hard Material

The removal of hard material is not included. Should the Government direct in writing that hard material be removed, the work shall be performed and an adjustment in the contract price or time for completion, or both, will be made in accordance with "FAR 52.236-2, Differing Site Conditions." If hard material is to be removed, blasting will not be permitted.

### 1.4 AVOIDANCE OF EXISTING CONSTRUCTION

#### 1.4.1 Existing Breakwaters, Jetties, and Revetments

The Contractor shall conduct dredging operations in this area in such a manner as to prevent undermining of the breakwaters, jetties, and revetments. Excessive or unnecessary dredging may result in an unstable condition at the toe of the structures. The Contractor will be required to strictly adhere to the indicated dredging template when working near any structures, and shall be responsible for repairing any damage which may result from failure to comply with the requirements of these specifications.

### 1.5 CHARACTER OF MATERIALS

The material to be removed from the channel and sand trap areas of Channel Islands Harbor is composed of shoaled materials that have accumulated since the areas were last dredged. Data obtained during the 1983, 1989, 1991, 1993, 1994, 1996, and 1998 Channel Islands maintenance dredging indicates that the materials should consist primarily of fine to medium sands with less than 5 percent (by weight) passing the No. 200 sieve. In addition, occasional gravels and cobble stones, tree stumps, rubber tires, trash, or other debris may be encountered. Rock from the entrance channel jetties may also be encountered within the Channel Islands Harbor entrance channel between where Ocean Drive ends near the jetties to the offshore ends of the jetties. The material to be removed from Port Hueneme Harbor is silty sand with more than 20 percent passing the No. 200 sieve at top 1.5 meters, and poorly graded sand with less than 5 percent passing the No. 200 sieve from 1.5 meters to the dredging depth.

### PART 2 PRODUCTS (NOT APPLICABLE)

### PART 3 EXECUTION

#### 3.1 DREDGE AND DISPOSAL PLAN

The Contractor shall submit a Dredge and Disposal Plan indicating the methods and equipment he proposes to use to dredge, position and dispose. The plan shall be submitted to the Contracting Officer for approval at least 20 days prior to start of dredging operations and shall also include, as a minimum, the following information:

- a. Order of dredging operations, layout of dredging and disposal areas, and proposed time line.
- b. Layout of all buoys, anchors, pipelines, and ancillary equipment.

c. Methods and equipment for positioning at the dredge and disposal site(s).

d. Layout of dredge, including: dimensions; location of engines, fuel storage, electrical/transformer rooms; description of engine types and horsepower ratings, types and size of generating equipment, fuel storage capacity, and vertical and horizontal access. A copy of this information shall be provided to the local fire fighting agency.

### 3.2 DISPOSAL OF DREDGED MATERIAL

#### 3.2.1 Beach Disposal

As directed by the Contracting Officer, the Contractor shall deposit each dredge period up to 191,000 cubic meters of Channel Islands Harbor dredged material on Silver Strand Beach. The remainder of the Channel Islands Harbor including Port Hueneme Harbor dredged material shall be deposited at Hueneme Beach as shown on the plans. See SECTION 01354: ENVIRONMENTAL PROTECTION FOR CIVIL WORKS for restrictions and commitments in environmental protection.

Dredged material shall be transported and deposited within the disposal limits of the areas indicated on the drawings and as specified hereinafter.

Slotted discharge pipes, multiple discharge points or other approved means shall be employed to minimize loss of dredge material such that all dredge material will remain on the beach. The dredged material shall be deposited in a uniform manner progressing from the shoreward side to the seaward side of the fill. The fill elevations are ideal and the actual elevation of the fill may vary 0.3 meters above or below the indicated elevations. The Contractor shall provide the necessary equipment to shape, groom, and dress the beach during fill operations. The seaward slope shall be no steeper than as indicated on the drawings. Any material that is deposited other than in the areas indicated on the drawings, or approved by the Contracting Officer, will not be included in measurement for payment and the Contractor may be required to remove such misplaced material and deposit it where directed at his own expense. Debris and other unsuitable materials encountered shall become the property of the Contractor and shall be removed from the site.

#### 3.2.2 Dike Disposal

In the event the Contractor cannot complete the entire work by 15 March of each dredging episode, the Contractor may be directed by the Contracting Officer to discontinue operations or may be directed to continue operations and utilize the following disposal method:

Dredged material shall be discharged behind dikes constructed on the disposal beach. Material for the dike shall be obtained from the beach adjacent to the site. This method of disposal would reduce the potential impacts to grunion by restricting the area of return water to a single point, and minimize turbidity and limit of amount of sediment returning to the ocean.

A dike disposal area shall be constructed on the disposal site, the lowest edge of which shall be approximately at the +1.6 meters (min.) elevation (MLLW) contour, or 7.5 meters landward from the highest wave runoff at the time of the start of dike construction, whichever is further landward. The

dike shall be used within the area of the end of Oxnard Harbor District revetment and the end of the beach disposal area. The extent and location of the dike shall be determined by the Contracting Officer. Refer to the drawing as shown on the General Plan and Details, Dike Disposal Detail.

Dredged material shall be discharged from a single pipeline above the dike and allowed to settle. The return water shall be discharged to the ocean at a single point

The Contractor shall be responsible for maintaining and repairing the dike. In case of dike failure, disposal shall be discontinued until the dike is repaired.

### 3.3 ADDITIONAL MONITORING

#### 3.3.1 Hopper and Hydraulic Dredges

The Contractor shall provide:

- a. continuous printed records of measurement of bulk density and mass flow rate.
- b. records of continuous loading of hoppers, barges, or scows based on hull displacement (load charts).

These records shall be submitted to the Contracting Officer daily with the Quality Control Reports.

#### 3.3.2 Barges and Scows

The Contractor shall provide a record of the measurements of the draft of the hull and freeboard of bins of each barge or scow when empty and prior to disposal operations. Measurement for displacement shall be taken at each corner, on the outside of the barge or scow, immediately before the start of a disposal operation. These records shall be submitted to the Contracting Officer daily with the Quality Control Reports.

### 3.4 DREDGE QUANTITIES

Quantity of material available within the dredge prism as of the condition survey of December 1998 for Channel Islands Harbor and August 1998 for Port Hueneme Harbor are listed below. The estimated quantity specified in the Bid Schedule is based upon these numbers with an estimated amount of material added to account for shoaling.

Description	Standard Dredging (Cubic Meters)	Overdepth (Cubic Meters)
Channel Islands Harbor		
Area A	84,800	33,000
Area B	155,200	0
Area C	687,800	0
AREA D	914,800	0

## Port Hueneme Harbor

Approach Channel	54,400	32,000
Entrance Channel	11,900	8,000

Overdepth dredging will be allowed to the limits specified in paragraphs: Overdepth and Excessive Dredging.

Based on dredging records, the estimated quantities of material available within the dredge prism for Channel Islands Harbor on the second and third dredge cycles are similar as stated above.

## 3.5 OVERDEPTH AND SIDE SLOPES

## 3.5.1 Overdepth

To cover inaccuracies of the dredging process, a 0.5 meter allowable overdepth applies to this contract. Material dredged from below the allowable overdepth will not be estimated and will not be included in the measurement of work.

## 3.5.1.1 Sand Trap Areas (Channel Islands Harbor)

There is no overdepth limit indicated for the sand trap areas. Any material removed from below the indicated advance maintenance depth will not be included in the measurement of work accomplished. To cover inaccuracies of the dredging process within the sand trap area, the Contractor shall be required to remove material within 0.5 meter above the advance maintenance depth. However, any material removed to advance maintenance depth will be included in the measurement of work.

## 3.5.2 Side Slopes

Material actually removed within limits approved by the Contracting Officer, shall provide for final side slopes not flatter than those indicated on the drawings and will be estimated and paid for. The Contractor may dredge material in original position or may dredge below the pay slope plane at the bottom of the slope to allow for sloughing of upslope material capable of falling into the cut (box dredge). However, material removed below any pay slope plane will not be estimated for payment. In computing the limiting amount of side slope dredging, the overdepth indicated on the drawings, measured vertically, will be used. The quantity of material to be paid for shall not be in excess of that originally lying above this limiting slope. Side slopes are given for pay purposes only and are not necessarily the angle of repose of the soil. Sloughing side slopes shall not be the basis for claims against the Government. End slopes, where indicated on the drawings, shall be treated in the same manner as side slopes.

Box cutting of side slopes will not be allowed near the breakwater and jetties.

## 3.5.3 Excessive Dredging

Material taken from beyond the allowable overdepth limits may be deducted from the total amount dredged as excessive overdepth dredging, or excessive side-slopes dredging. Materials dredged from below the depth limit which result in extra costs shall be the responsibility of the Contractor. Nothing here shall be construed to prevent the inclusion in the measurement

of material dredged for the removal of shoals performed in accordance with the applicable provisions of the paragraphs: FINAL EXAMINATION AND ACCEPTANCE or SHOALING.

### 3.6 SAMPLING OF MATERIAL

The Contractor shall obtain each dredge period representative Sediment Samples at the discharge point as material is being discharged, or in the case of a hopper dredge or scow, as material is placed into the hopper or scow. The exact location and depth of each sample shall be as directed by the Contracting Officer. The number of required samples for each dredge period shall be as follows:

Area	Number of Samples Required
Channel Islands Harbor:	
Entrance Channel, Area A	1
Sand Trap, Area B	1
Sand Trap, Area C	17
Sand Trap, Area D	12
Port Hueneme Harbor:	
Approach Channel	1
Entrance Channel	3

The samples shall be taken at evenly spaced intervals of time and volume as each of the areas is dredged. Each sample (water extracted) shall be not less than one (1) liter of slurry and shall be obtained in clear plastic bottles. The sample bottles shall be labeled in indelible ink with the sample number, date sampled, and name of person obtaining sample. Sample bottle lids shall be securely fastened to prevent spillage or leakage during shipment. Sample bottles shall be placed in a suitable shipping container with adequate cushioning to prevent breakage during shipment. The samples shall be delivered to the address specified herein below at weekly intervals, or at such other times as may be determined by the Contracting Officer.

A Dredge Sample Data Form with the description of the dredge cut location by coordinates and stationing, dredge cut elevation, placement location and elevation description of where sample was taken, date, time, sample number, and the name of the person who collected the sample shall accompany each sample. The sample form shall be placed in a waterproof sealed plastic bag for protection during shipment. A copy of a sample form is provided at the end of this section.

The Contractor shall notify the Contracting Officer's Representative 48 hours in advance of sample collection. Samples shall be delivered to:

U.S. Army Corps of Engineers  
 ATTN: Materials Lab  
 645 North Durfee Avenue  
 South El Monte, CA 91733-4399  
 Tel: (626) 401-4095  
 Attn: Art Moncayo

### 3.7 CONTRACTOR'S SURVEYS

#### 3.7.1 Survey Data

Reference is made to SECTION 00800: SPECIAL CONTRACT REQUIREMENTS, QUANTITY SURVEYS, FAR 52.236-16 which requires payment based on Government surveys. Progress payments or evidence (condition surveys) supporting extreme weather (storm) related shoaling, will be based upon Contractor's hydrographic surveys. The Contractor's survey shall provide full coverage of an entire area, as defined in paragraph DREDGE QUANTITIES, for which progress payment or evidence of storm-related shoaling is being submitted.

It is further emphasized that only condition surveys supporting extreme weather (storm) - related shoaling will be considered for payment in addition to the government surveys, provided that the Contractor's surveys clearly show the condition before and after each shoaling event and the condition after removal of material from the shoaled area. Survey data which does not meet all applicable requirements and quality assurance verifications will not constitute a valid request for payment of shoaling.

Contractor's hydrographic surveys shall be performed electronically (automated) and the data shall be provided and submitted to the Government on an electronic media (IBM compatible, ASCII format) in delimited files of easting, northing, and depth (x,y,z), where the depth is indicated as negative if recorded below MLLW. The first lines of the data file will list the information as follows:

- \* Project Name (Channel Islands Harbor Maintenance Dredging)
- \* Surveyor's Name
- \* Area Surveyed
- \* Date of Survey
- \* Vertical Datum
- \* Horizontal Datum

These first 6 lines will be preceded by an asterisk (\*), which indicates a comment line.

A plot of soundings will accompany the x,y,z data and all data shall be collected and plotted in metric units (meters).

### 3.7.2 Sounding Data Standards

The Contractor's hydrographic surveys for progress payment or evidence supporting extreme(storm) weather-related shoaling shall meet or exceed the survey standards listed in EM 1110-2-1003 (Hydrographic Surveying) for Class I surveys. Surveys shall be in the State Plane Coordinate System of 1983 - meters (SPCS 83), Zone 5, State of California, and be performed by an independent hydrographic survey contractor with at least three (3) years of experience in hydrographic surveying of navigable channels and have either a current Land Surveyor's or a Professional Engineer's license, authorized to certify surveys in the State of California. The Hydrographic Surveyor firm selected by the Contractor must be approved by the Contracting Officer prior to performing surveys for this contract.

### 3.7.3 Positioning System

It is required that hydrographic surveys shall be conducted using an Automated Range-Azimuth Positioning System or Differential Global Positioning System (DGPS) with positional accuracy of +/- 3 meters (1 DRMS) or exceed the survey standards listed in EM 1110-1-1003 and EM 1110-2-1003 that is linked to an automated (digital) depth recording device capable of continuous logging of x,y,z positional data with depth measurement resolution to the nearest five-hundredths (5/100) of a meter. Digital

depths shall be supplemented by analog depth records if survey is performed by single beam echosounder. Sounding lines shall be verified by crosslines at least 10 percent of the principal lines and along the centerline of channel. Distance between successive soundings (sounding interval) shall be no more than 2 meters. Soundings shall be reduced to sounding datum (Mean Lower Low Water) by using actual tides and other appropriate corrections resulting in an accuracy of +/- 0.2 meters from actual depth.

#### 3.7.4 Survey Firm Acceptance

For the Contracting Officer to approve the selected survey firm, the Contractor must provide documentation indicating that modern electronic horizontal positioning and sounding system equipment will be used for the surveys to be performed as well as documentation verifying the experience of the operators using the equipment. Typical information that will be required, as a minimum, includes the name, model, and year of manufacture of the electronic equipment, the electronic frequencies of the horizontal positioning equipment and sounding equipment, and the manufacturer's stated positioning and sounding accuracies, and capability of the equipment proposed for usage. In addition, the Contractor must provide information that a safe and suitable vessel meeting U.S. Coast Guard requirements is available and will be used for operation in the waters where the surveys are to be performed. The Contractor shall submit credentials/qualifications as evidence that qualified, experienced staff are available and will be used for the operation of the vessel as well as for the electronic positioning and sounding equipment.

#### 3.7.5 Data Processing

The Contractor shall use a Data Processing System to map the sounding data and calculate quantities. Reduced sounding data shall then be imported into the Data Processing System where cross-sections are compared to dredge templates and volume quantities are calculated. The software shall be capable of digital terrain modeling and shall produce, as a minimum, sounding sheets, cross section profiles, 3-dimensional area profiles, and quantity volume calculations using the Triangulated Irregular Network (TIN) method.

#### 3.8 PRE-DREDGE AND FINAL SURVEYS

The Government will perform a pre-dredge survey for each dredge cycle. The Government survey will be performed as close to commencement of dredging as possible, and not more than 14 calendar days prior to commencement of work.

For the post-dredge survey, the Contractor shall notify the Contracting Officer not less than ten (10) working days prior to completion of the entire work for each dredge cycle. The Government will perform the final survey for each dredge cycle as soon as possible after completion of the entire work, generally within 5 calendar days. All areas found to be in compliance with the contract requirements will be accepted and measured for payment in accordance with SECTION 01270: MEASUREMENT AND PAYMENT.

If the Government is unable to perform the final survey(s) due to the failure of the Contractor to complete the work in accordance with his prior notification, the Contracting Officer will charge the cost of the survey plant and standby labor, at \$3,000.00 per day, to the Contractor.

Preliminary data from the final Government survey will be available within ten (10) calendar days. If the preliminary survey data indicates that the dredged area is not at the required depth, the Contractor will be directed to resume dredging and to complete the work to project depth. Adjustment

in cost for additional Government post-dredge surveys shall be as specified in paragraph: FINAL EXAMINATION AND ACCEPTANCE.

### 3.9 METHOD OF SOUNDINGS

The material removed will be measured by cubic meter in place, by means of soundings taken before and after dredging. The drawings represent existing conditions based on current available information. Soundings will be taken by either lead line, trigonometric leveling (total station)/differential leveling, 200 kHz single-beam acoustic methods, acoustic multi-beam swath methods, or in combination, as determined by the Government; results of soundings by any of these methods, singularly or in combination, will be the basis for payment. The Contractor has the option of being present when such soundings are made.

### 3.10 SHOALING

If, before the contract is completed, shoaling occurs in any section (area) previously accepted, including shoaling in the finished channel, because of the natural lowering of the side slopes or from sediments transported inside the project area, re-dredging at contract price, within the limit of available funds, may be done if agreeable to both the Contractor and the Contracting Officer.

### 3.11 REPORTING REQUIREMENT

The Contractor will be required to prepare and maintain a Daily Report of Operations and furnish copies thereof to the Contracting Officer's representative. The daily reports shall document dredging operations for all shifts in a 24-hour period. Further instruction on the preparation of the report will be furnished at a preconstruction conference. Copies of sample submittals are provided at the end of the Contractor's Quality Control section.

### 3.12 FINAL EXAMINATION AND ACCEPTANCE

As soon as practicable after the completion of the entire work, a final examination of the work will be conducted by the Contracting Officer. Should any shoals, lumps, or other lack of contract depth be disclosed by this examination, the Contractor will be required to remove same dredging at the contract rate for dredging. However, if the bottom is soft and the shoal areas are small and form no material obstruction to navigation, the removal of such shoal may be waived by the discretion of the Contracting Officer. The Contractor or his authorized representative will be notified when soundings are to be made, and will be permitted to accompany the survey party. When the area is found to be in a satisfactory condition, it will be accepted finally. Should more than two sounding operations by the Government over an area be necessary by reason of work for the removal of shoals disclosed at a prior sounding, the cost of such third and any subsequent sounding operations will be charged against the Contractor at the rate of \$3,000.00 per day for each day in which the Government plant is engaged in sounding and/or is en route to or from the site or held at or near the said site for such operations.

Final acceptance of the whole or a part of the work and the deductions or corrections of deductions made thereon will not be reopened after having once been made, except on evidence of collusion, fraud, or obvious error, and the acceptance of a completed section shall not change the time of payment of the retained percentages of the whole or any part of the work.



Dredge Sample Data Form

CHANNEL ISLANDS/PORT HUENEME HARBORS MAINTENANCE DREDGING

Contract No.: \_\_\_\_\_ Sample No.: \_\_\_\_\_  
 Contractor Name: \_\_\_\_\_ Date: \_\_\_\_\_  
 Name of Dredge: \_\_\_\_\_ Time: \_\_\_\_\_  
 Type of Dredge: \_\_\_ Clamshell \_\_\_ Hopper \_\_\_ Hydraulic Cutterhead \_\_\_ other  
 If other, please specify: \_\_\_\_\_

Cut Location  
 northing: \_\_\_\_\_  
 easting: \_\_\_\_\_  
 elevation: \_\_\_\_\_  
 station: \_\_\_\_\_  
 range: \_\_\_\_\_  
 area: \_\_\_\_\_

Placement Location  
 northing: \_\_\_\_\_  
 easting: \_\_\_\_\_  
 elevation: \_\_\_\_\_  
 station: \_\_\_\_\_  
 range: \_\_\_\_\_  
 area: \_\_\_\_\_

Sample Obtained By: \_\_\_\_\_

Sample Obtained From: \_\_\_\_\_

Remarks: \_\_\_\_\_

Note: A copy of this completed form should accompany the sample when shipped to a laboratory for testing.

-- End of Section --