

Contract Documents

Off-Site Soil Delivery and Placement – Cells 11 and 12 Ann Street MSW Landfill Cumberland County, North Carolina

Prepared for:

Cumberland County Solid Waste Management Department
Fayetteville, North Carolina



Bid Issue Documents

October 2025

Prepared by:

SMITH+GARDNER

14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

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**Off-Site Soil Delivery and Placement – Cells 11 and 12
Ann Street MSW Landfill
Cumberland County, North Carolina**

Contract Documents

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ADVERTISEMENT FOR BIDS

Off-Site Soil Delivery and Placement Ann Street MSW Landfill - Cells 11 and 12 Cumberland County, North Carolina

Sealed bids (proposals) will be received by the Owner Cumberland County, NC, in the Offices of Cumberland County Solid Waste (Address: 698 Ann Street, Fayetteville, NC 28301; Phone: (910) 321-6920) until 2:00 p.m., local prevailing time on November 12, 2025, and then at said office be publicly opened and read aloud for the following:

OFF-SITE SOIL DELIVERY AND PLACEMENT: Includes transportation and placement of subgrade soil for two (2) proposed municipal solid waste (MSW) cells (Cell 11 and Cell 12) at the Ann Street MSW Landfill facility.

Each Bid must be accompanied by a certified check or a Bid Bond by an acceptable surety company of not less than five percent (5%) of the amount of the Base Bid, made payable to the Owner, as a Bid guarantee.

A Performance and Payment Bond will be required for the successful Bidder in the amount of one hundred percent (100%) of the Contract price, conditioned upon the faithful performance of the Contract, payment of all persons supplying labor or furnishing materials, and payment of all liabilities incurred in connection with the Work under this Contract.

Each Bidder must be appropriately licensed as a General Contractor in compliance with NCGS 87.

No Bidder may withdraw their Bid within 90 days after the date of Bid opening.

The Owner reserves the right to reject any and all Bids and any part of a Bid and to waive formalities and technicalities in the bidding procedure.

Small, minority, and women's businesses and labor surplus area firms are encouraged to participate. Bidders shall make positive efforts to use small and minority-owned businesses and comply with NCGS 143-128.

There is no Pre-Bid meeting scheduled. Please contact the owner or the engineer if you wish to visit the site.

Contract Documents may be examined at the following locations:

Cumberland County Solid Waste Management Department - (OWNER)
698 Ann Street
Fayetteville, NC 28301
(910) 321-6920

Smith Gardner, Inc. - (ENGINEER)
14 N. Boylan Avenue
Raleigh, North Carolina 27603
(919) 828-0577

Copies of the Contract Documents may be obtained at the offices of Smith Gardner, Inc. located at 14 N. Boylan Avenue, Raleigh, North Carolina 27603, upon payment of \$180.00 (non-refundable) for each set of documents. Each request for Contract Documents must be accompanied by a check made payable to "Smith Gardner, Inc." If sets are to be shipped, a non-refundable, sixty dollar (\$60) shipping and handling charge will be required. Electronic copies of Contract Documents are available at no cost.

Neither the Owner nor the Engineer will be responsible for full or partial sets of Contract Documents, including any Addendums, obtained from any other source.

Cumberland County
Solid Waste Management Department

INSTRUCTIONS TO BIDDERS

1.0 Defined Terms

Terms used in these Instructions to Bidders which are defined in the Standard General Conditions of the Construction Contract, NSPE Document C-700 (2002 edition) shall have the meanings assigned to them in the General Conditions as modified, changed, added to, or deleted by the Supplementary Conditions.

2.0 Qualifications of Bidders

To demonstrate their qualifications for the Project, each Bidder shall submit with their Proposal satisfactory proof of their and all Subcontractor's qualifications to perform in a satisfactory manner and within the time specified in the Proposal, all of the work covered by the Contract Documents. Each Bidder shall submit, among other items, information, evidence, and statements with respect to the following (This information is also required for all major Subcontractors but may be provided after the bid upon request.):

- 2.1 That they are properly licensed.
- 2.2 That they have a well-trained and competent organization which has done work of similar character and value.
- 2.3 That they will have available adequate equipment and facilities to do the work at the proper time or times. The Bidder shall list equipment and facilities in such detail that they can be quickly and accurately checked.
- 2.4 That they have ample equipment, supplies, and repair parts to maintain all required equipment and facilities properly and with a minimum of delay.
- 2.5 If the Bidder is a corporation or partnership, the names of all corporate officers or partners, and the name of the executive or partner who will give their personal attention to the work.
- 2.6 A financial statement indicating the financial history and viability of the Bidder and proposed Subcontractors.
- 2.7 A statement relating the Bidder's history over the last five years regarding project related litigation initiated by or against the Bidder.
- 2.8 A listing of completed projects by the Bidder and proposed Subcontractors similar in nature and magnitude to the work proposed herein. The information shall include, at a minimum, the following:
 - 1) Project Information (name, location, value, date)
 - 2) Owner Information (name, address, telephone number, contact person)
 - 3) Engineer Information (name, address, telephone number, contact person).

- 2.9 Statements that the Bidder has:
- 1) Never failed to complete a project: if so, explain.
 - 2) A history of completing projects consistently on time and within the bid amount.
- 2.10 That they have an established safety program and that employees are well-trained and competent with regard to safety on similar projects of size and value. Bidders shall demonstrate experience by key personnel (Project Manager/Site Superintendent/Site Health and Safety Officer) to be assigned to this project which shall include, at a minimum, the following:
- 1) Number of lost workdays from OSHA 200 logs for the last three (3) years included with total number of employee workdays over the same period.
 - 2) Worker's compensation experience modifier rate (EMR) for the last three (3) years.
- 2.11 Information providing the total number and monetary value of contractor imposed change orders over the last 5 years.
- 2.12 With regard to **Schedule**, the qualifications statement of the Bidder may include a proposed, alternate time frame and schedule to complete the work under this Contract, in lieu of the time frame indicated by the Engineer in the Contract Documents. The Schedule shall include a breakdown by major components of the work (i.e. site preparation, soil hauling and placing, etc.). Favorable consideration will be given to the Bidder who can demonstrate and commit to a more expeditious schedule and earlier completion date.

All Subcontractors must be named and divulged at the time of Bid opening and included on the Bid forms. Failure to do so will be considered non-responsive and may be cause for rejection of the Bid by the Owner.

3.0 Minority Business Enterprise (MBE) Participation

- 3.1 The Owner prohibits discrimination in any manner on the basis of race, color, creed, national origin, sex, age, handicap, or sexual orientation and will pursue an affirmative policy of fostering, promoting, and conduction business with women and minority-owned business enterprises. The Owner has adopted a goal of 10% for participation by minority businesses where the project cost is three hundred thousand dollars (\$300,000) or more.
- 3.2 Definition of Minority Business:
- 3.2.1 The term "minority business" means a business:
- a. In which at least fifty-one percent (51%) is owned by one or more minority persons or socially and economically disadvantaged individuals, or in the case of a corporation, in which at least fifty-one percent (51%) of the stock is owned by one or more minority persons or socially and economically disadvantaged individuals; and

- b. Of which the management and daily business operations are controlled by one or more of the minority persons or socially and economically disadvantaged individuals who own it.

3.2.2 The term “minority person” means a person who is a citizen or lawful permanent resident of the United States and who is:

- a. Black, that is, a person having origins in any of the black racial groups in Africa;
- b. Hispanic, that is, a person of Spanish or Portuguese culture with origins in Mexico, South or Central America, or the Caribbean Islands, regardless of race;
- c. Asian American, that is, a person having origins in any of the original peoples of the Far East, Southeast Asia and Asia, the Indian subcontinent, or the Pacific Islands;
- d. American Indian, that is, a person having origins in any of the original Indian peoples of North America; or
- e. Female.

3.2.3 The term “socially and economically disadvantaged individual” means the same as defined in 15 U.S.C. 637.

3.3 The Recipient and Bidders shall make a good faith effort to assure that MBE’s and WBE’s are utilized, when possible, as sources of goods and services. The good faith effort must include the following affirmative steps: (a) including small, minority, and women’s businesses on solicitation lists; (b) assuring that small, minority, and women’s businesses are solicited whenever they are potential sources; (c) dividing total requirements, when economically feasible, into small tasks or quantities to permit maximum participation by small, minority, and women’s businesses; (d) establishing delivery schedules; and (e) using the services of the Small Business Administration and the Minority Business Development Agency of the U.S. Department of Commerce. **Please note that the solicitation efforts should include documentable follow up phone calls.**

3.4 Information regarding minority and women-owned businesses/contractors can be obtained from the following:

Office for Historically Underutilized Businesses
1336 Mail Service Center
Raleigh, NC 27699-1336
Phone: (919) 807-2330
Fax: (919) 807-2335
www.doa.nc.gov/hub

4.0 Examination of Contract Documents and Site

- 4.1 Before submitting their Bid, each Bidder shall have the following responsibilities:
 - 4.1.1 examine the Contract Documents thoroughly;
 - 4.1.2 visit the site to familiarize himself with local conditions that may in any manner affect performance of the work;
 - 4.1.3 familiarize himself with federal, state, and local laws, ordinances, rules and regulations affecting performance of the work;
 - 4.1.4 carefully correlate their observations with the requirements of the Contract Documents; and
 - 4.1.5 notify Engineer of all the conflicts, errors, or discrepancies in the Contract Documents and Drawings.
 - 4.1.6 the site shall be inspected only in the company of an authorized representative of the Owner with appointments made through through the Ann Street MSW Landfill, Amanda Lee, P.E., Director of Solid Waste Management (Phone: (910) 321-6920).
- 4.2 Latent physical conditions at the site affecting performance of the work have been considered by the Engineer in preparing the Drawings and Specifications. Before submitting their Bid, each Bidder will, at their own expense, make such additional observations, surveys and investigations as they may deem necessary to determine their Bid Price for performance of the work within the terms of the Contract Documents. Any Bidder desiring access to the site for the purpose of additional investigations must advise the Owner for coordination of access (see contact information in Paragraph 4.1.6 above).
- 4.3 The submission of a Bid will constitute an incontrovertible representation by the Bidder that they have complied with every requirement of this Article 4.0 of these Instructions to Bidders.

5.0 Interpretation

- 5.1 All questions about the meaning or intent of the Contract Documents shall be submitted in writing to:

Smith Gardner, Inc.
14 N. Boylan Avenue
Raleigh, North Carolina 27603
Attn.: Jesse C. Li, P.E.
Fax Number: (919) 828-3899
Phone Number: (919) 828-0577
Email: jesse@smithgardnerinc.com

Replies will be issued by Addenda, electronically mailed or otherwise delivered to all parties recorded by the Engineer as having received the bidding documents. Questions

received less than five (5) days prior to the date for opening of Bids will not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

- 5.2 Addenda, when issued, will be on file at the offices of the Owner and Engineer at least twenty-four (24) hours before Bids are opened. It shall be the Bidder's responsibility to make inquiry as to the Addenda issued. All such Addenda shall become part of the Contract Documents and all Bidders shall be bound by such Addenda, whether or not received by the Bidders.
- 5.3 Complete sets of Contract Documents must be used in preparing Bids; neither the Owner or the Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Contract Documents (including incomplete Contract Documents due to compatibility or other issues when printing from provided electronic versions). The Owner and the Engineer in making copies of the Contract Documents available on the above terms do so only for the purpose of obtaining Bids for the work and do not confer a license or grant for any other use.

6.0 Bid Security

Each Bid must be accompanied by a Bid Security which shall be an amount equal to five (5%) percent of the Bid amount. The required Bid Security must be in the form of a certified check on some bank or trust company insured by the Federal Deposit Insurance Corporation and made payable to Owner, or a Bid Bond issued by a surety licensed to conduct business in North Carolina. The Bid Security of the successful Bidder will be retained until they have executed the Contract and furnished the required Contract Security, whereupon it will be returned. If the successful Bidder fails to execute and deliver the Contract and furnish the required Contract Security within fifteen (15) calendar days of the Notice to Award, the Owner may annul the Notice of Award and the Bid Security of the Bidder will be forfeited. The Bid Security of any other Bidder whom Owner believes to have a reasonable chance of receiving the Award may be retained by Owner until the earlier of (1) the seventh day after the executed Contract is delivered by the Owner to the Contractor and the required Contract Security is furnished, or (2) the ninety-first day after Bid opening. The Bid Security of other Bidders will be returned within fourteen (14) calendar days of the Bid opening.

7.0 Contract Time

- 7.1 The number of days for completion of the work (the CONTRACT TIME) will be as set forth in the Agreement. The Contractor shall commence work on the date specified in the Notice to Proceed, and they shall complete the work within the stipulated Contract time.
- 7.2 Extension of the stipulated CONTRACT TIME will be provided for those normal working days that the Engineer determines that weather conditions prohibit Project work in accordance with the Supplementary Conditions.

8.0 Subcontractors

- 8.1 If the Owner or the Engineer after due investigation has reasonable objection to any proposed Subcontractor, person or organization specified by the Bidder, they may require before giving the Notice of Award that the apparent low Bidder submit an acceptable

substitute without an increase in their Bid Price. If the Bidder declines to make any such substitution, the Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors. Any Subcontractor, other person or organization so listed and to whom the Owner or Engineer does not make written objection prior to the giving of the Notice of Award will be deemed acceptable to the Owner and Engineer. This does not remove responsibilities for said Subcontractor, supplier, etc. to comply with the Contract Documents.

- 8.2 The Contractor shall not be required to employ any Subcontractor, other person, or organization against whom they have reasonable objection.

9.0 Proposal Form

- 9.1 Proposals shall be submitted on the Proposal Form furnished within the Contract Documents. Bidders agree that Proposals submitted on the specified Proposal Form, which is detached from the Contract Documents, will be considered and will have the same force and effect as if attached thereto.
- 9.2 All blank spaces for Bid prices in the Proposal Form shall be properly completed in ink in both words and numerals. In case of conflict between the Price in words and its equivalent shown in numerals, the words will take precedence. Blank spaces will be considered as zero (-0-). **PROPOSALS SHALL NOT BE CONDITIONAL, LIMITED, OR RESTRICTED IN ANY WAY.**
- 9.3 Bids by corporations must be executed in the corporate name by the president or vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal shall be affixed and attested by the corporate secretary or an assistant secretary. The corporate address and state of incorporation shall be shown with the signature.
- 9.4 Bids by partnership must be executed in the partnership name and signed by a partner, with their title and the official address of the partnership shown below the signature. The Owner reserves the right to request submission of partnership documents to determine the authority of the partner to execute the instrument.
- 9.5 All names must be printed in ink below the signature on the Proposal Form.
- 9.6 The Bid shall contain an acknowledgment of receipt of all Addenda (the numbers of which shall be filled in on the Proposal Form).
- 9.7 Proposals shall be accompanied with information providing the total number and monetary value of contractor imposed change orders over the last 5 years.

10.0 Submission of Proposals

- 10.1 Proposals shall be submitted at the time and place indicated in the Advertisement for Bids and shall be included in an opaque sealed envelope, marked with the Project Title, name and address of the Bidder, Contractor's License number, and be accompanied by the Bid Security and other required documents. No Proposal will be considered unless

filed on or before the time and at the place designated in the Advertisement for Bids. Proposals received after the time set for the opening will be returned unopened.

- 10.2 Proposals sent by mail should be registered mail or express courier. The sealed Proposal, marked as indicated above, should be enclosed in an additional sealed envelope similarly marked and addressed to:

Cumberland County Solid Waste Management Department
698 Ann Street
Fayetteville, NC 28301
(910) 321-6920
Attn.: Amanda Lee, P.E., General Manager for Natural Resources

Proposals sent by mail or courier, and arriving after the time for opening of Bids shall not be considered as valid Bids. In such instances, the Bidder shall have no claim against the Owner.

- 10.3 THE FOLLOWING FORMS AND INFORMATION SHALL BE COMPLETELY FILLED OUT AND SUBMITTED WITH THE BIDS:

- 1) Entire Proposal Form including:
 - a. Bid Form;
 - b. Bid Security;
 - c. Qualifications of Bidders;
 - d. Proposed Subcontractors;
 - e. Identification of Minority Business Participation;
 - f. Proposal Signature; and
- 2) MBE Affidavit A or Affidavit B (as applicable).

Failure to submit all of the above forms and information with the Proposal may be just cause for rejection of the Proposal by the Owner in the Owner's sole discretion.

11.0 Modification and Withdrawal of Proposals

- 11.1 Written or telegraphic modifications of Proposals may be accepted if received in accordance with the requirements for the submission of Proposals as provided in Article 10 above. Bidders are cautioned that if, in the opinion of the Owner or the Engineer such modifications are not explicit, or are in any sense subject to misinterpretation, then the Proposal so amended or modified will be subject to rejection.
- 11.2 Except as otherwise provided by law, any Bidder upon their properly notarized, written request received within 24 hours before Bids are opened will be given permission to withdraw their Proposal prior to the time scheduled for the opening of Bids. At the time of opening of the Proposals, when such Proposal is included, it will be returned to the Bidder unread. Errors, inaccuracies, or negligence on the part of the Bidder in preparing their Proposal confers no right for the withdrawal of the Proposal after it has been opened, except as otherwise provided by law.

12.0 Opening of Bids

Proposals will be received and Bids publicly opened (unless obviously non-responsive) and read at the time and place indicated in the Advertisement for Bids.

13.0 Bids to Remain Open

All Bids shall remain open for ninety (90) days after the day of the Bid opening, but the Owner may, in their sole discretion, release any Bid and return the Bid security prior to that date.

14.0 Award of Contract

- 14.1 The Owner reserves the right to reject any and all Bids and waive any and all informalities, and the right to disregard all non-conforming or conditional Bids or counter proposals.
- 14.2 In evaluating Bids, the Owner shall consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements, and alternates and installed prices as requested in the Proposal forms. They will consider the qualifications and experience of Subcontractors and other persons and organizations (including those who are to furnish the principal items of material or equipment) proposed for those portions of the work as to which the identity of Subcontractors and other persons and organizations must be submitted, as required by Article 8 above. They may conduct such investigations as they deem necessary to establish the responsibility, qualifications, and financial ability of the Bidders, proposed Subcontractors and other persons and organizations to do the work in accordance with the Contract Documents to the Owner's satisfaction within the prescribed time. The Owner reserves the right to reject the Bid of any Bidder who does not pass any such evaluation to the Owner's satisfaction.
- 14.3 If a Contract is to be awarded, it will be awarded to the lowest responsible, responsive Bidder whose evaluation by the Owner and/or Engineer indicates to the Owner that the Award will be in the best interest of the Project and as otherwise provided by law.
- 14.4 The Owner will give the apparent successful Bidder a Notice of Award within ninety (90) days after the day of the Bid opening. The Bidder will be required to execute the contract within fifteen (15) calendar days of date of Notice of Award of Contract and deliver to the Owner.
- 14.5 In addition, the successful Bidder, within the period stipulated in Paragraph 14.4, shall procure, execute, and deliver to the Owner and maintain, at their own cost and expense, a Performance Bond and a Payment Bond as specified in the General Conditions.
- 14.6 Failure or refusal of the Bidder whose Proposal is accepted to execute the Contract as hereinbefore provided shall constitute a breach by such Bidder of the Contract created by the acceptance of the Proposal, and in such event, the Owner at their option, may determine that such Bidder has abandoned the Contract. Thereupon such Bidder's Proposal and the acceptance thereof shall be null and void. It is understood by the Bidder, in the event of the annulment of the Award, that the amount of the Bid Security submitted with the Proposal shall be forfeited to the use of the Owner, not as a penalty, but as liquidated damages.

15.0 Compliance With Laws

15.1 The Bidder's attention is directed to the fact that all applicable federal regulations, State laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the Contract Documents throughout and they will be deemed to be included in the Contract Documents the same as though herein written out in full.

16.0 Coordination

The Contractor is reminded that they will be working in close proximity to an ongoing, active landfill operation and as such, should expect to encounter situations that could present access conflicts. In this event, the Contractor, being aware of this probability, and having worked in this environment in the past, shall always yield to the landfill operations, unless otherwise instructed by the Owner, without claim for delay and at no additional cost to the Owner. Refer to Section 01010, Paragraph G. "Coordination" for additional information.

17.0 Site Conditions

With the approval of the Owner, the Contractor will be permitted access to various areas of the property to perform the work under this Contract. However, in addition to other sections of these Contract Documents, the Contractor is responsible for returning these areas to at least their pre-construction condition at the completion of the work and also for maintaining all existing site features in at least pre-construction condition for the duration of the Contract at no additional cost to the Owner. This includes, but is not limited to, access roads, site areas, utilities, equipment, structures, etc. unless otherwise directed by the Owner at their sole discretion. Refer to Section 01010, Paragraph L. "Protection of Property" for additional information.

END OF SECTION

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PROPOSAL

To: Cumberland County

From: Bidder: _____
Address: _____

Phone: _____ FAX: _____
Email: _____
Contractor's License No.: _____
Date of Bid: _____

The undersigned hereby signifies that it is their intention and purpose to enter into a formal Contract with Cumberland County (Owner), to furnish all labor, materials, tools, equipment, apparatus, supplies, etc., required and to do all the work necessary for and because of the construction, erection, and/or installation of the proposed

Off-Site Soil Delivery and Placement – Cells 11 and 12 Ann Street MSW Landfill Cumberland County, North Carolina

in accordance with the Contract Documents, including the following Addenda (Bidder shall list to acknowledge receipt):

No.: _____
Date: _____

There is deposited, herewith, a certified check or a Bid Bond in the amount of five percent (5%) of the total aggregate amount of this Bid made payable to the Owner, the same to be refunded to the undersigned under the conditions of and in accordance with the terms of this Proposal which are as follows:

THAT: The undersigned has carefully examined the Drawings and Specifications and all other Contract Documents and fully understands them.

THAT: The undersigned has carefully examined the site of the project and is familiar with the conditions under which the work, or any part thereof, is to be performed and the conditions which must be fulfilled in furnishing and/or installing, erecting, or constructing any or all items of the Project.

THAT: The undersigned will provide all necessary tools, machinery, equipment, apparatus, and all other means necessary to do all the work and will furnish all labor, materials, and all else required to complete such Contract as may be entered into, in the manner prescribed in and in accordance with the terms of the Specifications and the Contract and in accordance with the true intent and meaning thereof, and in

accordance with the Drawings and the requirements of the Engineers under them, in a first class manner.

THAT: The undersigned hereby declares that the only person, or persons, interested in the Bid as principal(s) is, or are, named herein; that no other persons have any interest in the Bid or in the Contract to be entered into; that this Bid is made without connection with any person, company, or parties making a Bid; and that it is in all respects fair and in good faith without collusion or fraud.

THAT: The Owner reserves the right to reject any and all Bids and to waive formalities and technicalities in the Bidding procedure.

THAT: The rights of the Owner and the recommendations of the Engineers are not to be questioned in the Award of Contracts or the rejection of any or all Bids.

THAT: It is the intention of the Owner to let Contracts on the basis of the Bids received in accordance with the Contract Documents and in such manner as they may deem to be for the best interests of the Owner.

THAT: The work under each Section will be awarded under one Contract and that the Owner shall have the right to include such item or items as the Owner may deem to be in the best interests of the Owner.

THAT: On being awarded the Contract, the undersigned will execute a Performance Bond and a Payment Bond, on the forms included herein, each equal to one hundred percent (100%) of the Contract price, as security for the faithful performance the Contract.

THAT: The undersigned shall submit, in the blank spaces provided, all data, guarantees, and other information called for.

THAT: The undersigned shall submit, herewith, drawings, cuts, and/or Specifications showing and describing in detail the equipment and/or apparatus which the undersigned proposes to furnish.

THAT: This Proposal shall be signed and submitted in the manner prescribed in the Instructions to Bidders.

THAT: Should this Proposal not be accepted by the Owner, the certified check or the Bid Bond, deposited herewith, will be returned to the undersigned.

THAT: Should this Proposal be accepted by the Owner and the undersigned fail or neglect to execute the Contract and furnish the required Bonds within fifteen (15) days after receiving notifications of the acceptance of the Proposal and/or receipt of the formal Contract and Bond forms, the certified check or the Bid Bond, deposited herewith, shall be retained by the Owner as liquidated damages, it being understood that the Owner reserves the right to extend the time allowed for executing the Contract and/or furnishing the required Bonds.

THAT: It is the intent of these Contract Documents to obtain a Contract based on a Lump Sum Price except where Unit Prices are specifically requested. Where a discrepancy exists between words and numbers in the Bid amount, the written words shall govern.

THAT: The undersigned represents that they are properly licensed.

Bid Form

Off-Site Soil Delivery and Placement – Cells 11 and 12 Ann Street MSW Landfill Cumberland County, North Carolina

Bidder agrees to perform all the work described in the Specifications and shown on the Contract Drawings for the lump sum and unit prices listed in the Bid Schedule(s) below.

Measurement and Basis for Payment:

Some of the line items in the Bid Schedule(s) may include approximate quantities as estimated by the Engineer. The Contractor shall not rely on the quantities given, but shall instead estimate all quantities independently as required to complete the Proposal. The Bid Schedule(s) outlines each item and the corresponding lump sum or unit price listed by the Contractor. The price associated with each lump sum item shall be the full compensation paid for the work described, regardless of the Engineer's or Contractor's estimated quantity. For Lump Sum items, no claim shall be made by the Contractor for deviations between the Contractor's estimated and the actual quantity required to complete the work described, wherein no measurement will be made.

A description of measurement and payment for each Lump Sum and Unit Price Bid item can be found in Section 01025, Measurement and Payment, of these Specifications.

Unit Price Deviations:

The Bidder is responsible for providing unit prices consistent with typical industry norms for the work described. Unit prices which appear inconsistent with typical prices for similar work shall be justified by the Bidder at the request of the Engineer. Providing unit prices which do not reasonably reflect the work described, either high or low, which are not justified satisfactorily to the Engineer, may deem the Bidder non-responsive and invalidate the Bidder's Proposal.

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A. Off-Site Soil Delivery and Placement - Cells 11 and 12 - Base Bid Schedule

Pay Item Number	Description	Spec. Reference	Estimated Quantity ¹	Units	Unit Cost	Extended Cost
1.0	Off-Site Soil Delivery: Cell 11	-----	216,000	CY		
2.0	Off-Site Soil Delivery: Cell 12	-----	138,200	CY		
3.0	Embankment: Cell 11	02223	216,000	CY		
4.0	Embankment: Cell 12	02223	138,200	CY		
5.0	Silt Fence	02270	1,100	LF		

The TOTAL BASE BID PRICE for the pay items listed above is as follows:

(In Words) _____ Dollars and _____ Cents.

(In Numbers) (\$ _____)

Notes:

1. Engineer’s estimated quantities are based on in-place quantities. Areas and lengths are based on horizontally projected areas and lengths. No adjustments have been made for stripping topsoil, slopes, uneven contours, overlaps, seams, anchor trenches, compaction factors, etc.

NOTE: PROPOSAL SIGNATURE REQUIRED ON PAGE P-15. ALL PROPOSALS MUST BE PROPERLY EXECUTED TO BE CONSIDERED A VALID BID.

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Bid Security

Accompanying this Proposal is a (a) _____ in the amount of (b) _____ Dollars (\$ _____).

*Note: (a) Insert the words "certified check" or "bid bond" as the case may be.
(b) Amount must be equal to at least five percent (5%) of the Total Base Bid.*

Liquidated Damages

The undersigned agrees, further, that the Owner may retain those amounts indicated below from the amount of Compensation due the undersigned, under the terms of the Contract, for each and every day that the work remains incomplete beyond the completion date specified in the Notice to Proceed or date established in a duly-executed change order which increases/decreases the Contract performance period. This amount is agreed upon as the proper measure of liquidated damages the Owner will sustain, per day, by the failure of the undersigned to complete the work, within the stipulated time, and it is not to be construed, in any sense, as a penalty.

No Contractor shall have a claim against the Owner as a result of other construction Contractor's lack of progress or project completion.

	Owner's Liquidated Damages
Off-Site Soil Delivery and Placement – Cells 11 and 12	\$500/day

Liquidated damages will be assessed for the above listed amount(s) for each and every day the work remains incomplete after the completion date(s) listed above.

Completion for above listed item(s) shall be defined as completely installed including all associated appurtenances, tested and ready for the intended service.

Qualifications of Bidders

In order to assist the Owner in determining whether the Bidder is qualified to perform the work, as set forth in the Contract Documents, the Bidder shall furnish the information as required in the Instructions To Bidders and attach to this Proposal Form.

Proposed Subcontractors

The Bidder shall provide names and contact information for the following subcontractors. If more than one firm is under consideration for this work, please list each additional firm below or on a separate attached sheet. If the Bidder intends to perform one or more of the tasks identified below, please note "To be Performed by (Bidder Name)". The Contractor whose bid is accepted shall not substitute any person or subcontractor in the place of the subcontractors listed below, except:

- A. If the listed subcontractor's bid is later determined by the Contractor to be non-responsible or non-responsive, or the listed subcontractor refuses to enter into a contract for the complete performance of the bid work; or
- B. With the approval of the Owner for good cause shown by the Contractor.

Note: Documentation that the Bidder has made a good-faith effort to recruit and select minority businesses for participation in the performance of the work is also required in the event that a substitute subcontractor is selected.

Task	Proposed Subcontractor Information		
	Firm Name, Address, and Phone #	Dollar Amount	% of Total
Site Preparation:			
Soil Hauling:			
Soil Placement:			
Other: _____			

Minority Business Participation Requirements

Provide on the Bid: Under GS 143-128.2(c) the undersigned bidder shall identify on its bid (Identification of Minority Business Participation form) the minority businesses that it will use on the project with the total dollar value of the bids that will be performed by the minority businesses. **Also** the Bidder shall list the good faith efforts (MBE Affidavit A) made to solicit minority participation in the bid effort.

Note: A contractor that performs all of the work with its own workforce may submit MBE Affidavit B to that effect in lieu of MBE Affidavit A required above.

After the Bid Opening: The Owner will consider all bids and alternates and determine the lowest responsible, responsive bidder. Upon notification of being the apparent low bidder, the bidder shall then file within 72 hours of the notification of being the apparent lowest bidder, the following:

MBE Affidavit C that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the 10% goal established. This affidavit shall give rise to the presumption that the bidder has made the required good faith effort and MBE Affidavit D is not necessary;

OR

If less than the 10% goal, MBE Affidavit D of its good faith effort to meet the goal shall be provided. The document must include evidence of all good faith efforts that were implemented, including any advertisements, solicitations, and other specific actions demonstrating recruitment and selection of minority businesses for participation in the contract.

Note: Bidders must submit with their bid the Identification of Minority Business Participation form and MBE Affidavit A or Affidavit B as applicable. Failure to submit a required affidavit or documentation with the bid or after being notified apparent low bidder is grounds for rejection of the bid.

Identification of Minority Business Participation

I, _____,
 (Name of Bidder)

do hereby certify that on this project, we will use the following minority business enterprises as construction subcontractors, vendors, suppliers, or providers of professional services.

Firm Name, Address, and Phone #	*Minority Category	Work	Dollar Amount	% of Total
Total:				

*Minority Categories: Black, African American (B); Hispanic (H); Asian American (A); American Indian (I); Female (F); Socially and Economically Disadvantaged (D)

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Proposal Signature
(Sign on Next Page)

Corporation:

The Bidder is a corporation organized and existing under the laws of the State of _____, which operates under the legal name of _____ and the full names of its officers are as follows:

President: _____
Vice-President: _____
Secretary: _____
Manager: _____

and it does have a corporate seal. The _____ is authorized to sign construction proposals and Contracts for the company by action of its Board of Directors taken _____, a certified copy of which is hereto attached. *(Strike out this last sentence if not applicable.)*

Partnership:

The business is a partnership consisting of individual partners whose full names are as follows:

_____	_____
_____	_____
_____	_____
_____	_____

The partnership does business under the legal name of:

Individual:

The Bidder is an individual whose full name is:

and if operating under a trade name, said trade name is as follows:

(SIGN BELOW)

Dated _____, 20__.

Legal Entity

(SIGN HERE)

By: _____

Printed Name

SEAL
(If Corporation)

Telephone Number

Subscribed and sworn to before me this _____ day of _____, 20__

Notary Public

County

My Commission Expires: _____
(SEAL)

State of North Carolina AFFIDAVIT A – Listing of Good Faith Efforts

County of _____

(Name of Bidder)

Affidavit of _____

I have made a good faith effort to comply under the following areas checked:

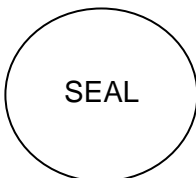
Bidders must earn at least 50 points from the good faith efforts listed for their bid to be considered responsive. (1 NC Administrative Code 30 I.0101)

- 1 – (10 pts)** Contacted minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor, or available on State or local government maintained lists, at least 10 days before the bid date and notified them of the nature and scope of the work to be performed.
- 2 --(10 pts)** Made the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bids are due.
- 3 – (15 pts)** Broken down or combined elements of work into economically feasible units to facilitate minority participation.
- 4 – (10 pts)** Worked with minority trade, community, or contractor organizations identified by the Office of Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.
- 5 – (10 pts)** Attended prebid meetings scheduled by the public owner.
- 6 – (20 pts)** Provided assistance in getting required bonding or insurance or provided alternatives to bonding or insurance for subcontractors.
- 7 – (15 pts)** Negotiated in good faith with interested minority businesses and did not reject them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.
- 8 – (25 pts)** Provided assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisted minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.
- 9 – (20 pts)** Negotiated joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.
- 10 - (20 pts)** Provided quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

The undersigned, if apparent low bidder, will enter into a formal agreement with the firms listed in the Identification of Minority Business Participation schedule conditional upon scope of contract to be executed with the Owner. Substitution of contractors must be in accordance with GS143-128.2(d) Failure to abide by this statutory provision will constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of the minority business commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____
Signature: _____
Title: _____



State of _____, County of _____
Subscribed and sworn to before me this _____ day of _____ 20____
Notary Public _____
My commission expires _____

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State of North Carolina --AFFIDAVIT B-- Intent to Perform Contract with Own Workforce.

County of _____

Affidavit of _____

(Name of Bidder)

I hereby certify that it is our intent to perform 100% of the work required for the _____

_____ contract.

(Name of Project)

In making this certification, the Bidder states that the Bidder does not customarily subcontract elements of this type project, and normally performs and has the capability to perform and will perform all elements of the work on this project with his/her own current work forces; and

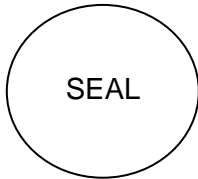
The Bidder agrees to provide any additional information or documentation requested by the owner in support of the above statement. The Bidder agrees to make a Good Faith Effort to utilize minority suppliers where possible.

The undersigned hereby certifies that he or she has read this certification and is authorized to bind the Bidder to the commitments herein contained.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____



State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20__

Notary Public _____

My commission expires _____

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State of North Carolina - AFFIDAVIT C - Portion of the Work to be Performed by HUB Certified/Minority Businesses

County of _____

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the portion of the work to be executed by HUB certified/minority businesses as defined in GS143-128.2(g) and 128.4(a),(b),(e) is equal to or greater than 10% of the bidders total contract price, then the bidder must complete this affidavit.
 This affidavit shall be provided by the apparent lowest responsible, responsive bidder within **72 hours** after notification of being low bidder.

Affidavit of _____ I do hereby certify that on the _____
 (Name of Bidder)

_____ (Project Name)
 Project ID# _____ Amount of Bid \$ _____

I will expend a minimum of _____% of the total dollar amount of the contract with minority business enterprises. Minority businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below. Attach additional sheets if required

Name and Phone Number	*Minority Category	**HUB Certified Y/N	Work Description	Dollar Value

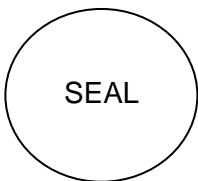
*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**** HUB Certification with the state HUB Office required to be counted toward state participation goals.**

Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____



Signature: _____

Title: _____

State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20____

Notary Public _____

My commission expires _____

This page intentionally left blank.

State of North Carolina AFFIDAVIT D – Good Faith Efforts

County of _____

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the goal of 10% participation by HUB Certified/ minority business **is not** achieved, the Bidder shall provide the following documentation to the Owner of his good faith efforts:

Affidavit of _____ I do hereby certify that on the _____
(Name of Bidder)

Project ID# _____ (Project Name) Amount of Bid \$ _____

I will expend a minimum of _____% of the total dollar amount of the contract with HUB certified/ minority business enterprises. Minority businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below. (Attach additional sheets if required)

Name and Phone Number	*Minority Category	**HUB Certified Y/N	Work Description	Dollar Value

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**** HUB Certification with the state HUB Office required to be counted toward state participation goals.**

Examples of documentation that may be required to demonstrate the Bidder's good faith efforts to meet the goals set forth in these provisions include, but are not necessarily limited to, the following:

- A. Copies of solicitations for quotes to at least three (3) minority business firms from the source list provided by the State for each subcontract to be let under this contract (if 3 or more firms are shown on the source list). Each solicitation shall contain a specific description of the work to be subcontracted, location where bid documents can be reviewed, representative of the Prime Bidder to contact, and location, date and time when quotes must be received.
- B. Copies of quotes or responses received from each firm responding to the solicitation.
- C. A telephone log of follow-up calls to each firm sent a solicitation.
- D. For subcontracts where a minority business firm is not considered the lowest responsible sub-bidder, copies of quotes received from all firms submitting quotes for that particular subcontract.
- E. Documentation of any contacts or correspondence to minority business, community, or contractor organizations in an attempt to meet the goal.
- F. Copy of pre-bid roster
- G. Letter documenting efforts to provide assistance in obtaining required bonding or insurance for minority business.
- H. Letter detailing reasons for rejection of minority business due to lack of qualification.
- I. Letter documenting proposed assistance offered to minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letter of credit, including waiving credit that is ordinarily required.

Failure to provide the documentation as listed in these provisions may result in rejection of the bid and award to the next lowest responsible and responsive bidder.

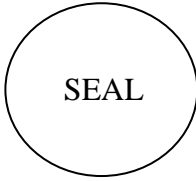
Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____



State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20____

Notary Public _____

My commission expires _____

Instructions to Contractors and Requirements as to Form for this Contract

Please observe the following in completing the attached Agreement:

1. The Owner may Contract with three types of legal entities.
 - (a) If the Contract is with an individual, that individual should sign the Agreement exactly as their name is set out. If the Contract is with an individually-owned business, the Contract should be with the individual owner, and not the named business.
 - (b) Signature on behalf of a corporation should be by the president or a vice president, attested by the corporate secretary, with the corporate seal affixed. An official other than president or vice president should attach documentation of their authority to sign and bind the company.
 - (c) If the Contract is with a partnership, all members of the partnership should sign unless an authorized partner is so designated. Documentation of such authorization should be attached.
2. After signing the Agreement, the appropriate notary's acknowledgment, either in the corporate form or individual/partnership form should be completed.
3. The Performance and Payment Bonds should be attached to the Contract package. The Bonds, in approved form, must be signed by the authorized agent of the Surety Company issuing the Bonds, and an executed Power of Attorney document authorizing the agent to sign must accompany the Bond Documents.
4. The Agreement should not be dated, except by the last person signing the Agreement.
5. Complete the Acceptance of Notice of Award.
6. Complete Page AG-3 in its entirety.
7. Complete Pages AG-5, AG-7, and AG-8 in their entirety.
8. Certificate of Insurance, Page AG-8:
 - (a) Article 5 of the General Conditions requires the Certificate of Insurance to list additional insureds in each policy issued.
 - (b) Most Certificates of Insurance state under the cancellation clause that "the issuing company will endeavor to mail 30 days written notice to the ...". If your certificate states this, the words "endeavor to" must be stricken in order to comply with the Contract Documents.
9. Four (4) copies of the Contract are sent to the Contractor. The original and duplicates should be signed and returned to the Owner for signature, after which the duplicate will be returned to the Contractor.

10. Failure to fully complete all four sets of the Contract Documents will cause delays in the approval by the Owner and therefore delay the issuance of the Notice to Proceed.

AGREEMENT

This Agreement made this _____ day of _____, 20_____, by and between Cumberland County, party of the first part, hereinafter called the Owner, and _____ of _____, party of the second part, hereinafter called the Contractor.

WITNESSETH

THAT, WHEREAS, a Contract for:

**Off-Site Soil Delivery and Placement – Cells 11 and 12
Ann Street MSW Landfill
Cumberland County, North Carolina**

as prepared by Smith Gardner, Inc. has recently been awarded to the Contractor by the Owner at and for a sum equal to the aggregate cost of the work to be done and labor, materials, equipment, apparatus, and supplies furnished at the prices and rates respectively named therefor, in the Proposal attached hereto.

AND WHEREAS, it was one of the conditions of said Award that a formal Contract should be executed by and between the Owner and the Contractor, evidencing the terms of said Award, and that the Contractor shall commence the work to be performed under this Agreement on the date specified in the Notice to Proceed, and shall fully complete Cell 11 within **300 CONSECUTIVE CALENDAR DAYS** thereafter, and shall fully complete Cell 12 within **300 CONSECUTIVE CALENDAR DAYS** following the completion of Cell 11, unless the Contract Time is extended otherwise by the Contract Documents.

NOW THEREFORE, THIS CONTRACT FURTHER WITNESSETH THAT, the Contractor doth hereby covenant and agree with the Owner that they will well and faithfully perform and execute such work and furnish such labor, materials, equipment, apparatus, and supplies, in accordance with each and every one of the conditions, covenants, stipulations, terms, and provisions contained in the Contract Documents, at and for a sum equal to the aggregate cost of the work done and labor, materials, equipment, apparatus, and supplies furnished at the prices and rates respectively named therefore in the Proposal attached hereto, and will well and faithfully comply with and perform each and every obligation imposed upon them by said Contract Documents and the terms of said Award.

It is agreed and understood that the term "Contract Documents" means and includes the following:

1. Advertisement for Bids;
2. Instructions to Bidders;
3. Proposal;
4. Information/Documents provided with the Bid (i.e. qualifications, MBE affidavits, etc.)
5. Agreement;
6. Notices (Notice of Award; Notice to Proceed);
7. Bonds (Bid Bond; Performance Bond; Payment Bond);
8. General Conditions;
9. Supplementary Conditions;
10. Specifications (General Specifications; Technical Specifications);
11. Addenda (enumerated in Proposal); and
12. Contract Drawings.

It is further mutually agreed between the parties hereto that if, at any time after the execution of this Agreement and the performance and payment Bonds hereto attached for its faithful performance and payment, the Owner shall deem the surety or sureties upon such Bonds to be unsatisfactory, or if, for any reason, such Bonds cease to be adequate to cover the performance or payment of the work, the Contractor shall, at their expense, within five (5) days after the receipt of notice from the Owner so to do, furnish an additional Bond or Bonds in such form and amount and with such surety or sureties as shall be satisfactory to the Owner. In such event no further payment to the Contractor shall be deemed to be due under this agreement until such new or additional security for the faithful performance and payment of the work shall be furnished in a manner and form satisfactory to the Owner.

The Contractor shall make payments to all persons supplying materials in the prosecution of the work, and to all laborers and others employed thereon in accordance with the General Conditions and in a manner as required by law.

The Owner does hereby covenant and agree with the Contractor that it will pay to the Contractor, when due and payable under the terms of the Contract Documents and the Award, the sum mentioned above, and that it will well and faithfully comply with and perform each and every obligation imposed upon it by said Contract Documents and the terms of said Award.

Further Agreements:

IN WITNESS WHEREOF, said (Legal Entity) _____
has caused these presents to be signed in its corporate name by its _____
_____, its corporate seal to be hereto affixed and attested by its
secretary, and the Owner has caused these presents to be executed in its name by the officer indicated,
attested, and its Official Seal to be affixed all by order of its County Commissioners as of the day and year
first above written.

Legal Entity*

By: _____

Printed Name

Title: _____

ATTEST:

Secretary
(SEAL)

CUMBERLAND COUNTY

ATTEST:

Andrea Tebbe
Clerk to the Board

By: _____
Kirk deViere, Chairman, Board of
Commissioners

***Note:** If the Contractor is a Corporation, the legal name of the Corporation shall be set forth above, together with the signature of the officer or officers authorized to sign Contracts on behalf of the Corporation; if Contractor is a partnership, the true name of the firm shall be set forth above, together with the signatures of all the partners; and if Contractor is an individual, their signature shall be placed above. If signature is by an agent other than an officer of a Corporation or a member of a partnership, a Power of Attorney must be attached hereto. Signature of Contractor shall also be acknowledged before a Notary Public or other person authorized by law to execute such acknowledgment.

Pre-Audit Certificate

This instrument has been pre-audited in the manner required by the Local Government and Fiscal Control Act.

Robin K. Deaver
Finance Director

Clarence Grier
County Manager

Kirk deViere
Chairman, Board of Commissioners

Approved as to Content:

Amanda Lee, P.E.
General Manager for Natural Resources

Approved for Legal Sufficiency upon formal execution by all parties:

County Attorney's Office

Contractor's Affidavit

STATE OF _____)

COUNTY OF _____)

THIS IS TO CERTIFY that on this day personally appeared before me _____ with whom I am personally acquainted, who, being duly sworn, says that _____ is the _____ President and that the said _____ is the _____ Secretary of _____, the Corporation described in and which executed the foregoing Contract; that they know the common seal of said corporation; that the seal affixed to the said instrument is said common seal; that the name of the corporation was subscribed thereto by the said _____ President and that the said _____ President and _____ Secretary subscribed their names thereto and said common seal was affixed, all by order of the Board of Directors of said Corporation, and said instrument is the act and Deed of said Corporation.

WITNESS my hand and notarial seal this _____ day of _____, 20_____

Notary Public

County

My Commission Expires: _____

[SEAL]

Certificate of Insurance

(Attach)

NOTICES

Notice of Award

To: Contractor: _____
Address: _____

Project: Off-Site Soil Delivery and Placement – Cells 11 and 12
Ann Street MSW Landfill
Cumberland County, North Carolina

You are hereby notified that the Owner has considered the Proposal submitted by you for the above-described project in response to its Advertisement for Bids dated _____, 20____.

It appears that it is to the best interest of said Owner to accept your Proposal in the amount of: _____ Dollars (\$ _____) for construction of the project (Off-Site Soil Delivery and Placement – Cells 11 and 12 – Ann St MSW Landfill).

You are required by the Instructions to Bidders to execute the formal Contract with the Owner and to furnish the required Contractor's Performance and Payment Bonds within fifteen (15) days from the date of the delivery of this Notice to you otherwise the Bid Security may be forfeited to the Owner at the Owner's sole discretion.

If you fail to execute said Contract and to furnish said Bonds within fifteen (15) days from the date of delivery of this Notice, said Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your Proposal as abandoned and to award the work covered by your Proposal to another, or to re-advertise the work or otherwise dispose thereof as the Owner may see fit.

CUMBERLAND COUNTY

BY: _____
Amanda Lee, Director

DATE: _____

Acceptance of Notice

Receipt of the above Notice of Award is hereby acknowledged this _____ day of _____, 20____.

BY: _____

Printed Name

This page intentionally left blank.

Notice to Proceed

To: Contractor: _____
Address: _____

Project: Off-Site Soil Delivery and Placement – Cells 11 and 12
Ann Street MSW Landfill
Cumberland County, North Carolina

Contract No. _____ Contract Amount \$ _____

You are hereby notified to commence work on the referenced project on or before _____
_____ and are to fully complete the work for Cell 11 within
300 CONSECUTIVE CALENDAR DAYS thereafter, and shall fully complete Cell 12 within **300**
CONSECUTIVE CALENDAR DAYS following the completion of Cell 11. Your Contract completion date is
therefore _____
_____.

The Contract provides for assessment of the sum of \$500.00 as liquidated damages for each consecutive calendar day after the above established Contract completion date that the work remains incomplete.

SMITH GARDNER, INC.

BY: _____
Jesse C. Li, Project Engineer

DATE: _____

This page intentionally left blank.

BONDS

Bid Bond

This Bond is executed on this _____ day of _____, 20____.

PRINCIPAL (Name and Address):

SURETY (Name and Address):

Cumberland County is the OWNER.

The amount of the Bond is _____ Dollars (\$_____)

KNOW BY ALL MEN BY THESE PRESENTS, the Principal and Surety above named are hereby held and firmly bound unto the above named Owner in the penal sum of the amount stated above in lawful money of the United States, for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of the above obligation is such that whereas the Principal has submitted to the Owner a certain Bid, attached hereto and hereby made a part hereof to enter into a Contract in writing, for the construction of:

**Off-Site Soil Delivery and Placement – Cells 11 and 12
Ann Street MSW Landfill
Cumberland County, North Carolina**

NOW, THEREFORE

- (a) If said Bid shall be rejected, or in the alternate,
- (b) If said Bid shall be accepted and the Principal shall execute and deliver a Contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall furnish a bond for their faithful Performance of said Contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Bid, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its Bond shall be in no way impaired or affected by any extension of the time within which the Owner may accept such Bid; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

PRINCIPAL

SURETY

Principal Name and Corporate Seal

Surety Name and Corporate Seal

By:

By:

Signature

Signature (Attach Power of Attorney)

Printed Name

Printed Name

Title

Title

Attest:

Attest:

Signature

Signature

Printed Name

Printed Name

Title

Title

Performance Bond

This Bond is executed on this _____ day of _____, 20____. *(See Note)*

PRINCIPAL (Name and Address):

SURETY (Name and Address):

Cumberland County is the OWNER.

The amount of the Bond is _____ Dollars (\$_____).

KNOW ALL MEN BY THESE PRESENTS, that we, the Principal and Surety above named, are held and firmly bound unto the above named Owner in the penal sum of the amount stated above in lawful money of the United States, for the payment of which sum well and truly to be made, we jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas, the Principal entered into a certain Contract with the Owner, dated the _____ day of _____, 20____, for work described by Drawings and Specifications prepared by Smith Gardner, Inc. a copy of said Contract is hereto attached and made a part hereof for the construction of:

**Off-Site Soil Delivery and Placement – Cells 11 and 12
Ann Street MSW Landfill
Cumberland County, North Carolina**

NOW THEREFORE, if the Principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said Contract during the original term of said Contract and any extensions thereof that may be granted by the Owner, with or without notice to the Surety, and during the life of any guaranty required under the Contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said Contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

PRINCIPAL

SURETY

Principal Name and Corporate Seal

Surety Name and Corporate Seal

By:

Signature

Printed Name

Title

By:

Signature (Attach Power of Attorney)

Printed Name

Title

Attest:

Signature

Printed Name

Title

Attest:

Signature

Printed Name

Title

Note: Date of Performance Bond must not be prior to date of the Agreement.

Payment Bond

This Bond is executed on this _____ day of _____, 20____. (See Note)

PRINCIPAL (Name and Address):

SURETY (Name and Address):

Cumberland County is the OWNER.

The amount of the Bond is _____ Dollars (\$_____).

KNOW ALL MEN BY THESE PRESENTS, that we, the Principal and Surety above named, are held and firmly bound unto the above named Owner in the penal sum of the amount stated above in lawful money of the United States, for the payment of which sum well and truly to be made, we jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas, the Principal entered into a certain Contract with the Owner, dated the _____ day of _____, 20____, for work described by Drawings and Specifications prepared by Smith Gardner, Inc. a copy of said Contract is hereto attached and made a part hereof for the construction of:

**Off-Site Soil Delivery and Placement – Cells 11 and 12
Ann Street MSW Landfill
Cumberland County, North Carolina**

NOW THEREFORE, if the Principal shall promptly make payment to all persons supplying labor and material in the prosecution of the work provided for in said Contract, and any and all duly authorized modifications of said Contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

PRINCIPAL

SURETY

Principal Name and Corporate Seal

Surety Name and Corporate Seal

By:

Signature

Printed Name

Title

By:

Signature (Attach Power of Attorney)

Printed Name

Title

Attest:

Signature

Printed Name

Title

Attest:

Signature

Printed Name

Title

Note: Date of Payment Bond must not be prior to date of the Agreement.

PREFERRED FORMS

(Note: Alternative Forms may be used as approved by the Owner and Engineer. Electronic versions of these forms are available)

This page intentionally left blank.

Pay Application No. _____

Project:	
Notice to Proceed:	
Completion Date:	

Contractor:	
ATTN:	

Engineer: Smith Gardner, Inc. (S+G)
ATTN:
14 N. Boylan Ave.
Raleigh, NC 27603

Owner:	
ATTN:	

APPLICATION SUMMARY:

Application Period: _____

1. Original Contract Sum:	\$0.00
2. Net Change by Change Order(s) to Date:	\$0.00
3. Contract Sum to Date (Line 1 + Line 2):	\$0.00
4. Work Completed to Date (See Attached Detail):	\$0.00
5. Materials Stored to Date (See Attached Detail):	\$0.00
6. Total Completed and Stored to Date (Line 4 + Line 5):	\$0.00
7. Less Retainage: _____ 5 %	\$0.00
8. Amount Eligible to Date (Line 6 - Line 7):	\$0.00
9. Less Amounts Due from Previous Pay Applications:	\$0.00
10. Amount Due this Application (Line 8 - Line 9):	\$0.00
11. Balance to Finish, Including Retainage (Line 3 - Line 8):	\$0.00

CONTRACTOR'S CERTIFICATION:

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information, and belief, the Work covered by this Pay Application has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Pay Applications were approved and payments received from the Owner, and that the current amount requested is now due.

Certified for Contractor By:		Recommended for Approval By (S+G):	
By:		By:	
Title:		Title:	
Date:		Date:	

Approved for Owner By:		Approved By (Other - When Required):	
By:		By:	
Title:		Title:	
Date:		Date:	

This page intentionally left blank.

Project:	<input type="text"/>
Owner:	<input type="text"/>
Contractor:	ATTN: <input type="text"/>

Date Transmitted:
1st Sub. <input type="text"/>
Re-Sub. <input type="text"/>
Prev. Transmittal Date: <input type="text"/>
Date Received: <input type="text"/>
Checked By: <input type="text"/>

No. Copies**	Description	Manufacturer or Supplier	Specification Section or Drawing No.	Action Taken*
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

* The Action Designated Above is in Accordance with the Following Legend:

A- Furnish as Submitted.

B- Furnish as Noted. (See Comments Below.)

C- Revise and Resubmit.

1. Not enough information for review.
2. No reproducibles submitted.
3. Copies illegible.
4. Not enough copies submitted.
5. Wrong sequence number.
6. Wrong resubmittal number.
7. Wrong specification number.
8. Wrong form used.
9. See comments below.

D- Rejected.

E- Engineer's Review Not Required.

1. Submittal not required.
2. Supplemental information. Submittal retained for informational purposes only.
3. Information reviewed and approved on prior submittal.
4. See comments below.

Comments:
<input style="height: 50px;" type="text"/>

Note that the Engineer's review of this submittal is confined to the general arrangement and compliance with the Contract Documents and does not relieve the Contractor of the responsibility of correcting all errors, deviations, and/or omissions which may be related to this submittal.

<input type="text"/>	
By:	<input type="text"/>
Title:	<input type="text"/>
Date:	<input type="text"/>

**Distribution:

Owner
 Contractor
 Field
 File
 Other

This page intentionally left blank.

Project:	<input type="text"/>
Owner:	<input type="text"/>
Contractor:	ATTN: <input type="text"/>

Contract No. (If Applicable):	<input type="text"/>
Date of Contract:	<input type="text"/>
Original Contract Price:	<input type="text"/>
Original Contract Period:	<input type="text"/>

It is agreed to modify the Contract referred to above as follows. Note that the changes included in this Change Order are to be accomplished in accordance with the terms, stipulations, and conditions of the original Contract (as amended) as though included herein.

Item No.	Description	Contract Price		Contract Time (Days)	
		Increase	Decrease	Increase	Decrease
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Subtotal:		\$0.00	0.00	0	0
Net Difference:		\$0.00		0	

Contract Price Prior to this Change Order:	Contract Time Prior to this Change Order (Days):
<input type="text"/>	0

Net Increase (Decrease) of this Change Order:	Net Increase (Decrease) of this Change Order (Days):
\$0.00	0

Revised Contract Price with all Approved Change Orders:	Revised Contract Time with all Approved Change Orders (Days):
\$0.00	0

Accepted for Contractor By:		Recommended for Approval By (S+G):	
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
By:	<input type="text"/>	By:	<input type="text"/>
Title:	<input type="text"/>	Title:	<input type="text"/>
Date:	<input type="text"/>	Date:	<input type="text"/>

Approved for Owner By:		Approved By (Other - When Required):	
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
By:	<input type="text"/>	By:	<input type="text"/>
Title:	<input type="text"/>	Title:	<input type="text"/>
Date:	<input type="text"/>	Date:	<input type="text"/>

Distribution: Owner Contractor Field File Other

SMITH+GARDNER

Change Order - Line Item Breakdown:

Item No.	Description (Units)	Unit Cost		Total Cost	
		Quantity	Unit Cost	Increase	Decrease
A. Unit Price Item Quantity Adjustments:					
Subtotal:				\$0.00	\$0.00
Net Difference:				\$0.00	
B. Additional Items:					
Subtotal:				\$0.00	\$0.00
Net Difference:				\$0.00	

Project:	<input type="text"/>
Owner:	<input type="text"/>
Contractor:	ATTN: <input type="text"/>

Attention:

The following change in the contract is proposed. A breakdown of the cost SHALL be attached and work shall not commence until authorized by Owner. Note that, if approved by Change Order, all work shall be accomplished in accordance with the terms, stipulations, and conditions of the original Contract (as amended).

Description:
<input type="text"/>

Net Increase (Decrease) of this Change Proposal Request:	Net Increase (Decrease) of this Change Proposal Request (Days):
\$0.00	0

Requested by Contractor:	
<input type="text"/>	
By:	<input type="text"/>
Title:	<input type="text"/>
Date:	<input type="text"/>

S+G Recommendation: <input type="checkbox"/> Accept <input type="checkbox"/> Reject	Owner Action: <input type="checkbox"/> Accept <input type="checkbox"/> Reject
<input type="text"/>	<input type="text"/>
By:	By:
Title:	Title:
Date:	Date:

Distribution: Owner Contractor Field File Other

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SMITH+GARDNER

Field Order No.

Project:	<input type="text"/>
Owner:	<input type="text"/>
Contractor:	ATTN: <input type="text"/>

Attention:
You are hereby directed to promptly execute this Field Order for minor changes in the Work without changes in Contract Sum or Contract Time. If you consider that a change in Contract Sum or Contract Time is required, please submit your itemized proposal to Smith Gardner, Inc. immediately and before proceeding with this work. If your proposal is found to be acceptable and in proper order, the Field Order will, in that event, be superseded by a Change Order.

Reference:

Description:

Attachments:

Comments:

<input type="text"/>	
By:	<input type="text"/>
Title:	<input type="text"/>
Date:	<input type="text"/>

Distribution: Owner Contractor Field File Other

This page intentionally left blank.

Project:	
Owner:	
Contractor:	ATTN: <input type="text"/>

Contract No. (If Applicable): <input type="text"/>
Date of Issuance: <input type="text"/>

- This Certificate of Substantial Completion applies to all Work under the Contract Documents.
- This Certificate of Substantial Completion applies to the following specified parts of the Contract Documents:

The Work to which this Certificate applies has been inspected by authorized representatives of the OWNER, CONTRACTOR, and ENGINEER and found to be substantially complete and is also the date of commencement of applicable warranties required by the Contract Documents. * (except as attached.)

The Work is hereby declared to be substantially complete with the Contract Documents on:

Date of Substantial Completion

A "Punch-List" of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include an item in it does not alter the responsibility of the CONTRACTOR to complete a Work in accordance with the Contract Documents. The items in the tentative list shall be completed or corrected by the CONTRACTOR within _____ days of the Substantial Completion.

*A list of "excepted" Warranty items is attached hereto.

This Certificate does not constitute an acceptance of Work NOT in accordance with the Contract Documents nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract Documents.

Executed By S+G (Engineer):		Accepted for Contractor By:	
By:		By:	
Title:		Title:	
Date:		Date:	

Accepted for Owner By:	
By:	
Title:	
Date:	

Distribution: Owner Contractor Field File Other

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This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the Controlling Law.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly By



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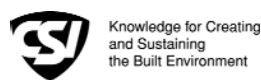
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Construction Specifications Institute

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These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor Nos. C-520 or C-525 (2002 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the EJCDC Construction Documents, General and Instructions (No. C-001) (2002 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (No. C-800) (2002 Edition).

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GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*--Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*--The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.

3. *Application for Payment*--The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Asbestos*--Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

5. *Bid*--The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

6. *Bidder*--The individual or entity who submits a Bid directly to Owner.

7. *Bidding Documents*--The Bidding Requirements and the proposed Contract Documents (including all Addenda).

8. *Bidding Requirements*--The Advertisement or Invitation to Bid, Instructions to Bidders, bid security of acceptable form, if any, and the Bid Form with any supplements.

9. *Change Order*--A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

10. *Claim*--A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*--The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*-- Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor's submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

13. *Contract Price*--The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).

14. *Contract Times*--The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any, (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.

15. *Contractor*--The individual or entity with whom Owner has entered into the Agreement.

16. *Cost of the Work*--See Paragraph 11.01.A for definition.

17. *Drawings*--That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.

18. *Effective Date of the Agreement*--The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

19. *Engineer*--The individual or entity named as such in the Agreement.

20. *Field Order*--A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

21. *General Requirements*--Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.

22. *Hazardous Environmental Condition*--The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.

23. *Hazardous Waste*--The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

24. *Laws and Regulations; Laws or Regulations*--Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

25. *Liens*--Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

26. *Milestone*--A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

27. *Notice of Award*--The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.

28. *Notice to Proceed*--A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.

29. *Owner*--The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.

30. *PCBs*--Polychlorinated biphenyls.

31. *Petroleum*--Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

32. *Progress Schedule*--A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

33. *Project*--The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

34. *Project Manual*--The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

35. *Radioactive Material*--Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

36. *Related Entity* -- An officer, director, partner, employee, agent, consultant, or subcontractor.

37. *Resident Project Representative*--The authorized representative of Engineer who may be assigned to the Site or any part thereof.

38. *Samples*--Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

39. *Schedule of Submittals*--A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.

40. *Schedule of Values*--A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

41. *Shop Drawings*--All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

42. *Site*--Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.

43. *Specifications*--That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain

administrative requirements and procedural matters applicable thereto.

44. *Subcontractor*--An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

45. *Substantial Completion*--The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

46. *Successful Bidder*--The Bidder submitting a responsive Bid to whom Owner makes an award.

47. *Supplementary Conditions*--That part of the Contract Documents which amends or supplements these General Conditions.

48. *Supplier*--A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or any Subcontractor.

49. *Underground Facilities*--All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

50. *Unit Price Work*--Work to be paid for on the basis of unit prices.

51. *Work*--The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

52. *Work Change Directive*--A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times

but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 Terminology

A. The following words or terms are not defined but, when used in the Bidding Requirements or Contract Documents, have the following meaning.

B. Intent of Certain Terms or Adjectives

1. The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action or determination will be solely to evaluate, in general, the Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. Day

1. The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. Defective

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

- a. does not conform to the Contract Documents, or
- b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents, or
- c. has been damaged prior to Engineer's - recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. Furnish, Install, Perform, Provide

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.

F. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 - PRELIMINARY MATTERS

2.01 Delivery of Bonds and Evidence of Insurance

A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.

B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 Copies of Documents

A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 Commencement of Contract Times; Notice to Proceed

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement

or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 Starting the Work

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 Before Starting Construction

A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule; indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 Preconstruction Conference

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

2.07 Initial Acceptance of Schedules

A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided whether or not specifically called for at no additional cost to Owner.

C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

A. Standards, Specifications, Codes, Laws, and Regulations

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or

responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, or Engineer, or any of, their Related Entities, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. Reporting Discrepancies

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor may discover and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.

2. *Contractor's Review of Contract Documents During Performance of Work:* If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor knew or reasonably should have known thereof.

B. Resolving Discrepancies

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

a. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work

(unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

1. A Field Order;
2. Engineer's approval of a Shop Drawing or Sample; (Subject to the provisions of Paragraph 6.17.D.3); or
3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

A. Contractor and any Subcontractor or Supplier or other individual or entity performing or furnishing all of the Work under a direct or indirect contract with Contractor, shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or Engineer's consultants, including electronic media editions; or
2. reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaption by Engineer.

B. The prohibition of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

A. Copies of data furnished by Owner or Engineer to Contractor or Contractor to Owner or Engineer that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's

sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party..

C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 *Subsurface and Physical Conditions*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports of explorations and tests of subsurface conditions at or contiguous to the Site that Engineer has used in preparing the Contract Documents; and

2. those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that Engineer has used in preparing the Contract Documents.

B. *Limited Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice*: If Contractor believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:

1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or

2. is of such a nature as to require a change in the Contract Documents; or

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer's Review*: After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. Possible Price and Times Adjustments

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and

b. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:

a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or

b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or

c. Contractor failed to give the written notice as required by Paragraph 4.03.A.

3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, Owner and Engineer, and any of their Related Entities shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

a. reviewing and checking all such information and data,

b. locating all Underground Facilities shown or indicated in the Contract Documents,

c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction, and

d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will

promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 *Hazardous Environmental Condition at Site*

A. *Reports and Drawings:* Reference is made to the Supplementary Conditions for the identification of those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the Engineer in the preparation of the Contract Documents.

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.

D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any.

E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered to Contractor written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.

F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to

entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.

G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06. G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 - BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified

in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.

B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent must be accompanied by a certified copy of the agent's authority to act.

C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

A. Contractor shall deliver to Owner, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.

B. Owner shall deliver to Contractor, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

5.04 *Contractor's Liability Insurance*

A. Contractor shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and as will provide protection

from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;

2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;

3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;

4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:

a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or

b. by any other person for any other reason;

5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and

6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

B. The policies of insurance required by this Paragraph 5.04 shall:

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, include as additional insured (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

3. include completed operations insurance;

4. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;

5. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);

6. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and

7. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment.

a. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance*

A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;

2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, false work, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, (other than caused by flood) and such other perils or causes of loss as may be specifically required by the Supplementary Conditions;

3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;

5. allow for partial utilization of the Work by Owner;

6. include testing and startup; and

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.

B. Owner shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.

C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.

D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any

deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 *Waiver of Rights*

A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insured or additional insured (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.

B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order .

B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract

Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances. The superintendent will be Contractor's representative at the Site and shall have authority to act on behalf of Contractor. All communications given to or

received from the superintendent shall be binding on Contractor.

6.02 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or-Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.

1. "*Or-Equal*" Items: If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that:

1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole,

3) it has a proven record of performance and availability of responsive service; and

b. Contractor certifies that, if approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times, and

2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. Substitute Items

a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.

b. Contractor shall submit sufficient information as provided below to allow Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.

c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented in the General Requirements and as Engineer may decide is appropriate under the circumstances.

d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

1) shall certify that the proposed substitute item will:

a) perform adequately the functions and achieve the results called for by the general design,

b) be similar in substance to that specified, and

c) be suited to the same use as that specified;

2) will state:

a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time;

b) whether or not use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and

c) whether or not incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;

3) will identify:

a) all variations of the proposed substitute item from that specified, and

b) available engineering, sales, maintenance, repair, and replacement services;

4) and shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change,

B. Substitute Construction Methods or Procedures: If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.

C. Engineer's Evaluation: Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by either a Change Order for a substitute or an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.

D. Special Guarantee: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

E. Engineer's Cost Reimbursement: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute item so proposed or submitted by Contractor, Contractor shall reimburse Owner for the charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the charges of Engineer for making changes in the Contract

Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

F. Contractor's Expense: Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 Concerning Subcontractors, Suppliers, and Others

A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity, nor

2. shall anything in the Contract Documents create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual

or entity except as may otherwise be required by Laws and Regulations.

D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.

E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.

F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of Owner or Engineer its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11 *Use of Site and Other Areas*

A. Limitation on Use of Site and Other Areas

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

6.13 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

C. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Draw-

ings or Specifications or to the acts or omissions of Owner or Engineer or , or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

D. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the acceptable Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. Shop Drawings

a. Submit number of copies specified in the General Requirements.

b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples*: Contractor shall also submit Samples to Engineer for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals.

a. Submit number of Samples specified in the Specifications.

b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.

B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals , any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. Submittal Procedures

1. Before submitting each Shop Drawing or Sample, Contractor shall have determined and verified:

a. all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

b. the suitability of all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;

c. all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto; and

d. shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents

with respect to Contractor's review and approval of that submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations, that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawing's or Sample Submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. Engineer's Review

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. Resubmittal Procedures

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 Continuing the Work

A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or

disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 Contractor's General Warranty and Guarantee

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its Related Entities shall be entitled to rely on representation of Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. use or occupancy of the Work or any part thereof by Owner;

5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;

6. any inspection, test, or approval by others; or

7. any correction of defective Work by Owner.

6.20 Indemnification

A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or

arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable .

B. In any and all claims against Owner or Engineer or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 *Delegation of Professional Design Services*

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.

B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal

shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 - OTHER WORK AT THE SITE

7.01 *Related Work at Site*

A. Owner may perform other work related to the Project at the Site with Owner's employees, or via other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

1. written notice thereof will be given to Contractor prior to starting any such other work; and
2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.

B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and shall properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and

properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

2. the specific matters to be covered by such authority and responsibility will be itemized; and

3. the extent of such authority and responsibilities will be provided.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.03 *Legal Relationships*

A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.

B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's actions or inactions.

C. Contractor shall be liable to Owner and any other contractor for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's action or inactions.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

8.02 *Replacement of Engineer*

A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

8.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

A. Owner's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that have been utilized by Engineer in preparing the Contract Documents.

8.06 *Insurance*

A. Owner's responsibilities, if any, in respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility in respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *Evidence of Financial Arrangements*

A. If and to the extent Owner has agreed to furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents, Owner's responsibility in respect thereof will be as set forth in the Supplementary Conditions.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents and will not be changed without written consent of Owner and Engineer.

9.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep

Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative*

A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Authorized Variations in Work*

A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.

B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.

C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.

D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question

B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believe that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.

C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.

D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show

partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to, the Resident Project Representative, if any, and assistants, if any.

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall

promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.B.

10.03 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:

1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;

2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and

3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *Notification to Surety*

A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any bond to be given to a surety, the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

10.05 *Claims*

A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.

B. *Notice:* Written notice stating the general nature of each Claim, shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:

1. deny the Claim in whole or in part,

2. approve the Claim, or

3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.

D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.

F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 - COST OF THE WORK;
ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in Paragraph 11.01.B.

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and

Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.

4. Costs of special consultants (including but not limited to Engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have

resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expresses, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

B. Costs Excluded: The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A and 11.01.B.

C. Contractor's Fee: When all the Work is performed on the basis of cost-plus, Contractor's fee shall

be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.

D. Documentation: Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 Allowances

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. Cash Allowances

1. Contractor agrees that:

a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. Contingency Allowance

1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 Unit Price Work

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

2. there is no corresponding adjustment with respect any other item of Work; and

3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an

allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

C. *Contractor's Fee:* The Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;

b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraph 12.01.C.2.a is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted

by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.

D. Owner, Engineer and the Related Entities of each of them shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of Engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 *Notice of Defects*

A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. All defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspecting, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's Site safety procedures and programs so that they may comply therewith as applicable.

13.03 *Tests and Inspections*

A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;

2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in said Paragraph 13.04.C; and

3. as otherwise specifically provided in the Contract Documents.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to

be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, it must, if requested by Engineer, be uncovered for observation.

F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.

B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.

C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.

D. If, the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

A. Promptly after receipt of notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. repair such defective land or areas; or
2. correct such defective Work; or
3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications .

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.

C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress

payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. Applications for Payments

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations on the Site of the executed Work as an experienced and qualified design professional and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and to any other qualifications stated in the recommendation); and

c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or

b. that there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

a. to supervise, direct, or control the Work, or

b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or

e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent

inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

- a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
- b. the Contract Price has been reduced by Change Orders;
- c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
- d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. Reduction in Payment

1. Owner may refuse to make payment of the full amount recommended by Engineer because:

- a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
- b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
- c. there are other items entitling Owner to a set-off against the amount recommended; or
- d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.

2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor corrects to Owner's satisfaction the reasons for such action.

3. If it is subsequently determined that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1.

14.03 Contractor's Warranty of Title

A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 Substantial Completion

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.

B. Promptly after Contractor's notification, , Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will within 14 days after submission of the tentative certificate to Owner notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will within said 14 days execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial

Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to complete or correct items on the tentative list.

14.05 *Partial Utilization*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions.

1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor will certify to Owner and Engineer that such part of the Work is substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals

that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *Final Payment*

A. Application for Payment

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.7;

b. consent of the surety, if any, to final payment;

c. a list of all Claims against Owner that Contractor believes are unsettled; and

d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner or Owner's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. *Engineer's Review of Application and Acceptance*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations

under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. Payment Becomes Due

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and , will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and

2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance

with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);

2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;

3. Contractor's disregard of the authority of Engineer; or

4. Contractor's violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:

1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion),

2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and

3. complete the Work as Owner may deem expedient.

C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph Owner shall not be required to obtain the lowest price for the Work performed.

D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.

E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B, and 15.02.C.

15.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

4. reasonable expenses directly attributable to termination.

B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 - DISPUTE RESOLUTION

16.01 *Methods and Procedures*

A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be

governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.

B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.

C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:

1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions, or

2. agrees with the other party to submit the Claim to another dispute resolution process, or

3. gives written notice to the other party of their intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 - MISCELLANEOUS

17.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

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SECTION 0800

SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (EJCDC No. C-700, 2002 Edition) as indicated below. All provisions which are not so amended or supplemented remain in full force and effect. The terms used in these Supplementary Conditions have the meanings stated in the General Conditions.

ARTICLE 2 - PRELIMINARY MATTERS

2.03 *Commencement of Contract Times; Notice To Proceed*

Amend Paragraph 2.03.A as follows:

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier. By mutual consent of the parties to the Contract, these time limits may be changed.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.03 *Reporting and Resolving Discrepancies*

Add the following paragraph after Paragraph 3.03.B.1:

2. Where conflicts exist between these General Conditions, Supplementary Conditions, the General and Technical Specifications, the Asbestos Work Plan, and the Contract Drawings, the most stringent requirements shall govern.

ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.06 *Hazardous Environmental Condition at Site*

Delete Paragraph 4.06.G in its entirety.

ARTICLE 5 - BONDS AND INSURANCE

5.03 *Certificates of Insurance*

Delete Paragraph 5.03.B in its entirety and replace with the following:

B. Failure of Owner to demand such certificates or other evidence of full compliance with these insurance requirements or failure of Owner to identify a deficiency from evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

C. By requiring such insurance and insurance limits herein, Owner does not represent that coverage and limits will necessarily be adequate to protect Contractor, and such coverage and limits shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 *Contractor's Liability Insurance*

Add the following paragraph after Paragraph 5.04.B:

C. The limits of liability for the insurance required by Paragraph 5.04 of the General Conditions shall provide the following coverages for not less than the following amounts or greater where required by Laws and Regulations:

1. Worker's Compensation, and related coverages under Paragraphs 5.04.A.1 and 5.04.A.2 of the General Conditions:

- a. State: Statutory.
- b. Applicable Federal (e.g. Longshoreman's): Statutory.
- c. Employer's Liability: \$500,000.

2. Contractor's General Liability under Paragraphs 5.04.A.3 through 5.04.A.6 of the General Conditions, which shall include completed operations and product liability coverages.

- a. General Aggregate (Except Products - Completed Operations): \$2,000,000
- b. Products - Completed Operations Aggregate: \$2,000,000
- c. Personal and Advertising Injury (Per Person/Organization): \$1,000,000
- d. Each Occurrence (Bodily Injury and Property Damage): \$1,000,000
- e. Property Damage liability insurance will provide Explosion, Collapse, and Underground coverages where applicable
- f. Excess or Umbrella Liability:
 - 1) General Aggregate: \$2,000,000
 - 2) Each Occurrence: \$2,000,000.

3. Automobile Liability under Paragraph 5.04.A.6 of the General Conditions:

- a. Bodily Injury:
 - Each Person: \$1,000,000
 - Each Accident: \$1,000,000
- b. Property Damage:
 - Each Accident: \$1,000,000
- c. Combined Single Limit (Bodily Injury and Property Damage): \$1,000,000.

4. The Contractual Liability coverage required by Paragraph 5.04.B.4 of the General Conditions shall provide coverage for not less than the following amounts:

- a. Bodily Injury:
 - Each Accident: \$1,000,000
 - Annual Aggregate: \$2,000,000
- b. Property Damage:
 - Each Accident: \$1,000,000
 - Annual Aggregate: \$2,000,000

5. The entities listed below and their respective officers, managers, directors, employees, and consultants are to be added as Additional Insureds on the Contractor's General Liability insurance policy by attachment of ISO Forms CG2026 (04/13) and CG2037 (04/13) or form(s) providing equivalent coverage:

<u>Owner:</u>	<u>Cumberland County</u>
<u>Engineer:</u>	<u>Smith Gardner, Inc. (S+G)</u>
<u>CQA Engineer:</u>	<u>TBD</u>

5.05 *Owner's Liability Insurance*

Delete in its entirety.

5.06 *Property Insurance*

Delete in its entirety.

5.07 *Waiver of Rights*

Delete in its entirety.

5.08 *Receipt and Application of Insurance Proceeds*

Delete in its entirety.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

Delete in its entirety.

5.10 *Partial Utilization, Acknowledgement of Property Insurer*

Delete in its entirety.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.06 *Concerning Subcontractors, Suppliers, and Others*

Amend Paragraph 6.06.B as follows:

B. If the ~~Supplementary Conditions~~ Instructions to Bidders require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the ~~Supplementary Conditions~~ Instructions to Bidders, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

6.10 *Taxes*

Add the following paragraph after Paragraph 6.10.A:

B. Sales and Use Tax Documentation

1. Pursuant to North Carolina General Statutes, Section 105-164.14, Owner is eligible for Sales and Use Tax refunds on all materials which become a permanent part of the construction. Contractor agrees to provide Owner documentation which meets the requirements of Sales and Use Tax Regulation 42 regarding request for refund of sales and use taxes. Those requirements are outlined as follows:

a. All refund claims must be substantiated by proper documentary proof and only those taxes actually paid by the claimant (Owner) during the fiscal year covered by the refund claim may be included in the claim.

b. Any local sales or use taxes included in the claim must be separately stated in the claim for refund. In cases where more than one county's sales and use tax has been paid, a breakdown must be attached to the claim for refund showing the amount of each county's local tax separately.

c. To substantiate a refund claim for sales and use taxes paid on purchases of building materials, supplies, fixtures, and equipment by its contractor, the claimant must secure from such contractor certified statements setting forth the cost of the property purchased from each vendor and the amount of state and local sales and/or use taxes paid thereon. Such statement must also include the cost of any tangible personal property withdrawn from Contractor's warehouse stock and the amount of state and local sales or use tax paid therein by Contractor. Similar certified statements by their subcontractors must be obtained by Contractor and furnished to the claimant. Any local sales or use taxes included in Contractor's statement must be shown separately from the State sales or use taxes. Contractor's statements must not contain sales or use taxes paid on purchases of tangible personal property purchased by such contractors for use in performing the contract which does no annex to, affix to, or in some manner become a part of the building or structure being erected, altered, or repaired for the governmental entities as defined by NCGS 105-164(c). Examples of property on which sales and use tax has been paid by Contractor and which should not be included in the Contractor's statement are scaffolding, forms for concrete, fuel for the operation of machinery and equipment, tools, equipment repair, parts and equipment rentals, blueprints, etc.

2. Contractor shall submit a notarized sales tax certificate(s) which meet the requirements detailed above with each monthly payment request. Payment will not be made until the sales tax certificate(s) has been submitted to Owner.

6.20 *Indemnification:*

Amend Paragraph 6.20.A as follows:

A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, civil penalties, fines, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.

Add the following paragraph after Paragraph 6.20.C:

D. Nothing in the Contract Documents shall create or give to third parties any claim or right of action against Contractor, Owner, or Engineer beyond such as may legally exist irrespective of the Contract.

ARTICLE 7 - OTHER WORK AT THE SITE

7.02 *Coordination*

Delete in its entirety.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

8.02 *Replacement of Engineer*

Delete in its entirety.

8.06 *Insurance*

Delete paragraph in its entirety.

8.11 *Evidence of Financial Arrangements*

Delete in its entirety.

ARTICLE 11 - COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

Add the following to the end of Paragraph 11.01A:

The work to be done by Contractor, specified and enumerated under this contract, shall include any minor details of the work not specifically mentioned in the specifications or shown on the plans, but obviously necessary for the proper completion of the work, which shall be considered incidental and as being a part of and included with the work for which prices are given in the Bid Form. Contractor will not be entitled to any additional compensation therefor.

Amend Paragraph 11.01.A.5.c as follows:

c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. These rates shall include all fuel, lubricants, insurance, etc. Equipment rental charges shall not exceed the prorated monthly rental rates listed in the current edition of the "Compilation of Rental Rates for Construction Equipment" as published by the Associated Equipment Distributors. Charges per hour shall be determined by dividing the monthly rates by 176. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

11.03 *Unit Price Work*

Delete Paragraph 11.03.D in its entirety and replace with the following:

D. The unit price of an item of Unit Price Work shall be subject to reevaluation and adjustment under the following conditions:

1. if the Bid price of a particular item of Unit Price Work amounts to five percent (5%) or more of the Contract Price and the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than twenty percent (20%) from the estimated quantity of such item indicated in the Agreement; and

2. if there is no corresponding adjustment with respect to any other item of Work; and

3. if Contractor believes that Contractor has incurred additional expense as a result thereof or if Owner believes that the quantity variation entitles Owner to an adjustment in the unit price, either Owner or Contractor may make a claim for an adjustment in the Contract Price in accordance with Article 10 if the

parties are unable to agree as to the effect of any such variation in the quantity of Unit Price Work performed.

ARTICLE 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.03 *Delays*

Add the following paragraphs after Paragraph 12.03.E:

F. *Weather Delay Days*: Contract Time extensions for abnormal weather conditions (“Weather Delay Days”) will be allowed if the cumulative number of Weather Delay Days is greater than the number shown in the table below (Standard Baseline) for the applicable month. Weather Delay Days shall be determined as follows:

Standard Baseline*:

<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APRIL</u>	<u>MAY</u>	<u>JUNE</u>	<u>JULY</u>	<u>AUG</u>	<u>SEPT</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>
<u>6</u>	<u>7</u>	<u>6</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>8</u>	<u>7</u>	<u>5</u>	<u>5</u>	<u>7</u>

* Based on Days With >= 0.10 Inches Rainfall. Data from SE Regional Climate Center, Fayetteville, NC Weather Station, 2000-2022.

1. A Weather Delay Day may be counted if one or more of the following conditions prevents work on the project for fifty percent (50%) or more of the Contractor’s scheduled work day and critical path construction activities were included in the day’s schedule:

- a. Precipitation (rain, snow, or ice) of at least one-tenth (0.10) inch, liquid measure;
- b. Temperatures that do not rise above that required for the day’s construction activity, if such temperature requirement is specified or accepted as standard industry practice;
- c. Sustained wind in excess of twenty five (25) miles per hour; or
- d. There is a hindrance to site access or site work based on at least one-half (0.5) inch of precipitation which occurred on an immediately prior day or over a consecutive day period since the last day worked and Contractor has taken all reasonable accommodations to avoid such hindrance (“Impact Day”).

2. Additionally, the following stipulations apply to the determination of allowable Weather Delay Days and applicable Contract Time extensions:

- a. Sundays and designated holidays shall not be allowed as Weather Delay Days unless specifically defined as normal work days in the Contract.
- b. Consecutive Impact Days shall not be allowed as Weather Delay Days unless conditions warrant (i.e. resulting from significant precipitation event (at least two (2.0) inches), snow/ice, etc.) and if recommended by the Engineer based on other site factors (temperatures, soil conditions, etc.).
- c. An extension of the Contract Time for Weather Delay Days shall be requested in writing to the Engineer within 60 calendar days of the applicable Weather Delay Day along with all required documentation. Such requests made after the 60 calendar day limitation will not be considered. Required documentation shall include:
 - 1) Actual weather data (site weather station (if applicable), nearest NOAA weather station, or other independently verified source approved by Owner and Engineer at the beginning of the project); and

2) Daily Contractor work logs showing the timing of precipitation events and which and to what extent critical path construction activities were affected by weather.

G. Owner, at Owner's sole discretion, may waive the requirements of Paragraph 12.03.A and grant extensions to the Contract Time for any reason Owner deems valid.

ARTICLE 13 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.03 *Tests and Inspections*

Delete Paragraph 13.03.B in its entirety and replace with the following:

B. Owner shall employ and pay for inspections and testing services specifically noted as such in the Contract. All others required shall be the responsibility of Contractor.

Add the following paragraph after Paragraph 13.03.F:

G. Owner reserves the right to independently perform at its own expense, laboratory tests on random samples of material or performance tests on equipment delivered to the site. These tests if made will be conducted in accordance with the appropriate referenced standards or Specification requirements. The entire shipment represented by a given sample, samples, or piece of equipment may be rejected on the basis of the failure of samples or pieces of equipment to meet specified test requirements. All rejected materials or equipment shall be removed from the site, whether stored or installed in the Work, and the required replacement shall be made, all at no additional cost to Owner.

13.05 *Owner May Stop the Work*

Amend Paragraph 13.05.A as follows:

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, or if the Work interferes with the operation of the existing facility Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

Add the following paragraph after Paragraph 13.06.B:

C. At any time during the progress of the Work and up to the date of final acceptance, Engineer shall have the right to reject any work which does not conform to the requirements of the Contract Documents, even though such work has been previously inspected and paid for. Any omissions or failure on the part of Engineer to disapprove or reject any Work or materials at the time of inspection shall not be construed as an acceptance of any defective work or materials.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

Add the following paragraph after Paragraph 14.01.A:

B. If requested to do so, Contractor shall submit for Engineer's approval, a complete breakdown of all Lump Sum Items in the Proposal. This breakdown, modified as directed by Engineer, will be used as a basis for preparing estimates and establishing progress payments.

14.02 *Progress Payments*

Delete Paragraph 14.02.A.3 in its entirety and replace with the following:

3. Applications for Payment shall include the percentage of the total amount of the Contract which has been completed from the start-up of the Project to and including the last day of the preceding month, or other mutually agreed upon day of the month accompanied by such data and supporting evidence as Owner or Engineer may require.

Forms to be used shall be prepared by Contractor and submitted to Engineer for approval and recommendation for payment by Owner. At the option of Owner, partial payment up to the estimated value, less retainage, may be allowed for any materials and equipment not incorporated in the Work, pursuant to the following conditions:

- a. Equipment or materials stored on the site shall be properly stored, protected, and maintained.
- b. For any partial payment Contractor shall submit, with their monthly progress payment from each material or equipment manufacturer, bills or invoices indicating actual stored material cost.
- c. Contractor shall submit evidence that they have paid for materials or equipment stored and for which Engineer has authorized partial payment and previous progress payments, prior to submission of the next monthly payment request.

Owner will retain five percent (5%) of the amount of each such estimate until Work covered by the Contract is fifty percent (50%) complete. When the project is fifty percent (50%) complete, the Owner, with written consent of the surety, shall not retain any further retainage from periodic payments due the Contractor if the Contractor continues to perform satisfactorily and any nonconforming work identified in writing prior to that time by the Engineer or Owner has been corrected by the Contractor and accepted by the Engineer or Owner. If the Owner determines the Contractor's performance is unsatisfactory, the Owner may reinstate retainage for each subsequent Application for Payment up to the maximum amount of five percent (5%). The project shall be deemed fifty percent (50%) complete when the Contractor's gross project invoices, excluding the value of materials stored off-site, equal or exceed fifty percent (50%) of the value of the Contract, except the value of materials stored on-site shall not exceed twenty percent (20%) of the Contractor's gross project invoices for the purpose of determining whether the project is fifty percent (50%) complete.

If Owner determines it is appropriate to reduce retainage, the method used for such adjustment shall be to fix retainage at two and one-half percent (2.5%) of the original Contract amount (when the work is 50% complete) and to pay all subsequent Applications for Payment to the full approved amount. The intent of such an adjustment is to gradually reduce retainage to two and one-half percent (2.5%) of the original Contract amount when the work is one hundred (100) percent complete.

Amend Paragraph 14.02.B.5.d and add Paragraphs 14.02.B.5.e-g as follows:

- d. Engineer has actual knowledge of the occurrence of any of the events enumerated in paragraph 15.02A.; or
- e. Contractor has failed to make payment to subcontractors or suppliers or for labor; or
- f. Contractor has failed to make acceptable submittals in accordance with accepted schedules; or

g. Liability for liquidated damages has been incurred by Contractor.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

Add the following paragraph after Paragraph 15.01.A:

B. Should Owner suspend Work due to repeated unsafe Work conducted by Contractor which is confirmed by subsequent inspection by the governing safety agency (State, Federal, or local), Contractor shall not be allowed any adjustment in Contract Price or extension of Contract Time attributed to this delay.

15.02 *Owner May Terminate for Cause*

Amend Paragraph 15.02.A.2 as follows:

2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction (including those governing employee safety);

15.03 *Owner May Terminate for Convenience*

Delete Paragraph 15.03.A.3 in its entirety.

Add the following paragraph after Paragraph 15.04:

15.05 *Assignment of Contract*

A. Contractor shall not assign, transfer, convey or otherwise dispose of the Contract, or of their legal right, title, or interest in or to the same or to any part thereof, without the prior written consent of Owner. Contractor shall not assign by power of attorney or otherwise any monies due them and payable under this Contract without the prior written consent of Owner. Such consent, if given, will in no way relieve Contractor from any of the obligations of this Contract. Owner shall not be bound to abide by or observe the requirements of any such assignment.

ARTICLE 16 – DISPUTE RESOLUTION

Replace Article 16 in its entirety with the following article:

ARTICLE 16 – DISPUTE RESOLUTION

The parties shall first attempt to negotiate a resolution to the dispute. In the event negotiation is unsuccessful, the parties shall enter into mediation. The mediator shall be as agreed upon by the parties, or in the event a mediator cannot be agreed upon, the mediator shall be selected by the trial court administrator of the Cumberland County Superior Court. The parties shall equally share in the cost of the mediation. Any agreement reached in mediation may be utilized in Court as an Order of agreement of the parties, or in lieu of mediation required by the Court. In the event mediation is unsuccessful, either party may proceed to litigation in a Court of competent jurisdiction located in Cumberland County, North Carolina.

ARTICLE 17 - MISCELLANEOUS

17.01 *Giving Notice*

Add the following paragraph after Paragraph 17.01.A:

B. No oral statement of any person whomsoever shall in any manner or degree modify or otherwise affect the terms of this Contract. Any notice to Contractor, from Owner and Engineer, relative to any part of this Contract shall be in writing.

Add the following paragraph after Paragraph 17.05:

17.06 MBE Documentation for Contract Payments

A. Unless otherwise directed by Owner, Contractor shall submit a certified form(s) with each monthly payment request (including final payment), which documents the use of minority business enterprise (MBE) participation. Payment will not be made until this form(s) has been submitted to Owner.

Add the following article after Article 17:

ARTICLE 18 - LIQUIDATED DAMAGES FOR FAILURE TO COMPLETE WORK ON TIME

18.01 Liquidated Damages

A. If Contractor shall fail to complete the Work within the Contract Time, or extension of time granted by Owner in accordance with Article 12, then Contractor will pay to Owner the amount for liquidated damages as specified in the Contract for each calendar day that Contractor shall be in default after the time stipulated in the Contract Documents.

Add the following article after Article 18:

ARTICLE 19 - MISCELLANEOUS ADDITIONAL REQUIREMENTS

19.01 Compliance with E-Verify Requirements

A. Contractor and any of its subcontractors shall comply with the requirements of Article 2 of Chapter 64 of the North Carolina General Statutes, if applicable, which requires employers to verify the work authorization of each newly hired employee through the federal E-Verify program operated by the United States Department of Homeland Security and other federal agencies.

19.02 Restricted Companies Lists

A. Contractor represents it is not included on the Final Divestment List created by the North Carolina State Treasurer pursuant to N.C. Gen. Stat. § 147-86.58 (“Iran Divestment Act”) and also represents that it is not included on the list of restricted companies determined to be engaged in a boycott of Israel created by the State Treasurer pursuant to N.C. Gen. Stat. § 147-86.81.

19.03 Non-Appropriation Clause

A. This Agreement shall be subject to the annual appropriation of funds by the Cumberland County Board of Commissioners. Notwithstanding any provision herein to the contrary, in the event funds are not appropriated for this Agreement, County shall be entitled to immediately terminate this Agreement, without penalty or liability, except the payment of all contract fees due under this Agreement through and including the last day of service.

END OF SECTION

General Specifications

**Off-Site Soil Delivery and Placement – Cells 11 and 12
Ann Street MSW Landfill
Cumberland County, North Carolina**

Prepared for:

**Cumberland County Solid Waste Management Department
Fayetteville, North Carolina**

October 2025

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**Off-Site Soil Delivery and Placement – Cells 11 and 12
Ann Street MSW Landfill
Cumberland County, North Carolina**

General Specifications

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SECTION 01010

SUMMARY OF WORK

A. Scope of Work

1. The work to be done under this Contract and in accordance with these Specifications consists of furnishing all equipment, superintendence, labor, skill, material and all other items necessary for the construction of the Project.

The Contractor shall perform all work required for such construction in accordance with the Contract Documents and subject to the terms and conditions of the Contract, complete and ready for use.

2. The principal features of the work to be performed under this Contract include:

OFF-SITE SOIL DELIVERY AND PLACEMENT: Includes transportation and placement of subgrade soil for two (2) proposed municipal solid waste (MSW) cells (Cell 11 and Cell 12) at the Ann Street MSW Landfill facility.

The foregoing description(s) shall not be construed as a complete description of all work required.

B. Contract Drawings

The work to be done is shown on the set of Contract Drawings entitled "Ann Street MSW Landfill – Cells 11 & 12 – Off-Site Soil Delivery and Placement" dated September 2025.

C. General Arrangement

1. The Contract Drawings indicate the extent and general arrangement of the work. If any departures from the Contract Drawings are deemed necessary by the Contractor to accommodate the materials and equipment they propose to furnish, details of such departures and reasons therefore shall be submitted as soon as practicable to the Engineer for approval. No such departures shall be made without the prior written approval of the Engineer. Approved changes shall be made without additional cost to the Owner for this work.
2. The specific equipment proposed for use by the Contractor on the Project may require changes in other work to provide a complete satisfactory operating installation. The Contractor shall submit to the Engineer, for approval, all necessary drawings and details showing such changes to verify conformance with the overall Project requirements and overall Project operating performance. The Bid Price shall include all costs in connection with the preparation of new drawings and details and all changes to construction work to accommodate the proposed materials and equipment.

D. Construction Permits, Easements, and Encroachments

1. The Owner shall obtain or cause to be obtained all permanent and temporary construction easements as shown on the Contract Drawings. The Contractor shall verify that these agreements have been obtained and shall comply with the conditions set forth in each agreement.
2. The Contractor shall obtain, keep current, and pay all fees for any necessary construction permits from those authorities, agencies, or municipalities having jurisdiction over land areas, utilities, or structures which are located within the Contract limits and which will be occupied, encountered, used, or temporarily interrupted by the Contractor's operations unless otherwise stated. Record copies of all permits shall be furnished to the Engineer.
3. When construction permits are accompanied by regulations or requirements issued by a particular authority, agency, or municipality, it shall be the Contractor's responsibility to familiarize himself and comply with such regulations or requirements as they apply to their operations on this Project.
4. The Contractor is responsible for all transportation permits required for performance of this Contract.

E. Time of Work

1. The normal time of work for this Contract shall generally be between the hours of 7:00 a.m. and 7:00 p.m., Monday through Saturday. Additionally, no work shall be performed on the following legal holidays should they occur during the Contract Time:

- | | |
|--------------------------------|--------------------------|
| 1. New Year's Day | 5. Independence Day |
| 2. Martin Luther King, Jr. Day | 6. Labor Day |
| 3. Good Friday | 7. Thanksgiving (2 Days) |
| 4. Memorial Day | 8. Christmas (2 Days) |

When a holiday falls on a Sunday, the holiday shall be observed on the following Monday.

The Contractor may elect to work beyond these times or on Sundays (only as approved in advance by the Owner) provided that all costs incurred by the Owner for additional engineering or landfill site staff required to be present during non-landfill hours shall be borne solely by the Contractor. Similarly, the Owner shall deduct the cost of additional inspection/monitoring or other required support service costs from monies due the Contractor.

Note that during periods of short daylight, the Contractor is required to provide ample temporary lighting as described in the following paragraph.

2. If it shall become imperative to perform work at night, the Owner and Engineer shall be informed a reasonable time in advance of the beginning of such work. Temporary lighting and all other necessary facilities for performing and inspecting the work shall be provided, maintained, and paid for by the Contractor at no additional cost to the Owner. The Contractor shall take all necessary steps and precautions to ensure a safe workplace for night work including compliance with all applicable statutes, ordinances, rules, and regulations.
3. Unless otherwise specifically permitted, all work that would be subject to damage shall be stopped during inclement, stormy, or freezing weather. Only such work as will not suffer injury to workmanship or materials will be permitted. The Contractor shall carefully protect their work against damage or injury from the weather, and when work is permitted during freezing weather, they shall provide and maintain approved facilities for heating the materials and for protecting the partially completed and finished work.

F. Surveys and Layout

1. All work under this Contract shall be constructed in accordance with the lines and grades shown on the Contract Drawings or as directed by the Engineer. Elevations of existing ground and appurtenances shown on the Contract Drawings are believed to be reasonably correct but are not guaranteed to be absolute and therefore are presented only as an approximation. Any error or apparent discrepancy in the data shown or omissions of data required for accurately accomplishing the stake out survey shall be referred immediately to the Engineer for interpretation or correction.

2. All survey work for construction control purposes shall be made by the Owner. The Owner shall provide a competently qualified survey party under the supervision of a Registered Land Surveyor, all necessary instruments, stakes, and other material to perform the work.
3. The Owner shall establish all baselines for the location of the principal component parts of the work together with a suitable number of bench marks and batter boards adjacent to the work.
4. The Contractor shall have the responsibility to carefully preserve the bench marks, reference points, and stakes, and in the case of destruction thereof by the Contractor or resulting from their negligence, the Contractor shall be charged with the expense and damage resulting therefrom and shall be responsible for any mistakes that may be caused by the unnecessary loss or disturbance of such bench marks, reference points, and stakes.
5. Existing or new control points, property markers, and monuments that will be or are destroyed during the normal causes of construction shall be reestablished by the Contractor at no cost to the Owner and all reference ties recorded therefore shall be furnished to the Engineer. All computations necessary to establish the exact position of the work shall be made and preserved by the Contractor.
6. The Engineer may check all or any portion of the work and the Contractor shall afford all necessary assistance and adequate time to the Engineer in carrying out such checks. Any necessary corrections to the work shall be immediately made by the Contractor. Such checking by the Engineer shall not relieve the Contractor of any responsibilities for the accuracy or completeness of their work.

7. GPS-Based Grading Systems:

If any global positioning system (GPS) based computer equipment is to be used in the grading of the site, the Contractor shall submit the digital data, GPS build file, or model surface in an AutoCAD compatible format to the Engineer for approval prior to construction.

10. Tolerances:

For this project, the maximum allowable deviation from the lines and grades, as shown on the Contract Drawings, are shown in the following table.

Survey Item	Tolerance
Horizontal Location:	± 0.15 Feet
Subgrade Elevations (Prepared Subgrade or Compacted Embankment):	
Subgrade over Natural Ground:	± 0.15 Feet
Subgrade over Waste:	± 1.00 Feet

Survey Item	Tolerance
Slopes (vertical/horizontal x 100): Outside of Landfill:	± 0.50 %
Landfill Slopes 10% or Flatter:	- 0.15 % + 0.50 % (2.0 % Min.)
Landfill Slopes Steeper than 10%:	± 2.00 % (3H:1V Max.)

G. Coordination

1. The Contractor shall allow the Owner or their agents, and other Project Contractors or their agents, to enter upon the work for the purpose of constructing, operating, maintaining, removing, repairing, altering, or replacing such pipes, sewers, conduits, manholes, wires, poles, or other structures and appliances which may be required to be installed at or in the work. The Contractor shall cooperate with all aforesaid parties and shall allow reasonable provisions for the prosecution of any other work by the Owner, or others, to be done in connection with their work, or in connection with normal use of the facilities.
2. Each Contractor shall cooperate fully with the Owner, the Engineer, and all other Contractors employed on the work, to effect proper coordination and progress to complete the Project on schedule and in proper sequence. Insofar as possible, decisions of all kinds required from the Engineer shall be anticipated by the Contractor to provide ample time for inspection, or the preparation of instructions.
3. Each Contractor shall assume full responsibility for the coordination of all parts of their work with that of other Contractors. Each Contractor's Superintendent shall coordinate all work with other Contractors in the laying out of work. Each Contractor shall lay out their own work in accordance with the Contract Drawings, Specifications, and instructions of latest issue and with due regard to the work of other Contractors.
4. Active Landfill Operations:

The Contractor shall coordinate their work with that of the Owner and Owner's personnel so as to not create any disruption to the access or operation of the active MSW or C&D landfill areas or the active borrow and stockpile areas. The Owner and Contractor will agree on the use of borrow and stockpile areas prior to construction.

H. Additional Engineering Services

1. In the event that the Engineer is required to provide additional engineering services as a result of substitution of materials or equipment which are not "or equal" by the Contractor, or changes by the Contractor in dimension, weight, power requirements, etc., of the equipment and accessories furnished, or if the Engineer is required to examine and evaluate any changes proposed by the Contractor for the convenience of the

Contractor, then the Engineer's charges in connection with such additional services shall be charged to the Contractor by the Owner.

2. In the event that the Engineer is required to provide additional engineering services as a result of Contractor's errors, omissions, or failure to conform to the requirements of the Contract Documents, or if the Engineer is required to examine and evaluate any changes proposed by the Contractor solely for the convenience of the Contractor, then the Engineer's charges in connection with such additional services shall be charged to the Contractor by the Owner.

I. Additional Owner's Expenses

1. In the event the work of this Contract is not completed within the time set forth in the Contract or within the time to which such completion may have been extended in accordance with the Contract Documents, the additional engineering or inspection charges incurred by the Owner may be charged to the Contractor and deducted from the monies due them. Extra work or supplemental Contract work added to the original Contract, as well as extenuating circumstances beyond the control of the Contractor, will be given due consideration by the Owner before assessing engineering and inspection charges against the Contractor.
2. Charges assessed to the Contractor for additional engineering and inspection costs will be determined based on actual hours charged to the job by the Engineer. Daily rates will depend on the number and classifications of employees involved, but in no case shall such charges exceed \$500 per day for engineering personnel, travel time and expenses, and any other direct reimbursable items, based on an eight hour workday.
3. Charges for additional Owner's expenses shall be in addition to any liquidated damages assessed in accordance with the Contract.

L. Protection of Property

1. The Contractor shall be responsible for the preservation and protection of property adjacent to and within the work site against damage or injury as a result of their operations under this Contract. Any damage or injury occurring on account of any act, omission, or neglect on the part of the Contractor shall be restored in a proper and satisfactory manner or replaced by and at the sole expense of the Contractor to an equal or superior condition than previously existed.
2. The Contractor shall comply promptly with such safety regulations as may be prescribed by the Owner or the local authorities having jurisdiction and shall, when so directed, properly correct any unsafe conditions created by, or unsafe practices on the part of, their employees. In the event of the Contractor's failure to comply, the Owner may take the necessary measures to correct the conditions or practices complained of, and all costs thereof will be deducted from any monies due the Contractor. Failure of the Engineer to direct the correction of unsafe conditions or practices shall not relieve the Contractor of their responsibility hereunder.

3. In the event of any claims for damage or alleged damage to property as a result of work under this Contract, the Contractor shall be responsible for all costs in connection with the settlement of or defense against such claims. Prior to commencement of work in the vicinity of property adjacent to the work site, the Contractor, at their own expense, shall take such surveys as may be necessary to establish the existing condition of the property. Before final payment can be made, the Contractor shall furnish satisfactory evidence that all claims for damage have been legally settled or sufficient funds to cover such claims have been placed in escrow, or that an adequate bond to cover such claims has been obtained.

M. Fire Protection

1. The Contractor shall take all necessary precautions to prevent fires at or adjacent to the work, buildings, etc., and shall provide adequate facilities for extinguishing fires which do occur.
2. When fire or explosion hazards are created in the vicinity of the work as a result of the locations of fuel tanks, or similar hazardous utilities or devices, the Contractor shall immediately alert the local Fire Marshal, the Engineer, and the Owner of such tank or device. The Contractor shall exercise all safety precautions and shall comply with all instructions issued by the Fire Marshal and shall cooperate with the Owner of the tank or device to prevent the occurrence of fire or explosion.
3. Landfill Gas Hazards:

The Contractor is reminded that construction is to take place around/over solid waste which generates methane, hydrogen sulfide, and/or other potentially flammable or hazardous gases. The Contractor shall take all necessary steps to protect their personnel and equipment from the explosive or other hazardous conditions which may result due to the presence of landfill gas during construction. The Contractor shall notify the Owner and Engineer immediately if a problem with landfill gas arises. In this case, the Owner and Engineer will develop a plan to control the landfill gas such that the Contractor may continue to work. Any delays resulting from the development of a plan may be granted to the Contractor as a time extension if the critical path of the work is affected. The Contractor shall hold the Owner and Engineer harmless in the event of an accident resulting from the ignition of landfill gas.

N. Chemicals

All chemicals used during Project construction or furnished for Project operation, whether herbicide, pesticide, disinfectant, polymer, or reactant of other classification, must show approval of either the EPA or USDA. Use of all such chemicals and disposal of residues shall be in strict conformance with all applicable Federal, State, and/or local rules and regulations. Material safety data sheets (MSDS) shall be submitted as requested by the Owner.

O. Existing Utilities and Structures

1. The term existing utilities shall be deemed to refer to both publicly and privately-owned utilities such as electric power and lighting, telephone, water, gas, storm drains, process

lines, sanitary sewers, leachate piping, landfill gas (LFG) piping and wells, and all appurtenant structures.

2. Where existing utilities and structures are indicated on the Contract Drawings, it shall be understood that all of the existing utilities and structures affecting the work may not be shown and that the locations of those shown are approximate only. It shall be the responsibility of the Contractor to ascertain the actual extent and exact location of existing utilities and structures. In every instance, the Contractor shall notify the proper authority having jurisdiction and obtain all necessary directions and approvals before performing any work within the Contract limits.
3. Prior to beginning any excavation work, the Contractor shall, through field investigations, determine any conflicts or interferences between existing utilities and new utilities to be constructed under this Project. This determination shall be based on the actual locations, elevations, slopes, etc. of existing utilities as determined in the field investigations, and locations, elevation, slope, etc. of new utilities as shown on the Contract Drawings. If an interference exists, shown or not shown in the Contract Drawings, the Contractor shall immediately cease work in the area of the interference and shall report to the Engineer for further direction.
4. If the Engineer agrees that an interference exists, they shall modify the design as required. Additional costs to the Contractor for this change shall be processed through a Change Order as detailed elsewhere in these Contract Documents. In the event the Contractor fails to bring a potential conflict or interference to the attention of the Engineer prior to beginning excavation work, any actual conflict or interference which does arise during the Project shall be corrected by the Contractor, as directed by the Engineer, at no additional expense to the Owner.
5. The work shall be carried out in a manner to prevent disruption of existing services and to avoid damage to the existing utilities. Temporary connections shall be provided, as required, to insure no interruption of existing services. Any damage resulting from the work of this Contract shall be promptly repaired by the Contractor at their own expense in a manner approved by the Engineer and further subject to the requirements of any authority having jurisdiction. Where it is required by the authority having jurisdiction that they perform their own repairs or have them done by others, the Contractor shall be responsible for all costs thereof.
6. Where excavations by the Contractor require any utility lines or appurtenant structures to be temporarily supported and otherwise protected during the construction work, such support and protection shall be provided by the Contractor. All such work shall be performed in a manner satisfactory to the Engineer and the respective authority having jurisdiction over such work. In the event the Contractor fails to provide proper support or protection to any existing utility, the Engineer may, at their discretion, have the respective authority to provide such support or protection as may be necessary to insure the safety of such utility, and the costs of such measures shall be paid by the Contractor.

P. Ultimate Disposition of Claims by One Contractor Arising from Alleged Damage by Another Contractor

1. During the progress of the work, other Contractors may be engaged in performing other work or may be awarded other Contracts for additional work on this Project. In that event, the Contractor shall coordinate the work to be done hereunder with the work of such other Contractors and the Contractor shall fully cooperate with such other Contractors and carefully fit its own work to that provided under other Contracts as may be directed by the Engineer. The Contractor shall not commit or permit any act which will interfere with the performance of work by any other Contractor.
2. If at the Engineer's discretion, they determine that the Contractor is not coordinating their work with the work of the other Contractors as the Engineer directed, then the Owner shall have the right to withhold any payments otherwise due hereunder until the Contractor completely complies with the Engineer's directions.
3. If the Contractor notifies the Engineer in writing that another Contractor on this Project is failing to coordinate their work with the work of this Contract as directed, the Engineer must investigate the charge within 2 business days. If the Engineer finds it to be true, they must issue such directions to the other Contractor with respect thereto as the situation may require. However, neither the Owner, the Engineer, nor any of their agents shall be liable for any damages suffered by the Contractor by reason of the other Contractor's failure to promptly comply with the directions so issued by the Engineer, or by reason of another Contractor's default in performance, it being understood that the Owner does not guarantee the responsibility or continued efficiency of any Contractor.
4. The Contractor shall indemnify and hold the Owner and the Engineer harmless from any and all claims or judgments for damages and from costs and expenses to which the Owner may be subjected or which it may suffer or incur by reason of the Contractor's failure to comply with the Engineer's directions.
5. Should the Contractor sustain any damage through any act or omission of any other Contractor having a Contract with the Owner for the performance of work upon the site or of work which may be necessary to be performed for the proper execution of the work to be performed hereunder, or through any act or omission of a Subcontractor of such Contract, the Contractor shall have no claim against the Owner or the Engineer for such damage, but shall have a right to recover as allowed by law such damage from the other Contractor under the provision similar to the following provisions which have been or will be inserted in the Contracts with such other Contractors.
6. Should any other Contractor having or who shall hereafter have a Contract with the Owner for the performance of work upon the site sustain any damage through any act or omission of the Contractor hereunder or through any act or omission of any Subcontractor of the Contractor, the Contractor agrees to reimburse such other Contractor for all such damages and to defend at their own expense any suit based upon such claim and if any judgment or claims against the Owner shall be allowed, the Contractor shall pay or satisfy such judgment or claim and pay all costs and expenses in connection therewith and shall indemnify and hold the Owner harmless from all such claims and judgments.

7. The Owner's right to indemnification hereunder shall in no way be diminished, waived or discharged, by its recourse to assessment of liquidated damages as provided in the Contract, or by the exercise of any other remedy provided for by Contract Documents or by law.

Q. Applicable Standards and Codes

1. Wherever reference is made to any published standards, codes, or standard specifications, it shall mean the latest standard code, specification or tentative specification of the technical society, organization or body referred to, which is in effect at the date of invitation for Bids.
2. All materials, products, and procedures used or incorporated in the work shall be in strict conformance with applicable codes, regulations, specifications, and standards.
3. A partial listing of codes includes the following:
 - a. National Fire Codes.
 - b. Underwriters Laboratories, Inc.
 - c. National Electrical Manufacturer's Association
 - d. American National Standards Association
 - e. Regulations and Standards of the Occupational Safety and Health Act (OSHA)
 - f. Uniform Building Code (UBC)
 - g. American Society for Testing and Materials (ASTM).

The following is a partial list of typical abbreviations which may be used in the Specifications, and the organizations to which they refer:

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AGA	American Gas Association
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
API	American Petroleum Institute
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
DIPRA	Ductile Iron Pipe Research Association
COE	U.S. Army Corps of Engineers
CRSI	Concrete Reinforcing Steel Institute
Fed Spec	Federal Specifications
GRI	Geosynthetic Research Institute
IEEE	Institute of Electrical and Electronic Engineers
IPCEA	Insulated Power Cable Engineers Association
ISO	Insurance Services Offices

NBS	National Bureau of Standards
NCDOT	North Carolina Department of Transportation
NEC	National Electric Code
NEMA	National Electrical Manufacturers Association
OSHA	Occupational Safety and Health Act
PCI	Precast Concrete Institute
UL	Underwriters Laboratories, Inc.
USGS	United States Geological Survey

4. The Contractor shall, when required, furnish evidence satisfactory to the Engineer that materials and methods are in accordance with such standards where so specified.
5. In the event any questions arise as to the application of these standards or codes, copies shall be supplied on-site by the Contractor.

R. Limits of Work Area

1. The Contractor shall confine their construction operations within the Contract limits shown on the Contract Drawings and/or property lines and/or fence lines. Storage of equipment and materials, or erection and use of sheds outside of the Contract limits, if such areas are the property of the Owner, shall be used only with the Owner's approval. Such storage or temporary structures, even within the Contract's limits, shall be confined to the Owner's property and shall not be placed on properties designated as easements or rights-of-way unless specifically permitted elsewhere in the Contract Documents.
2. Damage or impact by the Contractor to areas within or outside the Contract limits shall be the sole responsibility of the Contractor to remedy (including fines) the impact/damage to at least prior condition/function. This shall include sensitive areas including, but not limited to, wetlands and archeological sites.

S. Weather Conditions

The Contractor shall take necessary precautions (in the event of impending storms) to protect all work, materials, or equipment from damage or deterioration due to, but not limited to, floods, driving rain, wind, and snow/ice storms. The Owner reserves the right, through the opinion of the Engineer, to order that additional protection measures over and beyond those proposed by the Contractor, be taken to safeguard all components of the Project. The Contractor shall not claim any compensation for such precautionary measures so ordered, nor claim any compensation from the Owner for damage to the work from weather elements.

T. Periodic Cleanup: Basic Site Restoration

1. During construction, the Contractor shall regularly remove from the site of the work all accumulated debris and surplus materials of any kind which result from their operations. Unused equipment and tools shall be stored at the Contractor's yard or base of operations for the Project.

2. When the work involves installation of sewers, drains, water mains, manholes, underground structures, or other disturbance of existing features in or across streets, rights-of-way, easements, or private property, the Contractor shall (as the work progresses) promptly backfill, compact, grade, and otherwise restore the disturbed area to the basic condition which will permit resumption of pedestrian or vehicular traffic and any other critical activity or functions consistent with the original use of the land. Unsightly mounds of earth, large stones, boulders and debris shall be removed so that the site presents a neat appearance.
3. The Contractor shall perform the cleanup work on a regular basis and as frequently as ordered by the Engineer. Basic site restoration in a particular area shall be accomplished immediately following the installation or completion of the required facilities in that area. Furthermore, such work shall also be accomplished, when ordered by the Engineer, if partially completed facilities must remain incomplete for some time period due to unforeseen circumstances.
4. Upon failure of the Contractor to perform periodic cleanup and basic restoration of the site to the Engineer's satisfaction, the Owner may, upon five (5) days prior written notice to the Contractor, without prejudice to any other rights or remedies of the Owner, cause such work for which the Contractor is responsible to be accomplished to the extent deemed necessary by the Engineer, and all costs resulting therefrom shall be charged to the Contractor and deducted from the amounts of money that may be due them.

U. Use of Facilities Before Completion

1. The Owner reserves the right to enter and use any portion of the constructed facilities before final completion of the whole work to be done under this Contract. However, only those portions of the facilities which have been completed to the Engineer's satisfaction, as evidenced by their issuing a Certificate of Substantial Completion covering that part of the work, shall be placed in service.
2. It shall be the Owner's responsibility to prevent premature connections to or use of any portion of the installed facilities by private or public parties, persons or groups of persons, before the Engineer issues their Certificate of Substantial Completion covering that portion of the work to be placed in service.
3. Consistent with the approved progress schedule, the Contractor shall cooperate with the Owner, their agents, and the Engineer to accelerate completion of those facilities, or portions thereof, which have been designated for early use by the Owner.

END OF SECTION

SECTION 01025

MEASUREMENT AND PAYMENT

A. General

This section includes the units and methods of measurement and the basis of payment for work done under this Contract. The work required for each item shall be as required and/or reasonably implied by the Contract Documents to complete the work. Note that all measurement work shall be subject to verification (surveyed or otherwise) by the Owner.

B. Measurement and Payment

1. Site Preparation:

All work required for Site Preparation shall be considered incidental to the other pay items in this contract and no separate measurement or payment will be made.

2. Section 02223: Embankment:

All work required for Embankment shall be included for payment in the Contractor's Unit Price Bid for this work, per cubic yard in-place.

3. Section 02270: Erosion and Sedimentation Control:

All work required for Erosion and Sedimentation Control, which is not otherwise covered under related sections of these Specifications, shall be included for payment in the Unit Price Bid for the following items:

- a. Silt Fence, which includes related earthwork and materials, shall be paid on the basis of the Unit Price Bid for this work, per linear foot in-place.
- b. Stone Filter Fence, which includes related earthwork and materials (including fencing, stone, etc.), shall be considered incidental to the other pay items in this contract and no separate measurement or payment will be made.

4. Off-Site Soil Delivery:

All work required for Off-Site Soil Delivery shall be included for payment in the Contractor's Unit Price Bid for this work, per cubic yard delivered for in-place material. Payment for the first 50% of the Off-Site Soil Delivery item shall be made based on counts of trucks delivering soil to the project area. Payment for the remaining 50% shall be made based on surveys of in-place material. Surveys shall be completed on a basis no more frequently than monthly or upon contractor's request for payment of this item.

5. Surveying:

All work required for Surveying shall be done by the owner. Surveys will be completed on a monthly basis for in-place materials payments.

6. Bonds, Mobilization, and Insurance:

This work shall consist of securing the appropriate bonds and insurance policies for the project, performance of preparatory construction operations, and performance of project closeout activities including the movement of personnel and equipment to and from the project site, safety equipment, and other facilities to begin work on a substantial phase of the Contract. All work required for Bonds, Mobilization, and Insurance shall be considered incidental to the other pay items in this contract and no separate measurement or payment will be made.

C. Submittals

Before completion of the first pay application, the Contractor shall prepare and submit copies of their proposed pay application to the Engineer for review.

END OF SECTION

SECTION 01200

PROJECT MEETINGS

A. Pre-Bid Meeting

1. No pre-bid meeting will be held for this project.

B. Preconstruction Meeting

1. A preconstruction meeting will be held after Award of Contract, but prior to the start of work at the site.
2. Attendance:
 - a. Owner
 - b. Engineer
 - c. CQA Engineer
 - d. Contractor
 - e. Major Subcontractors (As Appropriate for Initial Stages of Work)
 - f. Safety Representative (As Appropriate)
 - g. Representatives of Governmental or other Regulatory Agencies (As Appropriate).
3. Tentative Agenda:
 - a. Tentative construction schedule/milestones
 - b. Work sequencing
 - c. Designation of responsible personnel
 - d. Processing of Field Decisions and Change Orders
 - e. Adequacy of distribution of Contract Documents
 - f. Submittal of Shop Drawings and samples
 - g. Procedures for maintaining record documents
 - h. Use of site and Owner's requirements
 - i. Major equipment deliveries and priorities
 - j. Safety and first aid procedures
 - k. Security procedures
 - l. Housekeeping procedures
 - m. Processing of Partial Payment Requests
 - n. General regard for community relations.

C. Progress Meetings

1. Progress meetings will be held monthly (or as otherwise directed by the Owner) at the project site during the performance of the work of this Contract. Additional meetings may be called as progress of work dictates.
2. The Engineer or their representative will preside at meetings and record minutes of proceedings and decisions. The Engineer will subsequently distribute copies of minutes to participants.
3. Attendance:
 - a. Owner
 - b. Engineer
 - c. CQA Engineer
 - d. Contractor
 - e. Subcontractors as pertinent to the agenda.
4. Tentative Agenda:
 - a. Review and approve minutes of previous meetings.
 - b. Review progress of work since last meeting.
 - c. Review proposed 30-60 day construction schedule.
 - d. Note and identify problems which impede planned progress.
 - e. Develop corrective measures and procedures to regain planned schedule.
 - f. Revise construction schedule as indicated and plan progress during next work period.
 - g. Maintaining of quality and work standards.
 - h. Complete other current business.
 - i. Report on community and governmental relations.
 - j. Schedule next progress meeting.

END OF SECTION

SECTION 01300

SUBMITTALS

A. General

This section describes the submittal process and the various submittal items which are required for this work. Submittal items include:

1. Progress Schedule
2. Proposed Products List
3. Product Data
4. Samples
5. Working Drawings
6. Operation and Maintenance Manuals
7. Other Submittals
8. Certified Shop Test Reports
9. Construction Photographs.

A summary list of required submittals for this project is shown on Table 1 of this section. Note that this summary list does not relieve the Contractor of providing additional submittal information, not listed in Table 1, which may be required by the Contract Documents.

B. Procedure for Submittal and Contractor Responsibilities

1. Submittals shall be transmitted in sufficient time to allow the Engineer at least ten (10) working days (or greater if specified elsewhere) for review and processing.
2. Unless otherwise stated or agreed to, the Contractor shall transmit an electronic copy of all submittals to the Engineer in a format acceptable to the Engineer and Owner. If hard copies of submittals are necessary (or required by the Contract Documents), the Contractor shall transmit five (5) copies of all hard copy submittals to the Engineer. Transportation charges on all submittals shall be the Contractor's responsibility.
3. All submittals from subcontractors, manufacturers, or suppliers shall be sent directly to the Contractor for checking. The Contractor shall thoroughly check all submittals for accuracy and conformance to the intent of the Contract Documents before submitting them to the Engineer. ALL SUBMITTALS SHALL BEAR THE CONTRACTOR'S STAMP OF APPROVAL CERTIFYING THAT THEY HAVE BEEN SO CHECKED. SUBMITTALS WITHOUT THE CONTRACTOR'S STAMP OF APPROVAL WILL NOT BE REVIEWED BY THE ENGINEER AND WILL BE RETURNED TO THE CONTRACTOR.
4. All submittals shall be bound, dated, properly labeled, and consecutively numbered. Information on the label shall indicate submittal number (corresponding to Table 1 of this section), specification section, Contract Drawing number, subcontractors, manufacturer's or supplier's name, and the name or type of item the submittal covers. Each part of a submittal shall be marked and tabulated. Submittals shall be

accompanied by a letter of transmittal, containing date, Project title, Contractor's name, number and titles of submittals, and any other pertinent data to facilitate review.

5. If the submittals contain any departures from the Contract Documents, specific mention thereof shall be made in the Contractor's letter of transmittal. Otherwise, the review of such submittals shall not constitute approval of the departure.

C. Procedure for Review

1. Submittals will be reviewed and annotated by the Engineer in one of the following ways:

"Furnish as Submitted" - no exceptions are taken.

"Furnish as Noted" - minor corrections are noted and shall be made.

"Revise and Resubmit" - major corrections are noted and a resubmittal is required.

"Rejected" - Based on the information submitted, the submission is not in conformance with the Contract Documents. The deviations from the Contract Documents are too numerous to list and a completely revised submission of the proposed equipment or a submission of other equipment is required.
2. If a submittal is satisfactory to the Engineer, the Engineer will annotate the submittal "Furnish as Submitted" or "Furnish as Noted" and transmit electronically to the Contractor. For hard copy submittals, the Engineer will transmit two (2) copies to the Contractor.
3. If a resubmittal is required, the Engineer will annotate the submittal "Revise and Resubmit" or "Rejected" and transmit electronically to the Contractor for appropriate action. For hard copy submittals, the Engineer will transmit four (4) copies to the Contractor for appropriate action.
4. The Contractor shall revise and resubmit submittals as required by the Engineer until submittals are acceptable to the Engineer.
5. No materials or equipment shall be ordered, fabricated, shipped, or any work performed until the Engineer returns to the Contractor the submittals, herein required, annotated either "Furnish as Submitted" or "Furnish as Noted".
6. The Engineer's review of the Contractor's submittals shall in no way relieve the Contractor of any of their responsibilities under the Contract. An acceptance of a submittal shall be interpreted to mean that the Engineer has no specific objections to the submitted material, subject to conformance with the Contract Drawings and Specifications.
7. The Engineer's review will be confined to general arrangement and compliance with the Contract Drawings and Specifications only, and will not be for the purpose of checking dimensions, weights, clearances, fittings, tolerances, interferences, coordination of trades, etc.

8. Acceptance of a Working Drawing by the Engineer will constitute acceptance of the subject matter for which the Drawing was submitted and not for any other structure, material, equipment, or appurtenances indicated or shown.
9. Where errors, deviations, and/or omissions are discovered at a later date in any of the submittals, the Engineer's prior review of the submittals does not relieve the Contractor of the responsibility for correcting all errors, deviations, and/or omissions.
10. Additional Engineering Services:
 - a. It is understood by the Contractor that the Owner may charge the Contractor the Engineer's charges for review in the event a submittal is not approved (either "Furnish as Submitted" or "Furnish as Noted") by the third submittal. These charges shall be for all costs associated with engineering review, meetings with the Contractor or manufacturer, etc. commencing with the fourth submittal.
 - b. In the event that the Engineer is required to provide additional engineering services as a result of a substitution of materials or equipment by the Contractor, the additional services will be provided in accordance with Section 01010, Summary of Work, of these Specifications, and will be covered in supplementary or revised information which will be issued to the Contractor.

D. Progress Schedule

1. General:
 - a. Within ten (10) days after the start date defined in the Notice to Proceed, the Contractor shall prepare and submit copies of their proposed progress schedule to the Engineer for review.
 - b. If so required, the schedule shall be revised until it is acceptable to the Owner. Acceptance by the Owner does not constitute confirmation that the schedule is accurate and complete only that it appears to meet minimum job requirements; and, thus, shall not relieve the Contractor of any Contract dates, milestones, or deadlines.
 - c. The schedule shall be updated monthly, depicting progress to the last day of the month and copies submitted to the Engineer not later than the fifth day of the month. PROGRESS PAYMENTS MAY NOT BE PROCESSED WITHOUT A CURRENT PROGRESS SCHEDULE.
2. Form of Schedule:
 - a. The schedule shall be prepared in the form of a horizontal bar chart showing in detail the proposed sequence of the work and identifying construction activities for each structure and for each portion of work including the critical path, predecessor relationships, milestones, etc.

- b. The schedule shall be time scaled, identifying the first day of each week, with the estimated date starting and completion of each stage of the work in order to complete the Project within the Contract time.

E. Proposed Products List

1. Within fifteen (15) days after the start date defined in the Notice to Proceed, the Contractor shall prepare and submit copies of their tabulation of principal items of equipment and materials to be purchased to the Engineer for review.
2. The list shall include the manufacturer name, trade name, and model number for each product.

F. Product Data

1. The Contractor shall furnish for review information on proposed products as required by the Contract Documents or requested by the Engineer.
2. Product data shall indicate, at a minimum, the material properties specified in the Contract Documents.

G. Samples

1. The Contractor shall furnish for review all samples as required by the Contract Documents or requested by the Engineer.
2. Samples shall be of sufficient size or quantity to clearly illustrate the quality, type, range of color, finish, or texture and shall be properly labeled to show the nature of the material, trade name of manufacturer, and location of the work where the material represented by the sample will be used.

H. Working Drawings

1. General:
 - a. Working Drawings include, but are not limited to, Shop Drawings, layout drawings in plan and elevation, etc. The Contractor shall be responsible for securing all of the information, details, dimensions, Drawings, etc., necessary to prepare the Working Drawings required and necessary under this Contract and to fulfill all other requirements of their Contract. The Contractor shall secure such information, details, Drawings, etc. from all possible sources including the Contract Drawings, Working Drawings prepared by subcontractors, Engineers, suppliers, etc.
 - b. Working Drawings shall accurately and clearly present the following:
 - (1) All working and installation dimensions.
 - (2) Arrangement and sectional views.

- (3) Units of equipment in the proposed positions for installation, details of required attachments and connections, and dimensioned locations between units and in relation to the structures.
 - (4) Necessary details and information for making connections between the various trades including, but not limited to, accessories, appurtenances, etc.
 - c. Working Drawings specifically prepared for this Project shall be on Mylar or other approved reproducible material sheets of the same size as the Contract Drawings. Drawings shall conform to recognized drafting standards and be neat, legible, and drawn to a large enough scale to show in detail the required information.
 - d. Contract Drawings are used for engineering and general arrangement purposes only and are not to be used for Working Drawings.
- 2. Working Drawing Requirements:
 - a. Shop Drawings:
 - (1) The Contractor shall submit for review by the Engineer Shop Drawings for all fabricated work and for all manufactured items required to be furnished by the Contract Documents.
 - (2) Structural and all other layout Drawings prepared specifically for the Project shall have a plan scale of not less than 1 inch = 4 feet.
 - (3) Where manufacturer's publications in the form of catalogs, brochures, illustrations, or other data sheets are submitted in lieu of prepared Shop Drawings, such submittals shall specifically indicate the item for which approval is requested. Identification of items shall be made in ink, and submittals showing only general information are not acceptable.
- 3. Record Working Drawings:
 - a. Prior to final payment, the Contractor shall furnish the Engineer one complete set of all accepted Working Drawings, including Shop Drawings.
 - b. Manufacturer's publications, submitted in lieu of prepared Shop Drawings, will not be required in reproducible form. However, five (5) sets of such material shall be furnished by the Contractor to the Engineer.
 - c. Working Drawings furnished shall be corrected to include any departures from previously accepted Drawings.
 - d. Refer to Section 01010 Paragraph F.9 (Summary of Work - Record (As-Built) Drawings) for additional information regarding required record drawings.

I. Operation and Maintenance Manuals

1. Copies of Operation and Maintenance Manuals, prepared specifically for this Project, shall be furnished for each item of equipment furnished under this Contract at the time it is installed.
2. Manuals shall contain complete information in connection with assembly, operation, lubrication, adjustment, , maintenance, and repair, including detailed parts lists with drawings or photographs identifying the parts.
3. All copies of the manuals furnished shall be assembled and bound in separate volumes, by major equipment items or trades, and properly indexed to facilitate locating any required information.
4. The Engineer and the Owner shall be the sole judge of the acceptability and completeness of the manuals and may reject any submittal for insufficient information included, incorrect references, and/or the manner in which the material is assembled.
5. The approved sets of operation and maintenance manuals shall be furnished prior to final acceptance.

J. Other Submittals

Other required submittals include, but are not limited to: proposed handling/installation procedures, information on proposed construction equipment, borrow area information, material certifications, qualifications for manufacturers and installers, manufacturer instructions/recommendations, test reports, and design data.

Table 1: Summary List of Required Submittals

Specification Section	Submittal Number	Description
01010 (Summary of Work)	01010-1	GPS-Based Grading System Information (If Applicable)
01025 (Measurement And Payment)	01025-1	Proposed Pay Application
01300 (Submittals)	01300-1	Progress Schedule
	01300-2	Proposed Products List
	01300-3	Record Working Drawings
02110 (Site Preparation)	02110-1	Product Information for Tree Protection Fence
	02110-2	Location for Disposal of Clearing Debris and Waste
	02110-3	Permit(s) or Approval(s) for Burning of Clearing Debris
	02110-4	List of Disposal Site(s) for Waste and Unsuitable Materials
	02110-5	Information on Excavation Equipment

Specification Section	Submittal Number	Description
	02110-6	Survey Results
02223 (Embankment)	02223-1	Information on Equipment to be Used for Embankment
	02223-2	Information on Off-Site Borrow Sources
	02223-3	Off-Site Soil Sample Information
	02223-4	Required Permits (if any)
	02223-5	Shipping, Handling, and Storage Instructions
	02223-6	Seaming Procedures
	02223-7	Quality Control Certificates
	02223-8	Delivery Tickets or Other Approved Receipts
	02223-9	Information on Amendment of On-Site Soils
02270 (Erosion And Sedimentation Control)	02270-1	Certification and Summary of Required Test Results on Materials to be Provided
	02270-2	Delivery Tickets or Other Approved Receipts
	02270-3	Delivery Tickets or Other Approved Receipts
	02270-4	Installation Guidelines/Instructions
	02270-5	Delivery Tickets or Other Approved Receipts
	02270-6	Installer Qualifications
	02270-7	Shipping, Handling, and Storage Instructions
	02270-8	Delivery Date
	02270-9	Installation Procedures and Drawings
	02270-10	Delivery Tickets or Other Approved Receipts
	02270-11	Installation Certificate
	02270-12	Seed Certificates
	02270-13	Fertilizer Invoices

END OF SECTION

SECTION 01400

QUALITY CONTROL AND QUALITY ASSURANCE

A. General

1. Definitions:

a. Construction Quality Control (CQC)

Construction Quality Control refers to actions taken by manufacturers, fabricators, installers, and/or the Contractor to ensure that the materials and the workmanship meet the requirements of the Contract Documents. CQC is provided by the Contractor at no additional cost to the Owner. The Contractor shall follow CQC procedures as required by the Contract Documents and the Project CQA Manual.

b. Construction Quality Assurance (CQA)

Construction Quality Assurance is defined as a planned and systematic program employed by the Owner to assure conformity of the construction with the Contract Documents. CQA is provided by the CQA Engineer as a representative of the Owner and is independent from the Contractor and all manufacturers. The CQA program is designed to provide adequate confidence that items or services meet contractual and regulatory requirements and will perform satisfactorily in service.

2. On this Project, the Owner will provide for the services of a CQA Engineer on-site to selectively test materials and monitor compliance with the requirements of the Contract Documents. This will be in addition to Construction Quality Control (CQC) provided and paid for by the Contractor. The Contractor will afford these representatives access to the job site for the performance of their duties as described in the Contract Documents.

3. CQA test methods and frequency of testing are defined in the accompanying Project CQA Manual. The Contractor shall participate in and conform with all terms and requirements of this document.

B. Testing Laboratory Services

1. General:

a. Laboratory testing and checking required by the Specifications, including the cost of transporting all samples and test specimens, shall be provided and paid for by the Contractor unless otherwise indicated in the Specifications.

b. Materials to be tested include, but are not necessarily limited to the following: geosynthetics.

- c. Tests required by the Owner shall not relieve the Contractor from the responsibility of supplying certificates from manufacturers or suppliers to demonstrate conformance with the Specifications.

2. Procedure:

- a. The Contractor shall plan and conduct their operations to permit taking of field samples and test specimens, as required, and to allow adequate time for laboratory tests.
- b. The collection, field preparation, and storage of field samples and test specimens shall be as directed by the Engineer with the cooperation of the Contractor.

3. Significance of Tests:

Test results shall be binding on both the Contractor and the Owner, and shall be considered irrefutable evidence of compliance or noncompliance with the Specification requirements, unless:

- a. Supplementary testing shall prove, to the satisfaction of the Owner, that the initial samples were not representative of actual conditions or
- b. Observation(s) of the test sampling or procedures as made by the Engineer render the results invalid.

4. Supplementary and Other Testing:

Nothing shall restrict the Contractor from conducting tests they may require. Should the Contractor at any time request the Owner to consider such test results, the test reports shall be certified by an independent testing laboratory acceptable to the Owner. Testing of this nature shall be conducted at the Contractor's expense.

C. Imperfect Work, Equipment, or Materials

1. Any work, equipment, or materials furnished by the Contractor not in conformance with the Contract Documents which is discovered before the final acceptance of the work, as established by the date of Final Payment, or during the Contractor's guarantee period, shall be removed, replaced, and/or corrected to conform to the Contract Documents immediately even though it may have been overlooked by the Engineer and estimated for payment.
2. Any equipment or materials condemned or rejected by the Engineer shall be tagged as such and shall be immediately removed from the site. Satisfactory work or materials shall be substituted for that rejected.
3. The Engineer may order tests of work, equipment, or materials which appear to be in non-conformance with the Contract Documents to determine the required functional capability for possible acceptance, if there is no other reason for rejection. The cost of

such tests shall be borne by the Contractor; and the nature, tester, extent, and supervision of the tests will be as determined by the Engineer. If the results of the tests indicate that the required functional capability of the work, equipment, or material was not impaired, consistent with the final general appearance of same, the work, equipment, or materials may be deemed acceptable. If the results of such tests reveal that the required functional capability of the questionable work, equipment, or materials has been impaired, then such work, equipment, or materials shall be deemed imperfect and shall be replaced. The Contractor may elect to replace the imperfect work, equipment, or material in lieu of performing the tests.

D. Inspection and Tests

1. The Contractor shall allow the Engineer ample time and opportunity for testing materials and equipment to be used in the work. The Contractor shall at all times furnish the Engineer and their representatives, facilities including labor, and allow proper time for inspecting and testing materials, equipment, and workmanship.
2. The Contractor must anticipate possible delays that may be caused in the execution of their work due to the necessity of materials and equipment being inspected and accepted for use.
3. The Contractor shall furnish, at their own expense, all samples of materials required by the Engineer for testing, and shall make their own arrangements for providing water, electric power, or fuel for the various inspections and tests of structures and equipment.
4. The Contractor shall furnish the services of representatives of the manufacturers of certain equipment, as prescribed in other sections of the Specifications. The Contractor shall also place their orders for such equipment on the basis that, after the equipment has been tested prior to final acceptance of the work, the manufacturer will furnish the Owner with certified statements that the equipment has been installed properly and is ready to be placed in functional operation. Tests and analyses required of equipment shall be paid for by the Contractor, unless specified otherwise in the section which covers a particular piece of equipment.
5. Where other tests or analyses are specifically required in other sections of these Specifications, the cost thereof shall be borne by the party so designated in such sections.
6. The Owner will bear the cost of all tests, inspections, or investigations undertaken by the order of the Engineer for the purpose of determining conformance with the Contract Documents if such tests, inspections, or investigations are not specifically required by the Contract Documents, and if conformance is ascertained thereby. Whenever nonconformance is determined by the Engineer as a result of such tests, inspections, or investigations, the Contractor shall bear the full cost thereof or shall reimburse the Owner for said cost. In this connection, the cost of any additional tests and investigations, which are ordered by the Engineer to ascertain subsequent conformance with the Contract Documents, shall be borne by the Contractor.

END OF SECTION

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

A. Temporary Utilities

1. General:

- a. The Contractor shall provide temporary sanitary service, light and power, for their operations at the site unless otherwise provided as agreed to by the Owner. The temporary services shall be provided for use throughout the construction period.
- b. The Contractor shall coordinate and install all temporary services in accordance with the requirements of the utility companies having jurisdiction and as required by applicable codes and regulations.
- c. At the completion of the work, or when the temporary services are no longer required, the temporary facilities shall be restored to their original conditions.
- d. All costs in connection with the temporary services including, but not limited to, installation, utility company service charges, maintenance, relocation, and removal shall be borne by the Contractor at no additional cost to the Owner.
- e. Some temporary facilities that may be required may be indicated on the Contract Drawings; however, the Contract Drawings do not necessarily show any or all of the temporary facilities that the Contractor ultimately uses to complete the work.

2. Temporary Sanitary Service:

Sanitary conveniences, in sufficient numbers, for the use of all persons employed on the work and properly screened from public observation, shall be provided and maintained at suitable locations by the Contractor, all as prescribed by State and local requirements. The contents of same shall be removed and disposed of in a manner consistent with State and local requirements, as the occasion requires. Each Contractor shall rigorously prohibit the committing of nuisances within, on, or about the work. Sanitary facilities shall be removed from the site when no longer required.

3. Temporary Light and Power:

- a. The Contractor shall provide at their sole expense such temporary light and power as required for their operations.
- b. Upon completion of the work, but prior to acceptance by the Owner, the Contractor shall remove all temporary services, security lighting systems, temporary general lighting systems, and all temporary electrical work from the premises.

B. First Aid Facilities and Accidents

1. First Aid Facilities:

The Contractor shall provide at the site such equipment and facilities as are necessary to supply first aid to any of their personnel who may be injured in connection with the work.

2. Accidents:

- a. The Contractor shall report immediately by telephone or messenger to both the Owner and the Engineer all accidents whatsoever out of, or in connection with, the performance of the work, whether on or adjacent to the site, which cause death, personal injury, or property damage. The Contractor shall further issue a written report to the Engineer within 24 hours which describes these accidents giving full details and statements of witnesses.
- b. If any claim is made by anyone against the Contractor or a Subcontractor on account of any accidents, the Contractor shall report within 2 business days the facts, in writing, to the Engineer, giving full details of the claim.

C. Protection of Work and Material

1. During the progress of the work and up to the date of final payment, the Contractor shall be solely responsible for the care and protection of all work and materials covered by the Contract as well as other areas of the site that may be impacted by the Contractor or Subcontractors.
2. All work and materials shall be protected against damage, injury, or loss from any cause whatsoever, and the Contractor shall make good any such damage or loss at their own expense. Protection measures shall be subject to the approval of the Engineer.

D. Barricades, Warning Signs, and Lights

1. The Contractor shall provide, erect, and maintain as necessary, strong and suitable barricades, danger signs, and warning lights along all roads accessible to the public, as required by the authority having jurisdiction, to insure safety to the public. All barricades and obstructions along public roads shall be illuminated at night and all lights for this purpose shall be kept burning from sunset to sunrise.
2. Each Contractor shall provide and maintain such other warning signs and barricades in areas of and around their respective work as may be required for the safety of all those employed in the work, the Owner's operating personnel, or those visiting the site.

E. Access Roads and Parking Areas

1. Access Roads:

- a. The Contractor shall construct and maintain such temporary access roads as required to perform the work of this Contract.

- b. The Contractor shall access the site through the existing site entrance shown on the Contract Drawings or as otherwise designated by the Owner. The Contractor shall not disturb areas outside the clearing limits shown on the Contract Drawings unless approved by the Owner.
- c. Access roads shall be located within the property lines of the Owner unless the Contractor independently secures easements for their use and convenience. Contractor shall submit written documentation (consent form, etc.) to the Engineer for any Contractor secured easements across privately held property. The easement agreement shall specify terms and conditions of use and provisions for site restoration. A written release from the property owner certifying that all terms of the easement agreement have been complied with by the Contractor shall be furnished to the Engineer prior to final payment.
- d. The Contractor shall obtain all necessary permits and pay all costs associated with any bonds required by the State transportation department for the use of State maintained roads or similar requirements for local roads and private drives.

2. Parking Areas:

The Contractor shall use existing parking areas and/or construct and maintain suitable parking areas for their construction personnel on the Project site within the clearing limits shown on the Contract Drawings where approved by the Engineer and the Owner.

3. Restoration:

At the completion of the work, the surfaces of land disturbed by the Contractor's activities, whether in the Contract Limits or not, shall be restored by the Contractor. At a minimum, such restoration shall include establishment of a permanent ground cover (Revegetation or other means acceptable to the Owner) adequate to restrain erosion for all disturbed areas. Revegetation shall be in accordance with Section 02930, Revegetation, of these Specifications. The Contractor shall also maintain and restore to pre-construction conditions (as directed and approved by the Owner) all site paved and gravel roadway surfaces (including shoulders) used during the performance of their work. The cost of all restoration work shall be at the Contractor's sole expense.

F. Dust and Mud Control

1. The Contractor shall take all necessary measures to control dust and mud from their operations, and to prevent spillage of excavated materials on public or site roads.
2. The Contractor shall remove all spillage of excavated materials, debris, dust, or mud from public roads by methods approved by the Engineer.
3. The Contractor shall apply water at locations and in such quantities and at such frequencies as may be required by the Owner or Engineer to control dust and mud and prevent either from becoming a nuisance to the surrounding area. Other measures (dust suppressants, etc.) may be required, as determined by the Owner or Engineer.

4. Dust and mud control and cleaning measures shall be provided at no additional cost to the Owner.

G. Traffic Regulations

The Contractor shall obey all traffic laws and comply with all the requirements, rules, and regulations of the State Department of Transportation and other local authorities having jurisdiction to maintain adequate warning signs, lights, barriers, etc. for the protection of traffic on public roadways.

I. Contractor's Field Office

At their option and upon approval by the Owner, the Contractor may furnish, equip, and maintain a field office at the site of a size required for their operations.

END OF SECTION

SECTION 01600

MATERIALS AND EQUIPMENT

A. General

1. All equipment, materials, instruments, or devices incorporated in this Project shall be new and unused, unless indicated otherwise in the Contract Documents. Equipment and materials to be incorporated into the work shall be delivered sufficiently in advance of their installation and use to prevent delay in the execution of the work, and they shall be delivered as nearly as feasible in the order required for executing the work.
2. The Contractor shall protect all equipment and materials from deterioration and damage. Storage of equipment and materials shall be in locations completely protected from flooding, standing water, excessive dust, falling rock, brush fire, etc. Storage areas shall be located sufficiently distant from all construction activities and the movement of construction vehicles to minimize the potential for accidental damage. Any equipment or materials of whatever kind which may have become damaged or deteriorated from any cause shall be removed and replaced by good and satisfactory items at the Contractor's expense for both labor and materials.
3. Equipment and materials shall be installed in accordance with the requirements of the General Conditions and the respective Specification Sections.

B. Storage of Materials and Equipment

1. The Contractor shall store their materials and equipment at the job site in accordance with the requirements of the General Conditions and as hereinafter specified. All equipment and materials shall be stored in accordance with manufacturer's recommendations and as directed by the Owner or Engineer, and in conformity to applicable statutes, ordinances, regulations, and rulings of the public authority having jurisdiction.
2. The Contractor shall enforce the instructions of the Owner and Engineer regarding the posting of regulatory signs for loadings on structures, fire safety, and smoking areas.
3. The Contractor shall not store materials or encroach upon private property without the written consent of the owners of such private property.
4. The Contractor shall not store materials in such a manner that they are exposed to weather which, in the Engineer or CQA Engineer's opinion can alter the material properties.
5. The Contractor shall not store unnecessary materials or equipment on the job site, and shall take care to prevent any structure from being loaded with a weight which will endanger its security or the safety of persons.

6. Materials shall not be placed within ten (10) feet of fire hydrants. Gutters, drainage channels, and inlets shall be kept unobstructed at all times.

C. Connections to Equipment

1. Connections to equipment shall follow manufacturer's recommendations as to size and arrangement of connections and/or as shown in detail on the Contract Drawings or approved Shop Drawings. Piping connections shall be made to permit ready disconnection of equipment with minimum disturbance of adjoining piping and equipment.

D. Substitutions

1. Requests for substitutions of equipment or materials shall conform to the requirements of the General Conditions and as hereinafter specified.
 - a. The Contractor shall submit for each proposed substitution sufficient details, complete descriptive literature, and performance data together with samples of the materials, where feasible, to enable the Owner and Engineer to determine if the proposed substitution is equal.
 - b. The Contractor shall submit certified tests, where applicable, by an independent laboratory attesting that the proposed substitution is equal.
 - c. A list of installations where the proposed substitution is equal.
2. Where the approval of a substitution requires revision or redesign of any part of the work, including that of other Contracts, all such revision and redesign, and all new drawings and details therefore, shall be provided by the Contractor at their own cost and expense, and shall be subject to the approval of the Owner and Engineer.
3. In the event that the Engineer is required to provide additional engineering services, then the Engineer's charges for such additional services shall be charged to the Contractor by the Owner in accordance with the requirements of the General Conditions.
4. In all cases the Owner and Engineer shall be the judge as to whether a proposed substitution is to be approved. The Contractor shall abide by their decision when proposed substitute items are judged to be unacceptable and shall in such instances furnish the item specified or indicated. No substitute items shall be used in the work without written approval of the Owner and Engineer.
5. The Contractor shall have and make no claim for an extension of time or for damages by reason of the time taken by the Engineer in considering a substitution proposed by the Contractor or by reason of the failure of the Engineer to approve a substitution proposed by the Contractor.
6. Acceptance of any proposed substitution shall in no way release the Contractor from any of the provisions of the Contract Documents.

END OF SECTION

SECTION 01700

PROJECT CLOSEOUT

A. Final Cleaning

1. At the completion of the work, the Contractor shall remove all rubbish from and about the site of the work, and all temporary structures, construction signs, tools, scaffolding, materials, supplies, and equipment which they or any of their Subcontractors may have used in the performance of the work.
2. The Contractor shall thoroughly clean all materials, equipment, and structures so as to leave work in a clean and new appearing condition.
3. The Contractor shall maintain cleaning until the Project, or portion thereof, is occupied by the Owner.

B. Not used.

C. Not used.

D. Not used.

E. Final Cleanup: Site Rehabilitation

1. Before finally leaving the site, the Contractor shall wash and clean all exposed surfaces which have become soiled or marked, and shall remove from the site of work all accumulated debris and surplus materials of any kind which result from their operation, including construction equipment, tools, sheds, sanitary enclosures, etc. The Contractor shall leave all equipment, fixtures, and work, which they have installed, in a clean condition. The completed Project shall be turned over to the Owner in a neat and orderly condition.
2. The site of the work shall be rehabilitated or developed in accordance with other sections of the Specifications and the Drawings. In the absence of any portion of these requirements, the Contractor shall completely rehabilitate the site to a condition and appearance equal or superior to that which existed just prior to construction, except for those items whose permanent removal or relocation was required in the Contract Documents or ordered by the Owner.

F. Final Inspection

1. Final cleaning and repairing shall be so arranged as to be finished upon completion of the construction work. The Contractor will make their final cleaning and repairing, and any portion of the work finally inspected and accepted by the Engineer shall be kept clean by the Contractor, until the final acceptance of the entire work.

2. When the Contractor has finally cleaned and repaired the whole or any portion of the work, they shall notify the Engineer that they are ready for final inspection of the whole or a portion of the work, and the Engineer will thereupon inspect the work. If the work is not found satisfactory, the Engineer will order further cleaning, repairs, or replacement.
3. When such further cleaning or repairing is completed, the Engineer, upon further notice, will again inspect the work. The "Final Payment" will not be processed until the Contractor has complied with the requirements set forth, and the Engineer has made their final inspection of the entire work and is satisfied that the entire work is properly and satisfactorily constructed in accordance with the requirements of the Contract Documents.

G. Project Closeout

1. As construction of the Project enters the final stages of completion, the Contractor shall, in concert with accomplishing the requirements set forth in the Contract Documents, attend to or have already completed the following items as they apply to their contract:
 - a. Scheduling equipment manufacturers visits to site.
 - b. Required testing of Project components.
 - c. Scheduling start-up and initial operation.
 - d. Scheduling and furnishing skilled personnel during initial operation.
 - e. Correcting or replacing defective work, including completion of items previously overlooked or work which remains incomplete, all as evidenced by the Engineer's "Punch" Lists.
 - f. Attend to any other items listed herein or brought to the Contractor's attention by the Engineer.
2. In addition, and before the Certificate of Substantial Completion is issued, the Contractor shall submit to the Engineer (or to the Owner if indicated) certain records, certifications, etc. which are specified elsewhere in the Contract Documents. A partial list of such items appears below, but it shall be the Contractor's responsibility to submit any other items which are required in the Contract Documents:
 - a. Test results of Project components.
 - b. Performance Affidavits for equipment.
 - c. Certification of equipment or materials in compliance with Contract Documents.
 - d. Operation and maintenance instructions or manuals for equipment.
 - e. Any special guarantees or bonds (Submit to Owner).

The Contractor's attention is directed to the fact that required certifications and information under some items above must actually be submitted earlier in accordance with other sections of the Specifications.

END OF SECTION

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Technical Specifications

Off-Site Soil Delivery and Placement – Cells 11 and 12 Ann Street MSW Landfill Cumberland County, North Carolina

Prepared for:

**Cumberland County Solid Waste Management Department
Fayetteville, North Carolina**

October 2025

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**Off-Site Soil Delivery and Placement – Cells 11 and 12
Ann Street MSW Landfill
Cumberland County, North Carolina**

Technical Specifications

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02223	Embankment
02270	Erosion and Sedimentation Control

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SECTION 02110

SITE PREPARATION

Site Preparation: Site Preparation includes clearing, grubbing, and/or stripping operations.

A. Description

1. General:

- a. The Contractor shall furnish all labor, material, and equipment to complete Site Preparation in accordance with the Contract Drawings and these Specifications.
- b. Principal items of work include:
 1. Notifying all authorities owning utility lines running to or on the property. Protect and maintain all utility lines to remain and cap those that are not required in accordance with instructions of the Utility Companies, and all other authorities having jurisdiction.
 2. Clearing the site within the clearing limits, including removal of grass, brush, shrubs, trees, loose debris, and other encumbrances except for trees to remain.
 3. Boxing and protecting all areas to be preserved.
 4. Removing all topsoil from designated areas and stockpiling on site where directed by the Engineer for future use.
 5. Disposing from the site all debris resulting from work under this Section.

2. Related Work:

Related Contract Work is described in the following sections of the Specifications:

<u>Work</u>	<u>Section</u>
Embankment	02223
Erosion and Sedimentation Control	02270

B. Materials Not used.

C. Submittals

The Contractor shall submit the following to the Engineer prior to performance of the work:

1. Location for disposal of clearing debris and waste.

D. Construction

1. Clearing of the Site:

- a. Clearing limits, as shown on the Contract Drawings, shall be established by the Surveyor. Once established, the clearing limits shall be inspected and approved by the Engineer prior to clearing the affected areas.
- b. Install required erosion and sedimentation control measures prior to performing clearing and grubbing activities.
- c. Before the start of excavation and grading operations, the areas within the clearing limits shown on the Contract Drawings shall be cleared and grubbed.
- d. Clearing shall consist of cutting, removal, and satisfactory disposal of all trees, fallen timber, brush, bushes, rubbish, fencing, and other perishable and objectionable material.

Should it become necessary to remove a tree, bush, brush, or other plants outside the clearing limits, the Contractor shall do so only after permission has been granted by the Engineer.

- e. Where necessary, excavation resulting from the removal of trees, roots, and the like shall be filled with suitable material, as approved by the Engineer, and thoroughly compacted per the requirements contained in Section 02223, Embankment, of these Specifications.
- e. In temporary construction easement locations, only those trees and shrubs shall be removed which are in actual interference with excavation or grading work under this Contract, and removal shall be subject to approval by the Engineer. However, the Engineer reserves the right to order additional trees and shrubs removed at no additional cost to the Owner, if such, in their opinion, they are too close to the work to be maintained or have become damaged due to the Contractor's operations.

2. Stripping and Stockpiling Existing Topsoil:

- a. Existing topsoil and sod on the site within areas designated on the Contract Drawings shall be stripped to whatever depth it may occur, and stored in locations directed by the Engineer.
- b. The topsoil shall be free of stones, roots, brush, rubbish, or other unsuitable materials before stockpiling.
- c. Care shall be taken not to contaminate the stockpiled topsoil with any unsuitable materials.

3. Grubbing:

- a. Grubbing shall consist of the removal and disposal of all stumps, roots, logs, sticks, and other perishable materials to a depth of at least 6 inches below ground surfaces.
- b. Large stumps located in areas to be excavated may be removed during grading operations, subject to the approval of the Engineer.

4. Disposal of Cleared and Grubbed Material:

No open burning of clearing debris will be allowed on this project. All trees, stumps, roots, bushes, etc. shall be removed from the site and disposed of by the Contractor.

END OF SECTION

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SECTION 02223

EMBANKMENT

Embankment: Embankment is the on-site compacted fill that provides the foundation and the berms for the containment area, the subgrade for some access roadways and structures, and backfill around structures and piping.

A. Description

1. General:

The Contractor shall furnish all labor, material, and equipment to complete Embankment including borrowing, hauling, screening, discing, drying, compaction, control of surface and subsurface water, final grading, sealing, and all necessary and incidental items as detailed or required to complete the Embankment, all in accordance with the Contract Drawings and these Specifications.

2. Related Work:

Related Contract Work is described in the following sections of the Specifications:

<u>Work</u>	<u>Section</u>
Erosion and Sedimentation Control	02270

3. Reference Standards:

The latest revision of the following standards of the American Society of Testing and Materials (ASTM) are hereby made a part of these Specifications.

ASTM D 698	Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft ³).
ASTM D 1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
ASTM D 2167	Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
ASTM D 2216	Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass.
ASTM D 2487	Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
ASTM D 2488	Standard Practice for Description and Identification of Soils (Visual-Manual Procedure).

ASTM D 2937	Standard Test Method for Density of Soil in Place by the Drive Cylinder Method.
ASTM D 4643	Standard Test Method for Determination of Water (Moisture) Content of Soil by the Microwave Oven Method.
ASTM D 4959	Standard Test Method for Determination of Water (Moisture) Content of Soil by Direct Heating Method.
ASTM D 6938	Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

5. Definitions:

- a. Embankment: Shall include construction of all site earthwork including roadways, subgrade, perimeter berm embankments, including preparation of the areas upon which materials are to be placed. Embankment may also be referred to as structural and/or controlled fill. All Embankment materials may be either (off-site) Select Borrow or (on-site) Borrow unless otherwise noted on Contract Drawings or specified by the Engineer.
- b. Prepared Subgrade: The ground surface after clearing, grubbing, stripping, excavation, scarification, and/or compaction, and/or proof rolling to the satisfaction of the Engineer.
- c. Well-Graded: A mixture of particle sizes that has no specific concentration or lack thereof of one or more sizes. Well-graded does not define any numerical value that must be placed on the coefficient of uniformity, coefficient of curvature, or other specific grain size distribution parameters. Well-graded is used to define a material type that, when compacted, produces a strong and relatively incompressible soil mass free from detrimental voids.
- d. Unclassified Fill: The nature of materials to be used is not identified or described herein but must be approved by the Engineer prior to use.

B. Materials

- 1. Embankment materials shall consist of clean well-graded natural soil classified as SP, SW, SM, SC, ML, or CL (ASTM D 2487) containing no topsoil or other deleterious material. Additionally, for the upper 3 feet beneath the final wearing surface of roadways including shoulders, Embankment materials shall have a liquid limit less than 50%, a plasticity index less than 20% (ASTM D 2487) and have a maximum standard Proctor dry density of at least 100 pounds per cubic foot (ASTM D 698).

Other material classifications may be approved by the Engineer.

- 2. Stones or rock fragments shall not exceed one half the maximum lift thickness as compacted in any dimension. Isolated rocks shall be a maximum of 24-inches in any dimension.

3. Off-Site soil must comply with the North Carolina Department of Environmental Quality (NCDEQ) Preliminary Soil Remediation Goals (PSRGs). PSRG table and notes are attached.

C. Submittals

The Contractor shall submit the following to the Engineer:

1. Information on equipment to be used for construction of Embankment.
2. Descriptive information on the location and source of any off-site borrow material to be used for Embankment, where applicable. Information shall include Standard Proctor curves (ASTM D698) for each borrow material and documentation that the material meets NCDEQ PSRGs.

D. Construction

1. The Contractor shall conduct Embankment activities in such a manner that erosion of disturbed areas and off-site sedimentation is absolutely minimized as outlined in Section 02270, Erosion and Sedimentation Control, of these Specifications.
2. All placement and compaction of Embankment shall be performed only when the Engineer is informed by the Contractor of intent to perform such work.
3. Embankment shall be placed and compacted to the lines and grades shown on the Contract Drawings. Placement of Embankment outside the construction limits shall occur only as directed and approved by the Engineer.

The Contractor will perform all surveys necessary to establish and verify lines and grades for all Embankment.

4. The Contractor shall protect all existing facilities including, but not limited to, utilities and monitoring wells.
5. Subgrade Preparation:
 - a. The Engineer shall inspect the exposed subgrade prior to placement of Embankment to ensure that all rocks, topsoil, vegetation, roots, debris, or other deleterious materials have been removed.
 - b. Prior to placement of Embankment, the exposed subgrade shall be proofrolled using a static smooth-drum roller, loaded tandem axle dump truck, or other suitable equipment in the presence of the Engineer. Any soft or unsuitable materials revealed before or during the in-place compaction shall be removed as directed by the Engineer and replaced with suitable Embankment.
6. Surfaces on which Embankment is to be placed shall be scarified or stepped in a manner which will permit bonding of the Embankment with the existing surface.

7. The Contractor shall be responsible for preparing the materials for the Embankment, including but not limited to, in-place drying or wetting of the soil necessary to achieve the compaction criteria of these Specifications.
8. The Contractor shall be responsible for the control of surface and subsurface water, when necessary. Except for certain erosion and sedimentation control measures and other areas designated to impound water, all areas shall be graded to drain.
9. Embankment materials shall be placed in a manner permitting drainage and in continuous, approximately horizontal layers.
10. Compaction Requirements:
 - a. The Contractor shall compact Embankment in accordance with the requirements shown in Table 1 of this section. If Embankment does not meet the specified requirements, the Contractor shall rework the material, as may be necessary and continue compaction to achieve these requirements, or remove and replace the material to achieve the specified requirements, at Contractor's expense.
 - b. Each lift shall be compacted prior to placement of succeeding lifts. In confined areas, mechanical equipment, suitable for small areas and capable of achieving the density requirements, shall be required.
 - c. Lift compaction shall be performed with an appropriately heavy, properly ballasted, penetrating-foot or smooth-drum vibratory compactor depending on soil type. Compaction equipment shall be subject to approval by the Engineer.
11. Embankment that becomes excessively eroded, soft, or otherwise unsuitable shall be removed or repaired by the Contractor as directed by the Engineer, at no cost to the Owner.
12. The exposed surface of Embankment shall be rolled with a smooth-drum roller at the end of each work day to protect from adverse weather conditions.
13. Where Embankment is to be placed and compacted on slopes that are steeper than 3H:1V, the subgrade shall be benched to a minimum depth of 6 inches and the Embankment shall be placed in horizontal lifts.
14. Backfilling for Structures and Piping:
 - a. All structures, including manholes and pipes shall be backfilled with Embankment as shown in the Contract Drawings and as described in these Specifications.
 - b. Where sheeting is used, the Contractor shall take all reasonable measures to prevent loss of support beneath and adjacent to pipes and existing structures when sheeting is removed. If significant volumes of soil cannot be prevented from clinging to the extracted sheets, the voids shall be continuously backfilled as rapidly as possible. The Contractor shall thereafter limit the depth below

subgrade that sheeting will be driven in similar soil conditions or employ other appropriate means to prevent loss of support.

- c. When backfilling around structures, do not backfill until concrete has sufficiently cured (as determined by the Engineer and is properly supported). Place backfill in a manner to avoid displacement or damage of structures.

Table 1: Required Embankment Properties

Item	Required % Standard Proctor (ASTM D698) ²	Required Moisture Content ³	Maximum Lift Thickness (Compacted) (inches)
Embankment Beneath Structures and Roads ¹	100	+/- 2% of Optimum (std. Proctor)	8
Embankment	95	As Required for Compaction	8
Backfill Around Structures	95		8
Backfill in Pipe Trenches	95		6
Unclassified Fill	N/A	N/A	N/A

Notes:

1. Embankment beneath structures shall be considered to include a zone 10 feet out from the foundation of the structure extending down to the natural ground on a 45° slope. Embankment beneath roads shall be considered to include all embankment placed within 3 vertical feet of the final wearing surface and shall also include shoulders.
2. Determine field density using ASTM D 6938, ASTM D 1556, ASTM D 2167, or ASTM D 2937.
3. Determine field moisture content using ASTM D 6938, ASTM D 2216, ASTM D 4643, or ASTM D 4959.
4. The Engineer may allow exceptions to the above criteria for areas outside of the containment area which are not subject to significant long-term loads.

END OF SECTION

North Carolina Department of Environmental Quality
Preliminary Soil Remediation Goals (PSRGs)

January 2025

(based on November 2024 USEPA Regional Screening Tables)

These notes must be used with the PSRG Table

Please contact the appropriate remediation program within DEQ if you have a contaminant not listed on the PSRG Table.

General Notes:

1. PSRGs are obtained using the USEPA Regional Screening Level (RSL) table. If a contaminant does not have a PSRG listed, then one or more of the contaminant-specific parameters are not available from the RSL table to calculate a soil PSRG.
2. The **health-based PSRGs** (Residential and Industrial/Commercial) are based upon human health risk and do not address potential ecological risk. The PSRGs listed are the lower of:
 - a. the carcinogenic target risk of 1.0E-06 (C), or
 - b. the non-carcinogenic target hazard quotient of 0.2 (N).

Residential health-based PSRGs should be used to identify and delineate site contaminants.

3. The **protection of groundwater PSRGs** are provided as a conservative indicator of soil leachability and are developed using a USEPA soil leaching model with conservative assumptions and default values appropriate for North Carolina (see **Equation 1** on page 5). The target groundwater concentration used in the equation is either:
 - a. **2L or IMAC** – a 15A NCAC 02L Standard (2L Standard) or Interim Maximum Allowable Concentration (IMAC),
 - b. **Calculated** – For contaminants with no 2L Standard or IMAC, a target groundwater concentration is calculated (where risk assessment parameters are available) using the procedures and references in 15A NCAC 02L.0202 (see **Equation 2** on page 6). The calculated groundwater concentration is then used in **Equation 1**. Check with the appropriate remedial program guidance to ensure applicability of a calculated groundwater concentration prior to use. *Use of these calculated soil-to-groundwater PSRGs in no way exempts compliance from the 2L Standards, IMACs, or risk-based alternate standards for groundwater where approved by applicable remediation program, including the use of the Practical Quantitation Limit (PQL) where no numeric standard currently exists.*

If a 15A NCAC 02L Standard or IMAC is available for a contaminant with no PSRGs, Synthetic Precipitation Leaching Procedure (SPLP) analysis of soil samples can be performed by an analytical laboratory to determine whether this contaminant is leaching to groundwater above its 2L Standard or IMAC. If there is no established target groundwater concentration, the 20x method (or the TCLP “Rule of 20”) or other method may be used to calculate a target soil cleanup concentration if allowed by the program providing oversight. Refer to program guidance.

4. If more than five contaminants with non-carcinogenic effects are detected at a site, including those where a lab reporting limit is greater than a PSRG, use the DEQ *Risk Calculator* to determine if the allowable human health risk is exceeded, or contact the appropriate remediation program within DEQ for additional guidance.

5. If one or more PSRGs are exceeded at a site, enter the data into the *Risk Calculator* to determine the cumulative human health risk of all contaminants and calculate site-specific cleanup levels. Site-specific calculated cleanup levels are typically less conservative than the generic PSRGs and are based on the upper end of USEPA’s allowed risk range:
 - a. the cumulative carcinogenic target risk of 1.0E-04, or
 - b. cumulative Hazard Index of 1.0 for noncarcinogens.

Refer to the DEQ *Risk Calculator User Guide* and the *Technical Guidance for Risk-Based Environmental Remediation of Sites* available at the DEQ risk-based remediation website or contact the appropriate remediation program for assistance.

6. For some low-toxicity chemicals, it is acknowledged that the calculated PSRG is greater than 100% saturation of the soil medium, which is physically impossible. However, these PSRGs are a risk-based concentration that can be used to calculate cumulative risk of all contaminants using the Risk Calculator.

Compound-Specific Notes:

1. **Ammonia, Nitrate and Nitrite:** Although 2L Standards or IMACs exist for these nutrients, soil-water partition coefficients (ks) are not available to calculate their protection of groundwater PSRGs, so the 20x method (aka the TCLP “Rule of 20”) may be used with remedial program approval to calculate a target soil cleanup concentration: *2L Standard or IMAC in mg/L x 20 = calculated protection of groundwater PSRG in mg/kg.*
2. **Benzene, Trimethyl (Trimethylbenzene):** PSRGs are provided for total Benzene, Trimethyl as well as the individual isomers (see 1,2,3-, 1,2,4-, and 1,3,5-trimethylbenzene). The DEQ Risk Calculator also allows data entry for both total trimethylbenzenes and individual isomers. Use the individual isomer data for PSRG comparison and data entry where available. If isomer data are unavailable, use the total trimethylbenzene value. However, avoid entering both isomers and total trimethylbenzenes in the DEQ Risk Calculator to prevent double-counting risk.
3. **Cadmium:** Use the “Cadmium (Diet)” PSRG.
4. **Chromium:** Compare speciated Cr results, if available. If only Total Cr was reported, use the Cr(VI) PSRG for comparison. Total Cr may also be compared to the Cr(III) Insoluble Salts PSRGs if Total Cr is within natural background levels. The Cr(III) Soluble Compounds should be used only when specifically available.
5. **Cyanide:** Analyze for total cyanide and use the lowest PSRG for a cyanide species on the table (unless analyses for both total cyanide and specific species are available to demonstrate all of the cyanide is of one particular species).
6. **Dioxins and Furans:** Multiply the individual dioxin and furan isomer concentrations by their associated toxicity equivalency factor (TEF) shown in the table below. Sum the adjusted concentrations of all dioxins and furans and compare the result to the 2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) PSRG.

CASRN	Dioxins and Furans	TEF
Chlorinated dibenzo-p-dioxins		
1746-01-6	2,3,7,8-TCDD	1
40321-76-4	1,2,3,7,8-PeCDD	1

39227-28-6	1,2,3,4,7,8-HxCDD	0.1
57653-85-7	1,2,3,6,7,8-HxCDD	0.1
57653-85-7	1,2,3,7,8,9-HxCDD	0.1
35822-46-9	1,2,3,4,6,7,8-HpCDD	0.01
3268-87-9	OCDD	0.0003
Chlorinated dibenzofurans		
51207-31-9	2,3,7,8-TCDF	0.1
57117-41-6	1,2,3,7,8-PeCDF	0.03
57117-31-4	2,3,4,7,8-PeCDF	0.3
70648-26-9	1,2,3,4,7,8-HxCDF	0.1
57117-44-9	1,2,3,6,7,8-HxCDF	0.1
72918-21-9	1,2,3,7,8,9-HxCDF	0.1
60851-34-5	2,3,4,6,7,8-HxCDF	0.1
35822-46-9	1,2,3,4,6,7,8-HpCDF	0.01
55673-89-7	1,2,3,4,7,8,9-HpCDF	0.01
39001-02-0	OCDF	0.0003

7. **Lead Compounds:** Unless the species is known, use the “Lead and Compounds” PSRGs.
 - a. **Residential health-based:** The PSRG is the EPA RSL of 200 mg/kg (updated 1/17/24). However, where additional sources of lead are present (e.g., lead water service lines, lead-based paint and/or non-attainment areas where the air lead concentrations exceed the national ambient air quality standards set by the EPA), the PSRG is 100 mg/kg.
 - b. **Industrial/commercial health-based:** The PSRG is the EPA RSL of 800 mg/kg.
8. **Manganese:** Use the “non-diet” PSRG, which excludes the dietary contribution.
9. **Mercury:** Unless it is known what species of mercury is present at the site, use the “Mercuric Chloride (and other Mercury salts)” PSRG. If methyl mercury formation or mercury vapor inhalation is likely, contact DEQ for further guidance.
10. **Nickel:** Unless the release occurred in the last six months and it is clearly known which species of this metal was released, the PSRG for "Nickel Soluble Salts" should be used.
11. **Per- and Polyfluoroalkyl Substances (PFAS):** The PSRG table contains several species of individual PFAS compounds. The PSRG values are typically the same for the salt, acid, and anionic species of each compound. Use the PSRGs provided for the acid species (the one with an acronym in parentheses). Although environmental contamination is typically associated with anion species, the acid species is used because the acid species has had the most reference value information. An example of the species associated with a single PFAS compound is shown below with the preferred PSRG form highlighted in blue.

Example showing the PFAS species for PFBA

	CAS No.	Analyte	Chemical Form
PFBA	10495-86-0	~Ammonium perfluorobutanoate	Ammonium Salt
	2966-54-3	~Potassium heptafluorobutanoate	Potassium Salt
	2218-54-4	~Sodium perfluorobutanoate	Sodium Salt
	45048-62-2	~Perfluorobutanoate	Anion
	375-22-4	~Perfluorobutanoic acid (PFBA)	Acid

If PFAS with no protection of groundwater PSRGs are detected in soil, co-located groundwater samples should be tested for PFAS to determine if nearby water supplies could be at risk.

12. **Phosphates:** Unless it is known which species is present, use the “Potassium Salts of Inorganic Phosphates” PSRG, including laboratory results that report Phosphorus (CAS #7723-14-0).
13. **PCBs:** PSRGs are provided for the 12 dioxin-like PCB congeners. Total the remaining 197 congener concentrations and compare the sum to the “PCBs (high risk)” PSRG. Aroclor PSRGs should only be used for gross screening and with approval from the appropriate DEQ program.
14. **Thallium:** Unless it is clearly known which species was released, use the "soluble salt" PSRGs.
15. **Total Petroleum Hydrocarbons (TPH):** TPH is a term intended to refer to the total mass of hydrocarbons present without identifying individual compounds. Therefore, the individual chemical constituents should be analyzed for risk assessment rather than rely on TPH data. Most of the carcinogens in the TPH carbon range are individually listed on the PSRG table. Combining TPH and individual constituent cancer risks would be overly protective.

To better understand the TPH screening levels in the PSRG Table, the associated carbon ranges and 2L Standards are provided below. More information on USEPA’s RSLs for TPH can be found here: [Regional Screening Levels \(RSLs\) - Frequent Questions | US EPA](#)

Protection of groundwater PSRGs are only provided for the two TPH carbon ranges that have both an EPA RSL and a 2L Standard, Aliphatic Low and Aliphatic Medium. See table below for a comparison of the carbon ranges.

EPA Designation for TPH	Associated Carbon Range (per EPA RSL FAQs)	Associated Carbon Range with NC 2L Groundwater Standard Calculation	NC 2L Groundwater Standard (mg/L)
Aliphatic Low	C5-C8	C5-C8	0.4
Aliphatic Medium	C9-C18	C9-C18	0.7
Aliphatic High	C19-C32	C19-C36	10
Aromatic Low	C6-C8	NA	NA
Aromatic Medium	C9-C10	C9-C22	0.2
Aromatic High	C10-C32	NA	NA

NA - not available

16. **Xylenes:** PSRGs are provided for total xylenes as well as the individual isomers (m-, p-, and o-xylene). The DEQ Risk Calculator also allows data entry for both total xylenes and individual isomers. Use the individual isomer data for PSRG comparison and data entry where available. If the laboratory reports combined m- and p-xylene, use the m-xylene PSRG and enter data under m-xylene in the DEQ Risk Calculator, as m-xylene represents the higher risk isomer. It is also acceptable to use the total xylenes data for PSRG comparison and data entry; however, avoid entering both isomers and total xylenes in the DEQ Risk Calculator to prevent double-counting risk.

Equations Used to Calculate the Protection of Groundwater PSRG

Equation 1 calculates a target soil concentration that serves as a leachability screening level. (from USEPA soil to groundwater RSL calculation):

$$C_{soil} = C_{gw} \left[k_s + \frac{(\theta_w + \theta_a H')}{P_b} \right] df$$

	Parameters	Default Values	Units
C_{soil}	Calculated Source Concentration for soil	not applicable	mg/kg - soil
C_{gw}	Applicable Groundwater Target Concentration: 15A NCAC 02L Standard	02L standard or IMACs	mg/L - water
df	Dilution factor	20 (0.5-acre source area) ¹	unitless
k_s	Soil-water partition coefficient for organic constituents $k_s = k_{oc} \times f_{oc}$ for inorganic constituents $k_s = k_d$	Calculated from k_{oc} and f_{oc} , or K_d	L/kg
k_{oc}	Soil organic carbon-water partition coefficient	contaminant-specific ²	L/kg
f_{oc}	Fraction of organic carbon in subsurface vadose soils	0.002 (0.2%) ³	kg/kg
k_d	Soil-water partition coefficient for inorganics	contaminant-specific ² (pH=5.5)	L/kg
θ_w	Water-filled soil porosity-vadose soils	0.3 ³	L _{water} /L _{soil}
θ_a	Air-filled soil porosity-vadose soils	0.13 ³	L _{air} /L _{soil}
P_b	Dry bulk density	1.5 ³	kg/L
H'	Henry's Law constant-dimensionless where: $H' = \text{Henry's Law constant (atm- m}^3/\text{mole)} \times \text{conversion factor of 41}$	contaminant-specific ²	unitless

1 - USEPA default value from USEPA 1996 Soil Screening Guidance

2 - USEPA value from the USEPA RSL contaminant-specific parameter supporting table

3 - DEQ default value appropriate for North Carolina

Equation 2 calculates a target groundwater concentration that can be used in Equation 1 when no 2L standard or IMAC is available (based on 15A NCAC 02L .0202 methodology). C_{gw} in Equation 1 becomes the lower of the following calculated groundwater concentrations:

$$C_{gw}(C) = (TCR \times BW) / (CSFo \times IR)$$

$$C_{gw}(N) = (THQ \times RfDo \times BW \times RSC) / (IR)$$

Symbol	Parameter	Default Values	Units
$C_{gw}(C)$	Calculated groundwater concentration based on carcinogenic risk	Calculated	mg/L
$C_{gw}(N)$	Calculated groundwater concentration based on non-carcinogenic risk	Calculated	mg/L
TCR	Target cancer risk	1.0E-06	unitless
THQ	Target hazard quotient	1.0	unitless
RfDo	Oral reference dose	Contaminant-specific	mg/kg-day
CSFo	Oral cancer Slope Factor	Contaminant-specific	(mg/kg-day) ⁻¹
BW	Body weight	70	kg
IR	Ingestion Rate	2	L/day
RSC	Relative source contribution	0.1 for inorganics and 0.2 for organics	unitless

North Carolina Department of Environmental Quality

Preliminary Soil Remediation Goals (PSRG)

January 2025

(based on November 2024 USEPA Regional Screening Tables)

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CAS #	Chemical Name (See companion notes for shaded chemicals)	Residential Health Based PSRG (mg/kg)	Basis	Industrial/ Commercial Health Based PSRG (mg/kg)	Basis	Protection of Groundwater PSRG (mg/kg)	Basis	Does Chemical Have a Non-Cancer Effect?
30560-19-1	Acephate	3.8E+00	N	4.9E+01	N	9.2E-03	Calculated	Yes
75-07-0	Acetaldehyde	1.2E+01	C	5.2E+01	C			Yes
34256-82-1	Acetochlor	2.5E+02	N	3.3E+03	N	1.6E+00	2L or IMAC	Yes
67-64-1	Acetone	1.4E+04	N	2.1E+05	N	2.5E+01	2L or IMAC	Yes
75-86-5	Acetone Cyanohydrin	2.5E+07	N	1.0E+08	N			Yes
75-05-8	Acetonitrile	1.7E+02	N	7.3E+02	N			Yes
98-86-2	Acetophenone	1.6E+03	N	2.3E+04	N	4.3E+00	2L or IMAC	Yes
53-96-3	Acetylaminofluorene, 2-	1.4E-01	C	6.0E-01	C	8.5E-04	Calculated	
107-02-8	Acrolein	3.1E-02	N	1.3E-01	N	1.6E-02	2L or IMAC	Yes
79-06-1	Acrylamide	2.4E-01	C	4.6E+00	C	3.4E-05	2L or IMAC	Yes
79-10-7	Acrylic Acid	4.2E+00	N	1.8E+01	N	1.4E+01	Calculated	Yes
107-13-1	Acrylonitrile	2.7E-01	C	1.2E+00	C	2.8E-04	Calculated	Yes
111-69-3	Adiponitrile	7.4E+07	N	3.1E+08	N			Yes
15972-60-8	Alachlor	9.7E+00	C	4.1E+01	C	3.3E-02	2L or IMAC	Yes
116-06-3	Aldicarb	1.3E+01	N	1.6E+02	N	3.5E-02	Calculated	Yes
1646-88-4	Aldicarb Sulfone	1.3E+01	N	1.6E+02	N	3.1E-02	Calculated	Yes
1646-87-3	Aldicarb sulfoxide							
309-00-2	Aldrin	3.9E-02	C	1.8E-01	C	6.6E-03	2L or IMAC	Yes
107-18-6	Allyl Alcohol	7.5E-01	N	3.2E+00	N	1.1E-01	Calculated	Yes
107-05-1	Allyl Chloride	3.5E-01	N	1.5E+00	N	1.1E-02	Calculated	Yes
7429-90-5	Aluminum	1.6E+04	N	2.3E+05	N	1.1E+05	Calculated	Yes
20859-73-8	Aluminum Phosphide	6.3E+00	N	9.3E+01	N			Yes
834-12-8	Ametryn	1.1E+02	N	1.5E+03	N	1.3E+00	Calculated	Yes
92-67-1	Aminobiphenyl, 4-	2.6E-02	C	1.1E-01	C	1.7E-04	Calculated	
591-27-5	Aminophenol, m-	1.0E+03	N	1.3E+04	N	4.3E+00	Calculated	Yes
95-55-6	Aminophenol, o-	5.1E+01	N	6.6E+02	N	2.2E-01	Calculated	Yes
123-30-8	Aminophenol, p-	2.5E+02	N	3.3E+03	N	1.1E+00	Calculated	Yes
33089-61-1	Amitraz	3.2E+01	N	4.1E+02	N	1.8E+02	Calculated	Yes
7664-41-7	Ammonia							
131-74-8	Ammonium Picrate	2.5E+01	N	3.3E+02	N	1.3E+00	Calculated	Yes
7773-06-0	Ammonium Sulfamate	3.1E+03	N	4.7E+04	N			Yes
75-85-4	Amyl Alcohol, tert-	1.7E+01	N	7.3E+01	N			Yes
62-53-3	Aniline	8.8E+01	N	4.0E+02	C	4.2E-02	Calculated	Yes
84-65-1	Anthraquinone, 9,10-	1.4E+01	C	5.7E+01	C	1.8E-01	Calculated	Yes
7440-36-0	Antimony (metallic)	6.3E+00	N	9.3E+01	N	9.0E-01	2L or IMAC	Yes
1314-60-9	Antimony Pentoxide	7.8E+00	N	1.2E+02	N			Yes
1332-81-6	Antimony Tetroxide	6.3E+00	N	9.3E+01	N			Yes
1309-64-4	Antimony Trioxide	2.5E+06	N	1.0E+07	N			Yes
7440-38-2	Arsenic, Inorganic	6.8E-01	C	3.0E+00	C	5.8E+00	2L or IMAC	Yes
7784-42-1	Arsine	5.5E-02	N	8.2E-01	N			Yes
1332-21-4	Asbestos (units in fibers)							
3337-71-1	Asulam	4.6E+03	N	5.9E+04	N	1.3E+01	Calculated	Yes
1912-24-9	Atrazine	2.4E+00	C	1.0E+01	C	3.9E-02	2L or IMAC	Yes
492-80-8	Auramine	6.2E-01	C	2.6E+00	C	7.2E-03	Calculated	
65195-55-3	Avermectin B1	5.1E+00	N	6.6E+01	N	9.8E+01	Calculated	Yes
86-50-0	Azinphos-methyl	3.8E+01	N	4.9E+02	N	1.3E-01	Calculated	Yes
103-33-3	Azobenzene	5.6E+00	C	2.6E+01	C	4.9E-02	Calculated	
123-77-3	Azodicarbonamide	1.1E+04	N	1.1E+05	N	4.7E+01	Calculated	Yes

North Carolina Department of Environmental Quality

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CAS #	Chemical Name (See companion notes for shaded chemicals)	Residential Health Based PSRG (mg/kg)	Basis	Industrial/ Commercial Health Based PSRG (mg/kg)	Basis	Protection of Groundwater PSRG (mg/kg)	Basis	Does Chemical Have a Non-Cancer Effect?
7440-39-3	Barium	3.1E+03	N	4.7E+04	N	5.8E+02	2L or IMAC	Yes
1861-40-1	Benfluralin	7.8E+01	N	1.2E+03	N	2.3E+01	Calculated	Yes
17804-35-2	Benomyl	6.3E+02	N	8.2E+03	N	6.1E+00	Calculated	Yes
83055-99-6	Bensulfuron-methyl	2.5E+03	N	3.3E+04	N	7.2E+00	Calculated	Yes
25057-89-0	Bentazon	3.8E+02	N	4.9E+03	N	9.2E-01	Calculated	Yes
100-52-7	Benzaldehyde	1.7E+02	C	8.2E+02	C	3.1E+00	2L or IMAC	Yes
71-43-2	Benzene	1.2E+00	C	5.4E+00	C	1.0E-02	2L or IMAC	Yes
25551-13-7	Benzene, Trimethyl	1.1E+01	N	4.6E+01	N			Yes
6369-59-1	Benzenediamine-2-methyl sulfate, 1,4-	3.8E+00	N	2.3E+01	C	1.9E-03	Calculated	Yes
108-98-5	Benzenethiol	1.6E+01	N	2.3E+02	N	9.4E-02	Calculated	Yes
92-87-5	Benzydine	5.3E-04	C	1.0E-02	C	7.9E-06	Calculated	Yes
65-85-0	Benzoic Acid	5.1E+04	N	6.6E+05	N	1.2E+02	2L or IMAC	Yes
98-07-7	Benzotrichloride	5.3E-02	C	2.5E-01	C	1.2E-04	Calculated	
100-51-6	Benzyl Alcohol	1.3E+03	N	1.6E+04	N	3.4E+00	2L or IMAC	Yes
100-44-7	Benzyl Chloride	1.1E+00	C	5.0E+00	C	4.5E-03	Calculated	Yes
7440-41-7	Beryllium and compounds	3.1E+01	N	4.7E+02	N	6.3E+01	2L or IMAC	Yes
42576-02-3	Bifenox	1.1E+02	N	1.5E+03	N	9.5E+00	Calculated	Yes
82657-04-3	Biphenthrin	1.9E+02	N	2.5E+03	N	9.5E+03	Calculated	Yes
92-52-4	Biphenyl, 1,1'-	1.0E+01	N	4.3E+01	N	8.4E+01	2L or IMAC	Yes
108-60-1	Bis(2-chloro-1-methylethyl) ether	6.3E+02	N	9.3E+03	N	2.1E+00	Calculated	Yes
111-91-1	Bis(2-chloroethoxy)methane	3.8E+01	N	4.9E+02	N	9.6E-02	Calculated	Yes
111-44-4	Bis(2-chloroethyl)ether	2.4E-01	C	1.1E+00	C	1.6E-04	2L or IMAC	
542-88-1	Bis(chloromethyl)ether	8.8E-05	C	3.8E-04	C	7.5E-07	Calculated	
80-05-7	Bisphenol A	6.3E+02	N	8.2E+03	N	5.3E+02	Calculated	Yes
7440-42-8	Boron And Borates Only	3.1E+03	N	4.7E+04	N	4.5E+01	2L or IMAC	Yes
10294-34-5	Boron Trichloride	3.1E+04	N	4.7E+05	N			Yes
7637-07-2	Boron Trifluoride	6.3E+02	N	9.3E+03	N			Yes
15541-45-4	Bromate	9.9E-01	C	4.7E+00	C	7.7E-03	Calculated	Yes
107-04-0	Bromo-2-chloroethane, 1-	7.5E-02	N	3.3E-01	N	4.0E-03	Calculated	Yes
1073-06-9	Bromo-3-fluorobenzene, 1-	4.7E+00	N	7.0E+01	N	4.0E-02	Calculated	Yes
460-00-4	Bromo-4-fluorobenzene, 1-	4.7E+00	N	7.0E+01	N	4.0E-02	Calculated	Yes
79-08-3	Bromoacetic acid							
108-86-1	Bromobenzene	5.9E+01	N	3.7E+02	N	7.6E-01	Calculated	Yes
74-97-5	Bromochloromethane	3.2E+01	N	1.3E+02	N			Yes
75-27-4	Bromodichloromethane	3.1E-01	C	1.4E+00	C	3.3E-03	2L or IMAC	Yes
75-25-2	Bromoform	2.0E+01	C	9.0E+01	C	2.1E-02	2L or IMAC	Yes
74-83-9	Bromomethane	1.4E+00	N	6.4E+00	N	5.0E-02	2L or IMAC	Yes
2104-96-3	Bromophos	7.8E+01	N	1.2E+03	N	3.0E+00	Calculated	Yes
106-94-5	Bromopropane, 1-	1.7E+00	C	7.6E+00	C			Yes
1689-84-5	Bromoxynil	5.3E+00	C	2.2E+01	C	5.8E-03	Calculated	Yes
1689-99-2	Bromoxynil Octanoate	6.7E+00	C	3.2E+01	C	5.9E-02	Calculated	Yes
106-99-0	Butadiene, 1,3-	8.0E-02	C	3.5E-01	C	6.3E-04	Calculated	Yes
71-36-3	Butanol, N-	1.6E+03	N	2.3E+04	N	2.4E+00	2L or IMAC	Yes
75-65-0	Butyl Alcohol, t-	1.4E+03	C	6.5E+03	C	4.1E-02	2L or IMAC	Yes
78-92-2	Butyl alcohol, sec-	2.7E+04	N	3.0E+05	N	4.1E+01	2L or IMAC	Yes
2008-41-5	Butylate	7.8E+02	N	1.2E+04	N	6.8E+00	Calculated	Yes

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25013-16-5	Butylated hydroxyanisole	2.7E+03	C	1.1E+04	C	6.6E+00	Calculated	
128-37-0	Butylated hydroxytoluene	1.5E+02	C	6.4E+02	C	5.8E+00	Calculated	Yes
104-51-8	Butylbenzene, n-	7.8E+02	N	1.2E+04	N	4.5E+00	2L or IMAC	Yes
135-98-8	Butylbenzene, sec-	1.6E+03	N	2.3E+04	N	4.1E+00	2L or IMAC	Yes
98-06-6	Butylbenzene, tert-	1.6E+03	N	2.3E+04	N	3.1E+00	2L or IMAC	Yes
75-60-5	Cacodylic Acid	2.5E+02	N	3.3E+03	N	8.1E-01	Calculated	Yes
7440-43-9	Cadmium (Diet)	1.4E+00	N	2.0E+01	N	3.0E+00	2L or IMAC	Yes
7440-43-9b	Cadmium (Water)							
105-60-2	Caprolactam	6.3E+03	N	8.2E+04	N	2.0E+01	2L or IMAC	Yes
2425-06-1	Captafol	3.6E+00	C	1.5E+01	C	8.2E-03	Calculated	Yes
133-06-2	Captan	2.4E+02	C	1.0E+03	C	2.1E-01	Calculated	Yes
63-25-2	Carbaryl	1.3E+03	N	1.6E+04	N	1.3E+01	Calculated	Yes
1563-66-2	Carbofuran	6.3E+01	N	8.2E+02	N	3.1E-01	2L or IMAC	Yes
75-15-0	Carbon Disulfide	1.6E+02	N	7.4E+02	N	4.1E+00	2L or IMAC	Yes
56-23-5	Carbon Tetrachloride	6.9E-01	C	3.0E+00	C	2.3E-03	2L or IMAC	Yes
463-58-1	Carbonyl Sulfide	1.4E+01	N	6.0E+01	N			Yes
55285-14-8	Carbosulfan	1.3E+02	N	1.6E+03	N	3.4E+01	Calculated	Yes
5234-68-4	Carboxin	1.3E+03	N	1.6E+04	N	7.5E+00	Calculated	Yes
1306-38-3	Ceric oxide	1.1E+07	N	4.7E+07	N			Yes
302-17-0	Chloral Hydrate	1.6E+03	N	2.3E+04	N	2.8E+00	Calculated	Yes
133-90-4	Chloramben	1.9E+02	N	2.5E+03	N	5.1E-01	Calculated	Yes
E701235	Chloramines, Organic							
118-75-2	Chloranil	1.3E+00	C	5.7E+00	C	1.4E-03	Calculated	
5103-71-9	Chlordane (alpha)	7.1E+00	N	1.0E+02	N	9.5E+00	Calculated	Yes
5103-74-2	Chlordane (gamma)	7.1E+00	N	1.0E+02	N	9.5E+00	Calculated	Yes
12789-03-6	Chlordane (technical mixture)	1.7E+00	C	7.7E+00	C	2.7E-01	2L or IMAC	Yes
143-50-0	Chlordecone (Kepone)	5.4E-02	C	2.3E-01	C	2.5E-03	Calculated	Yes
470-90-6	Chlorfenvinphos	8.8E+00	N	1.1E+02	N	2.7E-01	Calculated	Yes
90982-32-4	Chlorimuron, Ethyl-	1.1E+03	N	1.5E+04	N	4.3E+00	Calculated	Yes
7782-50-5	Chlorine	3.9E-02	N	1.6E-01	N	3.4E+00	Calculated	Yes
10049-04-4	Chlorine Dioxide	4.7E+02	N	7.0E+03	N			Yes
7758-19-2	Chlorite (Sodium Salt)	4.7E+02	N	7.0E+03	N			Yes
75-68-3	Chloro-1,1-difluoroethane, 1-	1.1E+04	N	4.8E+04	N			Yes
126-99-8	Chloro-1,3-butadiene, 2- (Chloroprene)	3.9E-03	C	4.7E-02	C	1.5E+00	Calculated	Yes
3165-93-3	Chloro-2-methylaniline HCl, 4-	1.2E+00	C	5.0E+00	C	1.4E-03	Calculated	
95-69-2	Chloro-2-methylaniline, 4-	5.4E+00	C	2.3E+01	C	4.0E-03	Calculated	Yes
107-20-0	Chloroacetaldehyde, 2-	2.6E+00	C	1.2E+01	C	5.2E-04	Calculated	
79-11-8	Chloroacetic Acid							
532-27-4	Chloroacetophenone, 2-	3.7E+05	N	1.6E+06	N			Yes
106-47-8	Chloroaniline, p-	2.7E+00	C	1.1E+01	C	1.5E-03	Calculated	Yes
108-90-7	Chlorobenzene	5.8E+01	N	2.8E+02	N	6.8E-01	2L or IMAC	Yes
98-66-8	Chlorobenzene sulfonic acid, p-	1.3E+03	N	1.6E+04	N	3.2E+00	Calculated	Yes
510-15-6	Chlorobenzilate	4.9E+00	C	2.1E+01	C	2.1E-02	Calculated	Yes
74-11-3	Chlorobenzoic Acid, p-	3.8E+02	N	4.9E+03	N	1.1E+00	Calculated	Yes
98-56-6	Chlorobenzotrifluoride, 4-	2.4E+00	C	1.0E+01	C	1.5E+00	Calculated	Yes
109-69-3	Chlorobutane, 1-	6.3E+02	N	9.3E+03	N	2.3E+00	Calculated	Yes

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75-45-6	Chlorodifluoromethane	1.0E+04	N	4.4E+04	N			Yes
107-07-3	Chloroethanol, 2-	3.1E+02	N	4.7E+03	N	5.7E-01	Calculated	Yes
67-66-3	Chloroform	3.4E-01	C	1.5E+00	C	3.9E-01	2L or IMAC	Yes
74-87-3	Chloromethane	2.3E+01	N	9.9E+01	N	1.5E-02	2L or IMAC	Yes
107-30-2	Chloromethyl Methyl Ether	2.1E-02	C	9.4E-02	C	6.2E-05	Calculated	
88-73-3	Chloronitrobenzene, o-	1.8E+00	C	7.7E+00	C	2.2E-03	Calculated	Yes
100-00-5	Chloronitrobenzene, p-	8.8E+00	N	3.8E+01	C	1.1E-02	Calculated	Yes
95-57-8	Chlorophenol, 2-	7.8E+01	N	1.2E+03	N	7.8E-03	2L or IMAC	Yes
76-06-2	Chloropicrin	4.2E-01	N	1.7E+00	N			Yes
1897-45-6	Chlorothalonil	3.2E+01	C	1.4E+02	C	9.4E-02	Calculated	Yes
95-49-8	Chlorotoluene, o-	3.1E+02	N	4.7E+03	N	2.0E+00	2L or IMAC	Yes
106-43-4	Chlorotoluene, p-	3.1E+02	N	4.7E+03	N	4.6E-01	2L or IMAC	Yes
54749-90-5	Chlorozotocin	2.3E-03	C	9.6E-03	C	6.4E-07	Calculated	
101-21-3	Chlorpropham	6.3E+01	N	8.2E+02	N	6.3E-01	Calculated	Yes
2921-88-2	Chlorpyrifos	1.3E+01	N	1.6E+02	N	2.1E+00	Calculated	Yes
5598-13-0	Chlorpyrifos Methyl	1.3E+02	N	1.6E+03	N	6.4E+00	Calculated	Yes
64902-72-3	Chlorsulfuron	6.3E+02	N	8.2E+03	N	5.9E+00	Calculated	Yes
1861-32-1	Chlorthal-dimethyl	1.3E+02	N	1.6E+03	N	1.7E+00	Calculated	Yes
60238-56-4	Chlorthiophos	1.0E+01	N	1.3E+02	N	2.9E+00	Calculated	Yes
16065-83-1b	Chromium(III) (Soluble Compounds)	7.4E+05	N	3.1E+06	N	3.6E+05	2L or IMAC	Yes
16065-83-1	Chromium(III), Insoluble Salts	2.3E+04	N	3.5E+05	N	3.6E+05	2L or IMAC	Yes
18540-29-9	Chromium(VI)	9.6E-01	C	2.0E+01	C	3.8E+00	2L or IMAC	Yes
7440-47-3	Chromium, Total							
74115-24-5	Clofentezine	1.6E+02	N	2.1E+03	N	1.1E+02	Calculated	Yes
7440-48-4	Cobalt	4.7E+00	N	7.0E+01	N	9.0E-01	2L or IMAC	Yes
E649830	Coke Oven Emissions							
7440-50-8	Copper	6.3E+02	N	9.3E+03	N	7.0E+02	2L or IMAC	Yes
108-39-4	Cresol, m-	6.3E+02	N	8.2E+03	N	6.4E+00	2L or IMAC	Yes
95-48-7	Cresol, o-	6.3E+02	N	8.2E+03	N	6.5E+00	2L or IMAC	Yes
106-44-5	Cresol, p-	2.5E+02	N	3.3E+03	N	6.4E-01	2L or IMAC	Yes
59-50-7	Cresol, p-chloro-m-	1.3E+03	N	1.6E+04	N	1.7E+01	Calculated	Yes
1319-77-3	Cresols	1.3E+03	N	1.6E+04	N	1.1E+01	Calculated	Yes
123-73-9	Crotonaldehyde, trans-	3.7E-01	C	1.7E+00	C	7.5E-05	Calculated	Yes
98-82-8	Cumene	4.1E+02	N	2.1E+03	N	2.3E+00	2L or IMAC	Yes
135-20-6	Cupferron	2.5E+00	C	1.0E+01	C	5.5E-03	Calculated	
21725-46-2	Cyanazine	6.5E-01	C	2.7E+00	C	3.9E-04	Calculated	Yes
	Cyanides							
592-01-8	~Calcium Cyanide	1.6E+01	N	2.3E+02	N			Yes
544-92-3	~Copper Cyanide	7.8E+01	N	1.2E+03	N			Yes
57-12-5	~Cyanide (CN-)	4.9E+00	N	3.3E+01	N	1.4E+01	2L or IMAC	Yes
460-19-5	~Cyanogen	1.6E+01	N	2.3E+02	N			Yes
506-68-3	~Cyanogen Bromide	1.4E+03	N	2.1E+04	N			Yes
506-77-4	~Cyanogen Chloride	7.8E+02	N	1.2E+04	N			Yes
74-90-8	~Hydrogen Cyanide	4.7E+00	N	3.1E+01	N	4.2E-01	Calculated	Yes
151-50-8	~Potassium Cyanide	3.1E+01	N	4.7E+02	N			Yes
506-61-6	~Potassium Silver Cyanide	7.8E+01	N	1.2E+03	N			Yes
506-64-9	~Silver Cyanide	1.6E+03	N	2.3E+04	N			Yes

North Carolina Department of Environmental Quality

Preliminary Soil Remediation Goals (PSRG)

January 2025

(based on November 2024 USEPA Regional Screening Tables)

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CAS #	Chemical Name (See companion notes for shaded chemicals)	Residential Health Based PSRG (mg/kg)	Basis	Industrial/ Commercial Health Based PSRG (mg/kg)	Basis	Protection of Groundwater PSRG (mg/kg)	Basis	Does Chemical Have a Non-Cancer Effect?
143-33-9	~Sodium Cyanide	1.6E+01	N	2.3E+02	N			Yes
557-21-1	~Zinc Cyanide	7.8E+02	N	1.2E+04	N			Yes
110-82-7	Cyclohexane	1.4E+03	N	5.8E+03	N			Yes
87-84-3	Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro-	2.7E+01	C	1.1E+02	C	2.0E-01	Calculated	Yes
108-94-1	Cyclohexanone	6.0E+03	N	2.7E+04	N	1.6E+02	Calculated	Yes
110-83-8	Cyclohexene	6.3E+01	N	6.3E+02	N	4.6E-01	Calculated	Yes
108-91-8	Cyclohexylamine	3.1E+03	N	4.7E+04	N	7.4E+00	Calculated	Yes
68359-37-5	Cyfluthrin	3.2E+02	N	4.1E+03	N	9.1E+02	Calculated	Yes
66215-27-8	Cyromazine	6.3E+03	N	8.2E+04	N	1.8E+01	Calculated	Yes
75-99-0	Dalapon	3.8E+02	N	4.9E+03	N	8.3E-01	2L or IMAC	Yes
1596-84-5	Daminozide	3.0E+01	C	1.3E+02	C	8.6E-03	Calculated	Yes
1163-19-5	Decabromodiphenyl ether, 2,2',3,3',4,4',5,5',6,6'- (BDE-209)	8.8E+01	N	1.1E+03	N	5.4E+02	Calculated	Yes
8065-48-3	Demeton	5.1E-01	N	6.6E+00	N			Yes
103-23-1	Di(2-ethylhexyl)adipate	4.5E+02	C	1.9E+03	C	4.2E+01	Calculated	Yes
2303-16-4	Diallate	8.9E+00	C	3.8E+01	C	1.7E-02	Calculated	
333-41-5	Diazinon	8.8E+00	N	1.1E+02	N	6.1E-01	Calculated	Yes
96-12-8	Dibromo-3-chloropropane, 1,2-	5.6E-03	C	6.8E-02	C	3.5E-04	2L or IMAC	Yes
631-64-1	Dibromoacetic acid							
108-36-1	Dibromobenzene, 1,3-	6.3E+00	N	9.3E+01	N	5.3E-02	Calculated	Yes
106-37-6	Dibromobenzene, 1,4-	1.6E+02	N	2.3E+03	N	1.3E+00	2L or IMAC	Yes
124-48-1	Dibromochloromethane	8.3E+00	C	3.9E+01	C	2.1E-03	2L or IMAC	Yes
106-93-4	Dibromoethane, 1,2-	3.8E-02	C	1.7E-01	C	1.1E-04	2L or IMAC	Yes
74-95-3	Dibromomethane (Methylene Bromide)	5.0E+00	N	2.1E+01	N	3.4E-01	2L or IMAC	Yes
E1790661	Dibutyltin Compounds	3.8E+00	N	4.9E+01	N			Yes
1918-00-9	Dicamba	3.8E+02	N	4.9E+03	N	1.1E+00	Calculated	Yes
3400-09-7	Dichloramine							
764-41-0	Dichloro-2-butene, 1,4-	2.3E-03	C	1.0E-02	C			
1476-11-5	Dichloro-2-butene, cis-1,4-	7.9E-03	C	3.5E-02	C			
110-57-6	Dichloro-2-butene, trans-1,4-	7.9E-03	C	3.5E-02	C			
79-43-6	Dichloroacetic Acid	1.1E+01	C	4.6E+01	C	2.9E-03	2L or IMAC	Yes
95-50-1	Dichlorobenzene, 1,2-	3.8E+02	N	2.0E+03	N	3.9E-01	2L or IMAC	Yes
106-46-7	Dichlorobenzene, 1,4-	2.8E+00	C	1.2E+01	C	1.2E-01	2L or IMAC	Yes
91-94-1	Dichlorobenzidine, 3,3'-	1.2E+00	C	5.1E+00	C	1.0E-02	Calculated	
90-98-2	Dichlorobenzophenone, 4,4'-	1.1E+02	N	1.5E+03	N	7.6E+00	Calculated	Yes
75-71-8	Dichlorodifluoromethane	1.8E+01	N	7.8E+01	N	3.0E+01	2L or IMAC	Yes
72-54-8	Dichlorodiphenyldichloroethane, p,p'- (DDD)	2.3E+00	C	9.6E+00	C	4.7E-01	2L or IMAC	Yes
72-55-9	Dichlorodiphenyldichloroethane, p,p'- (DDE)	2.0E+00	C	9.3E+00	C	4.7E-01	2L or IMAC	Yes
50-29-3	Dichlorodiphenyltrichloroethane, p,p'- (DDT)	1.9E+00	C	8.5E+00	C	6.7E-01	2L or IMAC	Yes
75-34-3	Dichloroethane, 1,1-	3.8E+00	C	1.7E+01	C	3.4E-02	2L or IMAC	Yes
107-06-2	Dichloroethane, 1,2-	4.9E-01	C	2.2E+00	C	2.3E-03	2L or IMAC	Yes

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75-35-4	Dichloroethylene, 1,1-	1.0E+00	N	4.3E+00	N	2.5E+00	2L or IMAC	Yes
156-59-2	Dichloroethylene, cis-1,2-	1.3E+01	N	7.8E+01	N	4.1E-01	2L or IMAC	Yes
156-60-5	Dichloroethylene, trans-1,2-	1.5E+01	N	6.4E+01	N	6.2E-01	2L or IMAC	Yes
120-83-2	Dichlorophenol, 2,4-	3.8E+01	N	4.9E+02	N	9.7E-03	2L or IMAC	Yes
94-75-7	Dichlorophenoxy Acetic Acid, 2,4-	1.4E+02	N	1.9E+03	N	3.6E-01	2L or IMAC	Yes
78-87-5	Dichloropropane, 1,2-	2.6E+00	C	1.2E+01	C	4.0E-03	2L or IMAC	Yes
142-28-9	Dichloropropane, 1,3-	3.1E+02	N	4.7E+03	N	9.7E-01	Calculated	Yes
616-23-9	Dichloropropanol, 2,3-	3.8E+01	N	4.9E+02	N	8.9E-02	Calculated	Yes
542-75-6	Dichloropropene, 1,3-	1.9E+00	C	8.6E+00	C	2.9E-03	2L or IMAC	Yes
62-73-7	Dichlorvos	1.9E+00	C	7.9E+00	C	7.4E-04	Calculated	Yes
141-66-2	Dicrotophos	3.8E-01	N	4.9E+00	N	9.8E-04	Calculated	Yes
77-73-6	Dicyclopentadiene	2.7E-01	N	1.2E+00	N	3.9E+01	Calculated	Yes
60-57-1	Dieldrin	3.4E-02	C	1.4E-01	C	1.6E-03	2L or IMAC	Yes
E17136615	Diesel Engine Exhaust							
111-42-2	Diethanolamine	2.5E+01	N	3.3E+02	N	5.7E-02	Calculated	Yes
112-34-5	Diethylene Glycol Monobutyl Ether	3.8E+02	N	4.9E+03	N	9.2E-01	Calculated	Yes
111-90-0	Diethylene Glycol Monoethyl Ether	7.6E+02	N	9.8E+03	N	1.7E+00	Calculated	Yes
617-84-5	Diethylformamide	1.6E+01	N	2.3E+02	N	2.9E-02	Calculated	Yes
56-53-1	Diethylstilbestrol	1.6E-03	C	6.6E-03	C	1.1E-03	Calculated	
43222-48-6	Difenzoquat	1.0E+03	N	1.4E+04	N	1.8E+03	Calculated	Yes
35367-38-5	Diflubenzuron	2.5E+02	N	3.3E+03	N	3.2E+00	Calculated	Yes
75-37-6	Difluoroethane, 1,1-	1.0E+04	N	4.3E+04	N			Yes
420-45-1	Difluoropropane, 2,2-	5.0E+03	N	2.1E+04	N			Yes
94-58-6	Dihydrosafrole	1.0E+01	C	4.6E+01	C	9.8E-03	Calculated	
108-20-3	Diisopropyl Ether	4.8E+02	N	2.0E+03	N	3.6E-01	2L or IMAC	Yes
1445-75-6	Diisopropyl Methylphosphonate	1.3E+03	N	1.9E+04	N	3.2E+00	Calculated	Yes
55290-64-7	Dimethipin	2.8E+02	N	3.6E+03	N	6.7E-01	Calculated	Yes
60-51-5	Dimethoate	2.8E+01	N	3.6E+02	N	6.9E-02	Calculated	Yes
119-90-4	Dimethoxybenzidine, 3,3'-	7.6E-02	C	1.4E+00	C	5.3E-04	Calculated	
75-18-3	Dimethyl Sulfide	1.3E-01	N	5.5E-01	N	7.0E-01	Calculated	Yes
756-79-6	Dimethyl methylphosphonate	3.2E+02	C	1.4E+03	C	8.7E-02	Calculated	Yes
60-11-7	Dimethylamino azobenzene [p-]	1.2E-01	C	5.0E-01	C	6.5E-04	Calculated	
21436-96-4	Dimethylaniline HCl, 2,4-	9.4E-01	C	4.0E+00	C	1.1E-03	Calculated	
95-68-1	Dimethylaniline, 2,4-	2.7E+00	C	1.1E+01	C	2.0E-03	Calculated	Yes
121-69-7	Dimethylaniline, N,N-	2.6E+01	C	1.2E+02	C	9.3E-03	Calculated	Yes
119-93-7	Dimethylbenzidine, 3,3'-	1.1E-02	C	2.1E-01	C	4.2E-04	Calculated	
68-12-2	Dimethylformamide	5.4E+02	N	3.0E+03	N	2.8E+00	Calculated	Yes
57-14-7	Dimethylhydrazine, 1,1-	1.2E-02	N	5.1E-02	N	3.1E-03	Calculated	Yes
540-73-8	Dimethylhydrazine, 1,2-	9.0E-04	C	4.1E-03	C	2.9E-07	Calculated	
105-67-9	Dimethylphenol, 2,4-	2.5E+02	N	3.3E+03	N	2.4E+00	2L or IMAC	Yes
576-26-1	Dimethylphenol, 2,6-	7.6E+00	N	9.8E+01	N	1.0E-01	Calculated	Yes
95-65-8	Dimethylphenol, 3,4-	1.3E+01	N	1.6E+02	N	1.7E-01	Calculated	Yes
513-37-1	Dimethylvinylchloride	1.2E+00	C	5.1E+00	C	5.1E-03	Calculated	

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534-52-1	Dinitro-o-cresol, 4,6-	1.0E+00	N	1.3E+01	N	1.9E-02	Calculated	Yes
131-89-5	Dinitro-o-cyclohexyl Phenol, 4,6-	2.5E+01	N	3.3E+02	N	9.3E+00	Calculated	Yes
618-87-1	Dinitroaniline, 3,5-	5.1E+00	N	6.6E+01	N	3.0E-02	Calculated	Yes
528-29-0	Dinitrobenzene, 1,2-	1.3E+00	N	1.6E+01	N	1.3E-02	Calculated	Yes
99-65-0	Dinitrobenzene, 1,3-	1.3E+00	N	1.6E+01	N	1.3E-02	Calculated	Yes
100-25-4	Dinitrobenzene, 1,4-	1.3E+00	N	1.6E+01	N	1.3E-02	Calculated	Yes
51-28-5	Dinitrophenol, 2,4-	2.5E+01	N	3.3E+02	N	3.1E-01	Calculated	Yes
E1615210	Dinitrotoluene Mixture, 2,4/2,6-	8.0E-01	C	3.4E+00	C	1.4E-03	Calculated	
121-14-2	Dinitrotoluene, 2,4-	1.7E+00	C	7.4E+00	C	1.4E-03	2L or IMAC	Yes
606-20-2	Dinitrotoluene, 2,6-	3.6E-01	C	1.5E+00	C	1.4E-03	2L or IMAC	Yes
35572-78-2	Dinitrotoluene, 2-Amino-4,6-	1.5E+00	N	2.3E+01	N	1.1E-02	Calculated	Yes
19406-51-0	Dinitrotoluene, 4-Amino-2,6-	1.5E+00	N	2.3E+01	N	1.1E-02	Calculated	Yes
25321-14-6	Dinitrotoluene, Technical grade	1.2E+00	C	5.1E+00	C	2.1E-03	Calculated	Yes
88-85-7	Dinoseb	1.3E+01	N	1.6E+02	N	1.2E+00	2L or IMAC	Yes
123-91-1	Dioxane, 1,4-	5.4E+00	C	2.5E+01	C	1.2E-02	2L or IMAC	Yes
	Dioxins							
34465-46-8	~Hexachlorodibenzo-p-dioxin, Mixture	1.0E-04	C	4.7E-04	C	1.6E-04	Calculated	
1746-01-6	~TCDD, 2,3,7,8-	4.8E-06	C	2.2E-05	C	2.0E-06	2L or IMAC	Yes
957-51-7	Diphenamid	3.8E+02	N	4.9E+03	N	4.1E+01	Calculated	Yes
101-84-8	Diphenyl Ether	7.2E+00	N	3.0E+01	N	1.5E+01	2L or IMAC	Yes
127-63-9	Diphenyl Sulfone	1.0E+01	N	1.3E+02	N	2.7E-01	Calculated	Yes
122-39-4	Diphenylamine	1.3E+03	N	1.6E+04	N	2.6E+01	Calculated	Yes
122-66-7	Diphenylhydrazine, 1,2-	6.8E-01	C	2.9E+00	C	2.8E-03	Calculated	
2764-72-9	Diquat	2.8E+01	N	3.6E+02	N	3.3E+00	2L or IMAC	Yes
1937-37-7	Direct Black 38	7.3E-02	C	3.1E-01	C	4.6E+01	Calculated	
2602-46-2	Direct Blue 6	7.3E-02	C	3.1E-01	C	1.5E+02	Calculated	
16071-86-6	Direct Brown 95	8.1E-02	C	3.4E-01	C	1.5E+00	Calculated	
298-04-4	Disulfoton	5.1E-01	N	6.6E+00	N	1.1E-02	2L or IMAC	Yes
505-29-3	Dithiane, 1,4-	1.6E+02	N	2.3E+03	N	6.9E-01	Calculated	Yes
330-54-1	Diuron	2.5E+01	N	3.3E+02	N	1.2E-01	Calculated	Yes
2439-10-3	Dodine	2.5E+02	N	3.3E+03	N	1.4E+01	Calculated	Yes
759-94-4	EPTC	7.8E+02	N	1.2E+04	N	3.7E+00	Calculated	Yes
115-29-7	Endosulfan	9.4E+01	N	1.4E+03	N	1.1E+01	2L or IMAC	Yes
1031-07-8	Endosulfan Sulfate	7.6E+01	N	9.8E+02	N	1.6E+01	2L or IMAC	Yes
145-73-3	Endothall	2.5E+02	N	3.3E+03	N	4.8E-01	2L or IMAC	Yes
72-20-8	Endrin	3.8E+00	N	4.9E+01	N	1.6E+00	2L or IMAC	Yes
106-89-8	Epichlorohydrin	4.0E+00	N	1.7E+01	N	1.8E-02	2L or IMAC	Yes
106-88-7	Epoxybutane, 1,2-	3.4E+01	N	1.4E+02	N			Yes
111-77-3	Ethanol, 2-(2-methoxyethoxy)-	5.1E+02	N	6.6E+03	N	1.1E+00	Calculated	Yes
16672-87-0	Ethephon	6.3E+01	N	8.2E+02	N	1.5E-01	Calculated	Yes
563-12-2	Ethion	6.3E+00	N	8.2E+01	N	1.4E-01	Calculated	Yes
111-15-9	Ethoxyethanol Acetate, 2-	5.4E+02	N	3.0E+03	N	2.9E+00	Calculated	Yes
110-80-5	Ethoxyethanol, 2-	5.4E+02	N	3.1E+03	N	2.5E+00	Calculated	Yes
141-78-6	Ethyl Acetate	1.3E+02	N	5.6E+02	N	1.3E+01	2L or IMAC	Yes

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140-88-5	Ethyl Acrylate	9.8E+00	N	4.5E+01	N	1.6E-01	Calculated	Yes
75-00-3	Ethyl Chloride (Chloroethane)	1.1E+03	N	4.8E+03	N	1.7E+01	2L or IMAC	Yes
60-29-7	Ethyl Ether	3.1E+03	N	4.7E+04	N	6.3E+00	Calculated	Yes
97-63-2	Ethyl Methacrylate	3.8E+02	N	1.6E+03	N			Yes
637-92-3	Ethyl Tertiary Butyl Ether (ETBE)	1.4E+02	C	6.0E+02	C	2.3E-01	2L or IMAC	Yes
2104-64-5	Ethyl-p-nitrophenyl Phosphonate	1.3E-01	N	1.6E+00	N	4.4E-02	Calculated	Yes
100-41-4	Ethylbenzene	6.1E+00	C	2.7E+01	C	1.3E+01	2L or IMAC	Yes
109-78-4	Ethylene Cyanohydrin	8.8E+02	N	1.1E+04	N	2.0E+00	Calculated	Yes
107-15-3	Ethylene Diamine	1.4E+03	N	2.1E+04	N	2.9E+00	Calculated	Yes
107-21-1	Ethylene Glycol	1.0E+04	N	1.3E+05	N	4.0E+01	2L or IMAC	Yes
111-76-2	Ethylene Glycol Monobutyl Ether	1.3E+03	N	1.6E+04	N	2.9E+00	Calculated	Yes
75-21-8	Ethylene Oxide	2.2E-03	C	2.6E-02	C	4.7E-04	Calculated	Yes
96-45-7	Ethylene Thiourea	1.0E+00	N	1.3E+01	N	2.5E-03	Calculated	Yes
151-56-4	Ethyleneimine	2.8E-03	C	1.2E-02	C	2.3E-06	Calculated	
84-72-0	Ethylphthalyl Ethyl Glycolate	3.8E+04	N	4.9E+05	N	9.4E+02	Calculated	Yes
22224-92-6	Fenamiphos	3.2E+00	N	4.1E+01	N	3.5E-02	Calculated	Yes
39515-41-8	Fenpropathrin	3.2E+02	N	4.1E+03	N	1.6E+02	Calculated	Yes
51630-58-1	Fenvalerate	3.2E+02	N	4.1E+03	N	2.2E+03	Calculated	Yes
2164-17-2	Fluometuron	1.6E+02	N	2.1E+03	N	1.4E+00	Calculated	Yes
16984-48-8	Fluoride	6.3E+02	N	9.3E+03	N	6.0E+03	2L or IMAC	Yes
7782-41-4	Fluorine (Soluble Fluoride)	9.4E+02	N	1.4E+04	N	6.3E+02	Calculated	Yes
59756-60-4	Fluridone	1.0E+03	N	1.3E+04	N	1.3E+03	Calculated	Yes
56425-91-3	Flurprimidol	5.1E+02	N	6.6E+03	N	2.6E+01	Calculated	Yes
85509-19-9	Flusilazole	2.5E+01	N	3.3E+02	N	4.5E+01	Calculated	Yes
66332-96-5	Flutolanil	6.3E+03	N	8.2E+04	N	3.7E+02	Calculated	Yes
69409-94-5	Fluvalinate	1.3E+02	N	1.6E+03	N	2.0E+03	Calculated	Yes
133-07-3	Folpet	1.1E+03	N	1.5E+04	N	3.0E+00	Calculated	Yes
72178-02-0	Fomesafen	1.3E+02	N	1.6E+03	N	4.6E+00	Calculated	Yes
944-22-9	Fonofos	2.5E+01	N	3.3E+02	N	5.4E-01	Calculated	Yes
50-00-0	Formaldehyde	4.4E+00	C	7.3E+01	C	2.4E+00	2L or IMAC	Yes
64-18-6	Formic Acid	6.1E+00	N	2.6E+01	N	2.5E+01	Calculated	Yes
39148-24-8	Fosetyl-AL	3.2E+04	N	4.1E+05	N	4.6E+03	Calculated	Yes
	Furans							
132-64-9	~Dibenzofuran	1.6E+01	N	2.3E+02	N	1.0E+01	2L or IMAC	Yes
110-00-9	~Furan	1.6E+01	N	2.3E+02	N	5.3E-02	Calculated	Yes
109-99-9	~Tetrahydrofuran	3.9E+03	N	2.0E+04	N	8.9E+00	2L or IMAC	Yes
67-45-8	Furazolidone	1.4E-01	C	6.0E-01	C	3.5E-04	Calculated	
98-01-1	Furfural	4.3E+01	N	5.4E+02	N	8.9E-02	Calculated	Yes
531-82-8	Furium	3.6E-01	C	1.5E+00	C	6.3E-04	Calculated	
60568-05-0	Furmecyclox	1.8E+01	C	7.7E+01	C	2.5E-02	Calculated	
77182-82-2	Glufosinate, Ammonium	7.6E+01	N	9.8E+02	N	1.8E-01	Calculated	Yes
111-30-8	Glutaraldehyde	1.3E+03	N	1.6E+04	N	2.8E+00	Calculated	Yes
765-34-4	Glycidaldehyde	4.7E+00	N	4.2E+01	N	1.1E-02	Calculated	Yes
1071-83-6	Glyphosate	1.3E+03	N	1.6E+04	N	6.2E+01	Calculated	Yes
113-00-8	Guanidine	1.6E+02	N	2.3E+03	N	3.1E-01	Calculated	Yes

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Preliminary Soil Remediation Goals (PSRG)

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(based on November 2024 USEPA Regional Screening Tables)

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CAS #	Chemical Name (See companion notes for shaded chemicals)	Residential Health Based PSRG (mg/kg)	Basis	Industrial/ Commercial Health Based PSRG (mg/kg)	Basis	Protection of Groundwater PSRG (mg/kg)	Basis	Does Chemical Have a Non-Cancer Effect?
50-01-1	Guanidine Chloride	2.5E+02	N	3.3E+03	N			Yes
506-93-4	Guanidine Nitrate	3.8E+02	N	4.9E+03	N	1.0E+00	Calculated	Yes
69806-40-2	Haloxypop, Methyl	6.3E-01	N	8.2E+00	N	7.8E-02	Calculated	Yes
76-44-8	Heptachlor	1.4E-01	C	6.3E-01	C	1.3E-02	2L or IMAC	Yes
1024-57-3	Heptachlor Epoxide	7.1E-02	C	3.3E-01	C	1.6E-03	2L or IMAC	Yes
111-71-7	Heptanal, n-	5.2E+00	N	2.2E+01	N			Yes
142-82-5	Heptane, N-	4.4E+00	N	5.8E+01	N	6.2E+01	2L or IMAC	Yes
87-82-1	Hexabromobenzene	3.1E+01	N	4.7E+02	N	1.6E+00	Calculated	Yes
68631-49-2	Hexabromodiphenyl ether, 2,2',4,4',5,5'- (BDE-153)	2.5E+00	N	3.3E+01	N			Yes
118-74-1	Hexachlorobenzene	1.6E-01	N	9.9E-01	C	5.0E-03	2L or IMAC	Yes
87-68-3	Hexachlorobutadiene	1.3E+00	C	5.6E+00	C	1.5E-02	2L or IMAC	Yes
319-84-6	Hexachlorocyclohexane, Alpha-	8.6E-02	C	3.6E-01	C	7.0E-04	2L or IMAC	Yes
319-85-7	Hexachlorocyclohexane, Beta-	3.0E-01	C	1.3E+00	C	2.3E-03	2L or IMAC	
319-86-8	Hexachlorocyclohexane, Delta-	7.6E-04	N	9.8E-03	N	4.9E-05	Calculated	Yes
58-89-9	Hexachlorocyclohexane, Gamma- (Lindane)	1.1E-02	N	1.6E-01	N	3.5E-03	2L or IMAC	Yes
608-73-1	Hexachlorocyclohexane, Technical	3.0E-01	C	1.3E+00	C	2.3E-03	2L or IMAC	
77-47-4	Hexachlorocyclopentadiene	3.8E-01	N	1.6E+00	N	2.6E+00	Calculated	Yes
67-72-1	Hexachloroethane	1.9E+00	C	8.5E+00	C	1.1E-02	Calculated	Yes
70-30-4	Hexachlorophene	3.8E+00	N	4.9E+01	N	5.6E+01	Calculated	Yes
121-82-4	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	8.3E+00	C	3.8E+01	C	3.3E-03	Calculated	Yes
822-06-0	Hexamethylene Diisocyanate, 1,6-	6.7E-01	N	2.8E+00	N			Yes
4035-89-6	Hexamethylene diisocyanate biuret	4.9E+06	N	2.1E+07	N			Yes
3779-63-3	Hexamethylene diisocyanate isocyanurate	4.9E+06	N	2.1E+07	N			Yes
680-31-9	Hexamethylphosphoramide	5.1E+00	N	6.6E+01	N	1.2E-02	Calculated	Yes
E5241997	Hexane, Commercial	1.2E+01	C	5.4E+01	C			Yes
110-54-3	Hexane, N-	1.3E+02	N	5.4E+02	N	5.5E+01	2L or IMAC	Yes
124-04-9	Hexanedioic Acid	2.5E+04	N	3.3E+05	N	7.0E+01	Calculated	Yes
104-76-7	Hexanol, 1-,2-ethyl- (2-Ethyl-1-hexanol)	3.2E+00	N	1.3E+01	N	2.0E-02	Calculated	Yes
591-78-6	Hexanone, 2-	4.2E+01	N	2.8E+02	N	1.8E-01	2L or IMAC	Yes
51235-04-2	Hexazinone	4.2E+02	N	5.4E+03	N	2.1E+00	Calculated	Yes
78587-05-0	Hexythiazox	3.2E+02	N	4.1E+03	N	1.6E+01	Calculated	Yes
67485-29-4	Hydramethylnon	2.1E+02	N	2.8E+03	N	8.6E+05	Calculated	Yes
302-01-2	Hydrazine	3.4E-02	C	1.5E-01	C	4.8E-05	Calculated	Yes
10034-93-2	Hydrazine Sulfate	2.3E-01	C	1.1E+00	C			
7647-01-0	Hydrogen Chloride	2.5E+08	N	1.0E+09	N			Yes
7664-39-3	Hydrogen Fluoride	6.3E+02	N	9.3E+03	N			Yes
7783-06-4	Hydrogen Sulfide	2.5E+07	N	1.0E+08	N			Yes
123-31-9	Hydroquinone	9.0E+00	C	3.8E+01	C	7.9E-03	Calculated	Yes

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35554-44-0	Imazalil	8.9E+00	C	3.8E+01	C	2.0E-01	Calculated	Yes
81335-37-7	Imazaquin	3.2E+03	N	4.1E+04	N	1.7E+02	Calculated	Yes
81335-77-5	Imazethapyr	3.2E+04	N	4.1E+05	N	3.1E+02	Calculated	Yes
7553-56-2	Iodine	1.6E+02	N	2.3E+03	N	4.2E+01	Calculated	Yes
36734-19-7	Iprodione	5.1E+02	N	6.6E+03	N	1.7E+00	Calculated	Yes
7439-89-6	Iron	1.1E+04	N	1.6E+05	N	1.5E+02	2L or IMAC	Yes
78-83-1	Isobutyl Alcohol	1.6E+03	N	9.1E+03	N	8.6E+00	Calculated	Yes
78-59-1	Isophorone	5.7E+02	C	2.4E+03	C	2.6E-01	2L or IMAC	Yes
33820-53-0	Isopropalin	2.3E+02	N	3.5E+03	N	4.8E+01	Calculated	Yes
67-63-0	Isopropanol	1.2E+03	N	5.1E+03	N	5.7E+01	Calculated	Yes
1832-54-8	Isopropyl Methyl Phosphonic Acid	1.3E+03	N	1.6E+04	N	3.0E+00	Calculated	Yes
99-87-6	Isopropyltoluene, p-	3.4E+01	N	2.4E+02	N	1.2E+00	2L or IMAC	Yes
82558-50-7	Isoxaben	6.3E+02	N	8.2E+03	N	1.9E+01	Calculated	Yes
E1737665	Jet propulsion fuel 7 (JP-7)	3.7E+09	N	1.6E+10	N			Yes
77501-63-4	Lactofen	1.0E+02	N	1.3E+03	N	5.2E+01	Calculated	Yes
78-97-7	Lactonitrile	2.5E+00	N	3.3E+01	N	5.7E-03	Calculated	Yes
7439-91-0	Lanthanum	7.8E-01	N	1.2E+01	N			Yes
100587-90-4	Lanthanum Acetate Hydrate	2.6E-01	N	3.4E+00	N			Yes
10025-84-0	Lanthanum Chloride Heptahydrate	2.9E-01	N	4.4E+00	N			Yes
10099-58-8	Lanthanum Chloride, Anhydrous	4.4E-01	N	6.6E+00	N			Yes
10277-43-7	Lanthanum Nitrate Hexahydrate	2.5E-01	N	3.7E+00	N			Yes
	Lead Compounds							
7446-27-7	~Lead Phosphate	8.2E+01	C	3.8E+02	C			
301-04-2	~Lead acetate	2.6E+00	C	1.1E+01	C	6.7E-04	Calculated	
7439-92-1	~Lead and Compounds	2.0E+02		8.0E+02		2.7E+02	2L or IMAC	
7439-92-1b	~Lead and Compounds (with other sources of lead present, see Guidance)	1.0E+02				2.7E+02	2L or IMAC	
1335-32-6	~Lead subacetate	1.4E+01	C	6.0E+01	C	4.1E-03	Calculated	
78-00-2	~Tetraethyl Lead	1.6E-03	N	2.3E-02	N	4.9E-05	Calculated	Yes
541-25-3	Lewisite	7.8E-02	N	1.2E+00	N	3.0E-04	Calculated	Yes
330-55-2	Linuron	9.7E+01	N	1.3E+03	N	9.5E-01	Calculated	Yes
7439-93-2	Lithium	3.1E+01	N	4.7E+02	N	4.2E+01	Calculated	Yes
94-74-6	MCPA	6.3E+00	N	8.2E+01	N	1.8E-02	Calculated	Yes
94-81-5	MCPB	5.6E+02	N	7.2E+03	N	2.4E+00	Calculated	Yes
93-65-2	MCPP	1.3E+01	N	1.6E+02	N	4.2E-02	Calculated	Yes
121-75-5	Malathion	2.5E+02	N	3.3E+03	N	7.4E-01	Calculated	Yes
108-31-6	Maleic Anhydride	1.3E+03	N	1.6E+04	N	2.8E+00	Calculated	Yes
123-33-1	Maleic Hydrazide	6.3E+03	N	8.2E+04	N	1.4E+01	Calculated	Yes
109-77-3	Malononitrile	1.3E+00	N	1.6E+01	N	2.9E-03	Calculated	Yes
8018-01-7	Mancozeb	3.8E+02	N	4.9E+03	N	5.9E+00	Calculated	Yes
12427-38-2	Maneb	6.3E+01	N	8.2E+02	N	9.9E-01	Calculated	Yes
7439-96-5b	Manganese (Diet)							
7439-96-5	Manganese (Non-diet)	3.8E+02	N	5.6E+03	N	6.5E+01	2L or IMAC	Yes

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950-10-7	Mephosfolan	1.1E+00	N	1.5E+01	N	1.9E-02	Calculated	Yes
24307-26-4	Mepiquat Chloride	3.8E+02	N	4.9E+03	N	1.4E+00	Calculated	Yes
149-30-4	Mercaptobenzothiazole, 2-	4.9E+01	C	2.1E+02	C	1.9E-01	Calculated	Yes
	Mercury Compounds							
7487-94-7	~Mercuric Chloride (and other Mercury salts)	4.7E+00	N	7.0E+01	N			Yes
7439-97-6	~Mercury (elemental)	1.5E+00	N	6.4E+00	N	1.0E+00	2L or IMAC	Yes
22967-92-6	~Methyl Mercury	1.6E+00	N	2.3E+01	N	4.9E+01	Calculated	Yes
62-38-4	~Phenylmercuric Acetate	1.0E+00	N	1.3E+01	N	3.5E-03	Calculated	Yes
150-50-5	Merphos	4.7E-01	N	7.0E+00	N	4.1E-01	Calculated	Yes
57837-19-1	Metalaxyl	7.6E+02	N	9.8E+03	N	2.3E+00	Calculated	Yes
126-98-7	Methacrylonitrile	1.5E+00	N	2.1E+01	N	3.2E-03	Calculated	Yes
10265-92-6	Methamidophos	6.3E-01	N	8.2E+00	N	1.5E-03	Calculated	Yes
67-56-1	Methanol	2.5E+04	N	2.5E+05	N	1.6E+01	2L or IMAC	Yes
950-37-8	Methidathion	1.9E+01	N	2.5E+02	N	5.1E-02	Calculated	Yes
16752-77-5	Methomyl	3.2E+02	N	4.1E+03	N	7.7E-01	Calculated	Yes
99-59-2	Methoxy-5-nitroaniline, 2-	1.1E+01	C	4.7E+01	C	4.9E-03	Calculated	
72-43-5	Methoxychlor	6.3E+01	N	8.2E+02	N	4.3E+01	2L or IMAC	Yes
110-49-6	Methoxyethanol Acetate, 2-	2.2E+01	N	1.1E+02	N	2.3E-01	Calculated	Yes
109-86-4	Methoxyethanol, 2-	5.2E+01	N	4.2E+02	N	1.4E-01	Calculated	Yes
79-20-9	Methyl Acetate	1.6E+04	N	2.3E+05	N	2.9E+01	Calculated	Yes
96-33-3	Methyl Acrylate	3.1E+01	N	1.3E+02	N			Yes
78-93-3	Methyl Ethyl Ketone (2-Butanone)	5.5E+03	N	4.0E+04	N	1.7E+01	2L or IMAC	Yes
60-34-4	Methyl Hydrazine	1.5E-01	C	6.6E-01	C	3.2E-02	Calculated	Yes
108-10-1	Methyl Isobutyl Ketone (4-methyl-2-pentanone)	7.0E+03	N	3.0E+04	N	4.5E-01	2L or IMAC	Yes
624-83-9	Methyl Isocyanate	9.8E-01	N	4.1E+00	N			Yes
80-62-6	Methyl Methacrylate	9.4E+02	N	4.1E+03	N	1.1E-01	2L or IMAC	Yes
298-00-0	Methyl Parathion	3.2E+00	N	4.1E+01	N	5.8E-02	Calculated	Yes
993-13-5	Methyl Phosphonic Acid	7.6E+02	N	9.8E+03	N	1.7E+00	Calculated	Yes
25013-15-4	Methyl Styrene (Mixed Isomers)	6.5E+01	N	5.5E+02	N	1.4E+00	Calculated	Yes
66-27-3	Methyl methanesulfonate	5.5E+00	C	2.3E+01	C	1.5E-03	Calculated	
1634-04-4	Methyl tert-Butyl Ether (MTBE)	4.9E+01	C	2.2E+02	C	9.0E-02	2L or IMAC	Yes
615-45-2	Methyl-1,4-benzenediamine dihydrochloride, 2-	3.8E+00	N	4.9E+01	N	2.5E-02	Calculated	Yes
108-11-2	Methyl-2-Pentanol, 4-	1.1E+04	N	4.8E+04	N			Yes
99-55-8	Methyl-5-Nitroaniline, 2-	6.0E+01	C	2.6E+02	C	4.3E-02	Calculated	Yes
70-25-7	Methyl-N-nitro-N-nitrosoguanidine, N-	6.5E-02	C	2.8E-01	C	2.9E-05	Calculated	
636-21-5	Methylaniline Hydrochloride, 2-	4.2E+00	C	1.8E+01	C	2.3E-03	Calculated	
124-58-3	Methylarsonic acid	1.3E+02	N	1.6E+03	N	4.0E-01	Calculated	Yes
74612-12-7	Methylbenzene,1-4-diamine monohydrochloride, 2-	2.5E+00	N	3.3E+01	N			Yes
615-50-9	Methylbenzene-1,4-diamine sulfate, 2-	3.8E+00	N	2.3E+01	C			Yes

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56-49-5	Methylcholanthrene, 3-	5.5E-03	C	1.0E-01	C	6.1E-02	Calculated	
108-87-2	Methylcyclohexane	2.1E+01	N	8.7E+01	N			Yes
75-09-2	Methylene Chloride	5.8E+01	C	6.5E+02	N	2.5E-02	2L or IMAC	Yes
101-14-4	Methylene-bis(2-chloroaniline), 4,4'-	1.2E+00	C	2.3E+01	C	8.1E-02	Calculated	Yes
101-61-1	Methylene-bis(N,N-dimethyl) Aniline, 4,4'-	1.2E+01	C	5.0E+01	C	8.4E-02	Calculated	
101-77-9	Methylenebisbenzenamine, 4,4'-	3.4E-01	C	1.4E+00	C	1.9E-03	Calculated	Yes
101-68-8	Methylenediphenyl Diisocyanate	7.4E+06	N	3.1E+07	N			Yes
98-83-9	Methylstyrene, Alpha-	1.1E+03	N	1.6E+04	N	1.6E+01	Calculated	Yes
51218-45-2	Metolachlor	1.9E+03	N	2.5E+04	N	2.5E+01	Calculated	Yes
21087-64-9	Metribuzin	3.2E+02	N	4.1E+03	N	1.1E+00	Calculated	Yes
74223-64-6	Metsulfuron-methyl	3.2E+03	N	4.1E+04	N	1.3E+01	Calculated	Yes
E1790669	Midrange Aliphatic Hydrocarbon Streams	6.9E-01	C	3.0E+00	C	1.9E+01	Calculated	Yes
8012-95-1	Mineral oils	4.7E+04	N	7.0E+05	N	1.6E+04	Calculated	Yes
2385-85-5	Mirex	3.6E-02	C	1.7E-01	C	2.8E-02	Calculated	Yes
2212-67-1	Molinate	2.5E+01	N	3.3E+02	N	1.6E-01	Calculated	Yes
7439-98-7	Molybdenum	7.8E+01	N	1.2E+03	N	7.1E+00	Calculated	Yes
10599-90-3	Monochloramine	1.6E+03	N	2.3E+04	N			Yes
100-61-8	Monomethylaniline	2.5E+01	N	3.3E+02	N	1.0E-01	Calculated	Yes
88671-89-0	Myclobutanil	3.2E+02	N	4.1E+03	N	4.3E+01	Calculated	Yes
74-31-7	N,N'-Diphenyl-1,4-benzenediamine	3.8E+00	N	4.9E+01	N	4.4E+00	Calculated	Yes
300-76-5	Naled	3.1E+01	N	4.7E+02	N	1.3E-01	Calculated	Yes
64742-95-6	Naphtha, High Flash Aromatic (HFAN)	4.7E+02	N	7.0E+03	N			Yes
91-59-8	Naphthylamine, 2-	3.0E-01	C	1.3E+00	C	2.0E-03	Calculated	
15299-99-7	Napropamide	1.5E+03	N	2.0E+04	N	1.1E+02	Calculated	Yes
373-02-4	Nickel Acetate	1.4E+02	N	1.8E+03	N	3.1E-01	Calculated	Yes
3333-67-3	Nickel Carbonate	1.4E+02	N	1.8E+03	N			Yes
13463-39-3	Nickel Carbonyl	1.7E+02	N	2.6E+03	N			Yes
12054-48-7	Nickel Hydroxide	1.7E+02	N	2.6E+03	N			Yes
1313-99-1	Nickel Oxide	1.7E+02	N	2.6E+03	N			Yes
E715532	Nickel Refinery Dust	1.7E+02	N	2.6E+03	N	1.2E+02	Calculated	Yes
7440-02-0	Nickel Soluble Salts	3.1E+02	N	4.6E+03	N	1.3E+02	2L or IMAC	Yes
12035-72-2	Nickel Subsulfide	4.1E-01	C	1.9E+00	C			Yes
1271-28-9	Nickelocene	6.0E-01	C	2.5E+00	C			Yes
14797-55-8	Nitrate (measured as nitrogen)	2.5E+04	N	3.7E+05	N			Yes
E701177	Nitrate + Nitrite (measured as nitrogen)							
14797-65-0	Nitrite (measured as nitrogen)	1.6E+03	N	2.3E+04	N			Yes
88-74-4	Nitroaniline, 2-	1.3E+02	N	1.6E+03	N	5.9E-01	Calculated	Yes
100-01-6	Nitroaniline, 4-	2.7E+01	C	1.1E+02	C	1.5E-02	Calculated	Yes
98-95-3	Nitrobenzene	5.5E+00	C	2.4E+01	C	1.8E-01	Calculated	Yes

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9004-70-0	Nitrocellulose	3.8E+07	N	4.9E+08	N	9.2E+04	Calculated	Yes
67-20-9	Nitrofurantoin	8.8E+02	N	1.1E+04	N	4.2E+00	Calculated	Yes
59-87-0	Nitrofurazone	4.2E-01	C	1.8E+00	C	4.8E-04	Calculated	
55-63-0	Nitroglycerin	1.3E+00	N	1.6E+01	N	6.0E-03	Calculated	Yes
556-88-7	Nitroguanidine	1.3E+03	N	1.6E+04	N	3.4E+00	Calculated	Yes
75-52-5	Nitromethane	5.8E+00	C	2.5E+01	C			Yes
79-46-9	Nitropropane, 2-	6.8E-02	C	3.0E-01	C			Yes
759-73-9	Nitroso-N-ethylurea, N-	4.5E-03	C	8.5E-02	C	6.3E-06	Calculated	
684-93-5	Nitroso-N-methylurea, N-	1.0E-03	C	1.9E-02	C	1.3E-06	Calculated	
924-16-3	Nitrosodibutylamine, N-	1.0E-01	C	4.6E-01	C	2.6E-04	Calculated	
1116-54-7	Nitrosodiethanolamine, N-	1.9E-01	C	8.2E-01	C	5.1E-05	Calculated	
55-18-5	Nitrosodiethylamine, N-	8.1E-04	C	1.5E-02	C	1.7E-06	Calculated	
62-75-9	Nitrosodimethylamine, N-	2.0E-03	C	3.5E-02	C	3.4E-06	2L or IMAC	Yes
86-30-6	Nitrosodiphenylamine, N-	1.1E+02	C	4.7E+02	C	7.8E-01	Calculated	
621-64-7	Nitrosodipropylamine, N-	7.8E-02	C	3.3E-01	C	7.5E-05	Calculated	
10595-95-6	Nitrosomethylethylamine, N-	2.0E-02	C	9.3E-02	C	9.1E-06	Calculated	
59-89-2	Nitrosomorpholine [N-]	8.1E-02	C	3.4E-01	C	2.6E-05	Calculated	
100-75-4	Nitrosopiperidine [N-]	5.8E-02	C	2.4E-01	C	4.0E-05	Calculated	
930-55-2	Nitrosopyrrolidine, N-	2.6E-01	C	1.1E+00	C	1.3E-04	Calculated	
99-08-1	Nitrotoluene, m-	1.3E+00	N	1.6E+01	N	1.3E-02	Calculated	Yes
88-72-2	Nitrotoluene, o-	3.2E+00	C	1.5E+01	C	3.0E-03	Calculated	Yes
99-99-0	Nitrotoluene, p-	3.4E+01	C	1.4E+02	C	4.1E-02	Calculated	Yes
111-84-2	Nonane, n-	2.3E+00	N	1.5E+01	N	5.8E-01	Calculated	Yes
27314-13-2	Norflurazon	1.9E+01	N	2.5E+02	N	1.4E+00	Calculated	Yes
32536-52-0	Octabromodiphenyl Ether	3.8E+01	N	4.9E+02	N	8.3E+01	Calculated	Yes
2691-41-0	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMx)	7.7E+02	N	1.1E+04	N	8.8E+00	Calculated	Yes
152-16-9	Octamethylpyrophosphoramidate	2.5E+01	N	3.3E+02	N	6.7E-02	Calculated	Yes
19044-88-3	Oryzalin	7.0E+01	C	2.9E+02	C	1.7E-01	Calculated	Yes
19666-30-9	Oxadiazon	6.3E+01	N	8.2E+02	N	7.1E+00	Calculated	Yes
23135-22-0	Oxamyl	3.2E+02	N	4.1E+03	N	8.8E-01	2L or IMAC	Yes
42874-03-3	Oxyfluorfen	7.4E+00	C	3.1E+01	C	7.7E-01	Calculated	Yes
76738-62-0	Paclobutrazol	1.6E+02	N	2.1E+03	N	3.7E+00	Calculated	Yes
1910-42-5	Paraquat Dichloride	5.7E+01	N	7.4E+02	N	8.7E+00	Calculated	Yes
56-38-2	Parathion	7.6E+01	N	9.8E+02	N	4.2E+00	Calculated	Yes
1114-71-2	Pebulate	7.8E+02	N	1.2E+04	N	5.6E+00	Calculated	Yes
40487-42-1	Pendimethalin	3.8E+03	N	4.9E+04	N	4.8E+02	Calculated	Yes
32534-81-9	Pentabromodiphenyl Ether	3.1E+01	N	4.7E+02	N	1.2E+01	Calculated	Yes
60348-60-9	Pentabromodiphenyl ether, 2,2',4,4',5- (BDE-99)	1.3E+00	N	1.6E+01	N	6.1E-01	Calculated	Yes
608-93-5	Pentachlorobenzene	1.3E+01	N	1.9E+02	N	8.5E-01	Calculated	Yes
76-01-7	Pentachloroethane	7.7E+00	C	3.6E+01	C	3.7E-03	Calculated	
82-68-8	Pentachloronitrobenzene	2.7E+00	C	1.3E+01	C	3.3E-02	Calculated	Yes
87-86-5	Pentachlorophenol	1.0E+00	C	4.0E+00	C	8.3E-03	2L or IMAC	Yes
78-11-5	Pentaerythritol tetranitrate (PETN)	1.1E+02	N	5.3E+02	C	2.4E-01	Calculated	Yes

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10159-46-3	Pentamethylphosphoramidate (PMPA)	1.3E+00	N	1.6E+01	N	2.9E-03	Calculated	Yes
109-66-0	Pentane, n-	1.7E+02	N	7.2E+02	N			Yes
	Per- and Polyfluoroalkyl Substances (PFAS)							
62037-80-3	~Ammonium perfluoro-2-methyl-3-oxahexanoate	3.8E-02	N	4.9E-01	N			Yes
10495-86-0	~Ammonium perfluorobutanoate	1.6E+01	N	2.3E+02	N			Yes
3108-42-7	~Ammonium perfluorodecanoate	2.6E-05	N	3.4E-04	N			Yes
21615-47-4	~Ammonium perfluorohexanoate	6.3E+00	N	8.2E+01	N			Yes
3825-26-1	~Ammonium perfluorooctanoate	1.9E-05	C	7.8E-05	C			Yes
82113-65-3	~Bis(trifluoromethylsulfonyl)amine (TFSI)	4.7E+00	N	7.0E+01	N			Yes
13252-13-6	~Hexafluoropropylene oxide dimer acid (HFPO-DA)	4.7E-02	N	7.0E-01	N	2.0E-04	2L or IMAC	Yes
90076-65-6	~Lithium bis[(trifluoromethyl)sulfonyl]azide	4.7E+00	N	7.0E+01	N			Yes
122499-17-6	~Perfluoro(2-propoxypropanoate)	4.7E-02	N	7.0E-01	N			Yes
45187-15-3	~Perfluorobutanesulfonate	3.8E+00	N	4.9E+01	N			Yes
375-73-5	~Perfluorobutanesulfonic acid (PFBS)	3.8E+00	N	4.9E+01	N	1.3E-02	2L or IMAC	Yes
45048-62-2	~Perfluorobutanoate	1.6E+01	N	2.3E+02	N			Yes
375-22-4	~Perfluorobutanoic acid (PFBA)	1.6E+01	N	2.3E+02	N	4.9E-02	2L or IMAC	Yes
73829-36-4	~Perfluorodecanoate	2.5E-05	N	3.3E-04	N			Yes
335-76-2	~Perfluorodecanoic acid (PFDA)	2.5E-05	N	3.3E-04	N			Yes
307-55-1	~Perfluorododecanoic acid (PFDoDA)	6.3E-01	N	8.2E+00	N			Yes
108427-53-8	~Perfluorohexanesulfonate	2.5E-01	N	3.3E+00	N			Yes
355-46-4	~Perfluorohexanesulfonic acid (PFHxS)	2.5E-01	N	3.3E+00	N	8.5E-05	2L or IMAC	Yes
92612-52-7	~Perfluorohexanoate	6.3E+00	N	8.2E+01	N			Yes
307-24-4	~Perfluorohexanoic acid (PFHxA)	6.3E+00	N	8.2E+01	N	1.9E-02	2L or IMAC	Yes
72007-68-2	~Perfluorononanoate	3.8E-02	N	4.9E-01	N			Yes
375-95-1	~Perfluorononanoic acid (PFNA)	3.8E-02	N	4.9E-01	N	1.4E-04	2L or IMAC	Yes
16517-11-6	~Perfluorooctadecanoic acid (PFODA)	5.1E+02	N	6.6E+03	N			Yes
45298-90-6	~Perfluorooctanesulfonate	1.3E-03	N	1.6E-02	N			Yes
1763-23-1	~Perfluorooctanesulfonic acid (PFOS)	1.3E-03	N	1.6E-02	N	1.3E-05	2L or IMAC	Yes
45285-51-6	~Perfluorooctanoate	1.9E-05	C	7.8E-05	C			Yes

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335-67-1	~Perfluorooctanoic acid (PFOA)	1.9E-05	C	7.8E-05	C	8.6E-09	2L or IMAC	Yes
422-64-0	~Perfluoropropanoic acid (PFPrA)	7.8E+00	N	1.2E+02	N			Yes
376-06-7	~Perfluorotetradecanoic acid (PFTetDA)	1.3E+01	N	1.6E+02	N			Yes
2058-94-8	~Perfluoroundecanoic acid (PFUDA)	3.8E+00	N	4.9E+01	N			Yes
29420-49-3	~Potassium perfluorobutanesulfonate	3.8E+00	N	4.9E+01	N			Yes
2966-54-3	~Potassium perfluorobutanoate	3.1E+01	N	4.7E+02	N			Yes
51604-85-4	~Potassium perfluorodecanoate	2.7E-05	N	3.5E-04	N			Yes
2795-39-3	~Potassium perfluorooctanesulfonate	1.3E-03	N	1.6E-02	N			Yes
2218-54-4	~Sodium perfluorobutanoate	1.6E+01	N	2.3E+02	N			Yes
3830-45-3	~Sodium perfluorodecanoate	2.6E-05	N	3.4E-04	N			Yes
2923-26-4	~Sodium perfluorohexanoate	6.3E+00	N	8.2E+01	N			Yes
	Perchlorates							
7790-98-9	~Ammonium Perchlorate	1.1E+01	N	1.6E+02	N			Yes
7791-03-9	~Lithium Perchlorate	1.1E+01	N	1.6E+02	N			Yes
14797-73-0	~Perchlorate and Perchlorate Salts	1.1E+01	N	1.6E+02	N			Yes
7778-74-7	~Potassium Perchlorate	1.1E+01	N	1.6E+02	N			Yes
7601-89-0	~Sodium Perchlorate	1.1E+01	N	1.6E+02	N			Yes
52645-53-1	Permethrin	6.3E+02	N	8.2E+03	N	1.7E+03	Calculated	Yes
62-44-2	Phenacetin	2.5E+02	C	1.0E+03	C	9.0E-02	Calculated	
13684-63-4	Phenmedipham	3.0E+03	N	3.9E+04	N	1.8E+02	Calculated	Yes
108-95-2	Phenol	3.8E+03	N	4.9E+04	N	3.4E-01	2L or IMAC	Yes
114-26-1	Phenol, 2-(1-methylethoxy)-, methylcarbamate	5.1E+01	N	6.6E+02	N	1.8E-01	Calculated	Yes
92-84-2	Phenothiazine	6.3E+00	N	8.2E+01	N	2.2E-01	Calculated	Yes
103-72-0	Phenyl Isothiocyanate	3.1E+00	N	4.7E+01	N	1.8E-02	Calculated	Yes
108-45-2	Phenylenediamine, m-	7.6E+01	N	9.8E+02	N	2.2E-01	Calculated	Yes
95-54-5	Phenylenediamine, o-	1.0E+00	C	1.9E+01	C	1.6E-03	Calculated	Yes
106-50-3	Phenylenediamine, p-	1.3E+01	N	1.6E+02	N	3.7E-02	Calculated	Yes
90-43-7	Phenylphenol, 2-	2.8E+02	C	1.2E+03	C	4.9E+00	Calculated	
298-02-2	Phorate	2.5E+00	N	3.3E+01	N	2.2E-02	2L or IMAC	Yes
75-44-5	Phosgene	6.5E-02	N	2.7E-01	N			Yes
732-11-6	Phosmet	2.5E+02	N	3.3E+03	N	6.2E-01	Calculated	Yes
	Phosphates, Inorganic							
13776-88-0	~Aluminum metaphosphate	4.6E+04	N	6.8E+05	N			Yes
E524680405	~Aluminum salts of inorganic phosphates	4.7E+03	N	7.0E+04	N			Yes
7758-11-4	~Dipotassium phosphate	1.6E+04	N	2.3E+05	N			Yes
7558-79-4	~Disodium phosphate	1.6E+04	N	2.3E+05	N			Yes
13530-50-2	~Monoaluminum phosphate	5.5E+04	N	8.3E+05	N			Yes
7778-77-0	~Monopotassium phosphate	1.6E+04	N	2.3E+05	N			Yes

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7558-80-7	~Monosodium phosphate	1.6E+04	N	2.3E+05	N			Yes
7664-38-2	~Phosphoric Acid	1.6E+04	N	2.3E+05	N			Yes
7784-30-7	~Phosphoric acid, aluminum salt (1:1) [aluminum phosphate]	1.7E+04	N	2.2E+05	N			Yes
7785-88-8	~Phosphoric acid, aluminum sodium salt (1:X:X) [sodium aluminum phosphate acidic (acidic SALP)]	6.7E+04	N	1.0E+06	N			Yes
8017-16-1	~Polyphosphoric acid	1.6E+04	N	2.3E+05	N			Yes
E524680403	~Potassium salts of inorganic phosphates	1.6E+04	N	2.3E+05	N			Yes
13845-36-8	~Potassium tripolyphosphate	1.6E+04	N	2.3E+05	N			Yes
10279-59-1	~Sodium aluminum phosphate (anhydrous)	7.8E+04	N	1.2E+06	N			Yes
10305-76-7	~Sodium aluminum phosphate (tetrahydrate)	5.5E+04	N	8.2E+05	N			Yes
10124-56-8	~Sodium hexametaphosphate	1.6E+04	N	2.3E+05	N			Yes
68915-31-1	~Sodium polyphosphate	1.6E+04	N	2.3E+05	N			Yes
7758-16-9	~Sodium pyrophosphate	1.6E+04	N	2.3E+05	N			Yes
E524680404	~Sodium salts of inorganic phosphates	1.6E+04	N	2.3E+05	N			Yes
7785-84-4	~Sodium trimetaphosphate	1.6E+04	N	2.3E+05	N			Yes
7758-29-4	~Sodium tripolyphosphate	1.6E+04	N	2.3E+05	N			Yes
7320-34-5	~Tetrapotassium phosphate	1.6E+04	N	2.3E+05	N			Yes
7722-88-5	~Tetrasodium pyrophosphate	1.6E+04	N	2.3E+05	N			Yes
15136-87-5	~Trialuminum sodium tetra decahydrogenoctaorthophosphate (dihydrate)	5.1E+04	N	7.6E+05	N			Yes
13939-25-8	~Triphosphoric acid, aluminum salt (1:1) [aluminum triphosphate]	4.0E+04	N	5.1E+05	N			Yes
7778-53-2	~Tripotassium phosphate	1.6E+04	N	2.3E+05	N			Yes
7601-54-9	~Trisodium phosphate	1.6E+04	N	2.3E+05	N			Yes
7803-51-2	Phosphine	4.7E+00	N	7.0E+01	N			Yes
7723-14-0	Phosphorus	3.1E-01	N	4.7E+00	N	5.2E-03	Calculated	Yes
12185-10-3	Phosphorus, white	3.1E-01	N	4.7E+00	N	3.4E-03	Calculated	Yes
	Phthalates							
117-81-7	~Bis(2-ethylhexyl)phthalate	3.9E+01	C	1.6E+02	C	1.4E+01	2L or IMAC	Yes
85-68-7	~Butyl Benzyl Phthalate	2.9E+02	C	1.2E+03	C	2.9E+02	2L or IMAC	Yes
85-70-1	~Butylphthalyl Butylglycolate	1.3E+04	N	1.6E+05	N	3.2E+03	Calculated	Yes
84-74-2	~Dibutyl Phthalate	1.3E+03	N	1.6E+04	N	3.5E+01	2L or IMAC	Yes
84-66-2	~Diethyl Phthalate	1.0E+04	N	1.3E+05	N	4.9E+01	2L or IMAC	Yes
120-61-6	~Dimethylterephthalate	1.6E+03	N	2.3E+04	N	3.7E+00	Calculated	Yes
117-84-0	~Octyl Phthalate, di-N-	1.3E+02	N	1.6E+03	N	5.6E+02	2L or IMAC	Yes
100-21-0	~Phthalic Acid, p-	6.3E+03	N	8.2E+04	N	2.5E+01	Calculated	Yes
85-44-9	~Phthalic Anhydride	2.5E+04	N	3.3E+05	N	6.2E+01	Calculated	Yes
1918-02-1	Picloram	8.8E+02	N	1.1E+04	N	2.7E+00	Calculated	Yes

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96-91-3	Picramic Acid (2-Amino-4,6-dinitrophenol)	1.3E+00	N	1.6E+01	N	9.1E-03	2L or IMAC	Yes
88-89-1	Picric Acid (2,4,6-Trinitrophenol)	2.5E+01	N	3.3E+02	N	1.3E+00	Calculated	Yes
29232-93-7	Pirimiphos, Methyl	9.2E+00	N	1.2E+02	N	9.7E-02	Calculated	Yes
36355-01-8	Polybrominated Biphenyls	1.8E-02	C	7.7E-02	C			Yes
	Polychlorinated Biphenyls (PCBs)							
12674-11-2	~Aroclor 1016	8.2E-01	N	1.0E+01	N	9.4E-01	Calculated	Yes
11104-28-2	~Aroclor 1221	2.0E-01	C	8.4E-01	C	5.9E-03	Calculated	
11141-16-5	~Aroclor 1232	1.7E-01	C	7.3E-01	C	5.9E-03	Calculated	
53469-21-9	~Aroclor 1242	2.3E-01	C	9.5E-01	C	5.5E-02	Calculated	
12672-29-6	~Aroclor 1248	2.3E-01	C	9.4E-01	C	5.4E-02	Calculated	
11097-69-1	~Aroclor 1254	2.3E-01	N	9.7E-01	C	9.1E-02	Calculated	Yes
11096-82-5	~Aroclor 1260	2.4E-01	C	9.9E-01	C	2.4E-01	Calculated	
11126-42-4	~Aroclor 5460	7.0E+00	N	8.8E+01	N	1.4E+01	Calculated	Yes
39635-31-9	~Heptachlorobiphenyl, 2,3,3',4,4',5,5'-(PCB 189)	1.3E-01	C	5.2E-01	C	1.3E-01	Calculated	Yes
52663-72-6	~Hexachlorobiphenyl, 2,3,3',4,4',5,5'-(PCB 167)	1.2E-01	C	5.1E-01	C	7.5E-02	Calculated	Yes
69782-90-7	~Hexachlorobiphenyl, 2,3,3',4,4',5-(PCB 157)	1.2E-01	C	5.0E-01	C	7.7E-02	Calculated	Yes
38380-08-4	~Hexachlorobiphenyl, 2,3,3',4,4',5-(PCB 156)	1.2E-01	C	5.1E-01	C	7.7E-02	Calculated	Yes
32774-16-6	~Hexachlorobiphenyl, 3,3',4,4',5,5'-(PCB 169)	1.2E-04	C	5.1E-04	C	7.5E-05	Calculated	Yes
65510-44-3	~Pentachlorobiphenyl, 2',3,4,4',5-(PCB 123)	1.2E-01	C	5.0E-01	C	4.7E-02	Calculated	Yes
31508-00-6	~Pentachlorobiphenyl, 2,3',4,4',5-(PCB 118)	1.2E-01	C	4.9E-01	C	4.6E-02	Calculated	Yes
32598-14-4	~Pentachlorobiphenyl, 2,3,3',4,4'-(PCB 105)	1.2E-01	C	4.9E-01	C	4.7E-02	Calculated	Yes
74472-37-0	~Pentachlorobiphenyl, 2,3,4,4',5-(PCB 114)	1.2E-01	C	5.0E-01	C	4.7E-02	Calculated	Yes
57465-28-8	~Pentachlorobiphenyl, 3,3',4,4',5-(PCB 126)	3.6E-05	C	1.5E-04	C	1.4E-05	Calculated	Yes
1336-36-3	~Polychlorinated Biphenyls (high risk)	2.3E-01	C	9.5E-01	C	5.5E-02	Calculated	
1336-36-3b	~Polychlorinated Biphenyls (low risk)							
1336-36-3c	~Polychlorinated Biphenyls (lowest risk)							
32598-13-3	~Tetrachlorobiphenyl, 3,3',4,4'-(PCB 77)	3.8E-02	C	1.6E-01	C	8.4E-03	Calculated	Yes
70362-50-4	~Tetrachlorobiphenyl, 3,4,4',5-(PCB 81)	1.2E-02	C	4.8E-02	C	2.8E-03	Calculated	Yes
9016-87-9	Polymeric Methylene Diphenyl Diisocyanate (PMDI)	7.4E+06	N	3.1E+07	N			Yes

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Preliminary Soil Remediation Goals (PSRG)

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(based on November 2024 USEPA Regional Screening Tables)

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CAS #	Chemical Name (See companion notes for shaded chemicals)	Residential Health Based PSRG (mg/kg)	Basis	Industrial/ Commercial Health Based PSRG (mg/kg)	Basis	Protection of Groundwater PSRG (mg/kg)	Basis	Does Chemical Have a Non-Cancer Effect?
	Polynuclear Aromatic Hydrocarbons (PAHs)							
83-32-9	~Acenaphthene	7.2E+02	N	9.0E+03	N	1.6E+01	2L or IMAC	Yes
120-12-7	~Anthracene	3.6E+03	N	4.5E+04	N	1.3E+03	2L or IMAC	Yes
56-55-3	~Benz[a]anthracene	1.1E+00	C	2.1E+01	C	3.5E-01	2L or IMAC	
50-32-8	~Benzo[a]pyrene	1.1E-01	C	2.1E+00	C	1.2E-01	2L or IMAC	Yes
205-99-2	~Benzo[b]fluoranthene	1.1E+00	C	2.1E+01	C	1.2E+00	2L or IMAC	
192-97-2	~Benzo[e]pyrene	1.1E+00	N	1.5E+01	N	1.5E+01	Calculated	Yes
205-82-3	~Benzo[j]fluoranthene	4.2E-01	C	1.8E+00	C	7.0E-01	Calculated	
207-08-9	~Benzo[k]fluoranthene	1.1E+01	C	2.1E+02	C	1.2E+01	2L or IMAC	
243-17-4	~Benzofluorene, 2,3-	6.3E+01	N	8.2E+02	N	1.4E+02	Calculated	Yes
91-58-7	~Chloronaphthalene, Beta-	9.6E+02	N	1.2E+04	N	5.8E+01	Calculated	Yes
218-01-9	~Chrysene	1.1E+02	C	2.1E+03	C	3.6E+01	2L or IMAC	
53-70-3	~Dibenz[a,h]anthracene	1.1E-01	C	2.1E+00	C	3.8E-01	2L or IMAC	
192-65-4	~Dibenzo[a,e]pyrene	4.2E-02	C	1.8E-01	C	7.6E-01	Calculated	
57-97-6	~Dimethylbenz[a]anthracene, 7,12-	4.6E-04	C	8.4E-03	C	2.8E-03	Calculated	
206-44-0	~Fluoranthene	4.8E+02	N	6.0E+03	N	6.7E+02	2L or IMAC	Yes
86-73-7	~Fluorene	4.8E+02	N	6.0E+03	N	1.1E+02	2L or IMAC	Yes
193-39-5	~Indeno[1,2,3-cd]pyrene	1.1E+00	C	2.1E+01	C	3.9E+00	2L or IMAC	
90-12-0	~Methylnaphthalene, 1-	3.9E-02	N	1.6E-01	N	1.1E-01	2L or IMAC	Yes
91-57-6	~Methylnaphthalene, 2-	4.8E+01	N	6.0E+02	N	3.1E+00	2L or IMAC	Yes
91-20-3	~Naphthalene	2.1E+00	C	8.8E+00	C	3.9E-01	2L or IMAC	Yes
57835-92-4	~Nitropyrene, 4-	4.2E-01	C	1.8E+00	C	1.0E-01	Calculated	
198-55-0	~Perylene	1.1E+00	N	1.4E+01	N	1.5E+01	Calculated	Yes
129-00-0	~Pyrene	3.6E+02	N	4.5E+03	N	4.4E+02	2L or IMAC	Yes
67747-09-5	Prochloraz	3.6E+00	C	1.5E+01	C	2.4E-02	Calculated	Yes
26399-36-0	Profluralin	9.4E+01	N	1.4E+03	N	5.1E+01	Calculated	Yes
1610-18-0	Prometon	1.9E+02	N	2.5E+03	N	1.0E+00	Calculated	Yes
7287-19-6	Prometryn	5.1E+02	N	6.6E+03	N	8.5E+00	Calculated	Yes
23950-58-5	Pronamide	9.5E+02	N	1.2E+04	N	1.1E+01	Calculated	Yes
1918-16-7	Propachlor	1.6E+02	N	2.1E+03	N	1.1E+00	Calculated	Yes
709-98-8	Propanil	6.3E+01	N	8.2E+02	N	3.9E-01	Calculated	Yes
2312-35-8	Propargite	2.8E+00	C	1.2E+01	C	2.7E-01	Calculated	Yes
107-19-7	Propargyl Alcohol	3.1E+01	N	4.7E+02	N	5.7E-02	Calculated	Yes
139-40-2	Propazine	2.5E+02	N	3.3E+03	N	2.5E+00	Calculated	Yes
122-42-9	Propham	2.5E+02	N	3.3E+03	N	1.8E+00	Calculated	Yes
60207-90-1	Propiconazole	1.3E+03	N	1.6E+04	N	4.6E+01	Calculated	Yes
123-38-6	Propionaldehyde	1.6E+01	N	6.7E+01	N			Yes
103-65-1	Propyl benzene	7.8E+02	N	5.1E+03	N	2.6E+00	2L or IMAC	Yes
115-07-1	Propylene	4.7E+02	N	2.0E+03	N			Yes
57-55-6	Propylene Glycol	2.5E+05	N	3.3E+06	N	4.0E+02	2L or IMAC	Yes
6423-43-4	Propylene Glycol Dinitrate	3.4E+06	N	1.4E+07	N			Yes
107-98-2	Propylene Glycol Monomethyl Ether	8.3E+03	N	7.7E+04	N	2.0E+01	Calculated	Yes
75-56-9	Propylene Oxide	2.1E+00	C	9.9E+00	C	6.1E-04	Calculated	Yes
110-86-1	Pyridine	1.6E+01	N	2.3E+02	N	4.8E-02	Calculated	Yes
13593-03-8	Quinalphos	6.3E+00	N	8.2E+01	N	6.0E-01	Calculated	Yes

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91-22-5	Quinoline	1.8E-01	C	7.7E-01	C	7.7E-04	Calculated	
76578-14-8	Quizalofop-ethyl	1.1E+02	N	1.5E+03	N	2.0E+01	Calculated	Yes
E715557	Refractory Ceramic Fibers (units in fibers)							
10453-86-8	Resmethrin	3.8E+02	N	4.9E+03	N	2.6E+03	Calculated	Yes
299-84-3	Ronnel	7.8E+02	N	1.2E+04	N	6.4E+01	Calculated	Yes
83-79-4	Rotenone	5.1E+01	N	6.6E+02	N	2.9E+02	Calculated	Yes
94-59-7	Safrole	5.5E-01	C	1.0E+01	C	2.0E-03	Calculated	
7783-00-8	Selenious Acid	7.8E+01	N	1.2E+03	N			Yes
7782-49-2	Selenium	7.8E+01	N	1.2E+03	N	2.1E+00	2L or IMAC	Yes
7446-34-6	Selenium Sulfide	7.8E+01	N	1.2E+03	N			Yes
74051-80-2	Sethoxydim	1.8E+03	N	2.3E+04	N	1.8E+02	Calculated	Yes
7631-86-9	Silica (crystalline, respirable)	3.7E+07	N	1.6E+08	N			Yes
7440-22-4	Silver	7.8E+01	N	1.2E+03	N	3.4E+00	2L or IMAC	Yes
122-34-9	Simazine	4.5E+00	C	1.9E+01	C	3.9E-02	2L or IMAC	Yes
62476-59-9	Sodium Acifluorfen	1.6E+02	N	2.1E+03	N	1.4E+01	Calculated	Yes
26628-22-8	Sodium Azide	6.3E+01	N	9.3E+02	N			Yes
148-18-5	Sodium Diethyldithiocarbamate	2.0E+00	C	8.5E+00	C	1.6E-03	Calculated	Yes
7681-49-4	Sodium Fluoride	7.8E+02	N	1.2E+04	N	5.3E+02	Calculated	Yes
62-74-8	Sodium Fluoroacetate	2.5E-01	N	3.3E+00	N	5.7E-04	Calculated	Yes
13718-26-8	Sodium Metavanadate	1.6E+01	N	2.3E+02	N			Yes
13472-45-2	Sodium Tungstate	1.3E+01	N	1.9E+02	N			Yes
10213-10-2	Sodium Tungstate Dihydrate	1.3E+01	N	1.9E+02	N			Yes
961-11-5	Stirofos (Tetrachlorovinphos)	2.3E+01	C	9.6E+01	C	8.6E-02	Calculated	Yes
7440-24-6	Strontium, Stable	9.4E+03	N	1.4E+05	N	1.4E+03	2L or IMAC	Yes
57-24-9	Strychnine	3.8E+00	N	4.9E+01	N	4.6E-01	Calculated	Yes
100-42-5	Styrene	1.2E+03	N	7.3E+03	N	1.5E+00	2L or IMAC	Yes
57964-39-3	Styrene-Acrylonitrile (SAN) Trimer (THNA isomer)	3.8E+01	N	4.9E+02	N			Yes
57964-40-6	Styrene-Acrylonitrile (SAN) Trimer (THNP isomer)	3.8E+01	N	4.9E+02	N			Yes
126-33-0	Sulfolane	1.3E+01	N	1.6E+02	N	3.1E-02	Calculated	Yes
80-07-9	Sulfonylbis(4-chlorobenzene), 1,1'-	1.0E+01	N	1.3E+02	N	6.6E-01	Calculated	Yes
7446-11-9	Sulfur Trioxide	1.2E+07	N	5.2E+07	N			Yes
7664-93-9	Sulfuric Acid	1.2E+07	N	5.2E+07	N			Yes
140-57-8	Sulfurous acid, 2-chloroethyl 2-[4-(1,1-dimethylethyl)phenoxy]-1-methylethyl ester	2.2E+01	C	9.2E+01	C	3.2E-01	Calculated	Yes
34014-18-1	Tebuthiuron	8.8E+02	N	1.1E+04	N	2.8E+00	Calculated	Yes
3383-96-8	Temephos	2.5E+02	N	3.3E+03	N	5.3E+02	Calculated	Yes
5902-51-2	Terbacil	1.6E+02	N	2.1E+03	N	5.5E-01	Calculated	Yes
13071-79-9	Terbufos	3.9E-01	N	5.8E+00	N	7.7E-03	Calculated	Yes
886-50-0	Terbutryn	1.3E+01	N	1.6E+02	N	2.0E-01	Calculated	Yes
540-88-5	Tert-Butyl Acetate	8.6E+00	C	3.8E+01	C	3.2E-02	Calculated	

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5436-43-1	Tetrabromodiphenyl ether, 2,2',4,4'- (BDE-47)	1.3E+00	N	1.6E+01	N	3.7E-01	Calculated	Yes
95-94-3	Tetrachlorobenzene, 1,2,4,5-	4.7E-01	N	7.0E+00	N	1.9E-01	2L or IMAC	Yes
630-20-6	Tetrachloroethane, 1,1,1,2-	2.1E+00	C	9.3E+00	C	7.6E-03	2L or IMAC	Yes
79-34-5	Tetrachloroethane, 1,1,2,2-	6.4E-01	C	2.8E+00	C	1.6E-03	2L or IMAC	Yes
127-18-4	Tetrachloroethylene	1.7E+01	N	8.2E+01	N	6.3E-03	2L or IMAC	Yes
58-90-2	Tetrachlorophenol, 2,3,4,6-	3.8E+02	N	4.9E+03	N	3.0E+00	2L or IMAC	Yes
5216-25-1	Tetrachlorotoluene, p- alpha, alpha, alpha-	4.3E-02	C	2.0E-01	C	1.5E-04	Calculated	Yes
3689-24-5	Tetraethyl Dithiopyrophosphate	6.3E+00	N	8.2E+01	N	5.1E-02	Calculated	Yes
811-97-2	Tetrafluoroethane, 1,1,1,2-	2.2E+04	N	9.1E+04	N			Yes
16853-36-4	Tetramethylphosphoramidate, -N,N,N',N" (TMPA)	1.3E+00	N	1.6E+01	N			Yes
479-45-8	Tetryl (Trinitrophenylmethylnitramine)	3.1E+01	N	4.7E+02	N	2.6E+00	Calculated	Yes
1314-32-5	Thallic Oxide	3.1E-01	N	4.7E+00	N			Yes
10102-45-1	Thallium (I) Nitrate	1.6E-01	N	2.3E+00	N			Yes
7440-28-0	Thallium (Soluble Salts)	1.6E-01	N	2.3E+00	N	2.8E+00	2L or IMAC	Yes
563-68-8	Thallium Acetate	1.6E-01	N	2.3E+00	N	2.8E-04	Calculated	Yes
6533-73-9	Thallium Carbonate	2.5E-01	N	3.3E+00	N	2.9E-04	Calculated	Yes
7791-12-0	Thallium Chloride	1.6E-01	N	2.3E+00	N			Yes
12039-52-0	Thallium Selenite	1.6E-01	N	2.3E+00	N			Yes
7446-18-6	Thallium Sulfate	3.1E-01	N	4.7E+00	N			Yes
79277-27-3	Thifensulfuron-methyl	5.4E+02	N	7.1E+03	N	1.8E+00	Calculated	Yes
28249-77-6	Thiobencarb	1.3E+02	N	1.6E+03	N	4.8E+00	Calculated	Yes
E1790665	Thiocyanates	3.1E+00	N	4.7E+01	N			Yes
463-56-9	Thiocyanic Acid	3.1E+00	N	4.7E+01	N			Yes
21564-17-0	Thiocyanic acid, (2-benzothiazolylthio)methyl ester (TCMTB)	3.8E+02	N	4.9E+03	N	2.9E+01	Calculated	Yes
111-48-8	Thiodiglycol	1.1E+03	N	1.6E+04	N	2.0E+00	Calculated	Yes
39196-18-4	Thiofanox	3.8E+00	N	4.9E+01	N	1.4E-02	Calculated	Yes
23564-05-8	Thiophanate, Methyl	4.7E+01	C	2.0E+02	C	5.2E-02	Calculated	Yes
137-26-8	Thiram	1.9E+02	N	2.5E+03	N	3.0E+00	Calculated	Yes
7440-31-5	Tin	9.4E+03	N	1.4E+05	N	1.0E+04	2L or IMAC	Yes
7550-45-0	Titanium Tetrachloride	1.2E+06	N	5.2E+06	N			Yes
108-88-3	Toluene	9.9E+02	N	9.7E+03	N	8.3E+00	2L or IMAC	Yes
584-84-9	Toluene-2,4-diisocyanate	1.4E+00	N	5.7E+00	N	2.7E-01	Calculated	Yes
91-08-7	Toluene-2,6-diisocyanate	1.1E+00	N	4.7E+00	N	2.8E-01	Calculated	Yes
2687-25-4	Toluenediamine, 2,3-	1.3E+00	N	1.6E+01	N	4.4E-03	Calculated	Yes
95-70-5	Toluenediamine, 2,5-	2.5E+00	N	1.3E+01	C	1.2E-03	Calculated	Yes
496-72-0	Toluenediamine, 3,4-	1.3E+00	N	1.6E+01	N	4.4E-03	Calculated	Yes
99-94-5	Toluic Acid, p-	6.3E+01	N	8.2E+02	N	1.8E-01	2L or IMAC	Yes
95-53-4	Toluidine, o- (Methylaniline, 2-)	3.4E+01	C	1.4E+02	C	1.9E-02	Calculated	
106-49-0	Toluidine, p-	1.8E+01	C	7.7E+01	C	9.9E-03	Calculated	Yes

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E1790670	Total Petroleum Hydrocarbons (Aliphatic High)	4.7E+04	N	7.0E+05	N			Yes
E1790666	Total Petroleum Hydrocarbons (Aliphatic Low)	5.1E+01	N	4.0E+02	N	5.6E+00	2L or IMAC	Yes
E1790668	Total Petroleum Hydrocarbons (Aliphatic Medium)	2.0E+01	N	9.3E+01	N	1.9E+02	2L or IMAC	Yes
E1790676	Total Petroleum Hydrocarbons (Aromatic High)	3.6E+00	N	4.5E+01	N			Yes
E1790674	Total Petroleum Hydrocarbons (Aromatic Medium)	6.2E+01	N	3.7E+02	N			Yes
8001-35-2	Toxaphene	4.9E-01	C	2.1E+00	C	9.3E-02	2L or IMAC	Yes
E1841606	Toxaphene, Weathered	3.8E-01	N	4.9E+00	N	6.5E-01	Calculated	Yes
66841-25-6	Tralomethrin	9.5E+01	N	1.2E+03	N	4.0E+02	Calculated	Yes
688-73-3	Tri-n-butyltin	4.7E+00	N	7.0E+01	N	9.1E-01	Calculated	Yes
102-76-1	Triacetin	1.0E+06	N	1.3E+07	N	3.2E+03	Calculated	Yes
43121-43-3	Triadimefon	4.3E+02	N	5.6E+03	N	3.8E+00	Calculated	Yes
2303-17-5	Triallate	9.7E+00	C	4.6E+01	C	2.2E-02	Calculated	Yes
82097-50-5	Triasulfuron	1.3E+02	N	1.6E+03	N	1.5E+00	Calculated	Yes
101200-48-0	Tribenuron-methyl	1.0E+02	N	1.3E+03	N	4.4E-01	Calculated	Yes
615-54-3	Tribromobenzene, 1,2,4-	7.8E+01	N	1.2E+03	N	1.0E+00	Calculated	Yes
118-79-6	Tribromophenol, 2,4,6-	1.1E+02	N	1.5E+03	N	2.3E+00	Calculated	Yes
78-48-8	Tribufos	2.5E+00	N	3.3E+01	N	1.4E-01	Calculated	Yes
126-73-8	Tributyl Phosphate	6.0E+01	C	2.6E+02	C	3.8E-01	Calculated	Yes
E1790679	Tributyltin Compounds	3.8E+00	N	4.9E+01	N			Yes
56-35-9	Tributyltin Oxide	3.8E+00	N	4.9E+01	N	2.2E+03	Calculated	Yes
10025-85-1	Trichloramine							
76-13-1	Trichloro-1,2,2-trifluoroethane, 1,1,2-	1.4E+03	N	6.0E+03	N	9.8E+03	2L or IMAC	Yes
76-03-9	Trichloroacetic Acid	7.8E+00	C	3.3E+01	C	2.1E-03	Calculated	Yes
33663-50-2	Trichloroaniline HCl, 2,4,6-	1.9E+01	C	7.9E+01	C	6.6E-02	Calculated	
634-93-5	Trichloroaniline, 2,4,6-	3.8E-01	N	4.9E+00	N	3.8E-02	Calculated	Yes
87-61-6	Trichlorobenzene, 1,2,3-	1.3E+01	N	1.9E+02	N	3.3E-01	Calculated	Yes
120-82-1	Trichlorobenzene, 1,2,4-	1.2E+01	N	5.5E+01	N	4.1E+00	2L or IMAC	Yes
71-55-6	Trichloroethane, 1,1,1-	1.7E+03	N	7.6E+03	N	1.4E+00	2L or IMAC	Yes
79-00-5	Trichloroethane, 1,1,2-	3.2E-01	N	1.3E+00	N	3.9E-03	2L or IMAC	Yes
79-01-6	Trichloroethylene	8.7E-01	N	4.0E+00	N	2.1E-02	2L or IMAC	Yes
75-69-4	Trichlorofluoromethane	4.7E+03	N	7.0E+04	N	2.5E+01	2L or IMAC	Yes
95-95-4	Trichlorophenol, 2,4,5-	1.3E+03	N	1.6E+04	N	4.3E+00	2L or IMAC	Yes
88-06-2	Trichlorophenol, 2,4,6-	1.3E+01	N	1.6E+02	N	7.7E-02	2L or IMAC	Yes
93-76-5	Trichlorophenoxyacetic Acid, 2,4,5-	1.3E+02	N	1.6E+03	N	5.8E-01	Calculated	Yes
93-72-1	Trichlorophenoxypropionic acid, -2,4,5	1.0E+02	N	1.3E+03	N	5.5E-01	2L or IMAC	Yes
598-77-6	Trichloropropane, 1,1,2-	7.8E+01	N	1.2E+03	N	2.7E-01	Calculated	Yes

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96-18-4	Trichloropropane, 1,2,3-	5.1E-03	C	1.1E-01	C	4.3E-05	2L or IMAC	Yes
96-19-5	Trichloropropene, 1,2,3-	1.6E-01	N	6.5E-01	N	2.1E-01	Calculated	Yes
1330-78-5	Tricresyl Phosphate (TCP)	2.5E+02	N	3.3E+03	N	2.6E+02	Calculated	Yes
58138-08-2	Tridiphane	3.8E+01	N	4.9E+02	N	3.0E+00	Calculated	Yes
121-44-8	Triethylamine	2.5E+01	N	1.0E+02	N			Yes
112-27-6	Triethylene Glycol	2.5E+04	N	3.3E+05	N	6.2E+01	Calculated	Yes
420-46-2	Trifluoroethane, 1,1,1-	3.1E+03	N	1.3E+04	N			Yes
1582-09-8	Trifluralin	9.0E+01	C	4.2E+02	C	3.0E+00	Calculated	Yes
512-56-1	Trimethyl Phosphate	2.7E+01	C	1.1E+02	C	7.7E-03	Calculated	Yes
526-73-8	Trimethylbenzene, 1,2,3-	7.0E+01	N	4.3E+02	N	2.1E+00	Calculated	Yes
95-63-6	Trimethylbenzene, 1,2,4-	6.3E+01	N	3.7E+02	N	1.2E+01	2L or IMAC	Yes
108-67-8	Trimethylbenzene, 1,3,5-	5.6E+01	N	3.2E+02	N	1.1E+01	2L or IMAC	Yes
25167-70-8	Trimethylpentene, 2,4,4-	1.6E+02	N	2.3E+03	N	4.7E+00	Calculated	Yes
99-35-4	Trinitrobenzene, 1,3,5-	4.5E+02	N	6.5E+03	N	1.5E+01	Calculated	Yes
118-96-7	Trinitrotoluene, 2,4,6-	7.3E+00	N	9.6E+01	C	1.4E-01	Calculated	Yes
791-28-6	Triphenylphosphine Oxide	2.5E+02	N	3.3E+03	N	1.2E+01	Calculated	Yes
13674-87-8	Tris(1,3-Dichloro-2-propyl) Phosphate	2.5E+02	N	3.3E+03	N	6.3E+01	Calculated	Yes
13674-84-5	Tris(1-chloro-2-propyl)phosphate	1.3E+02	N	1.6E+03	N	4.8E+00	Calculated	Yes
126-72-7	Tris(2,3-dibromopropyl)phosphate	2.8E-01	C	1.3E+00	C	6.0E-03	Calculated	
115-96-8	Tris(2-chloroethyl)phosphate	2.7E+01	C	1.1E+02	C	3.4E-02	Calculated	Yes
78-42-2	Tris(2-ethylhexyl)phosphate	1.7E+02	C	7.2E+02	C	1.1E+03	Calculated	Yes
7440-33-7	Tungsten	1.3E+01	N	1.9E+02	N	8.4E+00	Calculated	Yes
7440-61-1	Uranium	3.1E+00	N	4.7E+01	N	6.3E+00	Calculated	Yes
51-79-6	Urethane	1.2E-01	C	2.3E+00	C	1.6E-04	Calculated	
1314-62-1	Vanadium Pentoxide	1.4E+02	N	2.1E+03	N			Yes
7440-62-2	Vanadium and Compounds	7.9E+01	N	1.2E+03	N	1.4E+02	2L or IMAC	Yes
1929-77-7	Vernolate	1.6E+01	N	2.3E+02	N	1.1E-01	Calculated	Yes
50471-44-8	Vinclozolin	1.5E+01	N	2.0E+02	N	1.3E-01	Calculated	Yes
108-05-4	Vinyl Acetate	1.9E+02	N	8.2E+02	N	3.7E-01	2L or IMAC	Yes
593-60-2	Vinyl Bromide	2.7E-01	C	1.2E+00	C			Yes
75-01-4	Vinyl Chloride	6.1E-02	C	1.7E+00	C	2.1E-04	2L or IMAC	Yes
81-81-2	Warfarin	3.8E+00	N	4.9E+01	N	4.4E-02	Calculated	Yes
108-38-3	Xylene, m-	1.2E+02	N	5.0E+02	N	9.8E+00	2L or IMAC	Yes
95-47-6	Xylene, o-	1.4E+02	N	5.9E+02	N	9.8E+00	2L or IMAC	Yes
106-42-3	Xylene, p-	1.2E+02	N	5.1E+02	N	9.8E+00	2L or IMAC	Yes
1330-20-7	Xylenes	1.2E+02	N	5.3E+02	N	9.9E+00	2L or IMAC	Yes
1314-84-7	Zinc Phosphide	4.7E+00	N	7.0E+01	N			Yes
7440-66-6	Zinc and Compounds	4.7E+03	N	7.0E+04	N	1.2E+03	2L or IMAC	Yes
12122-67-7	Zineb	6.3E+02	N	8.2E+03	N	2.0E+01	Calculated	Yes
7440-67-7	Zirconium	1.3E+00	N	1.9E+01	N	1.7E+01	Calculated	Yes

SECTION 02270

EROSION AND SEDIMENTATION CONTROL

Erosion and Sedimentation Control: Erosion and Sedimentation Control is a system of construction and engineered measures (devices, structures, practices, etc.) which act to minimize surface water induced erosion of disturbed areas and the resulting off-site sedimentation.

A. Description

1. General:

The Contractor shall furnish all labor, material, and equipment to complete installation of and maintain Erosion and Sedimentation Control measures and related work in accordance with the Contract Drawings and these Specifications.

All Erosion and Sedimentation Control work shall be in accordance with the latest edition of the North Carolina Erosion and Sediment Control Planning and Design Manual as well as applicable regulations.

2. Reference Standards:

The latest revision of the following standards of the American Society of Testing and Materials (ASTM) are hereby made a part of these specifications.

ASTM D 3786	Test Method for Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabrics: Diaphragm Bursting Strength Tester Method.
ASTM D 4355	Standard Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus).
ASTM D 4491	Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
ASTM D 4533	Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
ASTM D 4632	Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
ASTM D 4751	Standard Test Method for Determining Apparent Opening Size of a Geotextile.
ASTM D 4833	Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products.

B. Materials

1. Silt Fence:

Silt fences shall be constructed as shown on the Contract Drawings and as needed, based on the Contractor's discretion and Engineer's approval. The silt fence is a permeable barrier erected within and downgradient of small disturbed areas to capture sediment from sheet flow. It is made of filter fabric buried at the bottom, stretched, and supported by posts and wire mesh backing. Silt fence shall conform to the following properties:

a. Posts: Posts shall be 1.33 lb/linear foot steel (preferred) or wood with a minimum length of 5 feet. Steel posts shall be "U" or "T"-type. Wood posts shall have a minimum diameter of 4-inches.

b. Filter Fabric: Filter fabric shall be a woven geotextile made specifically for sediment control. Filter fabric shall conform to the properties listed in Table 1 of this section.

2. Stone Filter Fence:

Stone filter fence shall be constructed as shown on the Contract Drawings.

3. Other Work:

In addition to the Erosion and Sedimentation Control measures shown on the Contract Drawings, the Contractor shall provide adequate means to prevent any sediment from entering any storm drains, drop inlets, ditches, streams, or bodies of water downstream of any area disturbed by construction. Excavation materials shall be placed upstream of any trench or other excavation to prevent sedimentation of off-site areas. In areas where a natural buffer area exists between the work area and the closest stream or water course, this area shall not be disturbed. All paved areas shall be scraped and swept as necessary to prevent the accumulation of dirt and debris. Work associated with this provision shall be considered incidental to the project and no separate payment will be made.

C. Submittals

The Contractor shall submit the following to the Engineer:

1. Submit a certification and summary of all required test results, prior to installation, that all Erosion and Sedimentation Control materials manufactured for the project have been produced in accordance with these Specifications.
2. Furnish copies of the delivery tickets or other approved receipts as evidence for materials received that will be incorporated into construction.

D. Construction

1. Establishment of Erosion and Sedimentation Control Measures:
 - a. All Erosion and Sedimentation Control measures will be constructed according to the Contract Drawings and these Specifications.
 - b. Due to the nature of the work required by this Contract, it is anticipated that the location and nature of the Erosion and Sedimentation Control measures may need to be adjusted to reflect the current phase of construction.
 - c. Erosion and Sedimentation Control measures shall be established prior to the work in a given area. Where such practice is not feasible, the Erosion and Sedimentation Control measure(s) shall be established immediately following completion of the clearing operation.
 - d. The construction schedule adopted by the Contractor will impact the placement and need for specific measures required for the control of erosion. The Contractor shall develop and implement such additional techniques as may be required to minimize erosion and prevent or correct the discharge of sediment outside the limits of construction (unless controlled by other on-site measure(s)).
 - e. The location and extent of Erosion and Sedimentation Control measures shall be revised at each phase of construction that results in a change in either the quantity or direction of surface runoff from construction areas. All deviations from the control provisions shown on the Contract Drawings shall have the prior approval of the Engineer.
 - f. The Contractor is responsible for protection of all liner system tie-ins from runoff from adjacent areas/slopes. The Contractor shall coordinate with the Engineer and Owner to establish and maintain appropriate measures (silt fence, stone filter fence, and/or diversion berms) as necessary for protection.
2. Inspection and Maintenance of Erosion and Sedimentation Control Measures:
 - a. The Contractor shall furnish the labor, material, and equipment required for the inspection and maintenance of all Erosion and Sedimentation Control measures. Maintenance shall be scheduled as required for a particular measure to maintain the removal efficiency and intent of the measure.
 - b. All Erosion and Sedimentation Control measures shall be inspected at least once every seven calendar days and within 24 hours after any storm event of greater than 1 inch of rain per 24 hour period and appropriate maintenance conducted. A rain gauge shall be maintained on the site and a record of the rainfall amounts and dates shall be kept properly.
 - c. Maintenance shall include, but not be limited to:
 - (1) The removal and satisfactory disposal of trapped or deposited sediments from basins, traps, barriers, filters, and/or drainage features/devices.

- (2) Replacement of filter fabrics used for silt fences upon loss of efficiency; and
 - (3) Replacement of any other components which are damaged or cannot serve the intended use.
- d. The Contractor shall accept and maintain any existing sediments that are included in existing sediment basins and traps that accept or will accept stormwater flow and or sediment accumulation from all areas within the Contractor's limits of construction.
 - e. Sediments removed from Erosion and Sedimentation Control measures shall be disposed of in locations that will not result in off-site sedimentation as approved by the Engineer.
 - f. All Erosion and Sedimentation Control measures shall be maintained to the satisfaction of the Engineer until the site has been stabilized.

3. Graded Slopes and Fills:

The angle for graded slopes and fills shall be no greater than the angle that can be retained by vegetated cover or other adequate measures.

4. Finish Grading:

All disturbed areas shall be uniformly graded to the lines, grades, and elevations shown on the Contract Drawings. Except for certain erosion and sedimentation control measures and other areas designated to impound water, all areas shall be graded to drain. Finished surfaces shall be reasonably smooth, compacted, and free from irregular surface changes. Unless otherwise specified, the degree of finish shall be that ordinarily obtainable from either blade or scraper operations. Areas shall be finished to a smoothness suitable for application of topsoil.

5. Cleanup:

- a. The Contractor shall remove from the site all debris from their work including, but not limited to, branches, paper, and rubbish in all landscape areas, and remove temporary barricades as the work proceeds.
- b. All areas shall be kept in a neat, orderly condition at all times. Prior to final acceptance, the Contractor shall clean up the entire landscaped area to the satisfaction of the Engineer.

Table 1: Required Silt Fence Filter Fabric Properties

Property	Test Method	Units	Value¹
Grab Tensile Strength ²	ASTM D 4632	lbs	90 x 90
Grab Elongation	ASTM D 4632	%	20 (Max.)
Ultraviolet Resistance (500 hrs)	ASTM D 4355	%	80
Apparent Opening Size (AOS)	ASTM D 4751	U.S. Sieve	30+
Permittivity	ASTM D 4491	sec ⁻¹	0.05

Notes:

1. Minimum Average Roll Value (MARV).
2. Values for machine and cross machine direction (MD x XD), respectively.

END OF SECTION

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