**Contract Documents for** 



# WASTEWATER TREATMENT PLANT BIOSOLIDS REMOVAL

**Issued for Bid** 

**MARCH 2023** 

Prepared by

Wilson Engineering LLC

# CITY OF FERNDALE FERNDALE, WASHINGTON

# **CONTRACT DOCUMENTS**

for the execution of the

# WASTEWATER TREATMENT PLANT BIOSOLIDS REMOVAL

Prepared for:

City of Ferndale

Prepared by:

Wilson Engineering, LLC 805 Dupont Street, Suite 7 Bellingham, Washington 98225 Tel. (360) 733-6100 Fax. (360) 647-9061 March 2023

PART 1

# **Bid Procedures and Conditions**

#### CITY OF FERNDALE WASTEWATER TREATMENT PLANT BIOSOLIDS REMOVAL

#### TABLE OF CONTENTS

#### PART 1 BID PROCEDURES AND CONDITIONS

Notice Inviting Sealed Proposals (Bids) Information for Bidders Proposal Form Bidder's Checklist Bid Bond Noncollusion Affidavit Statement of Intended Surety Statement of Bidder's Qualifications Statement of Proposed Subcontractors

#### PART 2 <u>CONTRACT FORMS</u>

Notice of Award Notice to Proceed Contract Performance and Payment Bond Retainage

# PART 3 GENERAL CONDITIONS

Table of Contents - General Conditions Definitions and Abbreviations Bidding Requirements and Conditions Award and Execution of Contract Scope of Work Control of Work Prosecution and Progress Legal Relations and Responsibility Contractor's Insurance Payment to Contractor Dispute Resolution

## PART 4 SPECIAL PROVISIONS

Table of Contents – Special ProvisionsDivision 1General RequirementsDivision 2Site Work

# PART 5 <u>APPENDICES</u>

Appendix APrevailing WagesAppendix BBiosolids Land Application Plan

Appendix CAccess MapAppendix DBiosolids Permit ConditionsAppendix ESpill Prevention/Response PlanAppendix FDrawingsBiosolids Land Application Site PlanVicinity and Location MapsWastewater Treatment Plant Site PlanBiosolids Stabilization Basin PlansSchematic of Wastewater Treatment PlantHydraulic Profile

#### NOTICE INVITING SEALED PROPOSALS (BIDS)

#### CITY OF FERNDALE WWTP BIOSOLIDS REMOVAL

NOTICE IS HEREBY GIVEN that the City of Ferndale, as Owner, invites and will receive sealed proposals (bids), as bound in this volume including any and all addenda, in a sealed envelope addressed and delivered to:

Department of Public Works City of Ferndale 2095 Main Street Ferndale, WA 98248

up to the hour of 2:00 p.m., local time, March 29, 2023. Proposals (bids) will subsequently be opened and read aloud at 2:05 p.m., local time, March 29, 2023, in the City of Ferndale, at the Department of Public Works, Ferndale, Washington 98248. It is anticipated that the City of Ferndale will consider awarding the Contract on April 6, 2023 to the lowest responsive bidder.

The work to be performed shall consist of furnishing all transportation, materials, labor, services, supplies and equipment necessary to complete the WWTP Biosolids Removal and all other miscellaneous work necessary to return the Treatment Plant to original condition.

The work shall be performed within the time limit stated in the Proposal. The work consists of (1) biosolids dredging, and (2) biosolids land application by injection,

#### **Biosolids Removal**

Biosolids Removal consists of all work and expenses required for removing 80 tons (dry weight measure) of biosolids from the Biosolids Stabilization Basin (West Lagoon). The estimated inplace quantity is 250 dry tons. The work includes all work necessary for the removal of biosolids, including moving aeration equipment, and providing all equipment and materials such as generators, transfer pumps, holding tanks, etc. This effort also includes all testing, costs and labor necessary to determine the biosolids dry tonnage; repositioning the floating mechanical aerators in the lagoon as needed; and site restoration including regrading disturbed areas or repaving damaged pavement throughout the site.

#### **Biosolids Land Application**

Biosolids Land Application consists of all work and expenses required for transporting, pretreating as necessary, and injecting biosolids on the adjacent 13-acre land application site. The work includes all work necessary to complete the described work, providing all equipment and materials, such as pumps tanks, screening equipment, piping, hoses, injection plow and tractor. This effort also includes all testing, costs and labor necessary to determine the biosolids dry tonnage and site restoration including regrading disturbed areas or repaving damaged pavement throughout the site (not including the land application field).

It is the intent of the Owner to award a single contract for the entire project. The Bidder understands and agrees that if a Contract is awarded, the Bidder awarded the contract is responsible for all parts of the project.

Contract Documents are on file at:

Department of Public Works City of Ferndale 2095 Main Street Ferndale WA 98248

Each proposal shall be made out and submitted on the forms furnished as part of the Contract Documents. Each proposal shall be enclosed in a sealed envelope plainly marked "Proposal for City of Ferndale, Wastewater Treatment Plant Biosolids Removal" with the name of the bidder in the upper left-hand corner.

A bid security for not less than (5%) five percent of the total base bid dollar amount is required to be submitted with each proposal (bid). The certified check, cashier's check or bid bond shall be payable to City of Ferndale. The Bidder to whom award is made will be required to furnish the necessary additional bonds for the faithful performance of the Contract, as prescribed in the Contract Documents.

Before a Contract will be awarded for the work contemplated herein, the Owner will conduct such investigation as is necessary to determine the performance record and ability of the apparent low Bidder to perform the size and type of work specified under this Contract. Upon request, the Bidder shall submit such information as deemed necessary by the Owner to evaluate the Bidder's qualifications.

The attention of Bidders is directed to the applicable state requirements and conditions of employment including, but not limited to, minimum wage rates to be paid under the Contract.

The City's Fair Practices and Non-Discrimination Policies shall apply.

All bidders and their subcontractors shall be licensed and qualified by the State of Washington to do the type of work contemplated in the project before the time of opening of proposals and shall be skilled and regularly engaged in the general class or type of work.

This proposal to the Owner is irrevocable for a period of thirty (30) days after the date of the proposals opening. The right is reserved by the City of Ferndale to reject any and all proposals, waive irregularities, informalities, or nonconformities, or to accept the proposals deemed in its best interest. The right to add or delete items, or change quantities shown on the Proposal Form is further reserved by the City of Ferndale.

#### **INFORMATION FOR BIDDERS**

#### **GENERAL CONDITIONS FOR BIDDING**

Bidding Requirements and Conditions are contained in the General Conditions – Part 3. Bidders are referred thereto.

#### **GENERAL DESCRIPTION OF THE PROJECT**

A general description of the work to be done is contained in the Notice Inviting Sealed Proposals (Bids). The scope is indicated on the accompanying Drawings and specified in applicable parts of these Contract Documents.

#### TYPE OF PROPOSAL

#### A. Contract for WWTP Biosolids Removal: Lump Sum and Unit Price

The Proposal for the work is to be submitted on a lump sum and unit price basis. Lump sum and unit prices shall be submitted in the appropriate places in the Proposal. Award of the Contract will be based on the sum of the lowest written lump sum bid plus the sum of the extended totals of the unit price bid items. Following award of the Contract, the total amount to be paid the Contractor shall include the amount of the lump sum Proposal, plus the measurement of work actually performed by the Contractor in association with the unit price items.

#### PREPARATION OF PROPOSALS

- A. <u>General</u>
  - 1. All blank spaces in the Proposal form must be filled in, as required, in BLACK ink. All price information shall be shown in both words and figures where required. No changes shall be made in the phraseology of the forms. Written amounts shall be given in case of discrepancy between the amounts stated in writing and the amounts stated in figures.
  - 2. Bids shall be properly executed upon the Proposal attached to and made part of these Contract Documents.
    - a. No bid will be considered unless it is made upon the Proposal Forms included as part of the Contract Documents.
    - b. Proposals shall each include at least those items listed in the Bidder's Checklist.
  - 3. All bids shall be made in accordance with applicable statutes of the State of Washington, applicable local laws, and as specified in these Contract Documents.
  - 4. Numbers shall be stated both in writing and in figures where so required. In case of a difference in written words and figures, the amount stated in written words shall govern.
  - 5. The Bidder shall complete and submit with the Proposal all forms indicated in the Contents to these Contract Documents.

6. The completed forms shall be without interlineations, alterations, or erasures.

#### B. Irregular Bids

- 1. Bids may be considered irregular and may be rejected by the Owner if they show any alterations of form, unauthorized additions, unauthorized conditions or alternate bids, incomplete bids, recapitulations, obviously unbalanced prices, erasures, or irregularities of any kind.
- 2. No bid will be considered unless accompanied by the Bid Security in the type and amount specified.
- 3. In unit price contracts and bid items, if the unit price and the total amount named for any item are not in agreement, the unit price alone shall be considered as representing the bidder's intention, and totals shall be corrected to conform thereto.

#### C. <u>Signing the Proposal</u>

- 1. The bid shall:
  - a. Include the legal name of the bidder.
  - b. Identify the bidder as a sole proprietor, a partnership, a corporation, or any other legal entity.
  - c. Be signed by the person or persons legally authorized to bind the bidder to a contract for the execution of the work.
- 2. A bid submitted by an agent shall have a current Power of Attorney attached certifying the agent's authority to bind the bidder.
- 3. The signature of all persons signing shall be in longhand.

#### D. <u>Submitting Proposals</u>

1. The outside, upper left-hand corner of the ENVELOPE shall be marked as follows:

Proposal of

(Bidder's Name)

ProjectCity of FerndaleName:WWTP Biosolids Removal

- 2. Sealed bids shall be delivered as instructed in the Notice Inviting Sealed Proposals, on or before the day and hour set for the opening of Proposals in the Notice Inviting Sealed Proposals.
  - a. It is sole responsibility of Bidder to see that the Proposals is received in proper time.
  - b. Proposals received after the scheduled closing time for receipt of proposals will be returned to the bidder unopened.

#### SALES TAX

Retail sales tax is not required for this work. B&O tax is required for this work and will be paid by the Contractor and not added onto the total bid amount.

All other federal, state, and local sales, use, or other taxes as required by federal, state, or local laws shall be included in the unit prices, lump sum price, or other prices stated in the Proposal, as applicable.

#### MODIFICATION OR WITHDRAWAL OF PROPOSALS

Prior to the time and date designated for receipt of Proposals, any Proposal submitted may be modified or withdrawn by notice to the party receiving Proposals at the place designated for receipt of Proposals. Such notice shall be in writing over the signature of the Bidder or by telegram. If by telegram, written confirmation over the signature of the Bidder shall be mailed and postmarked on or before the date and time set for receipt of Proposals, and it shall be so worded as not to reveal the amount of the original Proposal. No Proposal may be withdrawn after the time scheduled for opening of Proposals, unless the time specified in paragraph AWARD OF CONTRACT of these Instructions to Bidders shall have elapsed.

#### **BID SECURITY**

Proposals shall be accompanied by cash, a certified check, or cashier's check drawn on a bank in good standing, or a Bid Bond issued by a Surety authorized to issue such bonds in the state where the work is located, in an amount not less than 5 percent of the total amount of the Proposal submitted. This bid security shall be given as a guarantee that the Bidder will not withdraw the Proposal for a period of thirty (30) days after bid opening, and that if awarded the Contract, the successful Bidder will execute the attached Contract and furnish a properly executed Performance Bond and Payment Bond in the full amount of the Contract amount within the time specified.

The Attorney-in-Fact who executes this bond in behalf of the Surety must attach a notarized copy of power-ofattorney as evidence of authority to bind the Surety on the date of execution of the bond.

If the Bidder elects to furnish a Bid Bond, the Bid Bond form bound herewith shall be used, or one conforming substantially thereto in form and content.

#### **RETURN OF BID SECURITY**

Within 15 days after the award of the Contract, the Owner will return the bid securities to all Bidders whose Proposals are not to be further considered in awarding the Contract. Retained bid securities will be held until the Contract has been finally executed, after which all bid securities, other than Bidders' bonds and any guarantees which have been forfeited, will be returned to the respective Bidders whose Proposals they accompanied.

#### TIME OF COMPLETION

The time of completion of the work to be performed under this Contract is the essence of the Contract. Delays and extensions of time may be allowed in accordance with the provisions stated in the General Conditions. The time allowed for the completion of the work is stated in the Proposal.

#### COMPLIANCE WITH LABOR STANDARDS AND PREVAILING WAGE RATES REQUIREMENTS

The work under this Contract is to be paid for by public funds and consequently is subject to State minimum prevailing wage rates. Prevailing wage rate data is included in Appendix A for reference. It is the responsibility of the Contractor to obtain the most current State wage rates, and compensate his forces accordingly.

The Owner does not guarantee that labor can be procured for the minimum wages shown on the referenced schedules. The rates of wages listed are minimum only, below which the Contractor cannot pay, and they do not constitute a representation that labor can be procured for the minimum wage listed.

#### WAGE RATE FORMS

Before payment is made by the Owner of any sums due under this Contract, the Owner must receive from the Contractor and each subcontractor or agent a copy of "Statement of Intent to Pay Prevailing Wages", approved by the Washington State Department of Labor and Industries, and Weekly Certified Payrolls from the Contractor and each subcontractor or agent.

Upon completion of this contract, the Owner must receive from the Contractor and each subcontractor a copy of "Affidavit of Wages Paid", and "Request for Release", approved by the State Department of Labor and Industries.

These affidavits will be required before any funds retained according to the provisions of RCW 60.28.010, are released to the Contractor. Forms may be obtained from the Department of Labor and Industries. Fees are required to accompany each form submitted to the Department of Labor and Industries. The Contractor is responsible for payment of these fees and shall make all applications directly the Department of Labor and Industries. These fees shall be incidental to all bid items of this Contract.

#### **PROPOSAL FORM**

CITY OF FERNDALE
P.O. Box 936 Ferndale, WA 98248
WWTP Biosolids Removal
o contact for additional information on this Proposal:

#### **BIDDER'S DECLARATION AND UNDERSTANDING**

The undersigned, hereinafter called the Bidder, declares that the Bidder has carefully examined the Contract Documents for the project, that the Bidder has personally inspected the site, that the Bidder has satisfied himself as to the quantities involved, including materials and equipment, and conditions of work involved, including the fact that the description of the quantities of work and materials, as included herein, is brief and is intended only to indicate the general nature of the work and is intended to only approximate the said quantities of biosolids with the detailed requirements of the Contract Documents, and that this Proposal is made according to the provisions and under the terms of the Contract Documents, which Documents are hereby made a part of this Proposal. The Bidder also declares that the Bidder has fully examined the Contents of Appendix B "The City of Ferndale Biosolids Land Application Plan" and Appendix D "Biosolids Permit Conditions."

The Bidder warrants that as a result of the Bidder's examination and investigation of all the aforesaid data that the Bidder can perform the work in a good and workmanlike manner and to the satisfaction of the Owner. The Owner assumes no responsibility for any representations made by any of its officers or agents during or prior to the execution of this Contract, unless (1) such representations are expressly stated in the Contract, and (2) the Contract expressly provides that the responsibility therefore is assumed by the Owner.

In submitting this Proposal, the Bidder acknowledges and accepts the Contractor's representations as more fully set forth in the Contract Documents.

#### **CONTRACT EXECUTION AND BONDS**

The Bidder agrees to deliver to the Owner the Performance Bond and Payment Bond required herein, and will, to the extent of this Proposal, furnish all machinery, tools, apparatus, and other means of construction and do the work and furnish all the materials necessary to complete all work as specified or indicated in the Contract Documents.

Bidder accepts the terms and conditions of the Contract Document.

#### **CERTIFICATES OF INSURANCE**

The Bidder further agrees to furnish the Owner, before commencing the work under this Contract, the certificates of insurance as specified in these Contract Documents.

#### START OF CONSTRUCTION AND CONTRACT COMPLETION TIME

The Bidder further agrees to complete the work, in all respects, as set forth below:

Descrip	tion	Completion Time
A.	Dredging Biosolids	All work shall be completed in all respects no later than June 9, 2023
B.	Biosolids Land Application by Injection	All work shall be completed in all respects no later than June 9, 2023
C.	Site Restoration	All work shall be completed in all respects no later than June 16, 2023

#### LIQUIDATED DAMAGES

In the event the Bidder is awarded the Contract and fails to complete the work within the time limit or extended time limit agreed upon, as more particularly set forth in the Contract Documents, liquidated damages shall be paid to the Owner at the daily rate indicated in the following schedule for work awarded under each schedule until the work shall have been satisfactorily completed as provided by the Contract Documents.

1.	Dredging Biosolids	Liquidated Damages Per Day - \$200
2.	Biosolids Land Application by Injection	Liquidated Damages Per Day - \$300
3.	Site Restoration	Liquidated Damages Per Day - \$100

Such amount shall be a reimbursement to the Owner for damages which the Owner will have sustained by reason of such delayed completion. Damages so liquidated are understood to include penalties issued by the Department of Ecology for non-compliance with administrative order requirements and the additional cost to the Owner for interference with operations, development completion, engineering supervision, observation of construction, interest charges and overhead.

# NAMING OF SUBCONTRACTORS REQUIRED

Bidder agrees to submit as part of this Proposal the names of Subcontractors whose subcontract amount is more than 10 percent of the Contract Price.

#### UNIT PRICE OR LUMP SUM BIDS

#### WWTP BIOSOLIDS REMOVAL

Bid Item No.	Quantity	Unit	Bid Item	Unit Price or Lump Sum	Extended Total Amount
1	1	LS	Mobilization/Demobilization		
2	80	DT	Removal of Biosolids from Lagoon		
3	80	DT	Land Application of Biosolids by Injection		

SUM OF EXTENDED TOTALS FOR PROJECT

#### LUMP SUM OR UNIT PRICE WORK

The Bidder further proposes to accept as full payment for the work proposed herein the amounts computed under the provisions of the Contract Documents and based on the following lump sum or unit price amounts, it being expressly understood that the unit prices are independent of the exact quantities involved. The Bidder agrees that the lump sum prices and the unit prices represent a true measure of the labor and materials required to perform the work, including all allowances for overhead and profit for each type and unit of work called for in these Contract Documents. The amounts shall be shown in both words and figures. In case of a discrepancy, the amount shown in words shall govern.

#### SURETY

If the Bidder is awarded a Contract on this Proposal, the Surety who provides the Performance Bond and Payment Bond will be

		whose address is
Street	City	State/Zip
BIDDER		
The name of the Bidder submitting this Proposal	is	
		doing business at
Street	City	State/Zip
which is the address to which all communication	s concerned with this Proposal a	and with the Contract shall be sent.
<u>IF SOLE PRO</u>	PRIETOR OR PARTNERSH	<u>IP</u>
IN WITNESS hereto the undersigned has set his	(its) hand this day of	, 20

Signature of Bidder

Title

# **IF CORPORATION**

IN WITNESS hereto the undersigne	d corporation h	as caused this instrument	to be executed and its seal affixed by
its duly authorized officers this	day of	, 20	

Name of Corporation

\_\_\_\_\_

Title

By

Attest

Secretary

## **ACKNOWLEDGMENT**

ACKNOWLEDGES PROPOSAL FORM as accurate copy.

Signature of Bidder

Title

Date

# **BIDDER'S CHECKLIST**

The bidder's attention is especially called to the following forms which must be completed in full as requested and submitted collectively as the Bid Proposal package.

#### 1. BID PROPOSAL FORM

# 2. <u>BID BOND</u>

The "Bid Bond" form is to be completed by the bidder and the surety company unless bid is accompanied by a certified check. The amount of this deposit shall not be less than five (5%) percent of the total amount of the Bid Proposal and may be shown in dollars or on a percentage basis.

## 3. <u>POWER-OF-ATTORNEY FOR SURETY'S AGENT TO EXECUTE BIDDER'S BOND</u> (NOTARIZED)

- 4. <u>STATEMENT OF INTENDED SURETY</u> Required if bid bond deposit is not a surety bond.
- 5. <u>NON-COLLUSION AFFIDAVIT</u>
- 6. <u>STATEMENT OF BIDDER'S QUALIFICATIONS</u>
  - 7. ACKNOWLEDGMENT OF ADDENDA (ON BID PROPOSAL)
- 8. ACKNOWLEDGMENT OF ADDENDA (ON EACH ADDENDUM)
  - 9. STATEMENT OF PROPOSED SUBCONTRACTORS

The following contract forms are to be executed and submitted within five (5) calendar days after award of Contract:

1. <u>CONTRACT</u>

This agreement is to be executed by the successful bidder in four counterparts.

2. <u>PERFORMANCE AND PAYMENT BOND</u>

To be executed by the successful bidder and the bidder's surety company.

3. <u>PROOF OF INSURANCE</u>

Copy of policy and appropriate endorsements.

4. <u>CONTRACTOR'S DECLARATION OF OPTION FOR MANAGEMENT OF</u> <u>RETAINED PERCENTAGE</u>

The Contractor shall complete the attached form.

#### **BID BOND**

#### CITY OF FERNDALE WWTP BIOSOLIDS REMOVAL

KNOW ALL MEN BY THEIR PRESENCE, that we, the undersigned

									a	s Princ	cipal,	and
							as Sure	ty, are	e here	by held	and fi	rmly
bound	unto	City	of	Ferndale,	Washington	as	OWNER	in	the	penal	sum	of
					, a sum not l	ess th	an five perce	ent (5%	%) of 1	the total	bid, fo	r the
payment assigns.	t of whic	ch, well	and to	ruly to be ma	de, we hereby j	ointly	and severall	y bind	ourse	lves, suc	cessors	, and

Signed, this \_\_\_\_\_\_, 20\_\_\_\_,

The condition of the above obligation is such that whereas the Principal has submitted to City of Ferndale, Washington, a certain Bid, attached hereto and hereby made a part hereof to enter into a contract in writing, for the construction of the City of Ferndale, WWTP Biosolids Removal.

#### NOW, THEREFORE,

- a. If said Bid shall be rejected, or
- 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 his 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 to any extension.

IN WITNESS THEREOF, 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.

Principal

Surety

By \_\_\_\_\_

#### IMPORTANT:

Surety companies executing Bonds must be authorized to transact business in the State of Washington.

# NONCOLLUSION AFFIDAVIT

#### CITY OF FERNDALE WWTP BIOSOLIDS REMOVAL

This Affidavit to be fully executed

STATE of)	
) ss.	
	, affiant,
the	
President, Secretary, Manager, Owner, or Representative of	
Name of Company or Corporation or Owner	
the person, corporation, or company who makes the accompanying Proposal, having first deposes and says:	been duly sworn,
That such Proposal is genuine, and not sham or collusive, nor made in the interest or behalf herein named, and that the Bidder has not directly or indirectly induced or solicited any othe a sham bid, or any other person, firm, or corporation to refrain from bidding, and that the any manner sought by collusion to secure for itself an advantage over any other Bidder.	of any person not r Bidder to put in Bidder has not in
Signature of: President, Secretary,	
Manager, Owner, or Representative	2
Subscribed and sworn to before me this day of, 20	
Signature of Notary Public in and for	
the County of	
State of	
Surety companies executing Bonds must be authorized to transact business in the State of W	ashington.

#### STATEMENT OF INTENDED SURETY

#### **CITY OF FERNDALE**

#### WWTP BIOSOLIDS REMOVAL

(Required if Bid Bond is NOT a Surety Bond)

Furnish with your sealed bid a written statement prepared and signed by your intended sureties, or surety company, to the effect that:

(Name of Surety)

100% of the Bid Proposal in the event

(Bidder's Name)

will promptly provide a surety bond in the amount of

is awarded the project.

This statement, if required, must be included in your sealed Bid Proposal for your Bid Proposal to be considered.

(Name of Bidder)

By:\_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

#### STATEMENT OF BIDDER'S QUALIFICATIONS

## **CITY OF FERNDALE**

#### WWTP BIOSOLIDS REMOVAL

Each bidder submitting a Proposal Form on work included in these specifications shall prepare and submit, as part of the Proposal, the data requested in the following schedule:

1.	Name of Bidder:
2.	Business Address:
3.	Telephone Number:
4.	How many years has said bidder been engaged in the contracting business under the present firm name?
5.	Contracts now in hand (gross amount): \$
6.	General character of work performed by said company:
7.	List of more important and similar biosolids removal projects executed by said company, including approximate costs, dates of execution and references with telephone numbers (submit additional sheet if necessary):
8.	List of company's major equipment:
9.	Bank references and telephone numbers:
10.	Washington State Contractor's License Number:
11.	Amount Bondable: \$
12:	Bonding Company:
	Name of Bidder:
	By:
	Title:
	Date:

## STATEMENT OF PROPOSED SUBCONTRACTORS

# **CITY OF FERNDALE**

#### WWTP BIOSOLIDS REMOVAL

Subcontractor's Name And Address		Description of Work
		Biosolids Dredging
	-	
		Biosolids Injection
	-	
		Mechanical/Electrical
	-	
		Other
	-	
	-	
	-	

PART 2

**Contract Forms** 

#### **NOTICE OF AWARD**

#### **CITY OF FERNDALE**

#### WWTP BIOSOLIDS REMOVAL

То:

------

PROJECT DESCRIPTION:

The OWNER has considered the Bid submitted by you for the above-described work in response to its Notice Inviting Sealed Proposals dated \_\_\_\_\_\_, 20\_\_\_\_, and Information for Bidders.

You are hereby notified that your Bid has been accepted for the City of Ferndale, WWTP Biosolids Removal Project in the amount of \$\_\_\_\_\_.

You are required by the Instruction to Bidders to execute the Contract and furnish the required Contractor's Performance and Payment Bond within four (4) calendar days from the date of this Notice to you.

If you fail to execute said Contract and to furnish said Bonds within four (4) days from the date of this Notice, said OWNER will be entitled to consider all your rights arising out of the OWNER'S acceptance of your bid as abandoned and as a forfeiture of your Bid Bond. The OWNER will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the OWNER.

Dated this \_\_\_\_\_\_, 20\_\_\_\_.

City of Ferndale

By:

Title:

# NOTICE TO PROCEED

#### CITY OF FERNDALE

#### WWTP BIOSOLIDS REMOVAL

	Date:
То:	
Re:	Project No.
You are hereby notified to commence WORK in act or before, 20, and you at consecutive calendar days thereafter. The	cordance with the Contract dated 20, on re to complete the WORK within date of completion of all WORK is therefore
Sincerely,	
Signature	
Receipt of this NOTICE TO PROCEED is 1 , 20	hereby acknowledged this, the day of
CONTRACTOR:	
BY:	
TITLE:	
Please sign and return one copy of this Notice to Pro	oceed Acknowledgment to:

#### CONTRACT

#### **CITY OF FERNDALE**

#### WWTP BIOSOLIDS REMOVAL

This Contract, made and entered into this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by and between the City of Ferndale, Washington, a municipal corporation, hereinafter called the "Owner", and

of

hereinafter called the "Contractor";

WITNESSETH:

The Contractor, in consideration of the sum to be paid the Contractor by the Owner and of the covenants and agreements herein contained, hereby agrees at the Contractor's own proper cost and expense to do all the work and furnish all the materials, tools, labor, and all appliances, machinery, and appurtenances and all necessary measures for the removal and land application by injection of biosolids in the Biosolids Storage Basin to the extent of the Proposal made by the Contractor.

The BIDDING REQUIREMENTS, including the signed copy of the PROPOSAL FORM, the CONTRACT FORMS, the GENERAL CONDITIONS OF THE CONTRACT, the SPECIAL PROVISIONS, entitled "WWTP Biosolids Removal" dated March 2023, are hereby referred to and by reference made a part of this Contract as fully and completely as if the same were fully set forth herein and are mutually cooperative therewith.

In consideration of the performance of the work as set forth in these Contract Documents, the Owner agrees to pay to the Contractor the amount bid in the Proposal as adjusted in accordance with the Contract Documents, or as otherwise herein provided, and to make such payments in the manner and at the times provided in the Contract Documents.

The Contractor agrees to complete the work within the time specified herein and to accept as full payment hereunder the amounts computed as determined by the Contract Documents and based on the said Proposal.

Option to Extend the Contract: Contractor agrees and covenants to renew the Contract, at the sole option of the City. For each renewal, the bid amounts shall be escalated by the published Consumer Price Index for the preceding year.

The total amount for this Contract is

\_\_\_\_\_ Dollars and \_\_\_\_\_ Cents \$\_\_\_\_\_

Payment will be made as stated in the GENERAL CONDITIONS of this Contract Document.

It is agreed that the Contract, based upon the Proposal, shall be fully complete by \_\_\_\_\_\_, 20

In the event that the Contractor shall fail to complete the work within the time limit or the extended time limit agreed upon, as more particularly set forth in the Contract Documents, liquidated damages shall be paid at the

rate of \$400 per day for Item 1 work (Biosolids Land Application by Injection), \$200 per day for Item 2 work (Dredging Biosolids), and \$200 per day for Item 3 work (Site Restoration). Sundays and legal holidays shall be excluded in determining days in default.

IN WITNESS WHEREOF, we, the parties hereto, each herewith subscribe the same this \_\_\_\_\_ day of , 20 .

CONTRACTOR

CITY OF FERNDALE

President/Partner/Owner

Title

Secretary

ATTEST:

City Clerk

d/b/a

Firm Name

Individual \_\_\_\_\_ Partnership \_\_\_\_\_ Corporation \_\_\_\_\_ A \_\_\_\_Corporation State of Incorporation

Approved as to Form

City Attorney

ATTENTION:

If business is a CORPORATION, name of the corporation should be listed in full and both President and Secretary must sign the contract, OR if one signature is permitted by corporation by-laws, a copy of the by-laws shall be furnished to the City and made a part of the Contract Document.

If business is a PARTNERSHIP, full name of each partner should be listed followed by d/b/a (doing business as) and firm or trade name; any one partner may sign the contract.

If business is an INDIVIDUAL PROPRIETORSHIP, the name of the owner should appear followed by d/b/a and name of the company.

#### PERFORMANCE AND PAYMENT BOND

#### CITY OF FERNDALE WWTP BIOSOLIDS REMOVAL

#### KNOW ALL MEN BY THESE PRESENTS, THAT

(Name and Address or Legal Designation of Contractor)

as Principal, hereinafter called "Principal" and

(Legal Designation and Address of Surety)

authorized to do business of surety in State of Washington, as Surety, hereinafter called "Surety" are held and firmly bound unto the City of Ferndale, Washington, as Obligee, hereinafter called "Owner" for the use and benefit of claimants as hereinafter defined in the amount of \_\_\_\_\_\_,

amount no less than one hundred percent (100%) of the contract amount, for the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has, by written agreement dated \_\_\_\_\_\_, entered into contract with Owner for WWTP Biosolids Removal, which contract is attached hereto and by reference made a part hereof, and is hereinafter referred to as the "Contract".

NOW, THEREFORE, if the Principal as contractor in the Contract shall faithfully perform each and all of the conditions of the Contract to be performed by him in the manner and within the time therein set forth, or within such extensions of time as may be granted under said contract, and shall pay all laborers, mechanics, sub-contractors and material men, and all persons who shall supply said principal or sub-contractors with the provisions and supplies for the carrying on of said work, and shall hold OWNER harmless from any loss or damage occasioned to any person or property by reason of any carelessness or negligence on the part of said principal, or any sub-contractor in the performance of said work, and shall indemnify and hold OWNER harmless from any damage or expense by reason of failure of performance as specified in said contract or from defects appearing or developing in the material or workmanship provided or performed under said contract within a period of one year after its acceptance thereof by OWNER, then and in that event this obligation shall be void, but otherwise it shall be and remain in full force and effect.

THE SURETY, for value received, hereby stipulates and agrees that no prepayment or delay in payment and no change, extension, addition or alteration of any provision of the Contract or in the plans, profiles, detailed drawings, specifications, and no forbearance on the part of the Owner shall operate to relieve Surety from liability on this bond and consent thereto without notice to or consent by Surety is hereby given, and the Surety hereby waives provisions of any law relating thereto.

THIS BOND, is executed for the purpose of complying with the laws of the State of Washington as contained in RCW 39.08.010, and all acts amendatory thereof and no right of action shall accrue on this bond to or for the use of any person or corporation other than the Owner named herein or the heirs, executors, administrators or successors of Owner.

#### IN THE PRESENCE OF:

 Principal	(Seal)
 Title	
Surety	(Seal)
Title	Attorney-in-Fact

#### CONTRACTOR'S DECLARATION OF OPTION FOR MANAGEMENT OF STATUTORY RETAINED PERCENTAGE

#### **CITY OF FERNDALE**

#### WWTP BIOSOLIDS REMOVAL

Pursuant to Chapter 60.28 RCW, you may choose how your retainage under this contract will be held and invested. Please complete and sign this form indicating your preference. If you fail to do so, the City of Ferndale (City) will hold your retainage as described in "Current Expense", option 1 below.

- 1. <u>Current Expense</u>: The City will retain your money in its Current Expense Fund Account until thirty days following final acceptance of the improvement or work as completed. You will not receive interest earned on this money.
- 2. <u>Interest Bearing Account</u>: The City will deposit retainage checks in an interest-bearing account in a bank, mutual savings bank, or savings and loan association, not subject to withdrawal until after the final acceptance of the improvement or work as completed or until agreed to by both parties. Interest on the account will be paid to you.

# **BONDS AND SECURITIES ACCEPTABLE BY THE CITY OF FERNDALE:**

- 1. Bills, certificates, notes or bonds of the United States.
- 2. Other obligations of the United States or its agencies.
- 3. Indebtedness of the Federal national Mortgage Association.
- 4. Time Deposits in commercial banks.

Designate below the type of investment selected:

3. <u>Bond-in-Lieu</u>: With the consent of the City, the contractor may submit a bond for all or any portion of the amount of funds retained by the City in a form acceptable to the City and from a bonding company meeting standards established by the City, if any. Unless otherwise indicated, the contractor elects to submit a bond for the entire 5% retainage amount. Such bond and any proceeds there from shall be made subject to all claims and liens and in the same manner and priority as set forth for retained percentages in Chapter 60.28 RCW. Whenever the City accepts a bond-in-lieu of retained funds from a contractor, the contractor shall accept like bonds from any subcontractors or suppliers from which the contractor or supplier, to the subcontractor or supplier, within thirty days of the contractor's receipt of the retained funds from the City.

Retainage is normally released 30 - 45 days after final acceptance of work by the City, or following receipt Employment Security / Department of Revenue clearance, whichever takes longer.

#### (Signature)

Date

Title: \_\_\_\_\_

PART 3

# **General Conditions**

# **TABLE OF CONTENTS**

# **GENERAL CONDITIONS**

PART 1	DEFINITIONS AND ABBREVIATIONS	
1-1 1-2 1-3	Definitions Terms Abbreviations	1-1 1-5 1-5
PART 2	BIDDING REQUIREMENTS AND CONDITIONS	
2-1 2-2 2-3 2-4 2-5 2-6	Eligibility of Contractors Existing Conditions and Examination of Contract Documents Estimates of Quantities Disqualification of Bidders Addenda Interpretation of Plans and Other Contract Documents	2-1 2-1 2-1 2-2 2-2
PART 3	AWARD AND EXECUTION OF CONTRACT	
3-1 3-2 3-3 3-4 3-5	Award Execution of Contract Bonds Insurance Requirements Failure to Execute Contract	3-1 3-1 3-2 3-2 3-2
PART 4	SCOPE OF WORK	
4-1 4-2 4-3 4-4 4-5 4-6 4-7 4-8 4-9 4-10 4-11 PART 5	Intent of Plans and Specifications Performance of Work Addenda, Revisions, and Supplementary Drawings Changes in the Work Extra Work Change Order Claims for Extra Work Obstructions Existing Utilities Plans and Specifications Furnished by the Owner Final Cleanup CONTROL OF WORK	4-1 4-1 4-1 4-2 4-2 4-2 4-2 4-3 4-3
5-1 5-2	Work Schedule Authority of the Engineer	5-1

Authority of the Whatcom County Health Department	5-1
Coordination and Interpretation of Plans and Specifications	5-1
Errors or Discrepancies Noted by Contractor	5-2
Supervision and Superintendence	5-2
Standards, Codes, Samples, and Tests	5-3
	Authority of the Whatcom County Health Department Coordination and Interpretation of Plans and Specifications Errors or Discrepancies Noted by Contractor Supervision and Superintendence Standards, Codes, Samples, and Tests

General Conditions Table of Contents - 1

5-8	Order of Work	
5-9	Observation of Work by Engineer	
5-10	Cooperation With Other Work	5-5

# PART 6 PROSECUTION AND PROGRESS

6-1	Prosecution of Work	6-1
6-2	Subcontracting	6-1
6-3	Assignment	6-1
6-4	Contractor's Construction Schedule	6-1
6-5	Time for Completion and Liquidated Damages	6-1
6-6	Extension of Time	6-2
6-7	Not used	6-2
6-8	Not used	6-2
6-9	Methods and Equipment	
6-10	Date of Actual Completion	6-3
6-11	Final Acceptance	6-3
6-12	Protection of Work	
6-13	Contractor's Utilities	

# PART 7 LEGAL RELATIONS AND RESPONSIBILITY

7-1	Observing Laws and Ordinances
7-2	Permits and Licenses
7-3	Not used
7-4	Public Convenience and Safety
7-5	Responsibility for Loss, Damage, or Injuries
7-6	Contractor's Responsibility for the Work
7-7	Preservation of Property
7-8	Safety
7-9	Personal Liability
7-10	Indemnity
7-11	Alien Labor
7-12	Wages, Hours and Employment
7-13	No Extra Compensation
7-14	Not used
7-15	Not used
7-16	Not used
7-17	Termination of Contract by Owner for Default
7-18	Right of Owner to Do Work
7-19	Contractor's Right to Stop Work or Terminate Contract7-5
7-20	Owner's Right to Terminate for Convenience
7-21	Notice and Service Thereof
7-22	Partial Invalidity7-6
7-23	Not used
7-24	Payment for Labor and Material7-6
7-25	Work During Disputes and Litigation
7-26	Not used
7-27	Waiver of Rights
7-28	Taxes
7-29	Not used

General Conditions Table of Contents - 2

# PART 8 CONTRACTOR'S INSURANCE

8-1	General	.8-1
8-2	Industrial Accident or Workmen's Compensation Insurance	.8-1
8-3	Commercial General Liability Insurance	.8-1
8-4	Comprehensive Automobile Liability Insurance	.8-1

# PART 9 PAYMENT TO CONTRACTOR

9-1	General	9-1
9-2	Scope of Payment	9-1
9-3	Partial Payment	9-1
9-4	Advances on Materials	9-2
9-5	Payment for Changes in the Work	9-2
9-5.1	Work Directive	9-3
9-5.2	Deleted or Terminated Work	9-3
9-5.3	Increased or Decreased Quantities	9-4
9-5.4	Equitable Adjustment	9-5
9-6	Payment of Items in Proposal	9-6
9-7	Time of Partial Payments	9-6
9-8	Final Estimate and Payment	9-6
9-9	Owner's Right to Withhold Certain Amounts and Make Application	9-6

#### PART 10 DISPUTE RESOLUTION

#### GENERAL CONDITIONS - PART 1 DEFINITIONS AND ABBREVIATIONS

#### **1-1 DEFINITIONS**

Wherever in these General Conditions, or in other Contract Documents, the following terms are used, the intent and meaning shall be interpreted as specified herein. Additional definitions and abbreviations may be specified in the Special Conditions.

ACT OF GOD: An earthquake, flood, cyclone, or other cataclysmic phenomenon of nature.

ADDENDUM: Any written or graphic modifications or interpretations of the contract documents written by the Engineer.

APPROVAL, APPROVE(D): Any statement in these Specifications or the Standard Specifications stating "approve," "approved" or "approval" by the Engineer, means reviewed by the Engineer.

AWARD: The formal acceptance of the Proposal by the Owner.

BID BOND: The form of security approved by the Owner, and furnished by the Contractor, guaranteeing that he will enter into a contract in accordance with the contract documents if his proposal is accepted.

BIDDER: Any individual, firm, co-partnership, joint venture, corporation, or combination thereof formally submitting a proposal for the work contemplated, or any portion thereof, acting directly or through an authorized representative.

CALENDAR DAY: Every day shown on the calendar.

CHANGE ORDER: A written order to the Contractor authorizing an addition, deletion or revision of the work within the general scope of the Contract, or an adjustment in the contract price or time.

CONTRACT: The written formal contract executed between the Owner and the Contractor covering the performance of the work.

CONTRACTOR: The individual, partnership, corporation, joint venture, or other combination thereof who has entered into the contract with the Owner for the performance of the work. The term "Contractor" means the Contractor or his authorized representative.

CONTRACT DOCUMENTS: The Contract, Addenda, Instructions to Bidders, Contractor's Proposal, all bonds, General Conditions, Special Provisions, Plans, change orders, field orders and all other modifications of such documents entered into in accordance with the Contract.

CONTRACT PRICE (AMOUNT): The total amount payable to the Contractor for the work, and it shall include all sales, use and other consumer taxes related to the work.

CONTRACT TIME: The number of calendar days for completion of the Work, including authorized time extensions as established by acceptance of the project. A contract time for substantial completion shall also be established as the number of calendar days for completion of the work as defined for substantial completion. In case a calendar date of completion is specified in the proposal
in lieu of the number of calendar days, the Work shall be completed by that date. The Contract Time shall be computed by excluding the first and including the last day; and if the last day be a Saturday or Sunday or a legal holiday, that shall be excluded.

DAYS: Unless otherwise designated, days will be understood to mean calendar days.

ENGINEER: The firm or person and his properly authorized assistants, designated as such by the Owner and shall be deemed to include the design engineer who has prepared Contract Documents for the Work.

EQUIPMENT: (Construction) - All machinery and equipment, together with the necessary supplies for up-keep and maintenance, and also tools and apparatus necessary for the proper construction and acceptable completion of work. (Installed) - All material or articles used in equipping a facility as furnishing or apparatus to fulfill a functional design.

EXTRA WORK: An item of work not provided for in the Contract as awarded but found essential by the Engineer to the satisfactory completion of the Contract within its intended scope.

FIELD ORDER: A written order to the Contractor changing the work but not affecting the contract price or time.

INCLEMENT WEATHER: Any weather conditions so extraordinary that previous climatic conditions in the locality of the work afford no reasonable warning of them.

INSPECTOR: The authorized representative of the Engineer or Owner assigned to observe the work or materials therefor.

LABORATORY: The established materials testing laboratory of the Owner's Engineering Department, or other laboratories acceptable to or authorized by the Engineer to test materials and work involved in the Contract.

MAJOR BID ITEM: Any bid item whose unit bid item price extension is 5 percent or more of the total Contract Price.

MATERIALS: Material incorporated in the project, and equipment and other material consumed in the performance of the Work.

NOTICE INVITING SEALED PROPOSALS: The public announcement inviting bids for the performance of the Work.

NOTICE OF AWARD: A letter from the Owner advising a bidder that his Proposal has been accepted.

NOTICE TO PROCEED: A written directive issued by the Owner to the Contractor fixing the date on which the Contractor shall commence to perform his obligation under the Contract Documents.

OWNER: The individual, company, municipality or other legal entity that has contracted for the performance of the Work or for whom the Work is being performed.

OWNER'S REPRESENTATIVE OR OWNER'S AGENT: The authorized representative of the Owner, which may be an individual or a firm, the Engineer, or his assistants assigned to the Work, the

Project, or any part thereof during the performance of the Work by the Contractor and until final acceptance.

PLANS, DRAWINGS: All drawings or reproductions thereof pertaining to details of the Work and which are made a part of the Contract Documents.

PRODUCT DATA: Complete catalog data for the manufactured items of equipment and all component parts, including specific performance data, material descriptions and source, rating, capacity, working pressure, material gauge or thickness, brand name, catalog numbers, and other necessary information.

PROJECT: The total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

PROPOSAL: The offer of a bidder, on the prescribed form, to perform the work contemplated and which is required to be signed by the bidder.

PROPOSAL FORM: The approved form on which the Owner requires bids to be prepared and submitted for the Work.

REFERENCED DOCUMENTS: Bulletins, Standards, Rules, Methods of Analysis or Test, Codes and Specifications of public or private agencies, Engineering Societies, or Industrial Associations. Reference shall be to the latest edition thereof, including Amendments, which are in effect and published at the time the Notice Inviting Sealed Proposals is issued, unless a specific edition is identified, in which case reference shall be to such specific edition.

RESIDENT PROJECT REPRESENTATIVE: The authorized representative of the Owner and Engineer assigned to observe the work or materials therefore.

REVIEW: To evaluate by the Engineer and to take one of the following actions: (1) no exception taken, (2) require corrective action, (3) reject, (4) require revisions and resubmittals, and/or (5) require submittal(s) of specified item(s).

RIGHT-OF-WAY: The area provided by the Owner for use in constructing the work covered by the Contract, including appurtenances thereto. The right-of-way so designated may be either temporary or permanent.

SERVICE CONNECTION: All or any portion of a pipeline including sewer house laterals, conduit, wire, cable or duct, including meters between a utility distribution line and an individual customer or customers when served by a single connection.

SHOP DRAWINGS: All diagrams, drawings, illustrations, brochures, schedules, and all other data or submittals required by the contract to be furnished by the Contractor illustrating fabrication, installation, dimensions and other aspects of the work.

SPECIFICATIONS: The direction, requirements, explanations, terms and provisions pertaining to the various features of the work to be done, the manner and method of performance, and the manner and method of measurement and payment. The specifications include such directions, requirements and explanations as appear on the plans.

STANDARD PLANS: The Standard Plans for Road, Bridge and Municipal Construction (December 1993) prepared by the Washington Department of Transportation and the Washington State Chapter of the American Public Works Association

STANDARD SPECIFICATIONS: 1994 Standard Specifications for Road, Bridge, and Municipal Construction prepared by the Washington Department of Transportation and the Washington State Chapter of the American Public Works Association

SUBCONTRACTOR: An individual, partnership, corporation, joint venture, or other combination thereof who has a contract with the Contractor to perform any of the work at the site. Subcontractor also means an individual, partnership, corporation, joint venture, or other combination thereof who has a contract with another subcontractor to perform any of the work at the site.

SUBSTANTIAL COMPLETION: The Work has progressed to a point where, in the opinion of the Engineer as evidenced by the Engineer's written recommendation of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work can be utilized for the purposes for which it is intended.

SUPERINTENDENT: The Contractor's authorized representative in responsible charge of the Work.

SUPPLEMENTAL AGREEMENT: Written amendment to the Contract Documents executed by the Owner and the Contractor including contract change orders.

TITLE AND HEADINGS: The titles or headings of the section and subsections in the Contract Documents are intended for convenience of reference and shall not be considered as having bearing on their interpretation.

UTILITY: Public or private fixed improvement for the transportation of fluids, gases, power, signals, or communications and shall be understood to include tracks, overhead and underground wires, cables, pipelines, conduits, ducts, sewers or storm drains.

WEATHER DAY: A day on which inclement weather conditions prevent the completion of at least half of the work scheduled for that day.

WORK: Work shall be understood to mean the furnishing of all labor, materials, equipment and other incidentals necessary or convenient to the successful completion of the projects or the portion of the project involved and the carrying out of all duties and obligations imposed by the contract.

WORK DIRECTIVE: A written directive to Contractor issued on or after the effective date of the Agreement and signed by the Owner's agent and recommended by the Engineer, ordering an addition, deletion or revision in the Work, or responding to differing or unforeseen physical conditions under which the Work is to be performed, or to emergencies. A Work Directive may or may not change Contract Price or Contract Time, but is evidence that the parties expect that the change directed or documented by the Work Directive will be incorporated in a subsequently issued Change Order following negotiations of the parties as to its effect, if any, on the Contract Price or Contract Time.

WRITTEN NOTICE: A written communication delivered in person to the individual or to a member of a firm or to an officer of the corporation for whom it is intended, or if delivered or sent by mail to the last business address known to the one who gave the notice. It shall be the duty of each party to advise the other parties to the Contract as to any change in business address until the completion of the Contract.

# 1-2 TERMS

Wherever the terms "required," "permitted," "designated," "prescribed," or terms of like import are used, it shall be understood that the requirements, permission, designations, or prescription of the Owner's Representative is intended. Similarly, the terms "acceptable," "satisfactory," or "equal," or terms of like import shall mean acceptable to or satisfactory to the Owner's Representative, unless otherwise expressly stated. The word "provide" shall be understood to mean furnish and install.

# **1-3** ABBREVIATIONS

Wherever the following abbreviations are used, they shall have the meaning indicated:

AAN	American Association of Nurserymen
AAR	Association of American Railroads
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AFBMA	Anti-Friction Bearing Manufacturer's Association, Inc.
AGA	American Gas Association
AGMA	American Gear Manufacturer's Association
AI	The Asphalt Institute
AIA	American Institute of Architects
AIEE	American Institute of Electrical Engineer
AISC	American Institute of Steel Construction
AISI	American Iron & Steel Institute
AITC	American Institute of Timber Construction
ANSI	American National Standards Institute (formerly USASI, USAS, ASA)
API	American Petroleum Institute
APWA	American Public Works Association
AREA	American Railway Engineering Association
ASA	American Standards Association (Now ANSI)
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating, and Air Conditioning Engineers
ASLA	American Association of Landscape Architects
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWG	American Wire Gauge
AWS	American Welding Society
AWWA	American Water Works Association
COE	Department of the Army Corps of Engineers
CRSI	Concrete Reinforcing Steel Institute
DIPRA	Ductile Iron Pipe Research Association
FHWA	Federal Highway Administration
FSS	Federal Specification and Standard
GSA	General Services Administration
IEEE	Institute of Electrical and Electronics Engineers
MSHA	Mine Safety and Health Act
NBFU	National Board of Fire Underwriters
NEC	National Electrical Code
NEMA	National Electrical Manufacturer's Association

National Fire Protection Association
National Sanitation Foundation
Occupational Safety and Health Administration
Portland Cement Association
Product Standard
Revised Code of Washington
Society of Automotive Engineers
Steel Structures Painting Council
Uniform Building Code, Pacific Coast Building Officials Conference of the International
Conference of Building Officials
Underwriter's Laboratories, Inc.
United States of American Standards Institute (Now ANSI)

## GENERAL CONDITIONS - PART 2 BIDDING REQUIREMENTS AND CONDITIONS

## 2-1 ELIGIBILITY OF CONTRACTORS

When calling for bids for contract for public work to be performed on behalf of the State or any political subdivision thereof, which will be paid for from public funds, no bid will be considered, which is submitted by a bidder who is not licensed to conduct business in the State of Washington and licensed to perform the class of work defined by the Contract Documents prior to the time of bid opening. No bid will be considered, which is submitted by a bidder who is not in good standing with federal, state, and local agencies responsible for enforcing regulations related to land application of wastes and wastewater, including biosolids (i.e., contractors and subcontractors with a significant violation within the five (5) years prior to the bid opening date are ineligible).

## 2-2 EXISTING CONDITIONS AND EXAMINATION OF CONTRACT DOCUMENTS

The bidder represents that he has carefully examined the Contract Documents and the site where the work is to be performed and that he has familiarized himself with all local conditions and federal, state, and local laws, ordinances, rules, and regulations that may affect, in any manner, the performance of the work. The submittal of a bid shall be conclusive evidence that the bidder has investigated and is satisfied as to the conditions to be encountered, including locality, uncertainty of weather and all other contingencies, and as to the character, quality, quantities, and scope of the work.

# 2-3 ESTIMATES OF QUANTITIES

It is expressly agreed that the quantities shown in the Bid Proposal are approximate only and are not to be deemed to be warranties of the actual quantities of work involved. The Owner does not expressly nor by implication agree that the actual amount of work will correspond therewith and reserves the right to increase or decrease the amount of any class or portion of the work as may be deemed necessary or expedient by the Engineer without extra or special compensation to the Contractor or be responsible for lost profits or losses of the Contractor as a result of inadequate unit prices, except as may be provided elsewhere in the contract documents.

## 2-4 DISQUALIFICATION OF BIDDERS

More than one Proposal for the same work from an individual, a firm partnership, a corporation, or an association under the same or different names, will not be accepted. Reasonable grounds for believing that any bidder is interested in more than one Proposal for the same work will cause the rejection of all Proposals for the work in which such a bidder is interested. A person, partnership, or corporation submitting a sub-proposal to a bidder, or who has quoted prices on material to a bidder, is not thereby disqualified from submitting a sub-proposal or quoting prices to other bidders. Any or all Proposals will be rejected if there is reason for believing that collusion exists among any of the bidders.

## 2-5 ADDENDA

Any Addenda issued during the time of bidding, forming a part of the documents issued to the bidder for the preparation of his bid, shall be covered in the bid and shall be made a part of the Contract.

## 2-6 INTERPRETATION OF SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS

If any person or entity contemplating submitting a bid for the proposed contract is in doubt as to the true meaning of any part of the specifications, or other contract documents, or finds discrepancies, or omissions from the plans and specifications or other contract documents, he may submit to the Engineer a written request for an interpretation or correction thereof. The person submitting the request will be responsible for its prompt delivery. An interpretation or correction of the contract documents will be made only by Addendum duly issued by the Engineer. A copy of such Addendum will be mailed or delivered to each person or entity that has received a set of such documents. The Owner and the Engineer will not be responsible for any other explanation or interpretation of the documents.

## GENERAL CONDITIONS - PART 3 AWARD AND EXECUTION OF CONTRACT

## 3-1 AWARD

The award of the contract, if it be awarded, will be to the lowest responsible responsive bidder complying with the instructions contained in the these Contract Documents and will be based on the Bid Proposal Form with the lowest TOTAL CONTRACT AMOUNT. The Owner, however, reserves the right to reject any and all bids, and to waive any informality in bids received. If, in the judgment of the Owner, a bid is unbalanced or if the bidder is not responsible, it shall be considered sufficient grounds for rejection of the entire bid.

A Notice of Award will be sent to the successful bidder by certified mail.

The Owner shall have the period of time set forth in the Information for Bidders and Proposal after the opening of bids within which to accept or reject the bids. No bidder may withdraw his bid during said period. The proposal guarantee of the second and third lowest responsible bidders may be retained by the Owner until the contract has been finally executed and the performance bonds and certificates of insurance and endorsements have been provided at which time said security will be returned. The proposal guarantee required of all other unsuccessful bidders will be returned as set forth in the Information for Bidders.

Before award of the contract, each bidder shall furnish upon request a recent statement of his financial condition and previous construction experience or such other evidence of his qualifications as may be requested by the Owner. If a bidder fails to furnish in a timely manner the information requested, it shall be considered sufficient grounds for rejection of such bidder's entire bid.

## **3-2 EXECUTION OF CONTRACT**

The form of formal contract, bonds, and other documents, which the successful bidder, as Contractor, will be required to execute is included as a part of the contract documents.

The contract shall be signed by the successful bidder and returned to the Owner, together with the bonds and certificates of insurance and endorsement, within four (4) working days or such additional time as may be allowed by the Owner from the date of the mailing of Notice of Award to the bidder.

### **3-3 BONDS**

Performance and Payment Bond. The successful bidder, simultaneously with the execution of the Contract, shall furnish a performance and payment bond in an amount equal to one hundred percent (100%) of the contract amount. Bonds shall be furnished by surety companies satisfactory to the Owner on the forms furnished as part of the Contract Documents. Surety companies, to be acceptable to the Owner, must be authorized to do business and have an agent for service of process in Washington.

Guarantee Bond. Prior to acceptance of the Work, the Contractor shall furnish a Guarantee Bond in an amount equal to ten (10) percent of the final contract price. The Guarantee Bond shall continue in full force and effect for the guarantee period.

## **3-4 INSURANCE REQUIREMENTS**

The successful bidder will be required to furnish the Owner proof of full compliance with all insurance requirements as specified in the section on CONTRACTOR'S INSURANCE.

# 3-5 FAILURE TO EXECUTE CONTRACT

Failure by a bidder to whom the contract is awarded to execute the contract or to furnish the required bonds or insurance certificates and endorsements shall be just cause for the annulment of the award and the forfeiture of the proposal guarantee.

A bidder who is awarded the contract and fails to execute the contract or furnish the required bonds or insurance certificates and endorsements shall be liable to the Owner for all damages resulting therefrom, including reasonable attorney's fees. The proposal guarantee forfeited shall not be a limitation thereon.

## GENERAL CONDITIONS - PART 4 SCOPE OF WORK

### 4-1 INTENT OF PLANS AND SPECIFICATIONS

The intent of the Specifications is to prescribe a complete work or improvement, which the Contractor shall perform in a manner acceptable to the Engineer and in full compliance with the terms of the Contract. The Contractor shall provide the Owner with a complete and operable work or improvement, even though the Specifications may not specifically call out all items or items of work required of the Contractor to complete his tasks, incidental appurtenances, materials, and the like, and without additional compensations.

The Information for Bidders, General Conditions, Special Provisions, Specification Divisions, Plans, and all supplementary documents are intended to be complete and complementary and to prescribe a complete work. If any omissions are made of information necessary to carry out the full intent and meaning of the Contract Documents, the Contractor shall immediately call the matter to the attention of the Engineer for furnishing of detailed instructions.

Anything mentioned in these Specifications and not indicated on the Plans, or anything indicated on the Plans and not mentioned in these Specifications, shall be in the same force and effect as if indicated or mentioned in both.

## 4-2 **PERFORMANCE OF WORK**

Unless otherwise specified in the Special Conditions, the Contractor shall furnish all materials, labor, permits, tools, equipment, water, light, power, transportation, superintendence, temporary construction of every nature, and incidentals, including, but not limited to noise, dust and traffic control measures, and to perform all work involved in executing the Contract in a satisfactory and workmanlike manner within the time specified.

# 4-3 ADDENDA, REVISIONS, AND SUPPLEMENTARY DRAWINGS

The Work shall conform to such other provisions and drawings relating thereto as may be furnished by the Owner prior to the opening of Proposals as part of the addenda and to such drawings, explanation of details, or minor modifications as may be furnished from time to time during construction, including such minor modifications as the Owner may consider necessary during the prosecution of the Work.

### 4-4 CHANGES IN THE WORK

The Owner, without invalidating the Contract and without notifications of Sureties, may order extra work or may make changes by altering or deleting any portion of the work as specified herein or as deemed necessary or desirable by the Owner. All such work shall be executed under the conditions of the original Contract except that any claim for extension of time and additional costs caused thereby shall be adjusted at the time of ordering such extra work or change.

Upon demand of either the Contractor or the Owner, an equitable adjustment satisfactory to both parties shall be made in the basis of payment for extra work. The prices agreed upon and any agreed upon adjustment in Contract time shall be incorporated in the written order issued by the Owner, which shall be written so as to indicate acceptance on the part of the Contractor as evidenced by his

signature. In the event prices cannot be agreed upon, the Owner reserves the right to terminate the Contract as it applies to the items in question and make such arrangements as it may deem necessary to complete the work, or it may direct the Contractor to proceed with the items in question on a force account basis as provided hereinafter.

## 4-5 EXTRA WORK

Work will be classed as extra work when not provided for in the Contract as awarded but found essential by the Engineer and Owner to the satisfactory completion of the Contract within its intended scope.

## 4-6 CHANGE ORDER

Extra work and changes will be ordered in writing by the Owner by means of a Change Order in which the adjustments of Contract Price and Contract Time will be set forth. Change Orders shall be executed by the Owner, the Engineer, and the Contractor. The value of extra work and changes shall be determined and paid for in accordance with Part 9 of these General Conditions.

The Contractor shall do such extra work therefor upon receipt of an approved Change Order or other written order of the Owner or Work Directive, and in the absence of such Change Order or other written order of the Owner or Work Directive, the Contractor shall not be entitled to payment for such extra work.

## 4-7 CLAIMS FOR EXTRA WORK

If the Contractor claims that any instructions involve extra cost or additional time under this Contract, he shall give the Owner written notice thereof within seventy-two (72) hours after the receipt of such instructions, and in any event before proceeding to execute the work, except in emergency endangering life or property, and the procedure shall then be as provided for under Article 4-4, CHANGES IN THE WORK. No such claim shall be valid unless so made.

If the Contractor claims that defective Specifications involve extra work under this Contract, he shall give the Owner written notice thereof within seventy-two (72) hours after the occurrence of the cost and time associated with such extra work, and the procedures shall be as specified before under Article 4-4, CHANGES IN THE WORK. No such claim shall be valid unless so made.

### 4-8 **OBSTRUCTIONS**

Removal of obstructions is not believed to be necessary for completion of this work. The Contractor may remove and dispose, at the Contractor's cost, of any debris or other obstructions of any character necessary to accommodate the work.

In the event the Contract disturbs, disconnects, or damages any utilities, facilities, or improvements prior to obtaining approval of the owner of same, he shall immediately give to said owner notice of such disturbance, disconnection or damage, and the Contractor shall assume all responsibility in connection therewith. Any such utility or facility removed or otherwise disturbed shall be reconstructed as promptly as possible in its original or other authorized location in a condition at least as good as prior to such removal or disturbance, subject to the inspection of the owner of same.

### 4-9 EXISTING UTILITIES

The Engineer has endeavored to determine the existence of utilities at the site of the work from the records of the Owner and utilities. The service connections to these facilities are not shown, but the approximate positions of known main line utilities and facilities in the immediate vicinity of the work as taken from existing records are shown. The Owner and Engineer do not guarantee that all existing utilities and facilities are shown on the drawings or that they are shown in their actual position.

The Contractor, before commencing any excavation or other activity which may impact utilities, shall ascertain from records or otherwise, the existence, positions, and ownership of existing utilities and facilities. Should a discrepancy be found on the Plans, it shall not be construed to relieve the Contractor from his responsibility to protect any such utility or facility.

The Contractor shall repair or replace all utilities or facilities damaged or destroyed due to his operations, even in the event such damage or destruction occurs after backfilling or is not discovered until after completion of backfilling.

### 4-10 PLANS AND SPECIFICATIONS FURNISHED BY THE OWNER

The Owner will furnish to the Contractor free of charge, up to five (5) copies of specifications. Additional sets shall be provided by the Owner at cost of the Engineer's standard billing rate for labor of reproduction and the cost of reproduction itself.

#### 4-11 FINAL CLEANUP

Upon completion and before making application for final acceptance of the work, the Contractor shall clean all rights-of-way, streets, and all other grounds occupied by him in connection with the work including removal and disposal of all rubbish, excess materials, temporary structures, and equipment. All parts of the Work and ground occupied by him shall be left in a neat and presentable, well-finished condition.

## GENERAL CONDITIONS - PART 5 CONTROL OF WORK

#### 5-1 WORK SCHEDULE

The Contractor shall submit work schedules as specified in Article 6-4, CONTRACTOR'S CONSTRUCTION SCHEDULE AND COST BREAKDOWN. The Contractor shall assume the full responsibility for performing the work in an orderly procedure under the Contract.

### 5-2 AUTHORITY OF THE ENGINEER

The Engineer shall decide any and all questions which may arise as to the interpretation of the specifications. The Engineer shall have authority to disapprove or reject work performed coming to his attention which, in his opinion, is not in accordance with the contract documents. This authority on the part of the Engineer, whether exercised or not, shall not relieve the Contractor of its obligation to perform all work in strict accordance with the contract documents.

The Engineer shall be the Owner's representative during the construction period and shall observe the work on behalf of the Owner. The work will not be considered complete until reviewed by the Engineer and accepted by the Owner. The Contractor shall at all times carry out and fulfill the instructions and directions of the Engineer insofar as the work to be performed under the contract is concerned and, in the event the Contractor fails to carry out and fulfill the decisions of the Engineer, the Owner may refuse to make partial or final payments to the Contractor so long as the Contractor fails or refuses to carry out and fulfill such decisions of the Engineer.

All communication between the Owner and the Contractor shall be through the Engineer.

## 5-3 AUTHORITY OF THE WHATCOM COUNTY HEALTH DEPARTMENT

The Whatcom County Health Department Agent shall have full authority to give a Stop Work Order if the work is not carried out according to the intent of the Permit Conditions (Appendix D) and the Biosolids Land Application Plan (Appendix D). This authority on the part of the Whatcom County Health Department Agent, whether exercised or not, shall not relieve the Contractor of its obligation to perform all work in strict accordance with the contract documents.

### 5-4 COORDINATION AND INTERPRETATION OF SPECIFICATIONS

The Plans, Specifications, General Conditions, Special Provisions, Contract Change Orders, and all supplementary documents are essential parts of the Contract, and a requirement occurring in one is as binding as though occurring in all. They are intended to be coordinated and to describe and provide for a complete work.

Should it appear that the Work or any of the matters relative thereto are not sufficiently detailed or explained in the Contract Documents, the Contractor shall apply to the Engineer for such further explanations as may be necessary and shall conform to them as part of the Contract. In the event of any doubt or questions arising regarding the true meaning of the Contract Documents, reference shall be made to the Engineer whose decision thereon shall be final.

In the event of there being a conflict between one Contract Document and any of the other Contract Documents, the Document highest in precedence shall control and supersede the document which is

contrary to it. The order of precedence of the Contract Documents from the highest to the lowest in precedence shall be as follows:

FIRST:	Codes, laws and regulations
SECOND:	Supplemental Agreements, the last in time being the first in precedence.
THIRD:	The Contract
FOURTH:	Specification DIVISION 1
FIFTH:	Specifications (Subsequent DIVISIONS)
SIXTH:	Plans
SEVENTH:	General Conditions
EIGHTH:	Information for Bidders
NINTH:	The applicable sections of the 2002 Standard Specifications for Road,
	Bridge, and Municipal Construction prepared by the Washington
	Department of Transportation and the Washington State Chapter of the
	American Public Works Association as specifically listed.
TENTH:	Contractor's Proposal

#### 5-5 ERRORS OR DISCREPANCIES NOTED BY CONTRACTOR

It is the duty of the Contractor to promptly notify the Engineer in writing of any design, materials, or specified method that the Contractor believes may prove defective or insufficient. If the Contractor believes that a defect or insufficiency exists in design, materials, or specified method and fails to promptly notify the Engineer in writing of this belief, the Contractor waives any right to assert that defect or insufficiency in design, materials, or specified method at any later date in any legal or equitable proceeding against the Owner, or in any subsequent mediation or settlement conference between the Owner and the Contractor.

The Engineer, on receipt of any such notice, will promptly investigate the circumstances and give appropriate instructions to the Contractor. Until such instructions are given, any work done by the Contractor after he comes to the belief that a defect or insufficiency exists in materials, or specified method which is directly or indirectly affected by such alleged defect or insufficiency in design, materials, or specified method will be at his own risk and he shall bear all cost arising therefrom.

If the Contractor, either before commencing work or in the course of the work, finds any discrepancy between the specifications and the plans or between either of them and the physical conditions at the site of the work or finds any error or omission in any of the plans or in any survey, he shall promptly notify the Engineer of such discrepancy, error, or omission. If the Contractor observes that any plans or specifications are at variance with any applicable law, ordinance, regulation, order, or decree, he shall promptly notify the Engineer in writing of such conflict. The Engineer, on receipt of any such notice, will promptly investigate the circumstances and give appropriate instructions to the Contractor. Until such instructions are given, any work done by the Contractor after his discovery of such error, discrepancy, or conflict will be at his own risk and he shall bear all cost arising therefrom.

#### 5-6 SUPERVISION AND SUPERINTENDENCE

The Contractor shall supervise 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. The Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction, but the Contractor shall not be solely responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence, or procedure of construction which is indicated in and required by the Contract Documents except as otherwise provided in Article 5-4, ERRORS OR DISCREPANCIES NOTED BY CONTRACTOR.

The Contractor shall be responsible to see that the completed work complies with the Contract Documents.

The Contractor shall designate and keep on the work at all times during its progress a competent superintendent who shall not be replaced without written notice to the Engineer. The superintendent's home address and phone number shall be furnished to the Owner prior to beginning Work. The superintendent will be the Contractor's representative at the site and shall have authority to act on behalf of the Contractor. All communications given to the superintendent shall be as binding as if given to the Contractor. During periods when the work is suspended, the Contractor shall make appropriate arrangements for any emergency work, which may be required.

The Contractor shall submit with five (5) days of the Notice to Proceed, the name of the Contractor's superintendent, and the superintendent's list of projects for which he/she held the position of superintendent for a three (3) year period. The list shall include the type of construction, the cost of construction, and the name of the Owner(s) or Agency(ies) including telephone numbers of contact persons.

In addition, the superintendent shall have at least three (3) years of experience related to similar Work as described in the Contract documents.

The Engineer and/or the Owner may reject the request for superintendent if, in the opinion of the Engineer and/or the Owner, the superintendent is not qualified to perform the Work. No additional payment or compensation will be considered for the rejection and subsequent hiring of superintendent. Replacement superintendent for a previously approved superintendent shall meet the same qualifications as listed previously. Contractor shall submit information requested above to demonstrate that the replacement superintendent meets the qualifications listed previously.

Whenever the superintendent is not present on any particular part of the work where the Engineer may desire to inform the Contractor relative to interpretation of the plans and specifications or to disapproval or rejection of materials or work performed, the Engineer may so inform the foreman or other worker in charge of the particular part of the work in reference to which the information is given. Information so given shall be as binding as if given to the superintendent.

Whenever, in the opinion of the Engineer, any superintendent, foreman, or workman employed by the Contractor or his subcontractors is disrespectful, intemperate, disorderly, or otherwise objectionable, he shall, at the written request of the Engineer, be removed and not again employed on the work without the written consent of the Engineer.

### 5-7 STANDARDS, CODES, SAMPLES, AND TESTS

Whenever reference is made to a standard, code, specification, or test, and the designation representing the date of adoption or latest revision thereof is omitted, it shall mean the latest revision of such standard, code, specification, or test in effect on the day the Notice Inviting Sealed Proposals is dated.

Tests shall be made in accordance with commonly recognized procedures of technical organizations and such special procedures as may be prescribed elsewhere in the plans and specifications. The Contractor shall furnish without charge such samples for testing as may be required by the Engineer.

When tests of materials are required, such tests shall be made by a testing laboratory subject to review by the Engineer and at the expense of the Contractor. The Contractor shall afford such facilities as may be required for collecting and forwarding samples and shall hold the materials represented by the samples until tests have been made and the materials found equal to the requirements of the specifications or to reviewed samples. The Contractor in all cases shall furnish the required samples without charge. Upon completion of laboratory testing of materials as specified above, the results of the tests made therein shall be used as a basis for review in accordance with the specifications for the particular material. The Owner will retain all materials tested.

## 5-8 ORDER OF WORK

When required by the Contract Documents, the Contractor shall follow the sequence of operations as set forth therein.

Full compensation for conforming with such requirements will be considered as included in the prices paid for Contract items of work and no additional compensation will be allowed therefore.

## 5-9 OBSERVATION OF WORK BY ENGINEER

The Engineer or their representative is authorized to observe all work performed and all equipment furnished. Such observation may extend to all or part of the work. On the basis of its on-site observations, the Engineer will keep the Owner informed of the general progress of the work. The Engineer will not have control over or charge of and will not be responsible for any methods, techniques, sequences or procedures, or for safety precautions and safety programs in connection with the work, these remaining the sole responsibility of the Contractor. The Engineer will not be responsible for the Contractor's failure to carry out the work in accordance with the Contract Documents. The Engineer will not have control over or charge of and will not be responsible for any portion thereof shall be deemed acceptable by reason of the presence of the Engineer. While the Engineer will endeavor to point out to the Contractor any defective work which comes to its attention during these observations, the Engineer's failure to do so shall not constitute the basis of any claim, suit or cause of action by the Contractor or any other party against the Engineer or Owner and shall not excuse nonconforming or defective work by the Contractor.

Whenever the Contractor varies the normal period during which work or any portion of it is carried out on each day, he shall give timely notice to the Engineer so that the Engineer may, if he wishes, be present to observe the work in progress.

The observation, if any, by the Engineer of the work shall not relieve the Contractor of any of his obligations to fulfill the contract as prescribed. Defective work shall be made good and work performed, which is not in accordance with the Contract Documents may be rejected notwithstanding the fact that such work has been previously observed by the Engineer or that payment therefore has been included in an estimate for payment.

# 5-10 COOPERATION WITH OTHER WORK

The Contractor shall conduct his operations so as to interfere as little as possible with other work being performed on site. This includes: normal treatment plant operations and maintenance and truck deliveries.

## GENERAL CONDITIONS - PART 6 PROSECUTION AND PROGRESS

#### 6-1 **PROSECUTION OF WORK**

The work to be done under the contract by the Contractor shall not be commenced until the performance and payment bond have been executed by the Contractor and his surety and delivered to the Owner and until the Contractor has received written notice to proceed from the Owner.

Performance of the work to be done under the contract by the Contractor shall be commenced within five (5) days after receipt of written notice to proceed by the Contractor unless later commencement of the work is authorized by the Owner.

From the time of commencement of the work to the time of completion, the work shall be prosecuted as vigorously and as continuously as possible and always in accordance with a schedule which will insure completion within the specified time limit. There shall be no voluntary shutdown or slowing of operations without prior review by the Owner.

If the rate of progress being made is not such as will insure the completion of the work within the specified time limit, the Contractor shall provide additional equipment and workers and to take such other steps as may be necessary to insure completion as specified.

## 6-2 SUBCONTRACTING

If the Contractor shall subcontract any part of this contract, the Contractor shall be as fully responsible to the Owner for the acts and omissions of his subcontractor and of the persons either directly or indirectly employed by his subcontractor as he is for the acts and omissions of persons directly employed by himself. Nothing contained in the Contract documents shall create any contractual relationship between any subcontractor and the Owner. The Contractor shall bind every subcontractor to be bound by the terms of the Contract documents as applicable to his work.

#### 6-3 ASSIGNMENT

The performance of the contract may not be assigned, except upon the written consent of the Owner.

## 6-4 CONTRACTOR'S CONSTRUCTION SCHEDULE

Within five days after issuance of the Notice to Proceed, the Contractor shall deliver to the Owner a work schedule as required in the Special Provisions.

## 6-5 TIME FOR COMPLETION AND LIQUIDATED DAMAGES

The Contractor shall complete all or any designated portion of the work called for under the contract within the time periods set forth in the Special Provisions.

Failure of the Contractor to perform any covenant or condition contained in the contract documents within the time period specified shall constitute a material breach of this contract entitling the Owner to terminate the contract unless the Contractor applies for, and receives, an extension of time.

Failure of the Owner to insist upon the performance of any covenant or condition within the time period specified in the contract documents shall not constitute a waiver of the Contractor's duty to complete the performance within the designated periods unless the waiver is in writing.

The Owner's agreement to waive a specific time provision or to extend the time for performance shall not constitute a waiver of any other time provisions contained in the contract documents. Failure of the Contractor to complete performance promptly within the additional time authorized in the waiver or extension of time agreement shall constitute a material breach of this contract entitling the Owner to terminate.

It is agreed by the parties to the contract that in case the work is not completed in accordance with the foregoing, damage will be sustained by the Owner, and that it is and will be impracticable to determine the actual damage which the Owner will sustain in the event of and by reason of such delay, and it is therefore agreed that the Contractor will pay to the Owner the amount per day set forth in the Special Provisions for each and every calendar day beyond the time prescribed to complete the work or any designated portion of the work, as liquidated damages and not as a penalty, and the Contractor and his surety shall be liable for the total amount thereof. It is further agreed that said amount per day is a reasonable estimate of such damages, that said amount does in fact bear a reasonable relationship to the damage that would be sustained by the Owner, and the Contractor agrees to pay such liquidated damages as herein provided. Contractor agrees that the Owner may deduct the amount thereof from any money due or that may become due Contractor under the Contract, or if said amount is not sufficient, recover the total amount.

The Contractor shall not be deemed in breach of this contract nor shall liquidated damages be collected because of any delays in the completion of the work due to unforeseeable causes beyond the control and without the fault or negligence of the Contractor provided the Contractor requests an extension of time in accordance with the procedures set forth in this article and Article 6-6, EXTENSION OF TIME. Unforeseeable causes of delay beyond the control of the Contractor shall include Acts of God, acts of a public enemy, acts of government, or acts of the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and weather, or delays of subcontractors due to such causes, or delays caused by failure of the Owner or the facilities. Delays caused by actions or neglect of Contractor or his agents, servants, employees, officers, subcontractors, directors, or of any party contracting to perform part or all of the work or to supply any equipment or materials shall not be excusable delays. Excusable delays (those beyond Contractor's control) shall not entitle the Contractor to any additional compensations. The sole remedy of the Contractor shall be to seek an extension of time.

### 6-6 EXTENSION OF TIME

The time specified for completion of all of the work or any part of the work may be extended only by a written change order executed by the Owner or other written form executed by the Owner.

### 6-7 Not Used

6-8 Not Used

#### 6-9 METHODS AND EQUIPMENT

The methods and equipment adopted by the Contractor shall be such as will secure a satisfactory quality of work and will enable the Contractor to complete the work in the time agreed upon. The selection and use of these methods and equipment is the responsibility of the Contractor.

## 6-10 DATE OF ACTUAL COMPLETION

The date upon which the project will be considered as complete shall be that date upon which the work is finally accepted by the Owner.

### 6-11 FINAL ACCEPTANCE

After the Contractor has completed to the best of his knowledge all the work under this contract, including all of the Contractor's testing and cleanup, the Contractor shall then inform the Owner by written memorandum that the work has been completed. The Contractor shall then request a final inspection by the Owner. The Owner will make an inspection. If items are found by the Owner to be not in compliance with the contract requirements, the Owner will inform the Contractor of such items. After the Contractor has completed these items, the procedure shall then be the same as specified above for the Contractor's statement of completion and request for final inspection.

After all work under the Contract has been completed, as determined by the Owner, the Owner will make final acceptance.

## 6-12 **PROTECTION OF WORK**

The Contractor shall be responsible for the protection of the work until its completion and final acceptance, and he shall, at his own expense, replace damaged or lost material or repair damaged parts of the work, and the Contractor and his Sureties shall be liable therefore.

In addition, before and during any suspension of work, the Contractor shall protect and maintain the work from damage or deterioration. Suspension shall not relieve the Contractor from anything the contract requires.

Protection and maintenance of the work shall include, but is not limited to, maintenance of interim facilities, maintenance permanent or temporary drainages; the construction and maintenance of erosion control facilities; dust control; protection and maintenance of equipment and materials; and the erection of barricades, signs, lights and other traffic control measures needed for directing traffic through roadways or construction areas.

### 6-13 CONTRACTOR'S UTILITIES

The Contractor, at his expense, shall provide all water, electricity, power, heat, oil, gas and other utilities necessary to perform the work, unless otherwise stated in Division 1. Water will, hwoever, be available in limited quantities for clean up needs.

## GENERAL CONDITIONS - PART 7 LEGAL RELATIONS AND RESPONSIBILITY

#### 7-1 OBSERVING LAWS AND ORDINANCES

The Contractor shall keep himself fully informed of all existing and pending permits, licenses, laws, ordinances, and regulations, which, in any manner, affect those engaged or employed in the work or the materials used in the work or which in any way affect the conduct of the work or the materials used in the work or which in any way affect the conduct of all such orders and decrees of bodies or tribunals having any jurisdiction or authority over same. If any discrepancy or inconsistency is discovered in the plans, specifications, or contract for the work in relation to any such law, ordinance, regulation, order, or decree, he shall forthwith report the same to the Engineer in writing and cease operations on that part of the work until the Engineer has given him appropriate instruction as provided for in Article 5-10, ERRORS OR DISCREPANCIES NOTED BY CONTRACTOR.

The Contractor shall, at all times, observe and comply with and shall cause all his agents, employees, subcontractors, and suppliers to observe and comply with all such existing and future laws, ordinances, regulations, orders, and decrees, and shall hold harmless, indemnify, and defend the Owner, the Engineer, the Owner's representative, and their consultants, and each of their directors, officers, employees, and agents against any claims or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree by the Contractor, his employees, agents, subcontractors, or suppliers.

### 7-2 PERMITS AND LICENSES

The Contractor shall procure all permits and licenses not provided by the Owner, pay all charges and fees, and give all notices necessary and incidental to the due and lawful prosecution of the work. A listing of permits, licenses and other agreements secured by the Owner is provided in the Special Provisions.

### 7-3 Not Used

### 7-4 PUBLIC CONVENIENCE AND SAFETY

The Contractor shall so conduct his operations as to offer the least possible obstruction and inconvenience to the public, and he shall have under construction no greater length or amount of work than he can prosecute with due regard to the rights of the public.

The Contractor shall provide and maintain such fences, barriers, directional signs, lights, and flagmen as are necessary to give adequate warning to the public at all times of any dangerous conditions to be encountered as a result of the work and to give directions to the public.

### 7-5 RESPONSIBILITY FOR LOSS, DAMAGE, OR INJURIES

The Contractor shall be responsible for all claims, demands, or liability from any cause arising out of or resulting from or in connection with the performance of the work. The Owner, the Owner's Representative, the Engineer, and their consultants, and all officers, employees, and agents thereof, shall not be answerable or accountable in any manner for any loss or damage that may happen to the work or any part thereof; for any damage of the materials other things used loss or to any or or

employed in performing the work; for injury to or death of any person either workmen or the public; or for damage to property from any cause which might have been prevented by the Contractor or his workmen or his subcontractors or anyone employed by him. Such responsibility shall extend to claims, demands, or liability for loss, damage, or injuries occurring after completion of the work as well as during the progress of the work.

## 7-6 CONTRACTOR'S RESPONSIBILITY FOR THE WORK

In an emergency affecting the safety of life or property, including adjoining property, the Contractor, without special instruction or authorizations, is authorized to act at his discretion to prevent such threatened loss or injury.

## 7-7 PRESERVATION OF PROPERTY

The Contractor shall adopt every practical means and comply with all laws, ordinances, and regulations in order to minimize interferences to traffic, and inconveniences, discomfort and damage to the public, including the provision of adequate dust control measures. All obstructions to traffic shall be guarded.

The Contractor shall not trespass upon private property and shall be responsible for all injury or damage to persons or property, directly or indirectly, resulting from his operations in completing this work. He shall comply with the laws and regulations of the Owner, county, and state and federal governments, relating to the safety of persons and property, and will be held responsible and required to make good any injury or damage to persons or property caused by carelessness or neglect on the part of the Contractor or subcontractor(s), or any agent or employee of either during the progress of the work and until its final acceptance.

The Contractor shall exercise due care to avoid injury to existing improvements or facilities, utility facilities, adjacent property, and trees and shrubbery that are not to be removed.

The Contractor shall not infringe upon wetland areas at the site, whether identified or not, without the written approval of the Engineer. Infringement on wetlands will be the sole cause for stoppage of all work being conducted on or adjacent to the wetland area.

All trees, shrubbery, landscaping, pole lines, fences, signs, survey markers and monuments, buildings, and structures, conduits, pipelines under or above ground, sewer, storm drain and waterlines, fire hydrants, all highway or street facilities, and any other improvements or facilities within or adjacent to the work shall be protected from injury or damage, and the Contractor shall provide and install suitable safeguards to protect such objects from injury or damage. If such objects are injured or damaged by reason of the Contractor's operation, they shall be replaced or restored at the Contractor's expense to a condition as good as when the Contractor entered upon the work or as good as required by the specifications if any such objects are a part of the work being performed.

The fact that any such pipe or other underground facility is not shown on the plans shall not relieve the Contractor of his responsibility under this article.

### 7-8 SAFETY

In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for conditions of the job site, including safety of all persons and property

during performance of the work, and the Contractor shall fully comply with all state, federal, and other laws, rules, regulations, and orders relating to safety of the public and workers.

The right of the Engineer or the Owner's Representative to conduct construction review or observation of the Contractor's performance will not include review or observation of the adequacy of the Contractor's safety measures in, on, or near the construction site.

### 7-9 PERSONAL LIABILITY

The exercise of all responsibility, power and authority by the Engineer or his representative is undertaken solely to satisfy the Engineer's obligation to the Owner. It shall not give rise to any claim against nor impose liability on the Engineer or his representative in favor of the Contractor or third persons for any reason whatsoever, and the Contractor agrees that any remedy he has arising out of or in connection with the Engineer's performance hereunder, whether negligent or otherwise, is against the Owner and not the Engineer.

No director, officer, employee, or agent of the Owner, the Engineer, the Owner's Representative, or their consultants shall be personally responsible for any liability arising under or by virtue of the contract.

## 7-10 INDEMNITY

The Contractor shall indemnify, defend, and hold harmless the Engineer and the Owner, its elected officials, officers, employees, agents and representatives, from all claims, losses, suits, actions, legal or administrative proceedings, costs, attorneys' fees (including attorneys' fees in establishing indemnification of whatsoever nature), litigation costs, expenses, damages, penalties, fines, judgments, or decrees by reason of any death, injury or disability to or of any person and/or damages to any property or business, including loss of use, caused in whole or part by any act, error or omission of the Contractor, Contractor's employees, agents, or subcontractors arising out of or suffered, directly or indirectly, by reason of or in connection with the performance of this contract.

The Contractor's obligations to indemnify and hold harmless shall not apply if the injuries, death or damages are caused by the sole negligence of the Engineer and/or Owner. If the claim, suit, or action for injuries, death, or damages as provided for in the preceding paragraphs of this specification is caused by or results from the concurrent negligence of (a) the Engineer, the Owner or the Owner's agents or employees and (b) the Contractor or the Contractor's agents or employees, the duty to indemnify and hold harmless shall apply only to the extent of the Contractor's negligence.

The Contractor waives its immunity under the State Industrial Insurance law, Title 51 RCW, solely for the purpose of this indemnification. By signing this contract, the Contractor acknowledges that this waiver has been negotiated by the parties.

### 7-11 ALIEN LABOR

It is agreed that neither Contractor nor any subcontractor or agent or representative thereof shall knowingly employ or cause or allow to be employed on the work any alien except as provided by the laws of Washington. Every Contractor and subcontractor shall keep an accurate record of the name and citizenship of each workman employed by him in connection with the work. The Contractor shall forfeit \$500.00 as penalty to the Owner for each alien knowingly employed in the execution of the contract by him or any subcontractor mentioned under him of the work herein for on any each

calendar day or portion thereof during which such alien is permitted or required to labor in violation hereof.

# 7-12 WAGES, HOURS AND EMPLOYMENT

The Contractor shall conform in all respects to Chapter 39.12 RCW, as amended, pertaining to wages, hours, and employment on public works projects and shall forfeit amounts and be subject to fines set forth therein for noncompliance with the provisions of the statute. The rules and regulations of the Department of Labor and Industries and the schedule of prevailing wage rates for the locality or localities where this contract will be performed, as determined by the Industrial Statistician of the Department of Labor and Industries, are by reference made a part of this contract as though fully set forth herein.

In connection with the performance of work under this contract, the Contractor specifically agrees not to discriminate against any employee or applicant for employment because of race, creed, color, national origin, sex, or age. Such agreement shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. The Contractor further agrees to insert this provision in all subcontracts hereunder except subcontracts for standard commercial supplies or raw materials.

### 7-13 NO EXTRA COMPENSATION

Overtime work (work performed in excess of eight hours in any one calendar day or work performed on a Sunday or other legal holiday) or night work shall not entitle the Contractor to any compensation for any contract item in addition to that stipulated in the contract for the kind of work performed even though such overtime work may be required under emergency conditions and may be ordered by the Owner's Representative in writing. In case of extra work under the provisions of Section 4-5 of the General Conditions hereof, no additional payment will be made to the Contractor because of the payment by him of overtime wage rates for such work unless the use of overtime work in connection with such extra work is specifically ordered in writing, and then only to such extent as extra payment is regularly being made by the Contractor to his men for overtime work of a similar nature in the same locality.

- 7-14 Not Used
- 7-15 Not Used
- 7-16 Not Used

### 7-17 TERMINATION OF CONTRACT BY OWNER FOR DEFAULT

7-17.1 The Owner may terminate the Contract if the Contractor:

- 1. persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- 2. fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
- 3. persistently disregards laws, ordinances or rules, regulations or orders of a public authority having jurisdiction; or
- 4. otherwise is guilty of substantial breach of a provision of the contract documents.

7-17.2 When any of the above reasons exist, the Owner, upon certification by the Engineer that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- 1. take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- 2. accept assignment of subcontracts, and
- 3. finish the work by whatever reasonable method the Owner may deem expedient.

7-17.3 When the Owner terminates the contract for one of the reasons stated in Subparagraph 7-17.1, the Contractor shall not be entitled to receive further payment until the work is finished.

7-17.4 If the unpaid balance of the contract sum exceeds costs of finishing the work, including compensation for the Engineer's services and expenses made necessary thereby, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Engineer, upon application, and this obligation for payment shall survive termination of the Contract.

If the Owner has purported to terminate the contract for default and it later develops that a default termination was not justified, then the termination shall be deemed to have been a termination for convenience pursuant to Section 7-20, and, the rights of the parties shall be terminated accordingly.

The foregoing provisions are in addition to and not in limitation of any other rights or remedies available to the Owner.

## 7-18 RIGHT OF OWNER TO DO WORK

If the Contractor should neglect to prosecute the work properly or fail to perform any provision of the contract, the Owner after three (3) days written notice to the Contractor may, without prejudice to any other remedy it may have, make good such deficiencies and deduct the cost thereof from the payment then or thereafter due the Contractor.

# 7-19 CONTRACTOR'S RIGHT TO STOP WORK OR TERMINATE CONTRACT

If the Engineer should fail to issue any certificate for payment within ten (10) days after it is due or if the Owner should fail to pay to the Contractor within sixty (60) days of its presentation any sum certified by the Engineer and approved by the Owner, the Contractor may upon seven (7) days written notice to the Owner and the Engineer stop work or terminate this contract and recover from the Owner payment for all work executed and any loss sustained upon any plant or materials and reasonable profit.

### 7-20 OWNER'S RIGHT TO TERMINATE FOR CONVENIENCE

The Owner reserves the right to terminate this contract for convenience whenever he considers termination, in his sole and unfettered discretion, to be in the public interest. In the event that the contract is terminated in this manner, payment will be made for work actually completed. In no event if termination occurs under this provision shall the Contractor be entitled to anticipated profits on items of work not performed as of the effective date of the termination or compensation for any other

item, including but not limited unabsorbed overhead. The Contractor shall assure that all subcontracts which he enters related to this contract likewise contain a termination for convenience clause which precludes the ability of any subcontractor to make claims against the Contractor for damages due to breach of contract of unabsorbed overhead in the event of a convenience termination.

# 7-21 NOTICE AND SERVICE THEREOF

Any notice required or given under the contract shall be in writing, be dated, and signed by the party giving such notice or his duly authorized representative, and be served as follows:

If to the Owner, by personal delivery or by deposit in the United States mail.

If to the Contractor, by personal delivery to the Contractor, or to his authorized representative at the site of the project or by deposit in the United States mail.

If to the surety or any other person, by deposit in the United States mail.

All mailed notices shall be in sealed envelopes, shall be sent by certified mail with postage prepaid, and shall be addressed to the addresses in the Contract Documents or such substitute addresses which a party designates in writing and serves as set forth herein.

### 7-22 PARTIAL INVALIDITY

If any provision of this contract is held by a court of competent jurisdiction to be invalid, void, or unenforceable, the remaining provisions shall nevertheless continue in full force without being impaired or invalidated in any way.

### 7-23 Not Used

### 7-24 PAYMENT FOR LABOR AND MATERIAL

Contractor shall pay when due, all valid charges for labor and material incurred by Contractor and used in the construction of the work and shall also be responsible for keeping the job free of mechanics' liens recorded by or under Contractor or his subcontractors. Nothing contained herein shall be deemed to waive any immunities or other provisions of law preventing imposition of mechanics' liens on public property. If Contractor fails to make any payments required under this paragraph, or if Contractor fails to keep the project free of mechanics' liens incurred by or under Contractor or his subcontractors, Owner may settle such claims and Contractor shall, on demand, reimburse Owner for amounts so paid.

## 7-25 WORK DURING DISPUTES AND LITIGATION

In the event of a dispute between parties as to performance of the Work, the interpretation of this contract, or payment or nonpayment of work performed, parties shall attempt to resolve the dispute. If the dispute is not resolved, Contractor agrees to continue the work diligently to completion and will neither rescind this contract nor stop the progress of the work but will submit such controversy to determination in accordance with the terms of the contract documents. In the event any litigation is commenced with respect to this contract, such litigation shall not serve to suspend Contractor's obligation to continue performance of the work hereunder.

### 7-26 Not Used

# 7-27 WAIVER OF RIGHTS

Except as otherwise specifically provided in the contract documents, no action or failure to act by the Owner, Engineer, Owner's Representative, or Contractor shall constitute a waiver of any right or duty afforded any of them under the contract documents, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder.

## **7-28 TAXES**

The Contractor shall pay all sales, consumer, use, and other taxes.

### 7-29 Not Used

## GENERAL CONDITIONS - PART 8 CONTRACTOR'S INSURANCE

### 8-1 GENERAL

The Contract will not be executed by the Owner and the Contractor shall not commence any work until he obtains at his own expense all required insurance and has submitted certified copies of insurance policies, or original binders and sample copies with certified copies to follow, and such insurance has been approved by the Owner.

The types of insurance the Contractor is required to obtain and maintain for the full period of the contract will be, without limitation, Worker's Compensation, Employer's Liability "Stop Gap" Endorsement, Commercial General Liability, and Comprehensive Automobile Liability.

Each insurance policy will be endorsed to provide forty-five (45) days notice, by registered mail to the Owner, of cancellation or reduction in coverage.

Each insurance policy will be issued by an admitted and authorized carrier registered with the Washington State Office of Insurance Commissioner, and will be a member of the Washington State Insurance Guaranty Fund.

The Contractor shall be responsible for all subcontractor's insurance including the necessity, type, limits, acceptability, and verification of coverage.

### 8-2 INDUSTRIAL ACCIDENT OR WORKMEN'S COMPENSATION INSURANCE

The Contractor shall provide proof of coverage on all employees, for the entire period of this contract and until final acceptance, of worker's compensation to meet the Washington State Workers' Compensation Insurance laws. The contractor shall provide a Stop Gap coverage for no less than \$1,000,000 each occurrence to further this coverage, either by endorsement to the Workers Compensation coverage or by endorsement to the General Liability policy.

## 8-3 COMMERCIAL GENERAL LIABILITY INSURANCE

The Contractor shall obtain, and maintain the contract continuously at its own expense, for the term of the contract, Commercial General Liability Insurance, occurrence form only, with endorsements and/or other coverage to indemnify for the activities, services and products of this contract. The minimum limit of coverage shall be \$1,000,000 per occurrence and \$2,000,000 aggregate.

Such insurance shall be endorsed to include the Owner, its elected and appointed officers, officials, employees and agents as named additional insured.

Such insurance shall be endorsed to include a "separation of insureds", "cross liability", or "Severability of interests" indicating essentially that "except with respect to the limits of insurance, and any rights or duties specifically assigned in this coverage part to the first named insured, this insurance applies as if each named insured were the only named insured, and separately to each insured against whom claim is made or suit is brought".

## 8-4 COMPREHENSIVE AUTOMOBILE LIABILITY INSURANCE

The Contractor shall obtain, and maintain continuously until Final Acceptance, at his own expense, Comprehensive Automobile Liability Insurance including owned, non-owned and hired vehicle coverage.

Such insurance shall have limits of \$1,000,000 per each occurrence.

Such insurance shall be endorsed to include the Owner, its elected and appointed officers, officials, employees and agents as named additional insured.

## GENERAL CONDITIONS - PART 9 PAYMENT TO CONTRACTOR

### 9-1 GENERAL

The basis of payment for work shall be for all work actually performed in accordance with the plans and specifications, and contract documents shall include all labor and materials incorporated in the completed work.

The methods of measurement and computation to be used in the determination of the quantities of materials furnished and the quantities of work performed under the contract shall be the methods outlined in the contract documents or by those methods generally recognized as good engineering practice which in the opinion of the Engineer gives the greatest accuracy consistent with practical application.

Upon final inspection and final acceptance of the work, the Owner will pay the Contractor the amount earned under the contract, as stipulated herein.

#### 9-2 SCOPE OF PAYMENT

The payment provided for in the contract shall be full payment to the Contractor for:

- 1. Furnishing all equipment and performing all work under the contract (including changes in the work, materials, or plans) in a complete and acceptable manner;
- 2. All risk, loss, damage, or expenses of whatever character arising out of the nature of prosecution of the work; and
- 3. All expenses incurred resulting from a suspension or discontinuance of the work as specified under the contract.

The payment of any estimate or retained percentage shall not relieve the Contractor of the obligation to make good any defective work.

Unless the plans and special provisions provide otherwise, the unit contract prices for the various bid items shall be full payment for all labor, materials, supplies, equipment, tools, and all other things required to complete the work.

If the "Payment" clause in the specifications for an item included in the proposal covers and considers all work and material essential to that item, then the work or materials will not be measured or paid for under any other item which may appear elsewhere in the proposal or specifications.

### 9-3 PARTIAL PAYMENT

Once each month the Owner will process the Contractor's request for partial payment on the basis of an estimate prepared by the Contractor and accepted by the Engineer for the value of the work completed during the preceding month. The Contractor's request shall be submitted on or before the tenth day of each calendar month and shall be in a form acceptable to the Engineer. The estimate will cover the value of work performed by the Contractor during the preceding month plus the paid

invoice cost of material suitably stored at the site of the project if the Contractor desires payment for material stored.

The Owner will retain a portion of the amount otherwise due the Contractor. The amount retained by the Owner will be 5 percent of such estimated value of the work as part security for the fulfillment of the contract by the Contractor and as a trust fund for the protection and payment of persons involved in the construction of the project.

### 9-4 ADVANCES ON MATERIALS

Not used.

## 9-5 PAYMENT FOR CHANGES IN THE WORK

The Owner reserves the right to make, at any time during the work, such deletions, additions or revisions in the work as are necessary to satisfactorily complete the project. Such deletions, additions or revisions shall not invalidate the contract nor release the surety, and the Contractor agrees to perform the work as changed. Among others, these changes may include:

- A. Deleting any part of the work;
- B. Increasing or decreasing quantities;
- C. Ordering the Contractor to delay the work.

The Engineer will issue a written change order for any change unless the remainder of this section provides otherwise.

If the changes or increases or decreases in quantities significantly change the character of the work under the contract, whether or not changed by any such different quantities or changes, an adjustment, excluding loss of anticipated profits, will be made to the contract. The basis for the adjustment shall be agreed upon, then an adjustment will be made either for or against the Contractor in such amount as the Engineer may determine to be fair and equitable. If the changes or increases or decreases in quantities do not significantly change the character of the work to be performed under the contract, the changed work will be paid for as provided elsewhere in the contract. The term "significant change" shall be construed to apply only to the following circumstances:

- 1. When the character of the work as changed differs materially in kind or nature from that involved or included in the original proposed construction or
- 2. When a major bid item, as defined in Article 1-1, DEFINITIONS, is increased in excess of 200 percent or decreased below 75 percent of the original contract quantity as set forth in the Form of Bid. Any allowance for an increase in quantity shall apply only to that portion in excess of 200 percent of original contract item quantity, or in case of a decrease below 75 percent, of the actual amount of work performed.

For Item A, an equitable adjustment for deleted work will be made as provided in Article 9-5.2.

For Item B, if the quantities of a major item or the total cost of the original contract increase or decrease by more than 25 percent, an equitable adjustment will be made as provided in Article 9-5.3.

For Item C, the Engineer will determine if the change should be paid for at the unit contract price(s). If the Engineer recommends and the Owner determines that the change increased or decreased the

Contractor's costs or time to do any of the work including unchanged work, the Owner will make an equitable adjustment by agreement with the Contractor.

Variations from estimated quantities, except as provided in Item B above, will not require a written change order. These increased or decreased quantities shall be provided at the unit prices that apply.

Written consent of the surety or sureties will be required for a change order when the Engineer specifically requests it.

## 9-5.1 Work Directive

Where situations involve changes in the work which, if not processed expeditiously, might delay the project, the changed work shall be initiated through use of a work directive. The work directive is not a change order, but only a directive issued by the Owner or Engineer to proceed with work that will be included in a subsequent Change Order. All work directive billings by the Contractor shall be submitted within two (2) weeks of the completion of the work

## 9-5.2 Deleted or Terminated Work

The Engineer may delete work by change order or may recommend to the Owner that the contract be terminated in whole or in part. When the contract is terminated in part, the partial termination shall be treated as a deletion change order for payment purposes under this section.

Payment for completed items will be at unit contract prices.

When any item is deleted in whole or in part by change order or when the contract is terminated in whole or in part, payment for deleted or terminated work will be made as follows:

- A. Payment will be made for the actual number of units of work completed at the unit contract prices unless the Engineer determines the unit prices are inappropriate for the work actually performed. When that determination is made by the Engineer, payment for the work performed will be as mutually agreed. If the parties cannot agree, the Engineer will determine the amount of the equitable adjustment in accordance with Article 9-5.4.
- B. Payment for partially completed lump sum items will be as mutually agreed. If the parties cannot agree, the Engineer will determine the amount of the equitable adjustment in accordance with Article 9-5.4.
- C. To the extent not paid for by the contract prices for the completed units of work, the Owner will pay as part of the equitable adjustment those direct costs necessarily and actually incurred by the Contractor in anticipation of performing the work that has been deleted or terminated.
- D. The total payment for any one item in the case of a deletion or partial termination shall not exceed the bid price as modified by approved change orders less the estimated cost (including overhead and profit) to complete the work and less any amount paid to the Contractor for the item.
- E. The total payment where the contract is terminated in its entirety shall not exceed the total contract price as modified by approved change orders less those amounts paid to the Contractor before the effective date of the termination.

F. No claim for damages of any kind or for loss of anticipated profits on deleted or terminated work will be allowed because of the termination or change order.

Contract time shall be adjusted as the parties agree. If the parties cannot agree, the Engineer will determine the equitable adjustment for contract time.

Reviewed materials with no exceptions taken, ordered by the Contractor prior to the date the work was terminated or deleted, will either be purchased from the Contractor by the Owner at the actual cost without mark-up and shall become the property of the Owner, or the Owner will reimburse the Contractor for the actual costs connected with returning these materials to the suppliers.

### 9-5.3 Increased or Decreased Quantities

Payment to the Contractor will be made only for the actual quantities of work performed and accepted in conformance with the contract. When the accepted quantities of work vary from the original bid quantities, payment will be at the unit contract prices for accepted work unless the total quantity of any major bid item, using the original bid quantity, increases by more than 100 percent or decreases by more than 25 percent. In that case, that part of the increase or decrease will be adjusted as f ollows:

## A. Increased Quantities

Either party to the contract will be entitled to an equitable adjustment for that portion of the actual quantity in excess of percent of the original bid quantity except as limited in subparagraph 3 in this section.

## B. <u>Decreased Quantities</u>

Either party to the contract will be entitled an equitable adjustment if the actual quantity of work performed is less than 75 percent of the original bid quantity except as limited in subparagraph 3 in this section.

## C. <u>Adjustment Limits</u>

The equitable adjustment for increased or decreased quantities will be determined in accordance with Article 9-5.4 except as limited by the following provisions:

- 1. No payment for loss of anticipated profits will be allowed because of any contract provisions, and contract plans.
- 2. If the actual quantity of work performed is less than 75 percent of the original bid quantity, the total payment for the item will be limited to not more than 75 percent of the amount originally bid.
- 3. No payment will be made for extended or unabsorbed home office overhead and field overhead expenses to the extent that there is an unbalanced allocation of such expenses among the contract bid items.
- 4. No payment for consequential damages will be allowed because of any variance in quantities from those originally shown in the proposal form, contract provisions, and contract plans.

When ordered by the Engineer, the Contractor shall proceed with the work pending determination of the cost or time adjustments for the change.

The Owner will not adjust for increases or decreases if the Owner has entered the amount for the item in the proposal form only to provide a common basis for bidders.

### 9-5.4 Equitable Adjustment

The equitable adjustment provided for elsewhere in the contract shall be determined in one or more of the following ways:

- A. If the parties are able to agree, the price will be determined by using:
  - 1. Unit prices or
  - 2. Other agreed upon prices;
- B. If the parties cannot agree, the price will be determined by the Engineer using:
  - 1. Unit prices or
  - 2. Other means to establish costs.

The following limitations shall apply in determining the amount of the equitable adjustment:

- A. The equipment rates shall be actual cost but shall not exceed the rates set forth in the most recent edition of the Rental Rate Blue Book (as modified by the current AGC/WSDOT Equipment Rental Agreement) in effect at the time the work is performed.
- B. No claim for loss of anticipated profits on deleted or uncompleted work or consequential damages of any kind will be allowed.

#### 9-6 PAYMENT OF ITEMS IN PROPOSAL

Only those items listed in the Proposal are Pay Items.

Compensation for all work necessary for the completion of the project or improvement shall be included by the bidder in the bid price for the items shown in the Proposal.

### 9-7 TIME OF PARTIAL PAYMENTS

The Owner will make each partial payment within sixty (60) days following the date of receipt by the Owner of the Contractor's request for partial payment as accepted by the Engineer.

## 9-8 FINAL ESTIMATE AND PAYMENT

When the work has been completed, the Engineer will make a final estimate of the total amount of work done thereunder and the amount to be paid therefore under the terms of the contract. If the Owner finds the work has been completed according to the contract, he shall accept the work, shall file a notice of completion, and shall pay the entire sum so found to be due after deducting therefrom all previous payments and all amounts to be retained under the provisions of the contract. All prior progress estimates and payments shall be subject to correction in the final estimate and payment. The final payment shall not be due and payable until the expiration of 30 days from the date of filing a notice of completion of the work by the Owner.

It is mutually agreed between parties to the contract that no certificate given or payment made under the contract shall be conclusive evidence of performance of the contract and no payment shall be construed to be an acceptance of any defective work.

The Contractor further agrees that the payment of the final amount due under the Contract shall release the Owner, the Engineer, the Owner's Representative, and their consultants, and each of their directors, officers, employees, and agents from any and all claims or liability arising out of the contract.

## 9-9 OWNER'S RIGHT TO WITHHOLD CERTAIN AMOUNTS AND MAKE APPLICATION

In addition to the amount which the Owner may retain under Article 9-2, PARTIAL PAYMENT, the Owner may withhold a sufficient amount or amounts from any payment otherwise due to the Contractor as in his judgment may be necessary to cover:

- 1. Payment which may be past due and payable for properly filed claims against the Contractor or any subcontractors for labor or materials furnished in or about the performance of the work on the project under this Contract.
- 2. Estimated or actual costs for correcting defective work not remedied.

3. Amounts claimed by the Owner as liquidated damages or other offsets.

The Owner may apply such withheld amount or amounts to the payment of such claims in his discretion. In so doing, the Owner shall be deemed the agent of the Contractor and any payments so made by the Owner shall be considered as a payment made under the contract by the Owner or the Contractor, and the Owner shall not be liable to the Contractor for such payment made in good faith. Such payments may be made without prior judicial determination of the claim or claims. The Owner will render to the Contractor proper account of such funds disbursed in behalf of the Contractor.
#### GENERAL CONDITIONS - PART 10 DISPUTE RESOLUTION

#### **10-1 DISPUTE RESOLUTION**

In the event of a dispute arising out of or in relation to this agreement, or breach or alleged breach thereof, the Owner and the Contractor shall comply with the following dispute resolution procedures:

- A. **Negotiation.** As a prerequisite to any other dispute resolution procedures, the parties shall conduct at least one negotiation meeting in accordance with the following. The party seeking relief (the "initiating party") shall submit to the other party (the "responding party"), with a copy to the Engineer, a statement explaining its position on the dispute. The statement shall be accompanied by a list of five or more dates and times proposed for a negotiation meeting. The proposed dates shall be non-holiday weekdays, and the proposed times shall be within normal working hours; the proposed dates shall be not less than three, and not more than eight, weeks after the date on which the statement is delivered to the responding party. In cases involving disputes which must be resolved on an expedited basis, the parties may, by mutual agreement, schedule dates for negotiation on less than three weeks' notice. Within one week of its receipt of the statement, the responding party shall deliver to the initiating party a notice confirming one of the dates and times proposed by the initiating party. The negotiation meeting shall be held at the date and time thus chosen, at the office of the Owner. Within two weeks of its receipt of the initiating party's statement, the responding party shall submit to the initiating party, with a copy to the Engineer, a statement explaining its position on the dispute. Both the statement submitted by the initiating party and the statement submitted by the responding party shall be deemed to be settlement communications and inadmissible in any court. An individual representing each party who has full authority to settle the dispute shall attend the negotiation meeting; provided, however, that any agreement reached may have to be put before the Owners Legislative Body (City Council) for final action. Each party shall also be represented by such individuals whose presence is necessary to discuss the details of the dispute. The parties shall negotiate in good faith. If a resolution of the dispute is accomplished, such resolution shall be reduced to writing and signed by each party.
- B. Mediation. If, and only if, a negotiation meeting which complies with the preceding provision has been held and does not result in a resolution, either party may, within two weeks of the adjournment of the negotiation meeting, demand non-binding mediation in accordance with the following. If neither party demands mediation, then the claim(s) which underlies the dispute which was the subject of the negotiation meeting shall be deemed forever waived. Unless the parties mutually agree otherwise in a signed document, nonbinding mediation shall be conducted under the auspices of the American Arbitration Association acting under it's Construction Industry Mediation Rules and shall be administered by the Seattle Chapter of the American Arbitration Association. The mediation proceedings shall be conducted at the place designated by the mediator. Each party shall pay one-half of the mediator's compensation and the administration fees. Each party shall bear its own expense associated with the mediation, including but not limited to its own attorney and expert consultant fees. An individual representing each party who has full authority to settle the dispute shall attend the mediation proceeding accompanied by such other person(s) as may be reasonably necessary to participate knowledgeably in a mediation proceeding, provided, however, that any agreement reached may have to be put before the Owner's

Legislative Body for final action. Good faith participation in the mediation proceeding shall be a prerequisite to the initiation of litigation.

- C. Litigation. If, and only if, any dispute is not resolved in accordance with the foregoing, then either party may commence litigation. Jurisdiction and venue shall be in the Whatcom County Superior Court. The substantially prevailing party shall be awarded its cost, reasonable attorney fees and reasonable expert witness fees. In the event that any claim(s) submitted to mediation is not or are not resolved in mediation, and in the further event that litigation is not commenced to seek relief for such claim(s) within 90 days of the termination of the mediation, then the claim(s) shall be deemed fully and forever waived.
- **D.** No Waiver. Nothing stated in this section shall be deemed a waiver of any notice requirements imposed elsewhere in this agreement.
- **E. Contractor's Performance.** The Contractor shall continue to work on items not a part of the dispute until the dispute is resolved.

PART 4

# **Special Provisions**

#### **TABLE OF CONTENTS**

#### **SPECIAL PROVISIONS**

DIVISION 1		GENERAL REQUIREMENTS
Section	01010	Summary of Work
Section	01011	Technical Specifications
Section	01012	Preservation, Restoration and Cleanup
Section	01150	Measurement and Payment
Section	01310	Construction Schedule
Section	01340	Submittals
Section	01400	Quality Control
Section	01510	Maintenance of Existing Facilities and Interim Treatment During Biosolids
		Removal
Section	01520	Work Sequence and Constraints
Section	01530	Temporary Facilities and Utilities
Section	01540	Special Controls
Section	01700	Project Closeout
Section	01800	Wages

DIVISION 2 SITEWORK

Section 02150 Biosolids Removal and Land Application

## PART 4 DIVISION 1

# **General Requirements**

#### SECTION 01010 SUMMARY OF WORK

#### PART 1: GENERAL

#### 1.01 General Statement and Extent of Work

- A. The work to be performed under this Contract Document consists of furnishing all labor, material and equipment necessary for or incidental to the completion of all work. This consists of the City of Ferndale Wastewater Treatment Plant Biosolids Removal.
- B. The work shall be performed in a workmanlike manner and complete as required by the Contract Document. The work is to be performed for the City of Ferndale, Washington, herein defined as the Owner.
- C. To determine the full scope of the project or any particular part, coordinate the applicable information in the several parts of these Contract Documents.

#### 1.02 Scope of Work

A. The scope of work described by these Contract Documents generally consists of, but is not limited to the following:

#### **Biosolids Removal**

Biosolids Removal consists of all work and expenses required for removing 80 tons (dry weight measure) of biosolids from the Biosolids Stabilization Basin (West Lagoon). The estimated in-place quantity is 250 dry tons. The work includes all work necessary for the removal of biosolids, including moving aeration equipment, and providing all equipment and materials such as generators, transfer pumps, holding tanks, etc. This effort also includes all testing, costs and labor necessary to determine the biosolids dry tonnage; repositioning the floating mechanical aerators in the lagoon as needed; and site restoration including regrading disturbed areas or repaving damaged pavement throughout the site.

#### **Biosolids Land Application**

Biosolids Land Application consists of all work and expenses required for transporting, pretreating as necessary, and injecting biosolids on the adjacent 13-acre land application site. The work includes all work necessary to complete the described work, providing all equipment and materials, such as pumps tanks, screening equipment, piping, hoses, injection plow and tractor. This effort also includes all testing, costs and labor necessary to determine the biosolids dry tonnage and site restoration including regrading disturbed areas or repaving damaged pavement throughout the site (not including the land application field).

- 1.03 Drawings for Construction
  - A. No construction drawings for this contract.
- 1.04 <u>Time of Completion</u>
  - A. Performance of the work to be done under the Contract shall be commenced within ten (10) calendar days after the receipt of written notice to proceed by the Owner, unless later

commencement of the work is authorized by the Owner. The Contractor shall complete all the work as described in the Plans and Specifications by the following dates:

Descripti	on	Completion Time		
Task 1	Dredging Biosolids	All work shall be completed in all respects no later than June 9, 2023.		
Task 2	Biosolids Land Application by Injection	All work shall be completed in all respects no later than June 9, 2023		
Task 3	Site Restoration	All work shall be completed in all respects no later than June 16, 2023		

#### 1.05 <u>Substantial Completion</u>

A. The improvements shall be considered substantially complete when, in the opinion of the Engineer, as evidenced by the Engineers written recommendation of Substantial Completion, it is sufficiently complete per the Contract Documents.

#### 1.06 Liquidated Damages

A. In the event the Contractor fails to complete the work within the time limit or extended time limit agreed upon, as more particularly set forth in the Contract Documents, liquidated damages shall be paid to the Owner at the daily rate indicated in the following schedule for work awarded under each schedule until the work shall have been satisfactorily completed as provided by the Contract Documents.

Task 1	Dredging Biosolids	Liquidated Damages Per Day - \$200
Task 2	Biosolids Land Application by Injection	Liquidated Damages Per Day - \$300
Task 3	Site Restoration	Liquidated Damages Per Day - \$100

Such amount shall be a reimbursement to the Owner for damages which the Owner will have sustained by reason of such delayed completion. Damages so liquidated are understood the additional cost to the Owner for interference with adjacent projects, development completion, engineering supervision, observation of construction, interest charges and overhead.

#### 1.07 Project Coordination

A. It shall be the responsibility of the Contractor to coordinate all work to be performed under this contract. This coordination shall encompass all work to be performed by the Contractor, the subcontractors, the Owner, and all public and private utilities which may be involved.

#### 1.08 Access to the Work

A. Access to the work shall be provided to the Owner or the Owner's representative as required.

#### END OF SECTION 01010

#### Page 01010-2

#### SECTION 01011 TECHNICAL SPECIFICATIONS

#### PART 1: GENERAL

#### 1.01 General Statement and Extent of Work

- A. Articles, materials, operations or methods mentioned in the specifications as being required for the project, shall be provided by the Contractor. In addition, the Contractor shall provide each item mentioned or indicated, perform according to the conditions stated in each operation prescribed, and provide, therefore, all necessary labor, equipment, and incidentals necessary to complete the work.
- 1.02 <u>Standard Specifications</u>
  - A. Sections of the "Standard Specifications for Road, Bridge, and Municipal Construction," current edition prepared by Washington Department of Transportation and the Washington State Chapter of the American Public Works Association, may be referenced within these specifications. Only the section referenced is to be considered part of the contract documents.

#### SECTION 01012 PRESERVATION, RESTORATION AND CLEANUP

#### 1.01 <u>Roads and Streets</u>

- A. Restore all gravel service roads and existing asphalt pads in which the surface is rutted, potholed, removed, broken or damaged, or in which the ground has caved or settled, due to the hauling of materials, equipment and/or supplies execution of the tasks covered by this contract, to the original grade. Match the existing surfacing for depth, materials and surface finish.
- B. All restoration work shall be performed in accordance with the Engineer's direction and the specifications herein.
- C. At all times during the work, keep the premises clean and orderly, and upon completion of the work, repair all damage caused by equipment and leave the project free from all rubbish and excess material of any kind.
- D. Thoroughly clean all spilled material from all roads and streets at the end of each day.
- E. Provide all unpaved streets, roads, detours, or haul roads used a reviewed dust-preventive treatment or periodically water to prevent dust. Applicable environmental regulations shall be enforced.

#### 1.02 <u>Cultivated Areas and Other Surfaces</u>

- A. Restore all cultivated areas and easements which are disturbed or damaged by actions of the Contractor to their original condition.
- B. Equipment and materials storage areas shall be regraded and seeded at the conclusion of the project. Any damage to fences, walks, curbs, driveways, etc. shall be handled in accordance with applicable sections of these specifications.

#### 1.03 <u>Maintenance of Roads</u>

- A. The Contractor shall be fully responsible for the prevention of damage to the City's, County's or State's roads.
- B. Haul trucks shall not leak and shall be clean of adhered materials such that no materials flake off or fall off onto roadways.

#### SECTION 01150 MEASUREMENT AND PAYMENT

#### PART 1: GENERAL

#### 1.01 <u>Computations of Quantities</u>

- A. Measurements of Weight
  - 1. The quantity of biosolids land applied will be calculated based on flow rate and percent total solids content of the injected biosolids. Flow measurement and percent total solid determination shall be per Section 02150 of the Special Provisions.
  - 2. No payment will be made for dredged biosolids that are not properly land applied or delivered to a permitted biosolids land application facility.

#### 1.01 Measurement and Payment

- A. The unit or lump sum contract prices shall constitute full payment for furnishing all labor, equipment, materials, permits and agreements and performing all operations required to complete the work as shown in the specifications, drawings, and as directed. Not withstanding the omission or mention of any incidental work, the contract price and payment shall also constitute full compensation for all work incidental to completion of the item, unless such work is otherwise specifically mentioned for separate payment under another bid item.
- B. All measurements and computations will be made by the Engineer or their representative. The Contractor may perform quantity surveys for comparison. If there is a discrepancy where the measured quantity cannot be agreed upon, the Engineer's measurements shall be used.
- C. When any vehicle delivers to the project materials which have the unit designation of weight, the driver of the vehicle shall give the Owner's representative a legible weight ticket with the following information:
  - Vehicle identification number;
  - The date and time the load was weighed;
  - The tare weight of the vehicle for each day;
  - The gross weight of the loaded vehicle as registered on the scale; and
  - The legal gross weight of the vehicle as permitted by the State of Washington Department of Transportation;
- D. <u>Mobilization</u>
  - 1. Measurement: Shall be measured as lump sum (LS).
  - 2. Payment: Shall be paid for at the applicable contract lump sum price, payment for which shall constitute full compensation for project mobilization, including the moving of personnel, equipment, the set up of all temporary office buildings, facilities and utilities, provision of parking facilities for personnel working on the

project, provision of a stabilized construction entrance, preparation of all Contractor staging areas, storage areas, waste disposal sites, and all other preconstruction expenses and costs for preparatory work and operations performed by the Contractor. Payment shall be in accordance with Section 1-09.7 of the WSDOT Standard Specifications.

- E. <u>Biosolids Removal</u>
  - 1. Measurement: Shall be measured by the dry ton (DT) that is removed from the lagoon and land applied.
  - 2. Payment: Shall be paid at the applicable contract unit price per dry ton, payment for which shall constitute full compensation for electricity, dredging, process water, chemicals, loading, safety and health provisions, disposal at the land application site, restoration of the site and all other incidentals necessary to remove biosolids. A retainage of 10 percent will be withheld from each partial payment pending verification of final proper disposal.

#### F. Biosolids Land Application by Injection

- 1. Measurement: Shall be measured by the dry ton (DT) of Biosolids Land Applied by Injection.
- 2. Payment: Shall be paid at the applicable contract unit price per dry ton, payment for which shall constitute full compensation for hauling, pumping, pretreating, safety and health provisions, injection at the land application site, restoration of the site and all other incidentals necessary to land apply the biosolids. A retainage of 10 percent will be withheld from each partial payment pending verification of final proper disposal.

#### SECTION 01310 CONSTRUCTION SCHEDULE

#### PART 1 GENERAL

#### 1.01 Project Schedule

- A. Within (5) five calendar days after the date of receipt of Notice of Award, the Contractor shall prepare and submit to the Owner/Engineer for review a detailed Project Schedule showing the order in which the Contractor proposes to carry on the work, the date on which he will start the list of Construction Activities (including the procurement of materials, products, and equipment), and the contemplated dates for completing the same.
- B. The project schedule shall be in sufficient detail that progress of the work can be evaluated accurately at any time during the performance of the contract and shall address comments.
- C. Review of any schedule submitted by the Contractor shall not be construed to assign responsibility of performance or contingencies to the Owner, or relieve the Contractor of his responsibility to adjust his forces, equipment, and work schedule as may be necessary to ensure completion of the work within prescribed contract time.
- D. All costs associated with the submittal of the project schedule updates shall be incidental to and included in the various contract items.
- 1.02 <u>Revisions</u>
  - A. If, in the opinion of the Engineer, the Contractor falls behind the project schedule, the Contractor shall take such steps as may be necessary to improve his progress and to submit for review such supplementary schedule or schedules in chart form as may be deemed necessary to demonstrate the manner in which the agreed rate of progress will be regained, all without additional cost to the Owner.

#### 1.03 Failure to Comply

A. Failure of the Contractor to comply with the requirements of the Engineer under the provisions of this section shall be grounds for determination by the Engineer that the Contractor is not prosecuting the work with such diligence as will insure completion within the time specified. Upon such determination, the Engineer may recommend to the Owner that the Contractor's right to proceed with the work be terminated, or any separable part thereof, in accordance with determination for default or in accordance with other provisions provided in the contract.

#### 1.04 <u>Overtime Work</u>

A. If the Contractor desires, or, due to slow progress, is required to carry on work at night or outside the normal working hours, he must submit an application to the Engineer. The application shall be submitted at least 24 hours prior to performance of the work outside the normal working hours to enable satisfactory arrangements to be made for inspecting the work in progress. If granted permission, he shall light the different work areas and use equipment with appropriate sound reducing devices in a manner satisfactory to the

applicable ordinances and regulatory agencies and shall comply with all requirements of the Owner.

#### SECTION 01340 SUBMITTALS

#### PART 1: GENERAL

#### 1.01 <u>General</u>

- A. Submittal items, together with any other submittals that shall be requested by the Engineer, shall be submitted well in advance of need to allow time for the Engineer's review, in accordance with the reviewed Progress Schedule.
- B. The Contractor shall coordinate, check and submit all required submittals as specified herein and in each section of the Specifications.

#### 1.02 Engineer's Review

- A. The Engineer will require up to 3 working days from the date the submittals are received at the Engineer's office until they are sent back to the Contractor.
- B. If more than 3 calendar days are required for the Engineer's review of any individual submittal or resubmittal, an extension of time will be considered in accordance with Article 6.5 of the General Conditions.
- C. After receiving the reviewed submittal, the Contractor shall:
  - 1. Receive and execute orders and/or comments from Engineer.
  - 2. Revise if required, date and identify revisions if any.
  - 3. Resubmit project data rejected in the same form as specified above for original submittals.

#### SECTION 01400 QUALITY CONTROL

#### PART 1: GENERAL

#### 1.01 <u>Sampling and Testing</u>

- A. Testing of total percent solids (which includes fixed and volatile solids) shall be in accordance with method 2540G of *Standard Methods for the Examination of Water and Wastewater*, current edition. Alternative methods must be approved by the Engineer. The Engineer may require samples at any time. Samples not taken by or in the presence of the Engineer will not be accepted for testing, unless the Engineer permits otherwise.
- B. The Contractor shall furnish materials, tools, equipment, and instruments necessary to perform solids content sampling and testing of biosolids.
- C. The Contractor shall provide the Engineer with assistance and cooperation in collecting samples as requested by the Engineer.

#### SECTION 01510 MAINTENANCE OF EXISTING FACILITIES OPERATION DURING BIOSOLIDS REMOVAL

#### PART 1: GENERAL

#### 1.01 <u>General</u>

- A. The City of Ferndale must continue to meet the requirements of the National Pollutant Discharge Elimination System (NPDES) permit for the discharge of treated wastewater into the Nooksack River during biosolids removal. Due to the possible disruption of the existing wastewater treatment process during the biosolids removal activities, the Contractor shall perform work in such a manner to avoid disrupting the treatment system. If any activity performed by the contractor is deemed by the Engineer or Treatment Plant Staff to compromise the treatment system, the Contractor shall cease said activity as directed by the Engineer or Treatment Plant Staff.
- B. The Owner is responsible for meeting the conditions of the NPDES permit. It is the Contractor's responsibility to cooperate with the City's operations staff and to allow access to all portions of the treatment facility, at all times, for monitoring and testing. If certain activities being undertaken by the Contractor are deemed by the Engineer or Owner as being detrimental to meeting the conditions of the NPDES permit, the Contractor shall rectify the condition as required upon written request from the Engineer or Owner. If the Contractor fails to immediately take corrective action, he shall be responsible for any subsequent fines or penalties associated with that detrimental activity or condition.
- C. City staff will be on duty between the hours of 7:00 a.m. and 3:00 p.m. seven days per week. Coordination on treatment shall be during these hours. City staff will be available only for emergencies during other hours.

#### PART 2: NOT USED

#### PART 3: EXECUTION

#### 3.01 <u>Wastewater Treatment</u>

- A. The Biosolids Stabilization Basin is not part of the main biological treatment process for the wastewater treatment plant. Effluent from the Biosolids Stabilization Basin flows to the West Plant Drain Pump Station, which pumps to the grit chambers at the front end of the wastewater treatment process. Since effluent from the Biosolids Stabilization Basin ultimately receives full treatment in the wastewater treatment plant, there is a minimized risk of the biosolids removal process causing a significant disruption to the wastewater treatment system. However, the Contractor shall minimize the resuspension of biosolids due to dredging or other activities to minimize carryover of solids. Dredging will be curtailed if necessary to maintain NPDES Permit compliance.
- B. The Owner's staff will move aerators as needed by the Contractor. The Contractor shall not remove or install the

aerators. The Contractor shall give ample notification (i.e., at least one full day, two full days for Saturday, and three full days for Sunday).

- C. The Contractor should be aware that the City of Ferndale wastewater flows can increase significantly during wet weather. High flows may require additional coordination between the City and the Contractor to maintain the effectiveness of the treatment system. Necessary actions may include but are not limited to:
  - a. City staff diverting a portion or all of the treatment plant influent flow to the Biosolids Stabilization Basin.
  - b. City staff adjusting the telescoping weir in the Biosolids Stabilization Basin to provide short-term detention of increased flows in the Basin.

#### 3.02 Bypass

A. The Contractor shall coordinate work with the City for diversion of wastewater influent into the Biosolids Stabilization Basin if needed to prevent exceedance of NPDES Permit limits.

#### 3.03 <u>Work by Others</u>

- A. The Owner may be working within the project areas while work is in progress. If so, the Contractor shall schedule his work in conjunction with the Owner to minimize mutual interference.
- B. Tanker trucks hauling septage, leachate and wastewater to the treatment facilities shall be provided access as needed (infrequently). The tanker discharge location is at the west end of the Biosolids Stabilization Basin and will require the tanker trucks to drive along the access road located on the north side of the Biosolids Stabilization Basin. The Contractor shall make necessary provisions with hoses, equipment, vehicles, material and other appurtenances to facilitate tanker access.

#### 3.04 <u>Coordination of Work</u>

A. The Contractor shall maintain overall coordination for the execution of the work. Based on the Project Schedule prepared in accordance with these Specifications, he shall obtain from each of his subcontractors a similar schedule and shall be responsible for all parties maintaining these schedules or for coordinating required modifications.

#### SECTION 01520 WORK SEQUENCE AND CONSTRAINTS

#### PART 1: GENERAL

#### 1.01 <u>Scheduling</u>

A. Plan the work and carry it out with minimum interference to the operation of the existing facilities. Prior to starting the work, confer with the Engineer and Owner's representative to develop a work schedule which will permit the facilities to function normally as practical.

#### 1.02 <u>Coordination</u>

- A. The Contractor shall cooperate in the coordination of separate activities in a manner that will provide the least interference with the Owner's operations and activities.
- B. If any difficulty or dispute should arise in the accomplishment of the above, the problem shall be brought immediately to the attention of the Engineer.
- C. The Contractor is subject to this requirement for cooperation, and shall abide by the Engineer's decision in resolving schedule coordination problems without additional cost to the Owner.
- 1.03 <u>Sequence/Constraints of Construction</u>
  - A. Submittal of Work Schedule as specified in Section 01310.
  - B. The Contractor shall complete in all respects the execution of the Wastewater Treatment Plant Biosolids Removal per the Specifications within the times stated in the Proposal and Section 01010.
  - C. Access to the site is permitted 24 hours a day 7 days a week for dredging activities. Land application of biosolids, loading, site restoration, and other activities not directly a part of dredging will only be permitted between 7 a.m. and 9 p.m. Monday through Friday and access to the site between 6 a.m. and 10 p.m. Monday through Friday.
  - D. The Contractor's use of the project site shall be limited to its biosolids removal and related operations including on-site storage of materials, on-site facilities and field offices.
  - E. The Contractor shall not use areas outside the work staging area shown on the Drawings for any operations, equipment, facilities or vehicles other than equipment directly needed at the lagoons including dredge pump and crane or at the land application field, except as authorized by the Owner.
  - F. Access to the work area inside the wastewater treatment plant shall be by the existing asphalt entrance from Ferndale Road.

#### SECTION 01530 TEMPORARY FACILITIES AND UTILITIES

#### PART 1: GENERAL

#### 1.01 <u>Electrical Service</u>

A. The Contractor shall provide a portable electrical generator required for the biosolids removal process to provide power to operate the dredge equipment, lighting, etc. The Contractor shall then provide adequate job site distribution facilities conforming to applicable codes and safety regulations. The costs for power and related electrical work shall be incidental to the biosolids removal and land application costs.

#### 1.02 <u>Water</u>

A. The Owner will provide a non-potable reuse water connection at the WWTP Headworks for the Contractor's use.

#### 1.03 <u>Temporary Lighting</u>

A. The Contractor shall provide temporary lighting in all work areas sufficient to maintain a lighting level during working hours not less than the lighting level required by OSHA standards.

#### 1.04 <u>Sanitary Facilities</u>

- A. The Contractor shall provide suitable chemical toilets or water closets at appropriate locations within the site of the work. At the end of the job such toilets shall be removed completely.
- B. The Contractor shall provide potable water, soap, disinfectants, paper towels and sanitation at appropriate locations at the land application site and the dredging operation.

#### SECTION 01540 SPECIAL CONTROLS

#### PART 1: GENERAL

#### 1.01 Public Safety and Convenience

- A. The Contractor shall at all times conduct his work as to insure the least possible obstruction to traffic and inconvenience to the general public and the residents in the vicinity of the work, and to insure the protection of persons and property.
- B. The Owner and controlling public authorities shall be notified at least 24 hours in advance of any actions by the Contractor which may affect the functions of either the police or fire departments, school system, or water and sewer districts.
- C. The Contractor shall conduct his work, and take preventive measures, such that dust, noise, or odor in the project area shall not become objectionable to the adjacent property owners. Should the Owner determine the Contractor is not fulfilling his obligation in this regard, the Owner reserves the right to take such action as may be necessary and to charge the Contractor for any costs that may be incurred in such remedial action.
- D. All work shall be conducted with due regard for the safety of the public. Safety instructions received from the Engineer, Controlling Agency, or the Owner shall be observed, but the following of such instructions shall in no way relieve the Contractor of his responsibility or liability should any accident or loss occur as the result of his construction operations.
- E. It shall be the Contractor's responsibility to see that all requirements of the Federal William-Stieger Occupational Safety and Health Act, as well as the State of Washington Industrial Safety and Health Act, are observed and enforced to protect all the workmen on the project as well as the general public.
- 1.02 <u>Wetlands Control</u>
  - A. The Contractor shall at all times conduct his work so as to ensure that the wetlands on property adjacent to the project site are not adversely affected by the biosolids removal and stockpile areas operations.
  - B. If the Contractor does adversely impact the wetlands through the prosecution of his work, the Engineer will provide the Contractor with formal written notification of the violation. The Contractor shall be responsible for the payment of any fines or penalties resulting from wetlands impacts. If persistent violations occur, the Contractor will be ordered to immediately stop work and will revise his methods and means of operation to avoid wetlands impacts at his own cost. The Contractor will additionally be liable for any restoration work required by the regulating agencies with jurisdiction and any fines levied by those agencies.

#### 1.03 <u>Noise</u>

A. The Contractor shall comply with applicable federal, state and local regulations, and all applicable restrictions. Electrical generators shall be sound attenuated and shall emit no more than 75 DBA at full working load. Backup alarms on all vehicles and equipment shall be selected to minimize noise emitted and operate between a range of 87-112 decibels, and shall be SA917-Smart Alarm manufactured by ECCO Corporation or equal as approved by the Owner.

#### 1.04 Lights and Glare

Uses producing artificial light, utilizing light for night operation, or causing glare shall:

- A. Not impair use of or safety of any road due to strong dazzling artificial light directed at oncoming motor vehicles, or strobe lights projecting off-site or toward streets, or lights imitating traffic signal lights.
- B. Protect residential uses from artificial light during periods of darkness by shading the luminaire and/or screening abutting property lines.
- C. Shield light generated by arc welding, acetylene torch cutting, or similar processes in a manner which prevents such light from being visible from any point beyond the outside of the property.
- D. External lighting on/near residential property shall be directed and shielded appropriately to avoid creating a nuisance or hazard to passing traffic and neighboring properties.

#### 1.05 <u>Working Hours</u>

A. Biosolids shall not be applied <u>on or within two days of</u> the weekend of Easter, Mother's Day, Memorial Day, Father's Day, or Independence Day. The Contractor shall be permitted to dredge 24 hours a day, seven days a week; however, the Contractor must first apply for a special work permit/waiver with the City of Ferndale in order to operate outside the normal hours of operation. Land application and other activities associated with the project shall comply with the City of Ferndale's normal working hour limitations (7:00 a.m. to 9:00 p.m.).

#### 1.06 <u>Biosolids Stabilization Basin Discharge Restrictions</u>

- A. The Contractor is notified that water quality monitoring will occur during the dredging process. If water quality standards are violated as a result of the dredging operation, the Contractor shall modify processes such that water quality standards are met.
- 1.07 <u>Temporary Erosion and Sediment Control</u>
  - A. The Contractor shall provide all temporary erosion and sediment control and pollution prevention measures necessary during project executions for the prevention of water pollution, erosion, and or siltation to comply with the water quality standards given in the Washington State Administrative Code Chapter 173-201A. These measures are for the protection of streams, ponds, wetlands and groundwater.
  - B. Temporary erosion control measures include such items as keeping materials protected from rain and runoff, covering disturbed areas, vegetated buffers, and silt fences. Temporary erosion control measures shall remain in working condition until such controls are no longer necessary. If work is suspended for any reason, all materials and disturbed areas shall be covered and shall remain covered during the duration of the work suspension.
  - B. Payment for this work shall be considered incidental to the Contract and no separate payments shall be made.

#### SECTION 01700 PROJECT CLOSEOUT

#### PART 1: GENERAL

#### 1.01 <u>General</u>

A. It is intent of these contract documents that the Contractor shall remove and dispose of 80 dry tons (dry weight) of the biosolids from the Biosolids Stabilization Basin, and return the facilities to their preexisting conditions.

#### 1.02 <u>Cleanup</u>

- A. Throughout the period of project execution the Contractor shall keep the work site free and clean of all rubbish and debris, and shall promptly remove from any portion of the site, or from property adjacent to the site of the work, all unused materials, surplus earth and debris, excepting select material which may be required for refilling or grading.
- B. Upon completion of the work, and prior to the final acceptance, the Contractor shall remove from the vicinity of the work all surplus material and equipment belonging to him or used under his direction during construction.
- 1.03 <u>Waste Disposal</u>
  - A. The Contractor shall be responsible to dispose of surplus material, waste products and debris. If arrangements are made to dispose of materials on private property, the Contractor shall obtain written permission from the property owner prior to disposal of any material.
  - B. No separate or extra payment of any kind will be made for disposal of any surplus materials. Waste products or debris, other than dewatered biosolids, shall be considered as incidental to the work, and shall be included in applicable unit price or lump sum bid items.

#### 1.04 <u>Releases from Owners/Operators of Biosolids Disposal Sites</u>

A. Contractor shall provide written releases from all owners and operators of sites utilized under this contract for biosolids disposal stating that the Contractor has complied with all applicable requirements and that no outstanding claims remain.

## 1.05 <u>Repair of Damaged Pavement, Restoration of Damaged General Surfaces and Regrading of Disturbed Areas</u>

A. The Contractor shall repair all pavement sections damaged during the project prior to final acceptance. Gravel roads and surfaces damaged during the project shall be restored with similar aggregate and regraded prior to final acceptance. Disturbed areas in the stockpile area or other nonpaved/nongraveled areas shall be graded prior to final acceptance.

#### 1.06 Aerator Startup of Facilities Moved or Impacted by the Project

A. All aerators, cables, electrical lines and other affected equipment shall be reinstalled to preexisting configurations and tested to demonstrate that such equipment operates as before project startup.

#### 1.07 Project Closeout Procedures Checklist

			Date
Responsibility			
Engineer	1.	Punch List	
Contractor	2.	Notice to Engineer that Punch List items are completed	
Engineer	3.	Letter to Owner recommending substantial completion	
-		following inspection	
Owner	4.	Substantial Completion	
Contractor	5.	100 percent Completion of Specification Requirements	
		a. Releases	
		b. Test Results	
Contractor	6.	Final Billing/100 percent (all items complete)	
		a. Release of Liens; Contractor and Subcontractor forms	
Owner	7.	State Tax Release	
		a. Applied for by Owner on	
		b. Received on	
Engineer	8.	Letter to Owner recommending Acceptance	
Owner	9.	Final Acceptance Letter to Contractor	
Contractor	10.	Final Affidavit of Wages Paid	
Contractor	11.	Department of Labor and Industries Insurance Release	
Owner	12.	Notice of Completion and Acceptance (Exec. Sig.)	
Owner	13.	Processing of Retainage Payment begins 30 days following date of Final Acceptance	

#### SECTION 01800 WAGES

#### PART 1: GENERAL

#### 1.01 <u>Description</u>

- A. The Contractor and subcontractors shall comply with Section 1-07.9 of the WSDOT Standard Specifications, current edition, except as herein modified. The sub-section titled <u>Required Documents</u> is replaced with the following:
  - 1. Before payment is made by the Owner of any sums due under this contract, the Owner must receive from the Contractor and each subcontractor or agent a copy of "Statement of Intent to Pay Prevailing Wages" approved by the Washington Department of Labor and Industries, and weekly certified payrolls from the Contractor and each subcontractor or agent.
  - 2. Upon completion of this contract, the Owner must receive from the Contractor and each subcontractor a copy of the "Affidavit of Wages Paid", approved by the Washington Department of Labor and Industries. In addition, the Owner must receive from the Contractor a copy of "Release for the Protection of Property Owners and General Contractor" approved by the Washington Department of Labor and Industries. These affidavits will be required before any funds retained, according to the provisions of RCW 60.28.010 are released to the Contractor. The forms may be obtained from the Department of Labor and Industries. Fees are charged by the Washington Department of Labor and Industries. Fees are charged by the Washington Department of Labor and Industries for each form submitted. The Contractor is responsible for payment of these fees and shall make all applications directly to the Department of Labor and Industries. These fees shall be incidental to all bid items of this contract.

## PART 4 DIVISION 2

## **Site Work**

#### SECTION 02150 BIOSOLIDS REMOVAL AND LAND APPLICATION

#### PART 1 GENERAL

#### 1.01 Description of Work

- A. The work to be performed shall include furnishing all labor, materials and equipment necessary for removal of approximately 80 dry tons of biosolids from the City of Ferndale's existing wastewater treatment facility and land application at an adjacent land parcel. General work described in this section includes dredging, pumping, screening, land application, and restoration.
- B. The City has a permit for biosolids land application on City-owned agricultural property immediately adjacent to (northwest of) the wastewater treatment plant. The proposed application site is on 20 acres of farmland. The actual area of biosolids application will be 13 acres, with the remaining area forming the vegetated buffers adjacent to property lines, surface water, residences, and wells. The biosolids application rate is anticipated to be about 5-7 dry tons/acre once every year, which is equal to about a two-inch depth of liquid biosolids. The City will grow animal feed crops on the site. A relay crop of grass is harvested prior to biosolids land application. Silage corn is planted after biosolids land application.
- C. Biosolids at the municipal wastewater treatment plant are stored and aerated in the Biosolids Stabilization Basin (West Lagoon). Biosolids are Class B (i.e., not treated to remove all pathogens). The water level will be approximately 8-13 feet above the lagoon bottom. The lagoon is lined with HDPE geomembrane. The bottom is protected by a layer of shotcrete. The sideslopes are protected by a 12-inch thickness of rocks.

#### 1.02 Bidder Qualifications

- A. Only contractors with experience dredging and land applying wastewater biosolids will be considered for dredging and land applying biosolids at the Ferndale Wastewater Treatment Plant. Contractors must be able to show experience, within the last three years prior to bid opening date, in dredging and land applying at least 20 dry tons for a single job utilizing techniques described in this section.
- B. A superintendent with experience land applying at least 20 dry tons for a single job utilizing injection techniques shall be on the job site each day during land application of biosolids.

#### 1.03 <u>Compliance with Regulations</u>

- A. The Contractor is responsible for ensuring that all work is in accordance with the Permit Conditions attached in Appendix D. The Contractor(s) shall identify and comply with all such conditions and maintain documentation sufficient to show such compliance.
- B. The Contractor is responsible for ensuring that all work is in accordance with the City of Ferndale Biosolids Management Plan, specifically:
  - 1. Chapter 2 Site Maps
  - 2. Chapter 5 Biosolids Application Method and Timing

C. The Contractor is responsible carrying out biosolids removal and land application in accordance with Chapter 173-308 WAC Biosolids Management and all other applicable federal, state and local laws and regulations. The Contractor(s) shall identify and comply with all such regulations and maintain documentation sufficient to show such compliance.

#### 1.04 <u>Biosolids Quantity and Quality Information</u>

A. The biosolids are Class B biosolids acceptable for disposal at the City of Ferndale Biosolids Land Application site. Biosolids are typically 1.5 percent to 4 percent total solids content. Biosolids must be incorporated into the soil in order to comply with Vector Attraction requirements of WAC 173-308. The biosolids are largely free of rocks and debris because incoming wastewater is screened. However, small rocks and other small inert debris are present in the riprap dike walls and may be entrained in the dredging process. The Contractor shall screen all biosolids using 3/8-inch slotted or perforated screens. The Contract may wish to settle grit prior to screening. It is the Contractor's responsibility to perform any additional sampling and analyses the Contractor believes is needed to adequately determine a bid proposal. The City is not responsible for the performance efficiency of any item of the Contractor's equipment or equipment system used in this contract. The Contractor must evaluate for himself how the biosolids characteristics will influence the performance efficiency of his equipment.

#### 1.05 <u>Quality Assurance</u>

- A. Referenced Standards:
  - 1. Standard methods for the examination of Water and Wastewater
    - a. Current edition, Method 2540.G.
  - 2. EPA Sampling Procedures and Protocols for the National Sewage Biosolids Survey.

#### 1.06 <u>Submittals</u>

- A. A written method for measuring flow rate of injected biosolids and methods for demonstrating or certifying the accuracy of flow measurements. An alternative to measuring flow rate of injected biosolids for determining biosolids quantity may be proposed by the Contractor, but will only be allowed at the discretion of the Engineer.
- B. Biosolids Quantity and Characteristics Evaluation (only if performed this is not a required evaluation): Complete documentation of the Contractor's own evaluation, if any, of biosolids quantity and quality characteristics must be submitted. The submittal must include results from the Contractor's own evaluation of biosolids quantity and characteristics at the existing lagoon. The Contractor shall decide which quantity and quality characteristics, if any, will be determined.
- C. Biosolids Removal and Land Application Operations Plan: The Contractor shall submit a biosolids removal operations plan prior to any biosolids removal operations. The plan shall include, at a minimum, a schedule for biosolids removal in all areas of the existing lagoon including anticipated hours of operation and a site map showing staging areas and

locations of all biosolids removal equipment and systems, including conveyors, tankage, pumps, screens, piping, tractors, injectors, etc. The plan shall address scheduling, equipment use and staging in the area of biosolids dredging and land application as discussed in Part 3.01 of this Section. Coordination details for treatment lagoon bypass and conveyance to utilization/disposal site(s) shall also be outlined. The plan must be submitted in accordance with Section 01340 prior to any biosolids removal operations. The plan shall be coordinated with the requirements of Section 01510.

D. The Contractor must submit documentation to the City verifying that all biosolids has been disposed of in compliance with all Federal, State, and Local regulations and requirements.

#### 1.07 <u>Definitions</u>

A. Biosolids: Municipal sewage biosolids, a semi-solid product resulting from wastewater treatment process. "Biosolids" and "sludge" are used interchangeably in this document.

#### PART 2 PRODUCTS

#### 2.01 <u>Dredging</u>

A. Contractor shall utilize horizontal, auger type head dredge. Cutter shuttlecock, clamshell or dragline type dredges will not be allowed.

#### 2.03 <u>Stockpiling</u>

A. Contractor shall provide equipment for conveying biosolids and for storing in any temporary holding facilities. Contractor shall provide all conveyance, tankage, containment, and any other equipment needed for temporary holding facilities for dredged biosolids.

#### 2.03 Land Application

- A. Contractor shall provide pressure pipe and hose to convey biosolids slurry to field, pumps, storage, screening, tractors, injectors and any other equipment needed to inject biosolids per the Specifications.
- B. Tanker trucks will not be allowed as a substitute for pump and hose method of biosolids conveyance.

#### PART 3 EXECUTION

- 3.01 Work Sequence and Constraints
  - A. The Contractor shall be aware that expedient removal of biosolids from the Biosolids Stabilization Basin is required for the WWTP to maintain discharge compliance with local state and federal requirements.
  - B. The Contractor shall use only the areas designated on the Plans and by the Engineer for equipment and manpower staging. The Contractor shall maintain access on the job site

as directed by the Engineer for City operations staff. The Contractor shall develop any needed staging area(s) in compliance with local health district regulations. Costs in the set up of the Contractor's staging areas shall be included in Mobilization as described in Section 01150.

- C. The Contractor shall minimize the amount of odor generated during the biosolids removal, conveyance, and holding.
- D. The City is required to meet effluent discharge limits under federal law and stipulated under the current NPDES permit. Biosolids removal operations shall be done in such a manner to minimize the release of suspended solids through the effluent weir. Refer to Section 01510 of these Specifications.
- E. The Contractor will be required to coordinate their activities with the WWTP operators. The Contractor needs to be aware that trucks may need access to the site from time to time. The Contractor(s) shall allow access for these trucks. The Contractor will work through, and with, the Engineer or their designee in matters that may affect plant operations and work schedule. The Contractor must provide at least 48 hours prior notice of the need for relocation or removal of any facility equipment which may interfere with the dredging operation. The notice will be in writing, stating the assistance needed from the City with its equipment.
- F. The Contractor shall be responsible for any damage to any aeration equipment or other facility equipment, which has been caused by the biosolids removal operations and shall, at Contractor's expense, schedule and complete repairs as soon as possible. The repair schedule must be acceptable to the Engineer, and shall be submitted within 72 hours from the time when damage occurred or was initially noted by either the Contractor or the Engineer. Any repair work must be accomplished with parts, materials, and labor, which have first met the approval of the Engineer. Upon completion of any repair work or receipt of materials or replacement equipment or parts, written approval from the Engineer must accompany a statement to the affect that this work has been completed. Said statement shall be submitted to the Engineer. If, in the opinion of the Engineer, any equipment, materials, repair work, or schedule for such, is unacceptable to him, the Engineer may elect to have the work done by City staff or another contractor. All costs for any repair work as described herein are to be paid for by the Contractor.
- G. The Contractor will ensure that all phases of the biosolids removal operation (i.e., dredging, conveyance, and land application) are coordinated to avoid any delays or conflicts.

#### 3.02 <u>Dredging</u>

- A. The Contractor shall provide the necessary personnel, equipment, and facilities for dredging at areas described herein to dredge sufficient quantities of biosolids to yield approximately 80 dry tons of biosolids.
- B. The Contractor shall provide the temporary installation(s) of a discharge header(s) with connection point(s) along side of the Biosolids Stabilization Basin dike road without damaging structures and so as not to interfere with routine WWTP operation and maintenance activities.

- C. The dredged biosolids shall be expediently land applied upon removal from the lagoon.
- D. The Contractor may dredge the entire Biosolids Stabilization Basin or as much as needed to yield approximately 80 dry tons.
  - 1. The Biosolids Stabilization Basin shall be dredged beginning in the southeast corner near the outlet weir. The Contractor shall dredge as much as possible from this location in order to clear a zone around the Lagoon outlet.

#### 3.03 Land Application

- A. Injection of biosolids shall be to an average depth of approximately 6 inches into the soil.
- B. Biosolids shall not remain on the soil surface to a significant degree. The Whatcom County Health Department Representative shall have the authority to require a change in application rate or technique or to stop work if this requirement is not met.
- C. Biosolids shall be pumped to the site from the dredger in the wastewater treatment plant lagoon using a combination of pressure pipe and pressure hose. A temporary holding tank, pressure pump, and screening system are typical necessary additional components of the system.
- D. The Contractor shall comply with the required application rate as specified by the Engineer. The application rate is anticipated to be approximately 5-7 dry tons per acre depending on the nitrogen content of the biosolids. The biosolids shall be applied uniformly across the site. Uniform application shall be assured by:
  - 1. Checking calibration of the application rate frequently per Subsection E below.
  - 2. Applying biosolids at the required application rate by controlling the travel speed of the injector and the flow rate of the biosolids.
  - 3. Ensuring that each pass of the injection plow over the field does not overlap with the adjacent pass of the injection plow, but rather butts up against it as closely as practical.
  - 4. A representative of the Whatcom County Health Department may be on site during land application. The Contractor must comply with the requirements of the County Health Department per the Permit Conditions in Appendix B.
- E. Calibration of Injection Rate: Calibration of injection rate shall be performed immediately upon initiation of biosolids application and for every application of 5 dry tons of biosolids.
  - 1. Travel Speed

Travel speed of the injector shall be calculated from the following equation, assuming two (2) passes of the injector over the field:

Travel Speed (ft/min) =  $3.64 \times Flow Rate \times TS\% \times SG$ Agronomic Rate x Injection Width

Where,

Flow Rate: Flow rate of injected biosolids (gallons per minute)

TS%: Percent total solids of applied biosolids SG: Specific gravity of biosolids (assume 1.01 unless otherwise known) Agronomic rate: Application rate in dry tons per acre Injection width: Width of the path of travel (feet)

The travel speed shall be halved - if the biosolids can be fully incorporated with one pass of the injector over the entire field.

Example Calculation:

• Flow rate:	500 gpm
• TS%:	3.0%
• Agronomic rate:	5.2 dry tons/acre
• Injection width:	12 ft
• Travel speed:	88 ft/min (44 ft/min if making only one pass with injector)

2. Determination of Percent Total Solids

Percent Total Solids of the biosolids being injected shall be determined for each calibration per the following:

- i. Sample source: The sample shall be collected from the injector or injector feed line.
- ii. Sample timing: No more than 5 dry tons of biosolids may be applied after collection of the biosolids sample, until the injection rate is recalibrated using the results of the sample.
- iii. Testing Method: The testing method shall be SM2540B, which is the Standard Method or equivalent field method (i.e., microwave).
- iv. The Contractor shall verify the accuracy of the testing method prior to land application of biosolids.
- 3. Determination of Flow Rate
  - i. Flow rate shall be determined as per Section 3.09.
- F. Protection of Water Resources: Adjacent surface water resources shall be protected from pollution by adherence to the following practices:
  - 1. No biosolids shall be applied intentionally or inadvertently to the vegetated buffer shown on the site plan and marked in the field. The Contractor shall remove any biosolids applied to the vegetated buffer.
  - 2. No biosolids shall be applied to the low spot at the west end of the site where ponding occurs as shown on the site plan.
  - 3. Any biosolids spilled on the conveyance route between the lagoon and the biosolids application field shall be cleaned up appropriately.

#### 3.04 Loading and Temporary Holding if Used and if Authorized

A. The Contractor shall provide, as necessary, any facilities, equipment and operators for the loading and unloading of biosolids at any on-site staging area and any points of destination.

B. Biosolids shall not be delivered to any site until delivery has been authorized by the Engineer.

#### 3.05 <u>Sampling</u>

- A. The field Engineer will collect composite samples of biosolids during land application for determination of solids content for calculation of payment. To facilitate the biosolids testing, the Contractor shall provide the Engineer access to the biosolids. The Contractor shall provide a sampling port or sampling method that will provide a representative sample of the biosolids being injected.
  - 1. The percent solids of the injected biosolids shall be determined by testing at least one sample every 5 dry tons injected. These samples shall be representative of the material being injected into the field. The Contractor may collect additional samples, at his/her discretion, for corroboration or appeal of the results of the Engineer's samples.
  - 2. Sampling method shall comply with standards referenced in Article 1.05 of this section.
  - 3. Contractor shall be responsible for more frequent sample testing if required for quality control.
  - 4. If the Contractor obtains samples, the Contractor shall combine samples under direct supervision of Engineer.
  - 5. Composite samples shall be placed in watertight containers provided by an accredited laboratory as accepted by the Engineer.
- B. Samples shall be labeled with a minimum of the following information:
  - 1. Time and date the sample was taken and the number of subsamples.
  - 2. Name or initials of person taking sample.
  - 3. Sampling Location
  - 4. Weight slip numbers corresponding to sample, and truckload.

#### 3.06 <u>Testing</u>

- A. Engineer to analyze composite sample for percent total solids at a Department of Ecology accredited laboratory:
  - 1. Testing method to comply with standards referenced in Part 1.04 of this Section.
  - 2. Results shall be available to the Contractor 24 hours after tests results are provided to the Engineer.
- B. Contractor may appeal results of Engineer's tests:
  - 1. Appeal, accompanied by justification and analytical data, must be made within 48 hours of the Contractor's receipt of Engineer's test results. If results are not disputed within 48 hours, Engineer's results shall be final.
  - 2. Private testing, for the purpose of appeal, must be performed by a Washington State Department of Ecology accredited laboratory.

#### 3.07 Determination of Biosolids Injection Flow Rate

- A. The Contractor is responsible for determining the flow rate of the biosolids injection for the purposes of calibrating injection rate and determining pay quantities.
- B. The Contractor is responsible for providing a means of measuring flow rate of injected biosolids and methods for demonstrating or certifying the accuracy of flow measurements.

#### 3.08 Site Utilization/Disposal

A. All biosolids removed from the Biosolids Stabilization Basin (approximately 80 dry tons) will be land applied. There will be no hauling of biosolids.

#### 3.09 <u>Measurement</u>

- A. The dry weight (DW) of biosolids shall be determined by the following calculations.
  - 1. Calculation of dry weight for Injected Biosolids:

DW (dry tons) = Flow<sub>i</sub> x T<sub>i</sub> x %TS<sub>i</sub>  $\div$  100 x 8.34 x 1.01 $\div$  2,000

#### Where,

- $Flow_i = Flow rate of injected biosolids (gallons per minute) associated with sample "I"$
- $T_i$  = Application duration (minutes) associated with sample "i"
- $%TS_i$  = Percent total solids of applied biosolids for sample "i"
- 100 = Conversion of percent to decimal
- 8.34 =Conversion of gallons to pounds
- 1.01 = Assumed specific gravity of biosolids
- 2,000 =Conversion of pounds to tons

PART 5

# Appendices

## APPENDIX A

# **Prevailing Wages**

#### APPENDIX A WASHINGTON STATE PREVAILING WAGE RATES

The State of Washington prevailing wage rates applicable for this public works project, which is located in Whatcom County, may be found at the following website address of the Department of Labor and Industries:

#### https://secure.lni.wa.gov/wagelookup/

Based on the bid submittal deadline for this project, the applicable effective date for prevailing wages for this project is March 3, 2023. A copy of the applicable prevailing wage rates is also available for viewing at the office of the Owner, located at:

City of Ferndale 2095 Main Street, Ferndale, WA 98248

Upon request, the Owner will mail a hard copy of the applicable prevailing wages for this project.
### **APPENDIX B**

## **Biosolids Land Application Plan**



### WASTEWATER TREATMENT PLANT BIOSOLIDS LAND APPLICATION PLAN

FEBRUARY 2004 (Revised April 2015)

### **BIOSOLIDS LAND APPLICATION PLAN**

### TABLE OF CONTENTS

1.0	INTRODUCTION	1
1.1	Background	1
2.0	SITE MAPS	3
3.0	CROP MANAGEMENT	4
3.1	Crops Grown	4
3.2	Crop Yields, Nutrient Uptake, and Fertilizer and Irrigation Requirements	4
3.3	Planting	4
3.4	Harvesting	5
3.5	Soil Monitoring	5
N	litrogen Utilization Performance Monitoring	5
S	urface Soil Chemistry Monitoring	5
4.0	AGRONOMIC RATE CALCULATION	6
4.1	Nitrogen	6
4.2	Recommended Application Rate	6
4.3	Metals	6
4.4	Recalculate Agronomic Rate	7
5.0	BIOSOLIDS APPLICATION METHOD AND TIMING	8
5.1	Schedule	8
5.2	Equipment	8
5.3	Soil Incorporation Methods	8
5.4	Application Equipment Calibration	9
6.0	MONITORING1	0
6.1	Monitoring Plan1	0
G	roundwater1	0
S	urface Water1	0
S	oil 1	0
C	rop1	0
B	10solids	0
62	ample Testing	1
0.2 Ir	Daseline Data	1 ar
II. W	repertation of this fand appreciation plan, on-site son, groundwater, and surface water are sampled and tested. See the following tables for the testing results	л 1
S	oil Analysis Results and Interpretation	1
W	Vater Quality Monitoring Results	4
6.3	Monitoring Data1	7
7.0	SOIL DESCRIPTIONS AND LIMITATIONS1	8
7.1	Methods1	8
7.2	Field Observations1	8
7.3	Soils Data1	8

### **BIOSOLIDS LAND APPLICATION PLAN**

Se	bil Characteristics for Biosolids Management	18						
8.0	DRAINAGE CHARACTERISTICS	. 20						
9.0	SURFACE WATER PROTECTION	.21						
10.0	GROUNDWATER MANAGEMENT PLAN	.22						
10.1	Groundwater Characteristics	.22						
10.2	Groundwater Management23							
10.3	Application Timing	Application Timing23						
10.4	Application Rates	.23						
10.5	pH Management	.23						
10.6	Monitoring	.23						
11.0	PUBLIC ACCESS RESTRICTION	.25						
12.0	CONVEYANCE OF LIQUID BIOSOLIDS	.27						
13.0	SITE MANAGEMENT AND ADMINISTRATION	.28						
13.1	Biosolids Land Application Monitoring	.28						
С	alibration of Biosolids Application Equipment	. 28						
Pe	ercent Total Solids Measurement Frequency	. 28						
R	ecord Keeping System	28						
V	isual Monitoring	. 28						
R	emediation Plan	28						
13.2	Contingency Plans	.28						
13.3	Names and Contact Information	.29						
Si	te Manager	29						
С	ontractor	. 29						
14.0	REPORTING	. 30						
14.1	Regulatory Agencies	. 30						
14.2	Annual Report Required Elements	. 30						
14.3	Due Date	. 30						
APPEN	IDICES	A						
Appe	ndix A Groundwater Assessment ReportA							
Appe	ndix B Surface Water Report: Drainage Pathways & Surface and Ground Water QualityA							
Appe	ndix C Soils and Crop Management Study	А						
Appe	ndix D Chemical Toxicity and Pathogenicity of Biosolids	А						
Appe	ndix E Agronomic Rate Calculation	А						
Appe	ndix F Biosolids Land Application Monitoring – Sampling and Analysis Plan and Schedule	A						

### 1.0 INTRODUCTION

This site-specific Land Application Plan provides instructions for properly managing the application of biosolids from the City of Ferndale Wastewater Treatment Plant (WWTP) lagoon at the City's biosolids land application site.

The Land Application Plan appendices include additional detailed reports prepared to support the plan:

- Appendix A *Groundwater Assessment Report*, Biosolids Land Application Project, Ferndale Washington, June 13, 2003. Prepared by GeoEngineers.
- Appendix B Surface Water Report: Drainage Pathways & Surface and Ground Water Quality, City of Ferndale Biosolids Land Application Plan, June 2003. Prepared by Anvil.
- Appendix C Soils and Crop Management Study, June 2003. Prepared by Land Profile, Inc.
- Appendix D *Chemical Toxicity and Pathogenicity of Biosolids*, City of Ferndale Biosolids Land Application Plan, June 2003. Prepared by EVS Environmental Consultants.

The City of Ferndale will apply biosolids on city-owned agricultural property immediately adjacent to (northwest of) the wastewater treatment plant. The proposed application site is on 20 acres of farmland last planted in corn. The actual area of biosolids application will be about 14 acres, with the remaining area forming the vegetated buffers adjacent to property lines, surface water, residences, and wells. The biosolids application rate is anticipated to be about 5-6 dry tons/acre once every year, which is equal to about a one-inch depth of liquid biosolids. The biosolids in the form of liquid slurry will be injected into the soil once a year between May and August. The City will grow animal feed crops on the site.

Biosolids at the treatment plant are collected, treated, and stored at the bottom of the partial-mix aerated treatment lagoon cells. Biosolids are Class B (i.e., not treated to remove all pathogens). The current biosolids production rate is approximately 60 to 70 tons (dry weight) per year, or about 0.25 to 0.3 million gallons (liquid) per year.

The proposed site is located in Water Resource Inventory Area Number 1, Nooksack Watershed. Within WRIA 1, the site is located on the drainage divide between the Schell Creek basin and The Lummi River basin.

### 1.1 Background

Previous biosolids removal and disposal in 2000 involved dredging, dewatering, and hauling the biosolids long distance to Douglas County for dry land wheat application.

In 1976 biosolids from the WWTP's north and south lagoons were applied once to the proposed site. At that time, Thermal Reduction Corporation (now Recomp of Washington) did not discharge leachate to the WWTP. Thermal Reduction Company installed a leachate interceptor in 1981 and began discharging to The City of Ferndale in 1981. To the best of our knowledge, no biosolids with pollutants in excess of the values in WAC 173-308-160, Table 3, have ever been applied to the site. Site soils testing for metals showed no evidence of metals accumulations.

### 2.0 SITE MAPS

Maps for the site include:

- Vicinity map showing drainage.
- Site map showing topography, boundaries, wells, surface water, monitoring wells, and buffers.
- Soils map.
- Access map.
- Plat map, zoning and land use of adjacent properties, and Fertile Meadows Water Association Wellhead Protection Area.
- Floodplain maps

### 3.0 CROP MANAGEMENT

### 3.1 Crops Grown

The agronomist's recommendation is to plant silage corn with an annual relay hay crop such as rye grass, but other cropping systems, such as a perennial grass hay crop, could be considered if they are more compatible with biosolids management needs. All crops will be harvested no sooner than 30 days after the most recent biosolids application and will be utilized for domestic animal feed. No grazing will be allowed.

### 3.2 Crop Yields, Nutrient Uptake, and Fertilizer and Irrigation Requirements

- Silage corn yield is anticipated to be 24 tons/acre, with a nitrogen uptake of 200 lb/acre, or 240 lb/acre with a relay crop of annual hay grass.
- Prior to planting, and as needed (approximately every 5 years), the City should apply 2 tons per acre of agricultural lime to raise soil pH to about 6.5.
- Prior to planting, and as needed (approximately every 5 years), the City should apply 144 lbs/acre potassium (potash, or K<sub>2</sub>O) to address low soil potassium levels.
- Irrigation is not required for either silage corn with a relay hay crop or a perennial grass hay crop.

### 3.3 Planting

For silage corn, the field is prepared in May and planted to corn on about May 10<sup>th</sup>, or earlier if conditions warrant. However, planting may be delayed, until June 20<sup>th</sup> without affecting crop yield, if necessary due to high water table. Soil temperature should be monitored starting in late April, with a goal of planting corn immediately before soil temperatures reach 60°F, the ideal germination temperature for corn. Soil temperatures of 50°F at planting depth (3 inches) in the early morning, or 55°F at 1:00 PM would indicate a good planting time.

Earlier planting is highly preferable for several reasons:

- The corn plant develops better and has a higher yield potential if its development occurs in the cooler, moister weather of May and June.
- Earlier planting tends to place the tasseling period ahead of the greatest risk of drought damage.
- Earlier planted corn crops develop a deeper root system by late June and are more likely to have subsoil moisture to sustain the crop in July as well as utilize nutrients deeper in the soil profile.
- Early planted corn is shorter and less susceptible to lodging (compression from weather) and wind damage.
- It can be planted at a higher seed density, further assuring optimal yield.

After the corn is germinated and well established, an herbicide is applied to control weeds. Herbicide selection and application rate are based on a pre-application survey of weed population.

A relay crop of annual rye is planted as soon as herbicide post-application restrictions allow. The relay crop serves to take up late season soil nitrogen and control runoff and potential sediment loss.

### 3.4 Harvesting

Depending on variety, the crop would normally be ready for harvest between July 20 and August 20, but it must not be harvested until at least 30 days after any biosolids application. Corn should be harvested for silage after the ear is well dented but before the leaves turn brown and dry. The quantity and quality of corn silage are at their peak in this stage of development. The ear has accumulated most of its potential feeding value, but there has been little loss of nutrients (i.e., nitrogen) from the leaves and stalks. After the dent stage, the feeding value of corn stalks and leaves decreases while field losses increase.

### 3.5 Soil Monitoring

Nitrogen performance and soil chemistry monitoring will be performed according to the Plan's Monitoring section.

### Nitrogen Utilization Performance Monitoring

The City of Ferndale should use nitrogen utilization performance monitoring. Washington State University (WSU) and Oregon State University (OSU) have jointly developed a preferred approach to nitrogen utilization performance monitoring. Soil profile nitrate is measured immediately prior to crop growth and immediately after harvest. Annual crop yield and nutrient content is measured and compared to annual loading of nutrients. Factoring the soil residual enables calculation of treatment efficiency.

Efficiency above 85% is considered good, and efficiency of greater than 90% can be achieved with careful management. Efficiencies above 90% would be unexpected due to denitrification losses and immobilization in root mass, as well as a small but unavoidable amount of leaching. Efficiencies below 85% imply leaching losses of nitrate that could be prevented with better management of the operation.

### Surface Soil Chemistry Monitoring

Annual soil sampling is recommended to a depth of one foot. Analysis should include soil nutrients and pH. A soil scientist should evaluate the results. Soil should be sampled for soil nitrate twice annually to allow performance monitoring of nitrogen utilization, with the first sample at the time of planting (before crop growth) and the second sample immediately after final harvest.

### 4.0 AGRONOMIC RATE CALCULATION

Biosolids must be applied at the agronomic rate for uptake of nitrogen. In addition, the long-term biosolids application rate may be limited if the content of any metal is higher than the limits listed in Table 3 of WAC-173-308.

### 4.1 Nitrogen

Philip Small, Registered Professional Soil Scientist (RPSS), of Land Profile, Inc. recommends the following agronomic application rates for plant available nitrogen (PAN):

•	Silage corn with harvested relay hay crop:	240 pounds of PAN per acre/year
•	Silage corn with plowed-in relay hay crop:	200 pounds of PAN per acre/year
•	Perennial hay crop:	200 pounds of PAN per acre/year

### 4.2 Recommended Application Rate

The recommended biosolids application rate, based on a PAN of 240 pounds per acre/year and the January 7, 2003 nitrogen content of the biosolids (1.18% ammonia and 3.31% organic nitrogen), is 5.2 dry tons per acre, or 72.5 dry tons per 14 acres. Of that amount, 100% of ammonia and 22% of organic nitrogen will contribute to the PAN in the first year, and 8%, 3%, 1% and 1% percent of organic nitrogen in the succeeding 4 years.

See Appendix E, which contains a spreadsheet calculation showing the detailed agronomic rate calculation based on current monitoring data, and instructions for recalculating the agronomic rate with different biosolids nutrient content. See also the *Soils and Crop Management Study in Appendix C*, which describes the basis for the crop management plan and the biosolids application rate determination.

If and when the crop grown at the site is changed, the City will contact an agronomist or the Cooperative Extension Service for a vegetative nutrient requirement for the new crop. The City will then recalculate the application rate based on this information and on its biosolids and site soil testing.

### 4.3 Metals

Metals are all below the Table 3 limits in WAC 173-308 and therefore do not limit the application rate. If the concentration of any metal exceeds the Table 3 pollutant limits, then the biosolids application rate should be limited to that calculated based on Table 4 loading limits (WAC 173-308). The maximum biosolids application rate is then either this calculated application rate or the agronomic rate, whichever is lower.

### 4.4 Recalculate Agronomic Rate

To calculate the agronomic rate,

- Determine the crop's nitrogen requirement.
- Determine the nitrogen addition requirement (if conditions have changed since the previous calculation).
- Determine the ammonia, nitrate, and organic nitrogen content of the biosolids.
- Determine the soil nitrate content.
- Subtract 3.8 pounds/acre from the crop's nitrogen requirement for every 1 mg/L of soil nitrate above 20 mg/kg.
- Determine the fertilizer added, if any, and the nitrogen in any plowed-in cover crop.
- Fill in the yellow shaded cells in the Spreadsheet for Calculating Biosolids Application Rates in Agriculture (in Appendix E) to determine the biosolids application rate based on the agronomic rate.

### 5.0 BIOSOLIDS APPLICATION METHOD AND TIMING

The method and timing of the biosolids application depends on a number of factors described below.

### 5.1 Schedule

See Table 2 in Appendix F for full Schedule Checklist.

Biosolids application is limited to May through August:

- After the groundwater table recedes below 2 feet in depth (sometime in May, or possibly April or June depending on annual climate variation).
- At least 60 days prior to the flood season beginning in November.
- Biosolids shall not be applied on the weekend of Easter, Mother's Day, Memorial Day, Father's Day, or Independence Day.

We anticipate that biosolids application will occur sometime between May 1 and June 20 in order to comply with the groundwater management plan and to maximize uptake of ammonia during the growing season.

Biosolids application will normally occur prior to planting, and harvesting will be at least 30 days after biosolids application. Biosolids may be applied after the corn is planted, but great care must be taken not to disturb the planted corn with the tractor wheels, injectors, or hose. If the corn plants have begun to emerge from the soil, then a tanker must be used for biosolids conveyance instead of a pump hose.

### 5.2 Equipment

The contractor who performs the biosolids dredging and injection will supply all equipment:

- Horizontal auger dredge or hydraulic dredge
- Slurry pump
- Pressure pipe and hose to convey biosolids slurry to field, or
- Alternative to pressure hose: pumper truck, with oversized wheels to avoid soil compaction
- Tractor or pumper truck mounted with injector tines.

### 5.3 Soil Incorporation Methods

Biosolids will be incorporated into the soil by direct injection using tractor-pulled injection times spaced at intervals equal to crop row interval if injecting after crop is planted. Injection will be to an average depth of approximately 6 inches.

### 5.4 Application Equipment Calibration

Calibration will be performed immediately upon initiation of biosolids application and after each application of 10 dry tons of biosolids. Travel speed of the injector is calculated from the following equation, assuming **2 passes** of the injector over the entire field:

Travel Speed (ft/min) =  $\frac{3.64 \text{ x Flow Rate (gpm) x TS\% x SG}}{\text{Agronomic Rate (dry ton/acre) x Injection Width (ft)}}$ 

The travel speed shall be halved <u>if</u> the biosolids can be fully incorporated with **one pass** of the injector over the entire field.

- Flow Rate: Flow rate of injected biosolids (gpm)
- TS%: Percent total solids of applied biosolids
- SG: Specific gravity of biosolids (assume 1.01 unless otherwise known)
- Injection width: Width of the path of travel (ft)

### Example:

- Flow rate: 500 gpm
- TS%: 3.0%
- Agronomic rate: 5.2 dry tons/acre
- Injection width: 12 ft
- Travel speed: 88 ft/min (44 ft/min if making only one pass with injector)

### 6.0 MONITORING

The primary purpose of monitoring is to ensure protection of environmental resources and to provide information on soils and biosolids to ensure that biosolids are applied correctly and the crop is well managed. See Appendix F for the detailed Sampling and Analysis Plan containing the sampling schedule and analysis parameters.

### 6.1 Monitoring Plan

### Groundwater

- 1. Measure depth to groundwater table at all 6 wells prior to biosolids land application to verify depth is greater than 3 feet over all areas to be applied with biosolids. Measure depths during groundwater quality monitoring also.
- 2. Sample one upgradient well (MW1 OR MW4) and downgradient well MW5 <u>October-December</u> and <u>February-April</u>.

### **Surface Water**

- 1. Sample one upgradient and one downgradient site on the perimeter ditches during:
  - i. The first major rainfall after biosolids application AND
  - ii. October-December and February-April

### Soil

- 1. Immediately after final harvest, collect: (i) <u>one composite</u> sample of the <u>upper 0-12</u> <u>inches</u> of soil for <u>nutrients analysis</u> and (ii) <u>one composite</u> sample from <u>12-24 inches</u> <u>depth</u> for <u>nitrate</u> analysis.
- 2. At the time of planting, collect: (i) <u>one composite</u> sample of the <u>upper 0-12 inches</u> and (ii) <u>one composite</u> sample from <u>12-24 inches</u> depth for <u>nitrate</u> analysis.
- 3. Every FIFTH YEAR immediately after final harvest, collect: (i) <u>one composite</u> sample of the <u>upper 0-12 inches</u> for <u>503 metals</u> analysis.

### Crop

1. Collect one plant tissue sample for nutrients analysis at harvest time.

### **Biosolids**

- 1. One to two months prior to land application, collect one composite sample representative of the biosolids to be land-applied.
- 2. For every 10 dry tons of biosolids applied during land application, collect one sample for total solids testing (for calibration of the land application rate).

### Sample Testing

Samples will be tested using the parameters and methods shown in Appendix F, Biosolids Land Application Monitoring - Sampling and Analysis Plan.

### 6.2 Baseline Data

In preparation of this land application plan, on-site soil, groundwater, and surface water were sampled and tested. See the following tables for the testing results.

### Soil Analysis Results and Interpretation

Philip Small of Land Profile, Inc., took soil analysis samples on November 23, 2002.

### Nitrogen

The nitrate-nitrogen (NO<sub>3</sub>-N) concentration averages 22.1 mg/kg in the surface composite 12 inches.

Between 20 and 30 mg/kg is considered high but not excessive. Consistent with the most current guidelines available, the samples were obtained after fall mineralization and before any winter leaching had occurred.

In sidedressed field corn production, a midseason measurement of soil nitrate is preferable, and additional soil nitrate sampling may be desirable if field or silage corn is to be planted.

Selected Soil Analysis								
	NO <sub>3</sub> -N	Р	К	Na	В	Zn	OM	CEC
		Mg/kg % Meq/100						
Field Composite (6 sites)	22.1	62.3	81.8	14.0	nd	1.8	3.1	12.9
Site A	33.9	73.4	78.0	10.0	nd	1.5	2.0	10.0
Site B	21.0	29.9	48.7	17.0	0.3	0.9	3.1	13.0

OM = Organic Matter

CEC = Cation Exchange Capacity

### Phosphorus 2 1 1

Available (Bray) Phosphorus (P) concentration averages 62.3 mg/kg in the surface composite 12 inches.

According to the most current soil test interpretation guidelines, between 40 and 100 is considered high but not excessive. No additional phosphorus is required to support optimal biomass production at any fields. With increasing soil test phosphorus levels, preventing sediment from leaving the site becomes increasingly important to avoid impacts on surface water quality. Current management techniques available include grass filter strips and a relay crop of annual rye to control runoff after harvest of corn silage. The subject property has little slope, and its sandy texture has good water intake, combining to provide very low potential for runoff or loss of sediment. Proper management assures onsite retention of applied phosphorus. Although WSU recommends using the Bray extract phosphorous test, local experience is that Morgan (sodium acetate) extract phosphorus is a more informative test for acidic soils in the area. For future tests, Morgan extract phosphorus should be requested as well as Bray extract. However, while Morgan extract may show lower available phosphorus, it seems unlikely that it will be below 40 mg/kg or require changing the soil classification.

### <u>Potassium</u>

Exchangeable potassium (K) concentration averages 81.8 mg/kg in the surface composite 12 inches.

Potassium concentrations below 150 mg/kg are considered low. Since biosolids are not typically a ready source of potassium, an additional fertilizer application of 144 lbs  $K_2O$ /acre should be made to maintain optimal plant growth and biomass production.

### Calcium, pH and Lime Requirement

Exchangeable calcium concentration averages 717 mg/kg in the surface composite 12 inches. Calcium (Ca) concentrations below 1000 mg/kg are considered low.

Field pH is 5.1. This is low enough to have some effect on crop yield. Application of lime should be used to raise pH. At pH below 5.5, aluminum becomes soluble and available to plants, which can cause aluminum toxicity. Aluminum toxicity reduces root length and the plant's ability to take up nutrients, which can reduce crop biomass production. The recommended treatment to alleviate the low pH problem is to apply a source of carbonate ( $CO_3$ ) to the soil, such as agricultural lime ( $CaCO_3$ ).

The laboratory-measured lime requirement is 0.8 tons per acre. This approach calculates a lime application rate sufficient to raise soil pH to 6.0. Land Profile, Inc. recommends a minimum of 2 tons per acre to raise soil pH closer to 6.5 and to achieve and sustain crop productivity goals for a longer term.

With exchangeable magnesium (Mg) above 60 mg/kg, dolomitic limestone is not specifically needed to raise pH. Any cost effective source of agricultural lime will work.

### <u>Sodium</u>

Sodium levels are well within the suitable range for plant growth.

### Boron

Boron concentration is less than 0.1 mg/kg in the surface composite 12 inches. Boron concentrations below 0.5 mg/kg are considered low. For planting a crop known to respond to boron on low boron soil, an application of 10 pounds boron per acre should be considered. However, boron application is not necessary for silage corn.

### Zinc

Zinc concentration is 1.8 mg/kg in the surface composite 12 inches. Zinc concentrations above 1.0 mg/kg are considered sufficient.

### Trace Elements

Most trace elements were below the 90<sup>th</sup> percentile values for the Puget Sound region of Washington. With the possible exception of mercury (Hg), the only elevated trace element is nickel (Ni). In the experience of Land Profile, Inc., a mercury value below 0.15 mg/kg is within a typical background range for Western Washington, indicating no significance or concern.

Trace Element Concentrations								
	As	Cd	Pb	Hg	Se	Cu	Zn	Ni
Published Background	7	1	24	0.07		36	85	48
Composite Site Sample	3.4	0.55	6.6	0.10	nd	26.0	52.0	113

Trace element concentrations are based on Cascade Analytical Laboratory data. All values are presented as mg/kg.

### Water Quality Monitoring Results

The monitored site water quality on December 30, 2002 and on April 1, 2003.

		Gr	ound Water M	Surface Water			
	Date	12/3	30/02	4/3	8/03	12/30/02	4/3/03
	Monitoring Station Units	MW-1	MW-4	MW-5	MW-6	North Bour	ndary Ditch
Field Measurements							
Water Level Elevation	ft, MSL	14.11	13.11	13.30	13.47		
Flow Rate	cfs					Zero	Zero
рН	S.U.	6.3	6.4	6.8	6.8	6.9	7.5
Specific Conductance	µmhos/cm	551	781	239	610	266	401
Temperature	°Celsius	10.1	9.9	8.9	9.5	4.1	13.1
Dissolved Oxygen	mg/L	0.4	1.0	0.63	0.5	9.3	12.3
Dissolved Oxygen	% Saturation	3.6%	8.6%	5.4%	4.1%	72.0%	117.0%
<b>Conventional Parameters</b>							
Fecal Coliform	org/100mL	2 U	2 U	2 U	2 U	30	11
Total Coliform	org/100mL	80	500	80	23		
Total Dissolved Solids	mg/L	268	402	153	376		
Iron	mg/L			0.98	8.30		
Chloride	mg/L	10	16	5	8		
Total Organic Carbon	mg/L	13	31	4	26		
TKN	mg/L	1.0	3.0	0.8	1.0		
Ammonia as N	mg/L	1.10	1.40	0.07	0.30	0.16	0.12
Nitrate as N	mg/L	0.10 U	0.54	2.25	0.10 U	0.84	0.27
Total Phosphorus	mg/L					0.10 U	0.06 J
Metals							
Arsenic	µg/L	<u>10.00</u>	<u>15.00</u>	<u>2.00</u> J	<u>8.00</u> J		
Cadmium	µg/L	0.08 U	0.08 U	0.08 U	0.08 U		
Chromium	µg/L	2.00 J	5.00	3.00 J	3.00 J		
Copper	µg/L	1.00 J	2.00 J	3.00 J	1.00 J		
Lead	µg/L	0.10 U	0.10 U	0.21 J	0.10 U		
Mercury	µg/L	0.50 U	0.50 U	0.50 U	0.50 U		
Molybdenum	µg/L	0.40 U	0.40 U	1.00 J	0.40 J		
Nickel	µg/L	0.10 U	4.00 J	16.00 J	2.00 J		
Selenium	µg/L	0.20 U	0.20 U	3.00 J	0.20 U		
Zinc	µg/L	10.00	9.00 J	6.00 J	2.00 J		

Notes:

Exceedances of groundwater standards or surface water standards are underlined in bold.

U Indicates analyte was below the indicated instrument detection limit. The detection limit is shown.

J Indicates was detected but below the practical quantitation limit. The observed value is shown.

-- Indicates sample not analyzed.

Chemical analysis performed by Edge Analytical. Inc., Burlington, WA.

#### CITY OF FERNDALE WASTEWATER TREATMENT PLANT BIOSOLIDS LAND APPLICATION PLAN

	Average Biosolids Thickness (ft)	Biosolids Maximum Thickness (ft)	Biosolids Surface Area <sup>1</sup> (ft <sup>2</sup> )	Biosolids Volume (yd³)	Biosolids Volume (MG)	Biosolids Specific Gravity	Biosolids Percent Total Solids %	Biosolids Dry Weight (tons)
Cell 2	1.87	2.91	22,000	1,520	0.31	1.0100	5.80%	75
Cell 3	2.51	4.00	22,000	2,040	0.41	1.0100	5.80%	101
Cell 4	2.17	4.41	22,000	1,770	0.36	1.0100	5.43%	82
South/North Lagoon	2.46	3.92	24,000	2,190	0.44	1.0100	6.00%	112
Total Cells 2-4	2.18	4.41	66,000	5,330	1.08	1.0100	5.68%	257
Total All Lagoons	2.25	4.41	90,000	7,520	1.52	1.0100	5.76%	369

## Estimate of Biosolids Depth, Volume and Mass January 7, 2003

Notes:

1. Estimated biosolids surface areas for Cells 2-4 are equivalent to the area of water surface at elevation 20 ft. Estimated biosolids surface areas for the South/North Lagoons equals the bottom surface area multiplied by 1.5.

**Biosolids Quality January 7, 2003 (not including metals)** 

CONSTITUENTS	UNITS	Cells 2/3	Cell 4	Mass-weighted Average (1) Cells 2, 3 & 4
Total Solids	%	5.8	5.43	5.68
Volatile Solids	%	54	50	52.7
рН	S.U.	8.0	8.0	8.0
Tot. Kjeldahl Nitrogen	g/kg	42.8	49.3	44.9
Ammonia	g/kg	11.0	13.6	11.8
Nitrate+Nitrate	g/kg	0.056	0.107	0.072
Total Phosphorus	g/kg	26.4	32.3	28.3
Potassium	g/kg	1.8	2.0	1.9
Fecal Bacteria (2)	No./g dry			52,000
Cyanide	mg/kg			40.0 U
Total Phenols	mg/kg			2.5 U
Volatile Organic Compounds				
Toluene	mg/kg			63.5
All others	mg/kg			<mdl< td=""></mdl<>
Semi-volatile Organic Compo	unds			
Di(2-ethylhexyl)phthalate	mg/kg			79.5
Di-n-butylphthalate	mg/kg			1.9
m/p-cresol	mg/kg			1.8
Benz[a]anthracene	mg/kg			<pql (<1.0)<="" td=""></pql>
Pyrene	mg/kg			<pql (<1.0)<="" td=""></pql>
Benzo[a]pyrene	mg/kg			<pql (<1.0)<="" td=""></pql>
Chrysene	mg/kg			<pql (<1.0)<="" td=""></pql>
Fluoranthene	mg/kg			<pql (<1.0)<="" td=""></pql>
All others	mg/kg			< MDL
Chlorinated Pesticides/PCBs				
All	mg/kg			<mdl< td=""></mdl<>
Dioxins	/			
2,3,7,8-1CDD	µg/kg			0.0015000
2,3,7,8-10DF Total BCDD (aquin)	µg/kg			0.0004600
Total PCDD (equiv.)	µg/kg			0.01000
Total FPA TEFe	µg/kg			0.012400
TOTALEFA TEFS	μγ/κγ			0.020900

### Biosolids Quality, January 7, 2003 (not including metals)

Notes:

1. Equation: [(Cell 2/3 mass x conc) + (Cell 4 mass x conc)]/(Cell 2/3/4 mass)

2. The geometric mean of seven samples is shown

U Indicates concentration is less than the given practical quantitation limit.

MDL Method detection limit

<PQL Indicates concentration is between the practical quantitation limit and the MDL.

CONSTITUENTS	UNITS	Average 1985-1995	Mass- Weighted Average Cell 2,3,4 1999	Mass- Weighted Average Cell 2,3,4 2000	Mass- Weighted Average Cell 2,3,4 2003
TOTAL RECOVERABLE	METALS				
Arsenic	mg/kg	5	60 U	6	30 U
Cadmium	mg/kg	<u>118</u> **	<u>40</u>	<u>37</u>	6 U
Chromium	mg/kg	35	56	63	58
Copper	mg/kg	372	1,034	950	754
Lead	mg/kg	<u>1,293</u> **	<u>687</u>	<u>570</u>	228
Mercury	mg/kg	2.4	4.3	1.3	5.6
Molybdenum	mg/kg		11		9 U
Nickel	mg/kg	21	43	43	29
Selenium	mg/kg	2.4	30 U	3.4	12 U
Zinc	mg/kg	<u>5,284</u>	<u>2,845</u>	2,700	1,692

# Summary of January 7, 2003 Biosolids Heavy Metal Content and Previous Years

Notes:

U Indicates concentration is less than the given practical quantitation limit.

Values highlighted in bold and underlined exceed the Pollutant Limits for land application \*\* Indicates values that exceed the Ceiling Limits for land application.

### 6.3 Monitoring Data

All monitoring data collected for the site and for applied biosolids shall be compiled in this section as it becomes available.

### 7.0 SOIL DESCRIPTIONS AND LIMITATIONS

### 7.1 Methods

Philip Small, RPSS, conducted a field visit to the site on November 23, 2002. He examined soil profiles at six-backhoe pit locations distributed throughout the field. He opened the pits to 48 inches and examined an additional 12 inches using a 4-inch AMS bucket auger. Additionally, he used a modified (0.7 inch diameter soil core) Veihmeyer soil probe to extract the cores at two general area sites (sample sites A and B) adjoining the northeast and southwest pits. Composite soil samples were shipped to Cascade Analytical Laboratories in Wenatchee. Typical soil characteristics described in the six pit locations confirm published NCSS Order 2 soil survey documentation. No gleization, restrictive horizons, or clastic dikes were encountered.

### 7.2 Field Observations

Soils observed were consistent with the single soil map unit at the site: Unit 107, Mt. Vernon sandy loam, 0 to 2 percent slopes.

### 7.3 Soils Data

The site visit conducted on November 23, 2002, confirmed the applicability of the published Order 2 soil survey information for soil map unit 107.

The following soil characteristics for soil map unit 107 are published by the USDA-NRCS and can be used with confidence:

- Soil Map Unit (SMU) 107: Mt. Vernon sandy loam, 0 to 2 percent slopes
- Approximate % of Study Area: 100%
- Permeability: 0.6 in/hr, slight
- Sprinkler Intake Rate: 0.5 in/hr
- Hydrologic Soil Group: C
- Surface Runoff: very slow.

### Soil Characteristics for Biosolids Management

(Note: slightly limiting is the least restrictive rating.)

- Available water capacity is 9.05 inches of water held in the top 60 inches of soil and is slightly limiting.
- Soil porosity is no more than slightly limiting, since bulk density at 1.4 gm/cc does not exceed 1.7 gm/cc throughout.
- Cation exchange capacity (CEC) is 12.9 meq/100 gms. A CEC below 15 meq/100 gms can be moderately limiting if biosolids metals content is a concern and soil pH is low. Amending the soil with agricultural lime will raise soil pH to 6.5, and soil pH must be maintained at no less than 6.0.

- Soil depth of 60 inches is no more than slightly limiting.
- Depth to water table ranging from 2.0 to 4.0 feet (November to April) is no more than moderately limiting.
  - Observed depth to groundwater was deeper than the published soil mapping indicates. Published soils information indicates this site is moderately well drained, with a seasonal high water table within a depth of 2.0 to 4.0 feet in November through April. Depth to observable water table was greater than the excavation depth of 60 inches in November. The highest water table was observed in late March 2003, when the depth to water ranged from zero to 3 feet on site.
  - Applications should be scheduled for periods when groundwater is at least 3 feet below the surface.
- Flooding, occasional, is no more than slightly limiting.
- Rock fragments are not present, and are no more than slightly limiting.
- Hydrologic Soil Group C is no more than slightly limiting.
- Permeability of 0.6 in/hr is no more than slightly limiting.
- PH of 5.1 is less than 6.5 and is no more than moderately limiting. Amending the soil with agricultural lime will raise soil pH above 5.5 to achieve potential crop yield. Consider maintaining soil pH above 6.5 if biosolids metals are of concern.
- Ponding occurs infrequently, except where the water table intersects the ground surface. Biosolids applications should completely avoid ponded areas if they develop. At this site ponding is no more than slightly limiting.
- Soil salinity is estimated to be about 0.5 dS/m and, being less than 4 dS/m, is no more than slightly limiting.
- Slope is generally less than 2 percent. Slopes less than 8 percent are no more than slightly limiting.
- Sodium is low and no more than slightly limiting.

### 8.0 DRAINAGE CHARACTERISTICS

Drainage and surface water characteristics are covered in detail in the *Surface Water Report: Drainage Pathways & Surface and Ground Water Quality* (Appendix B). The site is within Water Resource Inventory Area No. 1 and is located on the southeast drainage divide of the Schell Creek drainage sub-basin. Approximately two-thirds of the site is located within the Schell Creek drainage basin. The remaining one-third of the site is in the Lummi River drainage basin. The proposed site is adjacent to the north boundary drainage ditch and the East Pond. (See the Site Map section.)

The Schell Creek (a.k.a. Schell ditch) drainage basin is approximately 2,046 acres, including most of the area in the Ferndale city limits and a rural, unincorporated area to the south. Two main tributaries originate near the north end of Ferndale at Thornton Road and combine to form one stream at Imhoff Road, one quarter-mile north of the site. The north boundary ditch and the Imhoff Road ditch flow into Schell Creek at this point.

Water does not flow onto the site because the site is elevated above the surrounding terrain. The upstream drainage area of the north boundary drainage ditch is approximately 121 acres, including the 8-acre East Pond wetland area, athletic fields, Pioneer Park, the PUD No. 1 Water Treatment Plant, and a portion of 2<sup>nd</sup> Avenue.

Approximately 5.5 acres of the site's surface area drains toward the north boundary ditch or the East Pond. Approximately 7.5 acres of the site's surface area drains west into the Imhoff Road drainage ditch, which flows to Schell Creek. Approximately 6.4 acres of the site's surface area drain south onto the Sigurdson property. Although runoff or surface water does not flow overland onto the site, water from the Imhoff Road ditch, the north boundary ditch, and the East Pond flows underground to recharge groundwater onsite, particularly during late autumn when groundwater levels are low relative to surface water elevation.

Little if any runoff discharges from the site, except at the low spot at the west end of the site where ponding occurs (i.e., the water table is exposed). Some water may exfiltrate (drain from) from the site's soils into the ditch along the north boundary during very wet conditions. However, these conditions would have to be sustained for 3 to 30 months to move water 100 feet through the soils from the biosolids application area to the ditch.

Category III wetlands appear on the property in two locations. Wetland "A", a monotypic emergent farmed wetland, is located in the westernmost 45-60 feet of the 19.4 acre parcel. Wetland "B", a monotypic adjacent farmed wetland, is located in the northeast corner of the site within 100 feet of the 8 acre East Pond.

There is no manmade drainage system (i.e., drain tiles) on the site.

The site is not and will not be irrigated.

### 9.0 SURFACE WATER PROTECTION

Surface water will be protected from pollution by a number of best management practices:

- The natural features of the site result in very little runoff or erosion from the site (i.e., 0-2% slopes, sandy loam soil).
- A 100-foot wide vegetated buffer will be maintained between the biosolids application area and the surface water ditches along the west and north site boundaries. Wetland "A" is included in this buffer area.
- A 200-foot wide vegetated buffer will be maintained between the biosolids application area and the wetland pond at the east site boundary. Wetland "B" is included in this buffer area.
- No biosolids will be applied to the low spot at the west end of the site where ponding occurs.
- A 6-inch high, vegetated soil berm will be formed along the west end of the site stretching from the south property line to the mound of fill at the northwest end of the site. The berm will be located within the vegetated buffer bordering the biosolids land application area.
- Biosolids will be injected into the soil, which will reduce pollutants' runoff potential.
- Biosolids application equipment will be low pressure (light weight) to reduce soil compaction.
- A cover crop will be maintained during the winter to prevent erosion and improve the soil's infiltration capability.

### 10.0 GROUNDWATER MANAGEMENT PLAN

### 10.1 Groundwater Characteristics

Groundwater characteristics are described in detail in the *Groundwater Assessment* Report (Appendix A).

A shallow aquifer underlies the site. A deeper aquifer, which also underlies the site, is used as a potable water supply. The deep aquifer is confined and separated from the shallow aquifer by virtually impervious layers. The deep aquifer is under pressure (i.e., artesian); therefore groundwater flow is locally away from the deep aquifer, which means that any pollutants that might be present in the shallow aquifer will not migrate down to the deep aquifer.

The depth of the shallow aquifer below the ground surface ranges from 0 to 4 feet during winter and early spring to more than 6 feet during late summer and early fall (see monitoring results in Section 6.2). Shallow groundwater flow is primarily to the south and southeast beneath the site. However, it is possible that minor amounts of shallow groundwater may migrate west and/or north, through the shallow aquifer towards the location of the River Road Water Association water supply well and the Knutson well. The particle tracking analysis shows that groundwater flows from the west side of the project site to Schell Creek or to the Nooksack River. Groundwater flows from the south side of the project site to the south towards Ulrick Road and then to the Nooksack River. The travel time from the site to the Nooksack River and Schell Creek was estimated to be greater than 10 years based on the parameters used in the calibrated model.

Vicinity drinking water wells are completed in the deep advance outwash aquifer, which is confined by low permeability Vashon till. Furthermore, the hydraulic gradient between the shallow and deep aquifer is upward at this location, prohibiting the water in the shallow aquifer from migrating to the deep aquifer.

The project site is within the Wellhead Protection Area for the River Road Water Association well (owned by Fertile Meadows Water Association). The 1, 5, and 10 year travel times (see Figure 5 in Section 2) were determined by the Association using a Fixed Radius Calculation method. The biosolids application area extends from the east boundary of the 1-year travel time to the east boundary of the 10-year travel time. The actual location of the 1, 5, and 10 year travel time boundaries is probably skewed to the west. However, since the groundwater velocity in the deep aquifer is unknown, the degree of skew, if any, cannot be determined. However, it is certain that the actual recharge area for the aquifer is located far from the well site in the uplands to the northwest. No rainfall or shallow groundwater in the valley floodplain can percolate down to the deep aquifer due to the artesian nature of the aquifer. The only possible route of contamination of the aquifer is from upland pollutant sources.

It is likely that seasonal variations in groundwater flow direction and velocity will occur during normal seasonal climatic fluctuations. The upward hydraulic gradient in the deeper aquifer may decrease because of these seasonal variations. The upward gradient from the deep aquifer to the shallow aquifer also could be reversed if there is significant pumping from the deep aquifer in the vicinity of the site. However, it is likely that any significant pumping from the deep aquifer would be periodic and the hydraulic gradient would quickly return to near normal levels within a short period of time after the pumping has stopped.

### 10.2 Groundwater Management

Groundwater management of the site consists of 4 basic elements:

- Appropriate timing of application
- Appropriate biosolids application rates
- pH management
- Groundwater monitoring

### 10.3 Application Timing

Biosolids will not be applied during September through April. Biosolids will not be applied until groundwater is at least 2 feet below the ground surface throughout the application area, as determined by monitoring the 6 on-site wells.

### 10.4 Application Rates

Biosolids will be applied at the agronomic rate to prevent nitrate from leaching into groundwater.

### 10.5 pH Management

- 1. The pH of the soil will be increased to 6.5 by applying lime. This will prevent metals from leaching due to acidic soil conditions.
- 2. The soil pH will be maintained at a pH for 6.0 or higher at all times.

### 10.6 Monitoring

- Groundwater will be monitored regularly (as described in this plan's Monitoring section) to provide advance warning of leaching or pollutant migration.
- Soil chemistry will also be monitored annually to determine whether acidic or anaerobic conditions are present that could contribute to mobilization of metals from the soil.
- Nitrogen uptake efficiency will also be monitored to verify that nitrate leaching is insignificant.

#### CITY OF FERNDALE WASTEWATER TREATMENT PLANT BIOSOLIDS LAND APPLICATION PLAN

Minimum	Minimum Groundwater Depths for Biosolids Land Application				
Monitoring Well	Minimum depth below top of PVC well stickup				
	feet	inches			
MW1 (NW)	7.87	94.4			
MW2 (W)	1.51	18.1			
MW3 (E)	1.51	18.1			
MW4 (NE)	4.96	59.5			
MW5 (SE)	5.08	61.0			
MW6 (NW)	5.03	60.4			

### 11.0 PUBLIC ACCESS RESTRICTION

Public access to the site will be limited by posting no trespassing and warning signs along the perimeter of the site. Signs will be posted at the 4 corners of the site and at the access point on Imhof Road. Signs will also be placed at the northeastern boundary of the site bordering the wetland. See the following example sign.

## NO TRESPASSING ACCESS PROHIBITED FOR PUBLIC HEALTH PROTECTION

**Biosolids Land Application Site** 

Site Operated by:

City of Ferndale Public Works Dept. Wastewater Treatment Plant 5405 Ferndale Road, Ferndale, WA 98248 (360) 384-4607

Permitting Authority: Whatcom County Health Department (360) 676-6724

Material Applied: Class B municipal biosolids from Wastewater Treatment Lagoon

DO NOT HARVEST CROPS FOR HUMAN CONSUMPTION! The site is accessible to the public. However, there is a low potential for public exposure, for the following reasons:

- The site is in an agricultural area.
- Biosolids will be injected below the soil surface.
- Biosolids will be applied only once per year.
- A corn crop will cover the site during at least 30 days following biosolids application.
- Activity at the site is visible to staff from the wastewater treatment plant.

The site is near public athletic fields to the northeast, but it is separated from them by a wetland area and ditch.

### 12.0 CONVEYANCE OF LIQUID BIOSOLIDS

Biosolids will be pumped to the site directly from the dredger in the wastewater treatment plant lagoon using a combination of pressure pipe and pressure hose.

Alternatively, dredged biosolids will be pumped into a tanker truck and hauled the short distance (about 800 feet) across City-owned property to the site.

### 13.0 SITE MANAGEMENT AND ADMINISTRATION

### 13.1 Biosolids Land Application Monitoring

Monitoring, record keeping, and reporting will as described in the detailed Sampling and Analysis Plan in Appendix F.

### **Calibration of Biosolids Application Equipment**

Calibration of biosolids application rate will be performed once for every 10 dry tons of biosolids applied.

### **Percent Total Solids Measurement Frequency**

Total solids will be measured on:

- One composite sample of the in-place lagoon biosolids prior to dredging.
- One sample for every 10 dry tons of biosolids during land application.

This testing method will be SM2540B, which is standard. Alternative testing methods for samples collected during dredging is to use a hydrometer to determine total solids content or to compare settle-able solids volume for 10:1 dilutions of in-place biosolids and 10:1 dilutions of dredged biosolids to determine dilution ratio between dredged and in-place biosolids.

### **Record Keeping System**

The worksheet calculating quantities for biosolids, metals, and nutrients applied per acre will be completed after the application is completed. The worksheet will be inserted into this plan's Monitoring Data section.

### Visual Monitoring

During biosolids application, City staff will visually monitor the buffer condition, crop condition, etc., daily. City staff will monitor at least monthly during April through September, and at least once every two months otherwise. They will fill out the inspection checklist each time with comments on crop and buffer conditions, ponding, and signage.

### **Remediation Plan**

Biosolids will not be applied to buffer areas. Application is by injection only.

### 13.2 Contingency Plans

Contingency plans for alternate dredging, conveyance, application timing, application method, application location, dewatering, and disposal are given in each of the previous sections as appropriate. Additional contingencies will be developed on a case-by-case

basis. Dredging may be skipped entirely for one year, if necessary, with no adverse effect.

### 13.3 Names and Contact Information

The following people are the responsible parties:

### Site Manager

Contact Person: Mike Olinger Ferndale Wastewater Treatment Plant City of Ferndale Public Works Department Phone: (360) 384-4607

Responsibilities:

- Site management and record keeping
- Biosolids application, including calibration and adjustment of application procedures
- Monitoring site buffers
- Collection of samples for environmental and public health monitoring
- Laboratory analyses of environmental samples
- Reporting to regulatory agencies

### Contractor

Contact Person:	
Company:	
Phone:	

Responsibilities:

- Biosolids application, including calibration and adjustment of application procedures
- Biosolids dredging
- Soil incorporation of biosolids (injection)
- Transportation and delivery of biosolids

### 14.0 REPORTING

### 14.1 Regulatory Agencies

The following agencies will receive the reports:

Whatcom County Health	Department of Ecology
Department	<b>Biosolids Coordinator</b>
Contact: Bill Angel	Contact: Amber Corfman
509 Girard Street	NWRO
P.O. Box 935	3190 160th Ave SE
Bellingham, WA 98227-0935	Bellevue, WA 98008
(360) 676-6724	(425) 649-7258

### 14.2 Annual Report Required Elements

- Amount of biosolids applied in total dry tons and in dry tons per acre.
- Vector attraction reduction requirements met (i.e., biosolids injected and incorporated will not attract vectors).
- Pathogen reduction requirements met (fecal coliform test results of 7 samples).
- Metals concentrations in biosolids (mg/kg dry weight).
- Predicted metals loading rate (lb/ac) based on the pre-application biosolids concentrations and calculated biosolids application rate.
- Nitrogen applied in pounds per acre.
- Maps showing the groundwater flow direction during the three different seasons: 1) Feb-April; 2) June; and 3) Oct-Dec.
- Environmental monitoring data.

### 14.3 Due Date

The Annual Report is due on March 1.

### APPENDICES

Appendix A Groundwater Assessment Report

Appendix B Surface Water Report: Drainage Pathways & Surface and Ground Water Quality

Appendix C Soils and Crop Management Study

Appendix D Chemical Toxicity and Pathogenicity of Biosolids

Appendix E Agronomic Rate Calculation

Appendix F Biosolids Land Application Monitoring – Sampling and Analysis Plan and Schedule

### APPENDIX C

# Access Map
### CITY OF FERNDALE BIOSOLIDS LAND APPLICATION PLAN ACCESS ROUTES



APPENDIX D

# **City of Ferndale Biosolids Permit Conditions**



March 31, 2004

### CERTIFIED MAIL

7099 3400 0002 6286 1937

Mr. Bob Cecile Public Works Director City of Ferndale 5405 Ferndale Road Ferndale, WA 98248

Re: Coverage under the statewide General Permit for Biosolids Management

Permit Number:	BA0022454
Issuance Date:	March 25, 1998
Effective Date:	May 15, 1998
Final Coverage:	March 30, 2004
Expiration Date:	Coverage under this general permit remains in effect until further notice. Facilities covered under this permit and which are in compliance with permit requirements will have a minimum of 180 days to apply for coverage when a new general permit is issued.

Dear Mr. Cecile:

The purpose of this letter is to notify you that pursuant to your application, Ferndale Waste Water Treatment Plant has been granted final approval of coverage under the statewide General Permit for Biosolids Management. You are required to comply with all the requirements of the general permit as they apply to your operation, including all approved plans, and also with all applicable requirements of Chapter 173-308 WAC, Biosolids Management. The following additional or more stringent requirements must also be complied with as a condition of this approval:

- 1. Notify the Department of Ecology (Ecology) and Whatcom County Health Department (WCHD) of any planned upgrades or changes to current Biosolids Management practices.
- 2. The City of Ferndale must manage biosolids according to the approved Wastewater Treatment Plant Biosolids Land Application Plan, or an approved amendment.
- 3. The City of Ferndale must receive written approval from Ecology and WCHD prior to receiving biosolids from sources not identified in its Application for Coverage.
- 4. The City of Ferndale must notify WCHD at least three (3) days before any land application or sampling event.

Mr. Bob Cecile March 31, 2004 Page 2 of 4

- 5. No biosolids land application will occur on or within two (2) days of the weekend including Easter, Mother's Day, Memorial Day, Father's Day, and Independence Day.
- 6. Biosolids may not be applied when ground water is within two (2) feet of the ground surface, or when percolation and/or incorporation of the material into the soil is precluded due to frozen soil, excessive snow cover, soil saturation or similar site conditions.
- 7. Prior to land application of biosolids, the City of Ferndale must submit its proposed application rates to WCHD and allow at least seven (7) days to make an agronomic rate determination. The determination period commences upon WCHD verification of receipt. If WCHD does not notify the City of Ferndale of its agronomic rate determination within seven (7) days from the commencement of the review and comment period, land application may commence at the rate proposed by the City of Ferndale.
- 8. The total mass of biosolids applied at any time may not exceed the amount needed to meet the agronomic requirement of the crop rotation, and may not exceed the agronomic rate determination approved by WCHD.
- 9. No additional organic or inorganic fertilizers may be applied to sites receiving biosolids without prior approval from WCHD. The City of Ferndale must submit to WCHD in writing any proposal to apply organic or inorganic fertilizers to sites receiving biosolids and allow WCHD at least fourteen (14) days for review/comment. The review/comment period commences upon WCHD verification of receipt. If WCHD does not notify the City of Ferndale of its approval or objection within fourteen (14) days from the commencement of the review/comment period, fertilizer application may commence at the rate proposed by the City of Ferndale.
- 10. Biosolids must be analyzed for fecal coliform density by the seven-sample alternative in accordance with WAC 173-308-170(3)(a)(i)-(ii), prior to land application, and a representative sample of the biosolids must be analyzed for the parameters specified in the Sampling and Analysis Plan prior to biosolids application and at the frequency specified by WAC 173-308-150.
- 11. The vector attraction reduction requirements of WAC 173-308 must be met.
- 12. Soil pH must be maintained above 6.0 at all times.
- 13. No biosolids residue shall leave the site at any time.
- 14. A reservoir of potable water and soap of sufficient volume for employee personal hygiene must be available near active application sites and storage sites, or another means for adequate personal hygiene must be available, during periods of biosolids land application.
- 15. Land application sites must be monitored daily during active applications. The City of Ferndale must keep a daily inspection/monitoring log that includes, at a minimum: the solids content of the biosolids, site identification number or name, date and time of

Mr. Bob Cecile March 31, 2004 Page 3 of 4

> inspection, person performing the inspection, weather conditions, land application site conditions, conditions of buffer zones, conditions of roadways and access areas, equipment inspection and calibration setting, and any problems and/or incidents of noncompliance. The inspection log must be available for review by Ecology and WCHD.

- 16. When biosolids are applied to agricultural sites, all sites must be seeded or otherwise planted within thirty (30) days following biosolids application.
- 17. During land application of biosolids and for at least thirty (30) days following land application, the sites to which the Class B biosolids are applied must be posted with no trespassing signs or informational signs. The informational signs must contain the following: a) Name, address and phone number of the City of Ferndale, b) name, address and phone number of the Whatcom County Health Department, Environmental Health, Solid Waste Program, c) the material that is being applied (biosolids or a more detailed description) and d) a notice that access is restricted, and if desired, the date after which access is no longer restricted. The signs must be posted at all significant access points and along the perimeter of the property so that the signs may be noticed and read by a "reasonably observant person."
- 18. Communication equipment capable of immediately contacting the appropriate persons must be available at all times during land applications in the event of an emergency or condition that might pose a threat to human health or the environment.
  - 19. The City of Ferndale must maintain records for biosolids in accordance with WAC 173-308-290, and records must be available for review by WCHD or Ecology.
  - 20. An Annual Report must be submitted to WCHD, the Department of Ecology Northwest Regional Office and the office of the State Biosolids Coordinator by March 1 of each year. The following information must also be included in the Annual Report:
    - A. In Section C, #1 on the Annual Report form, include information on the mass or volume of biosolids currently in storage at the facility.
    - B. Biosolids, groundwater, surface water, and soil sampling data and any other requested sampling data.
    - C. Calculate the pollutant metal loading rate in the site soil given the pre-application sampling results for metals, and provide that information in each Annual Report.
  - 21. Sample the site soil for pollutant metals and the suite of Class A pathogen indicators every five (5) years, at the end of the post-harvest period, and provide the results in the Annual Report.
  - 22. Upon application for any new or expanded land application site, the City of Ferndale must submit to Ecology and WCHD a signed letter from each landowner showing approval for the land application of non-exceptional quality biosolids, and public notice must be conducted in accordance with WAC 173-308-310(11)(c)(ii) or (iii).

Mr. Bob Cecile March 31, 2004 Page 4 of 4

- 23. Ecology and WCHD may require additional groundwater, drinking water, surface water, biosolids, or soil sampling at any time if Ecology or WCHD believes that the additional sampling are necessary to protect public health and the environment from any adverse effect of a pollutant or pathogen in the biosolids.
- 24. The City of Ferndale must notify WCHD and Ecology of any violations of permit conditions by phone, email, or letter within two (2) days. The City of Ferndale must provide a written explanation of the violation upon request from WCHD or Ecology.
- 25. Any contractor, operator, or person hired to manage biosolids for the City of Ferndale must be reputable and must have operated without violations of any federal, state, or local laws, rules, or permit conditions within the past five (5) years. Prior to hiring, the City of Ferndale must investigate the compliance status of selected candidates.

You have the right to appeal as provided by law. Your appeal must be filed with the Pollution Control Hearings Board and served on the department within thirty (30) days. The right of appeal under the state biosolids rule is addressed in WAC 173-308-310(24) and in Section 8.21 of the General Permit for Biosolids Management. The basic process for an appeal is outlined in RCW 43.21B.310. Other rules and laws may also govern your appeal.

Your staff contact at the department of Ecology for this permit is:

Marietta Sharp WA State Department of Ecology Northwest Regional Office 3190 160<sup>th</sup> Avenue S.E. Bellevue, WA 98008-5452 425-649-7258 mars461 @ecy.wa.gov

Sincerely,

ins

George Sidles Solid Waste Section Manager Northwest Regional Office Washington State Department of Ecology

GS/ms/ct

cc: Kyle Dorsey, Ecology HQ Bill Angel, WCHD Andrew Law, Anvil Corporation

## APPENDIX E

# **Spill Prevention/Response Plan**

## SPILL PREVENTION/RESPONSE PLAN

Submitted as an attachment to the Application for Coverage Under the Statewide General Permit for Biosolids Management

August, 2005

## Submitted by: The City of Ferndale

### **INTRODUCTION**

This Spill Prevention/Response Plan is being submitted as required by the General Permit for Biosolids Management. Northwest Liquid Transport hauls our liquid biosolids from our wastewater treatment facility located at 5405 Ferndale Rd, Ferndale WA 98248 to a land application site located at 9410 Deltop Road, Blaine WA 98230.

## **ROUTE TRAVELED**

Was

.aure

Dev

Bell

Ferndale

539

The City of Ferndale utilizes the following route to haul to it's secondary land application site:

1. Start out going NE on FERNDALE RD British Columpia Blaine 2: Turn LEFT onto CHERRY ST. <0.1 miles Whatcom 3: Turn RIGHT onto 1ST AVE. 0.1 miles Haynie END 4: Turn RIGHT onto MAIN ST. 0.7 miles 5: Merge onto I-5 N via the ramp on the LEFT. 7.3 :ho Hillsda miles **Birch Bay** Custer 6: Take EXIT 270 toward LYNDEN/BIRCH BAY. 0.2 miles Kickerville 7: Turn RIGHT onto BIRCH BAY-LYNDEN RD. <0.1 miles 8: Turn LEFT onto VALLEY VIEW RD. 2.4 miles **Mountain View** START 9: Turn RIGHT onto HAYNIE RD. 1.9 miles 10: Turn LEFT onto DELTA LINE RD. 0.5 miles Neptune Beach 11: Turn RIGHT onto BURK RD. 1.8 miles Marietta 12: Turn LEFT onto DELTOP DR. 0.2 miles Lummi 13: End at 9410 Deltop Dr Bay *Total Distance* = 16 *miles* 

### SPILL PREVENTION MEASURES

To minimize the possibility of spills, the Northwest Liquid Transport has implemented the following measures:

- All vehicles are regularly inspected and serviced
- Drivers never exceed the posted speed limit and only travel at speeds appropriate for current road conditions
- Vehicles are certified to be "leak-proof" upon purchase and are regularly examined to ensure no leaking occurs
- Drivers consult the Washington State Department of Transportation's website during times of possible inclement weather

## EQUIPMENT TO ADDRESS A SPILL

In order to be able to promptly and properly respond to a spill, Northwest Liquid Transport equips all biosolids transportation vehicles with the following:

- A copy of the most current Spill Prevention/Response Plan
- A cell phone
- Gloves and boots
- Hazard flares
- Reflective traffic cones
- A flat-bladed scoop shovel and bucket

SPILL RESPONSE MEASURES

In the event of a spill, the following measures may occur:

- Safely exit roadway if possible
- Place reflective traffic cones along roadway leading up to the spill (use flares if needed)
- If the spill has or could result in an emergency situation: dial 911
- If the spill is small: use shovel to remove all biosolids and place back into the truck
- If the spill is large and may obstruct traffic for an extended period: contact the Department of Transportation regional office
- If the spill is large: contact the City of Ferndale staff to have them contact a local "vactor" or similar-type company to remove all biosolids and place back into truck
- Contact the Department of Ecology's Northwest Regional Office as soon as possible but not more than 3 days following the spill

### CONTACTS

Emergency: 911

Department of Ecology

Northwest Regional Office: (425) 649-4259

Local Health Department

• Whatcom County Health Department: (360) 676-6724

City of Ferndale Wastewater Treatment Plant: (360) 384-4607

Washington State Department of Transportation

• Northwest Region: (206) 440-4000

APPENDIX F

# Drawings



# CITY OF FERNDALE, WA

## FERNDALE WASTEWATER TREATMENT PLANT UPGRADE

#### AREA MAP - NOT TO SCALE



#### CONTACT INFORMATION

OWNER CITY OF FERNDALE 2095 MAIN STREET FERNDALE, WA 98248 PHONE 360.384.4302

CIVIL ENGINEER WILSON ENGINEERING, LLC IEFF CHRISTNER, PE SCOTT WILSON, PE PHONE 360.733.6100

#### GEOTECHNICAL ENGINEER GEOENGINEERS SEAN COOL, PE FIONA McNAIR PHONE 360.647.1510

#### ELECTRICAL ENGINEER Z ENGINEERS, PLLC BRIAN ZIESMER, P.E. PHONE 509.888.9364

#### ARCHITECT RMC ARCHITECTS BRAD CORNWELL PETER NILES

PHONE 360.676.7733 HVAC & PLUMBING

FSI CONSULTING ENGINEERS OLA JARVEGREN PHONE 206.622.3321

#### PROTECTION OF THE ENVIRONMENT

NO CONSTRUCTION-RELATED ACTIVITY SHALL CONTRIBUTE TO THE DEGRADATION OF THE ENVIRONMENT, ALLOW MATERIAL TO ENTER SURFACE OR GROUND WATERS, OR ALLOW PARTICULATE EMISSIONS TO THE ATMOSPHERE, WHICH EXCEED STATE OR FEDERAL STANDARDS. ANY ACTIONS THAT POTENTIALLY ALLOW A DISCHARGE TO STATE WATERS MUST HAVE PRIOR APPROVAL OF THE WASHINGTON STATE DEPARTMENT OF ECOLOGY.



#### RECORD DRAWING NOTE: WITHIN THIS RECORD DRAWING SET, "(AB)" DENOTES CONDITION AS-BUILT.

















**RECORD DRAWINGS** 

	Ρ	)			
	トロクト	NEERING		INEERING.COM	
		U U Z	• •	ONENG	2
				/ W. WILS	
	(			~ ∧	3
3	ON		4	-07-22	
	10 <sup>M</sup>		ROISTERO AN	O THE PART	4
		Å.		5	
Mosening CHAR		Part of the second seco	ISTERED AND	VAL EN	5
D 123.00			ROFE	0-07-22	
DESIGNED BY JGC/SJW	DRAWN BY	JGS	CHECKED BY	AWL	9
, WA	WASHINGTON	LANT UPGRADE			ــــــــــــــــــــــــــــــــــــــ
DALE		TMENT P		IEET	00
FERN		er treat		VER SH	
ITY OF		E WASTEWAT		CC	6
	NDALE	ERNDALI			
ATE 2022	CALE FERI	HOWN	NUMBER	0-006	10
D/	sc	AS SI		2020	
SHEET	) - )	PAGE	- C = C	<b>∩</b> ∍	11







iETTINGS: Adobe PDF.pc3, Ledger, Portrait, 1:2, WE



ļ	DATE Aug 19, 2022	FIGURE 1		
Г	SCALE	FERNDALE WASHINGTON		
	AS SHOWN	CITY OF FERNDALE WASTEWATER TREATMENT PLANT		
Γ	JOB NUMBER	PROCESS FLOW SCHEMATIC		
	2022-003	TROCESS FLOW SCHEMATIC		

5 **ON** S U R V E Y / E N G I N E E R I N G www.wilsonengineering.com

WILSON ENGINEERING, LLC 805 DUPONT STREET BELLINGHAM, WA 98225 (360) 733-6100 • FAX (360) 647-9061

