Appendix E

Flow Analysis

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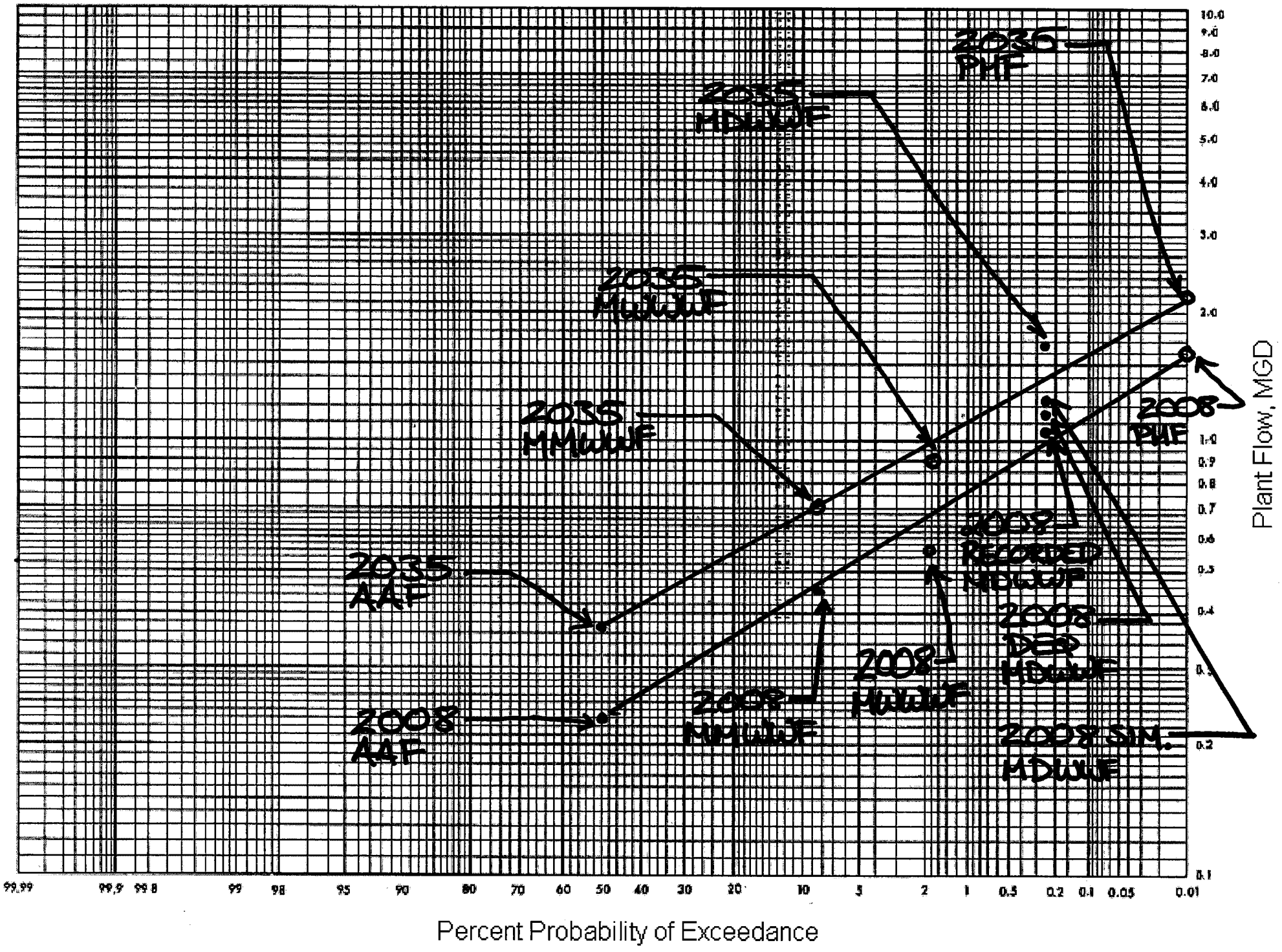
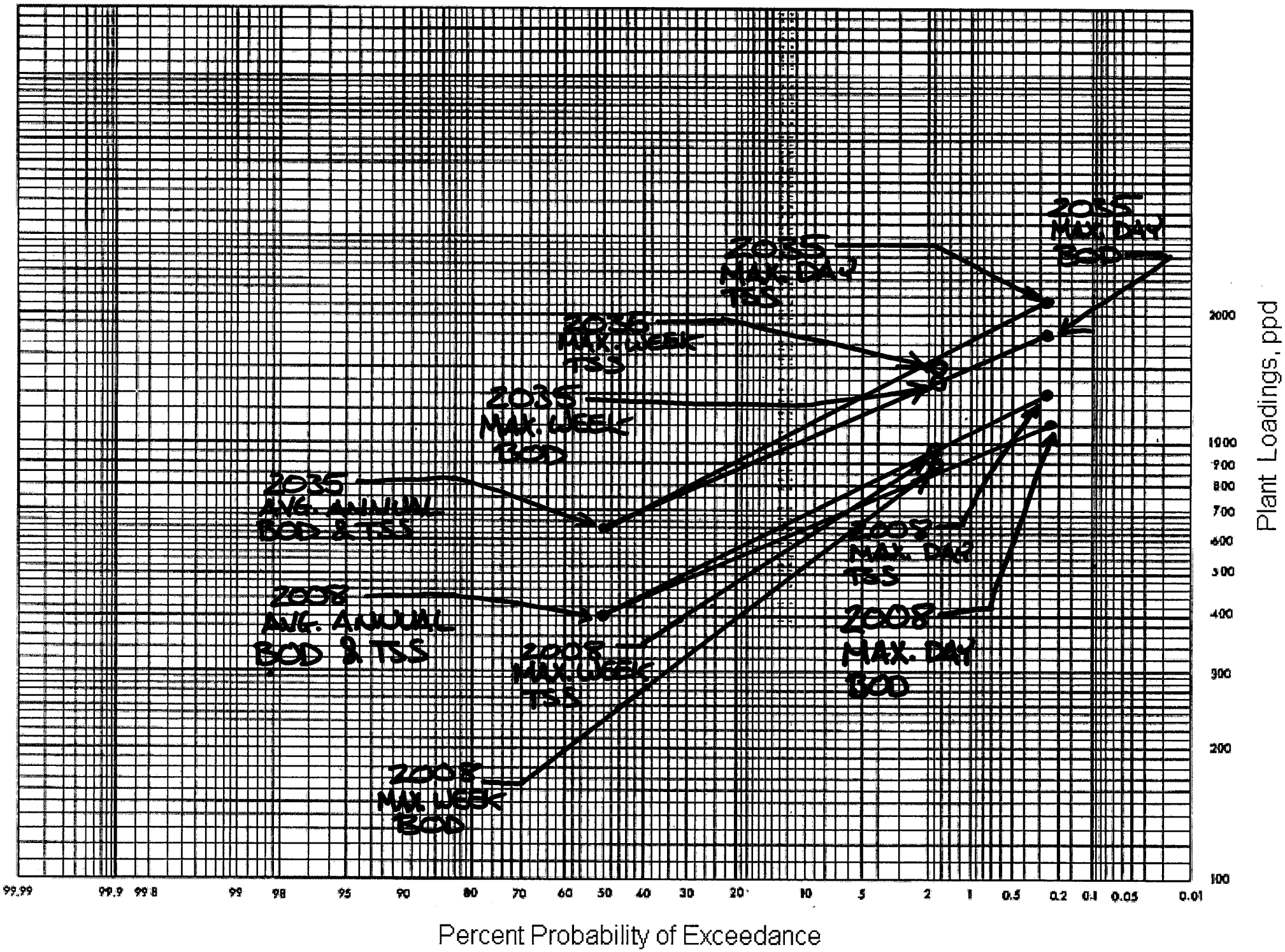

2035 PHF
2035 MDWWF
2035 MMWWF
2035 MMWWF
2008 PHF
2008 RECORDED MDWWF
2008 DEP MDWWF
2008 MMWWF
2008 MMWWF
2008 SIM. MDWWF
2035 AAF
2008 AAF
Plant Flow, MGD
Percent Probability of Exceedance
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
99.99
99.9
99.8
99
98
95
90
80
70
60
50
40
30
20
10
5
2
1
0.5
0.2
0.1
0.05
0.01


2035 MAX. DAY BOD
2035 MAX. DAY TSS
2035 MAX. WEEK TSS
2035 MAX. WEEK BOD
2035 AVG. ANNUAL BOD & TSS
2008 AVG. ANNUAL BOD & TSS
2008 MAX. DAY TSS
2008 MAX. DAY BOD
2008 MAX. WEEK TSS
2008 MAX. WEEK BOD
Plant Loadings, ppd
2000
1000
900
800
700
600
500
400
300
200
100
99.99
99.9
99.8
99
98
95
90
80
70
60
50
40
30
20
10
5
2
1
0.5
0.2
0.1
0.05
0.01
Percent Probability of Exceedance

Appendix F

NPDES Permit and Mutual Agreement and Order

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NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
WASTE DISCHARGE PERMIT

Department of Environmental Quality
Western Region – Salem Office
750 Front Street NE, Suite 120, Salem, OR 97301-1039
Telephone: (503) 378-8240

Issued pursuant to ORS 468B.050 and The Federal Clean Water Act

ISSUED TO:
Canyonville, City Of
PO Box 765
Canyonville OR 97417

SOURCES COVERED BY THIS PERMIT:

Type of Waste	Outfall Number	Outfall Location
Treated Wastewater	001	R.M. 50.6
Emergency Overflow	002	R.M. 50.6

FACILITY TYPE AND LOCATION:

Activated Sludge
Canyonville STP
450 Canyonville North Road
Canyonville, Oregon

Treatment System Class: Level III
Collection System Class: Level II

RECEIVING STREAM INFORMATION:

Basin: Umpqua
Sub-Basin: South Umpqua

Receiving Stream: South Umpqua River
LLID: 1234460432680 - 50.6 - D
County: Douglas

EPA REFERENCE NO: OR002072-9

Issued in response to Application No. 996562 received January 20, 1993.
This permit is issued based on the land use findings in the permit record.

Mark E Hamlin
for Michael H. Kortenhof, Water Quality Manager
Western Region

June 29, 2004
Date

PERMITTED ACTIVITIES

Until this permit expires or is modified or revoked, the permittee is authorized to construct, install, modify, or operate a wastewater collection, treatment, control and disposal system and discharge to public waters adequately treated wastewaters only from the authorized discharge point or points established in Schedule A and only in conformance with all the requirements, limitations, and conditions set forth in the attached schedules as follows:

Page
Schedule A - Waste Discharge Limitations not to be Exceeded 2
Schedule B - Minimum Monitoring and Reporting Requirements 4
Schedule C - Compliance Conditions and Schedules 8
Schedule D - Special Conditions 10
Schedule F - General Conditions 12

Unless specifically authorized by this permit, by another NPDES or WPCF permit, or by Oregon Administrative Rule, any other direct or indirect discharge to waters of the state is prohibited, including discharge to an underground injection control system.

SCHEDULE A

1. **Waste Discharge Limitations not to be exceeded after permit issuance.**

a. Treated Effluent Outfall 001

(1) May 1 - October 31:

Parameter	Average Effluent Concentrations Monthly	Weekly	Monthly* Average lb/day	Weekly* Average lb/day	Daily* Maximum lbs
$CBOD_5$ (See Note 1)	10 mg/L	15 mg/L	42	63	84
TSS	10 mg/L	15 mg/L	42	63	84
Total Chlorine Residual (see Note 5)	0.04 mg/L	0.10 mg/L			
Ammonia	5.4 mg/L	11 mg/L			

(2) November 1 - April 30:

Parameter	Average Effluent Concentrations Monthly	Weekly	Monthly* Average lb/day	Weekly* Average lb/day	Daily* Maximum lbs
$CBOD_5$ (See Note 1)	25 mg/L	40 mg/L	100	160	210
TSS	30 mg/L	45 mg/L	130	190	250
Total Chlorine Residual	0.18 mg/L	0.48 mg/L			

* Average dry weather design flow to the facility equals 0.5 MGD. Mass load limits are based upon average dry weather design flow to the facility. Schedule C, Condition 1 requires the permittee to select the basis for calculating winter time (November 1 through April 30 each year) mass load limits. Upon review and approval of the engineering study to determine the design average wet weather flow, pursuant to OAR 340-041-0120 (9), and upon request of the permittee, the Department intends to modify this permit and include revised mass load limits.

(3)

Other parameters (year-round except as noted)	Limitations
E. coli Bacteria	Shall not exceed 126 organisms per 100 mL monthly geometric mean. No single sample shall exceed 406 organisms per 100 mL. (See Note 2)
pH	Shall be within the range of 6.0 - 8.5
$CBOD_5$ and TSS Removal Efficiency	Shall not be less than 85% monthly average for $CBOD_5$ and 85% monthly for TSS.
Excess Thermal Load (May 15 through October 15)	Shall not exceed a weekly average of 6.8 million Kcals/day (see Note 4).

(4) Except as provided for in OAR 340-045-0080, no wastes shall be discharged and no activities shall be conducted which violate Water Quality Standards as adopted in OAR 340-041-0285 except in the following defined mixing zone:

The allowable mixing zone is that portion of the South Umpqua River contained within a band extending out 1/4 the distance from the west bank and extending from a point 15 feet

upstream of the outfall to a point 165 feet downstream from the outfall. The Zone of Immediate Dilution (ZID) shall be defined as that portion of the allowable mixing zone that is within 16.5 feet of the point of discharge. (See Note 3)

b. Emergency Overflow Outfall 002

(1) No wastes shall be discharged from these outfalls, unless the cause of the discharge is due to storm events as allowed under OAR 340-041-0120 (13) or (14) as follows:

Raw sewage discharges are prohibited to waters of the State from May 22 through October 31, except during a storm event greater than the one-in-ten-year, 24-hour duration storm. If an overflow occurs between May 22 and June 1, and if the permittee demonstrates to the Department's satisfaction that no increase in risk to beneficial uses occurred because of the overflow, no violation shall be triggered if the storm associated with the overflow was greater than the one-in-five-year, 24-hour duration storm.

c. No activities shall be conducted that could cause an adverse impact on existing or potential beneficial uses of groundwater. All wastewater and process related residuals shall be managed and disposed in a manner that will prevent a violation of the Groundwater Quality Protection Rules (OAR 340-040).

NOTES:

1. The $CBOD_5$ concentration limits are considered equivalent to the minimum design criteria for BOD_5 specified in Oregon Administrative Rules (OAR) 340-041. These limits and $CBOD_5$ mass limits may be adjusted (up or down) by permit action if more accurate information regarding $CBOD_5/BOD_5$ becomes available.

2. If a single sample exceeds 406 organisms per 100 mL, then five consecutive re-samples may be taken at four-hour intervals beginning within 28 hours after the original sample was taken. If the log mean of the five re-samples is less than or equal to 126 organisms per 100 mL, a violation shall not be triggered.

3. When the permittee completes a dilution and mixing zone study as required by Schedule C, Condition 3, the Department will reopen this permit and amend the total chlorine residual and ammonia limits, the mixing zone and ZID as appropriate.

4. The Excess Thermal Load limit was based on the amount of thermal energy necessary to raise the temperature of 25 percent of the stream by 0.3 °C. This permit may be re-opened, and the maximum Excess Thermal Load modified up or down, when more accurate information becomes available. In addition, upon approval of a Total Maximum Daily Load for temperature for this sub-basin, this permit may be re-opened and new temperature and/or thermal load limits assigned.

5. When the total residual chlorine limitation is lower than 0.10 mg/L, the Department will use 0.10 mg/L as the compliance evaluation level (i.e. daily maximum concentrations below 0.10 mg/L will be considered in compliance with the limitation).

SCHEDULE B

1. **Minimum Monitoring and Reporting Requirements** (unless otherwise approved in writing by the Department).
The permittee shall monitor the parameters as specified below at the locations indicated. The laboratory used by the permittee to analyze samples shall have a quality assurance/quality control (QA/QC) program to verify the accuracy of sample analysis. If QA/QC requirements are not met for any analysis, the results shall be included in the report, but not used in calculations required by this permit. When possible, the permittee shall re-sample in a timely manner for parameters failing the QA/QC requirements, analyze the samples, and report the results.

a. Influent

The facility influent grab samples and measurements and composite samples are taken just after the head works and just before splitter box which diverts flows to the aeration basin. The composite sampler is located at the end of head work and before the splitter box.

Item or Parameter	Minimum Frequency	Type of Sample
Total Flow (MGD)	Daily	Measurement
Flow Meter Calibration	Annually	Verification
$CBOD_5$	Weekly	Composite
TSS	Weekly	Composite
pH	2/Week	Grab

b. Treated Effluent Outfall 001

The facility effluent grab and composite samples and all measurements are taken from end of the chlorine contact basin. The composite sampler is located at the end of the chlorine contact basin.

Item or Parameter	Minimum Frequency	Type of Sample
Total Flow (MGD)	Daily	Measurement
Flow Meter Calibration	Annual	Verification
$CBOD_5$	Weekly	Composite
TSS	Weekly	Composite
pH	2/Week	Grab
E. coli	Weekly	Grab (See Note 1)
Quantity Chlorine Used	Daily	Measurement
Total Chlorine Residual	Daily	Grab
Pounds Discharged ($CBOD_5$ and TSS)	Weekly	Calculation
Average Percent Removed ($CBOD_5$ and TSS)	Monthly	Calculation
Ammonia (NH3-N)	Weekly	Composite
Nutrients		
TKN, NO2+NO3-N, Total Phosphorus	Once/2 Weeks (May-Oct)	24-hour Composite

c. Biosolids Management

Item or Parameter	Minimum Frequency	Type of Sample
Sludge analysis including: Total Solids (% dry wt.) Volatile solids (% dry wt.) Biosolids nitrogen for: NH_3-N; NO_3-N; & TKN (% dry wt.) Phosphorus (% dry wt.) Potassium (% dry wt.) pH (standard units) Sludge metals content for: As, Cd, Cu, Hg, Mo, Ni, Pb, Se & Zn, measured as total in mg/kg	Annually	Composite sample to be representative of the product to be land applied from the Sludge storage (See Note 2)
Record of locations where biosolids are applied on each DEQ approved site. (Site location maps to be maintained at treatment facility for review upon request by DEQ)	Each Occurrence	Date, volume & locations where biosolids were applied recorded on site location map.
Quantity and type of alkaline product used to stabilize biosolids (when required to meet federal pathogen and vector attraction reduction requirements in 40 CFR 503.32(b)(3) and 40 CFR 503.33(b)(6))	Each occurrence	Measurement
Initial time when solids that received alkaline agent ascended to pH >= 12	Each batch	Date, time, and actual pH measurement (corrected to standard at 25°C)
2 hours after initial alkaline addition and sustained at pH >= 12	Each batch	Date, time, and actual pH measurement (corrected to standard at 25°C)
24 hours after initial alkaline addition and pH >= 11.5 was sustained	Each batch	Date, time, and actual pH measurement (corrected to standard at 25°C)

d. Emergency Overflow Outfall 002

Item or Parameter	Minimum Frequency	Type of Sample
Flow	Daily (during each occurrence)	Estimate duration and volume

e. Temperature Monitoring

Item or Parameter	Minimum Frequency	Type of Sample
Effluent Temperature, Daily Max.	Daily	Continuous (see Note 3)
Effluent Temperature, Average of Daily Maximums (May 15 through September 15)	Weekly	Calculation
Excess Thermal Load (May 15 through September 15)	Weekly	Calculation (see Note 4)

An annual report covering temperature monitoring done in the calendar year is due by February 15th of the following year. The report is to include the weekly temperatures for effluent, upstream and downstream monitoring sites (average of daily maximum temperatures in each week).

2. **Reporting Procedures**

a. Monitoring results shall be reported on approved forms. The reporting period is the calendar month. Reports must be submitted to the appropriate Department office by the 15th day of the following month.

b. State monitoring reports shall identify the name, certificate classification and grade level of each principal operator designated by the permittee as responsible for supervising the wastewater collection and treatment systems during the reporting period. Monitoring reports shall also identify each system classification as found on page one of this permit.

c. Monitoring reports shall also include a record of the quantity and method of use of all sludge removed from the treatment facility and a record of all applicable equipment breakdowns and bypassing.

3. **Report Submittals**

a. The permittee shall have in place a program to identify and reduce inflow and infiltration into the sewage collection system. An annual report shall be submitted to the Department by February 1 each year which details sewer collection maintenance activities that reduce inflow and infiltration. The report shall state those activities that have been done in the previous year and those activities planned for the following year.

b. For any year in which biosolids are land applied, a report shall be submitted to the Department by February 19 of the following year that describes solids handling activities for the previous year and includes, but is not limited to, the required information outlined in OAR 340-050-0035(6)(a)-(e).

NOTES:

1. *E. coli* monitoring must be conducted according to any of the following test procedures as specified in Standard **Methods for the Examination of Water and Wastewater, 19th Edition**, or according to any test procedure that has been authorized and approved in writing by the Director or an authorized representative:

Method	Reference	Page	Method Number
mTEC agar, MF	Standard Methods, 18th Edition	9-29	9213 D
NA-MUG, MF	Standard Methods, 19th Edition	9-63	9222 G
Chromogenic Substrate, MPN	Standard Methods, 19th Edition	9-65	9223 B
Colilert QT	Idexx Laboratories, Inc.		

2. Composite samples from the Sludge storage shall be taken from reference areas in the Sludge storage pursuant to Test Methods for Evaluating Solid Waste, Volume 2; Field Manual, Physical/Chemical Methods, November 1986, Third Edition, Chapter 9.

   Inorganic pollutant monitoring must be conducted according to Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Second Edition (1982) with Updates I and II and third Edition (1986) with Revision I.

3. All continuous temperature monitors are to be checked visually monthly to insure that the devices are still in place and submerged. All continuous temperature monitors must be audited in June and September, following procedures described in DEQ Procedural Guidance for Water Temperature Monitoring. The Department acknowledges that uninterrupted data collection is not guaranteed due to vandalism, theft, damage or disturbance. In the event of equipment failure or loss, the permittee shall deploy new equipment to minimize interruption of data collection.

4. Calculated as follows:
   (Weekly average of daily maximum effluent temperatures in °C – 18 °C) X (Weekly average of daily flow in MGD) X 3.785 = Excess Thermal load, in Million Kcals/day.

SCHEDULE C

Compliance Schedules and Conditions

1. By no later than June 29, 2005, the permittee shall submit either an engineering evaluation which demonstrates the design average wet weather flow, or a request to retain the existing mass load limits. The design average wet weather flow is defined as the average flow between November 1 and April 30 when the sewage treatment facility is projected to be at design capacity for that portion of the year. Upon acceptance by the Department of the design average wet weather flow determination, the permittee may request a permit modification to include higher winter mass loads based on the design average wet weather flow.

2. Within 180 days of permit modification to include higher winter mass load limits as specified in Condition 1 of this Schedule, the permittee shall submit to the Department for review and approval a proposed program and time schedule for identifying and reducing inflow. Within 60 days of receiving written Department comments, the permittee shall submit a final approvable program and time schedule. The program shall consist of the following:

   a. Identification of all overflow points and verification that sewer system overflows are not occurring up to a 24-hour, five-year storm event or equivalent;

   b. Monitoring of all pump station overflow points;

   c. A program for identifying and removing all inflow sources into the permittee's sewer system over which the permittee has legal control; and

   d. If the permittee does not have the necessary legal authority for all portions of the sewer system or treatment facility, a program and schedule for gaining legal authority to require inflow reduction and a program and schedule for removing inflow sources.

3. By no later than April 1, 2005, the permittee shall submit to the Department a mixing zone dilution study demonstrating that the facility complies with all water quality standards at the edge of the mixing zone. If the facility cannot comply with all standards the mixing zone study report shall include an approvable plan, to bring the facility into compliance with these standards.

   The mixing zone dilution study should be conducted through a dye study or an approved and verified mathematical model and should include a characterization of the zone of immediate dilution and the mixing zone boundary. The study shall include an evaluation of the dispersion, mixing and dilution of the discharged effluent and should be conducted during critical low flow conditions and at the average dry weather flow for the facility.

4. By no later than January 1, 2010, the Permittee shall reduce the winter overflow frequency to the one-in-five-year, 24-hour duration storm criteria (OAR 340-041-0009(6) (b)).

5. By no later than September 27, 2004, the permittee shall submit to the Department a report which either identifies known sewage overflow locations and a plan for estimating the frequency, duration and quantity of sewage overflowing, or confirms that there are no overflow points. The report shall also provide a schedule to eliminate the overflow(s), if any.

6. The permittee's effluent discharge must be in compliance with the in stream temperature limit by no later than this permit's expiration date.

7. The permittee is expected to meet the compliance dates which have been established in this schedule. Either prior to or no later than fourteen days following any lapsed compliance date, the permittee shall submit to the Department a notice of compliance or noncompliance with the established schedule. The Director may revise a schedule of compliance if he/she determines good and valid cause resulting from events over which the permittee has little or no control.

SCHEDULE D

Special Conditions

1. Prior to increasing the thermal load (flow or temperature) beyond the current permit limitations, the Permittee shall notify the Department and apply for and be issued a permit modification allowing the increase.

2. All biosolids shall be managed in accordance with the current DEQ approved biosolids management plan, and the site authorization letters issued by DEQ. Any changes in solids management activities that significantly differ from operations specified under the approved plan require the prior written approval of DEQ.

   All new biosolids application sites shall meet the site selection criteria set forth in OAR 340-050-0070 and must be located within the State of Oregon. All currently approved sites are located in Douglas County. No new public notice is required for the continued use of these currently approved sites. Property owners adjacent to any newly approved application sites shall be notified, in writing or by any method approved by DEQ, of the proposed activity prior to the start of application. For proposed new application sites that are deemed by the DEQ to be sensitive with respect to residential housing, runoff potential or threat to groundwater, an opportunity for public comment shall be provided in accordance with OAR 340-050-0030.

3. This permit may be modified to incorporate any applicable standard for biosolids use or disposal promulgated under section 405(d) of the Clean Water Act, if the standard for biosolids use or disposal is more stringent than any requirements for biosolids use or disposal in the permit, or controls a pollutant or practice not limited in this permit.

4. The permittee shall comply with Oregon Administrative Rules (OAR), Chapter 340, Division 49, "Regulations Pertaining To Certification of Wastewater System Operator Personnel" and accordingly:

   a. The permittee shall have its wastewater system supervised by one or more operators who are certified in a classification <u>and</u> grade level (equal to or greater) that corresponds with the classification (collection and/or treatment) of the system to be supervised as specified on page one of this permit.

Note: A "supervisor" is defined as the person exercising authority for establishing and executing the specific practice and procedures of operating the system in accordance with the policies of the permittee and requirements of the waste discharge permit. "Supervise" means responsible for the technical operation of a system, which may affect its performance or the quality of the effluent produced. Supervisors are not required to be on-site at all times.

   b. The permittee's wastewater system may not be without supervision (as required by Special Condition 4.a. above) for more than thirty (30) days. During this period, and at any time that the supervisor is not available to respond on-site (i.e. vacation, sick leave or off-call), the permittee must make available another person who is certified at no less than one grade lower then the system classification.

   c. If the wastewater system has more than one daily shift, the permittee shall have the shift supervisor, if any, certified at no less than one grade lower than the system classification.

   d. The permittee is responsible for ensuring the wastewater system has a properly certified supervisor available at all times to respond on-site at the request of the permittee and to any other operator.

e. The permittee shall notify the Department of Environmental Quality in writing within thirty (30) days of replacement or re-designation of certified operators responsible for supervising wastewater system operation. The notice shall be filed with the Water Quality Division, Operator Certification Program, 811 SW 6th Ave, Portland, OR 97204. This requirement is in addition to the reporting requirements contained under Schedule B of this permit.

f. Upon written request, the Department may grant the permittee reasonable time, not to exceed 120 days, to obtain the services of a qualified person to supervise the wastewater system. The written request must include justification for the time needed, a schedule for recruiting and hiring, the date the system supervisor availability ceased and the name of the alternate system supervisor(s) as required by 4.b. above.

5. The permittee shall notify the appropriate DEQ Office in accordance with the response times noted in the General Conditions of this permit, of any malfunction so that corrective action can be coordinated between the permittee and the Department.

6. The permittee shall not be required to perform a hydrogeologic characterization or groundwater monitoring during the term of this permit provided:

a. The facilities are operated in accordance with the permit conditions, and;

b. There are no adverse groundwater quality impacts (complaints or other indirect evidence) resulting from the facility's operation.

If warranted, at permit renewal the Department may evaluate the need for a full assessment of the facilities impact on groundwater quality.

NPDES GENERAL CONDITIONS
(SCHEDULE F)

SECTION A. STANDARD CONDITIONS

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of Oregon Revised Statutes (ORS) 468B.025 and is grounds for enforcement action; for permit termination, suspension, or modification; or for denial of a permit renewal application.

2. Penalties for Water Pollution and Permit Condition Violations

Oregon Law (ORS 468.140) allows the Director to impose civil penalties up to $10,000 per day for violation of a term, condition, or requirement of a permit.

In addition, a person who unlawfully pollutes water as specified in ORS 468.943 or ORS 468.946 is subject to criminal prosecution.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment. In addition, upon request of the Department, the permittee shall correct any adverse impact on the environment or human health resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

4. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and have the permit renewed. The application shall be submitted at least 180 days before the expiration date of this permit.

The Director may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date.

5. Permit Actions

This permit may be modified, suspended, revoked and reissued, or terminated for cause including, but not limited to, the following:

a. Violation of any term, condition, or requirement of this permit, a rule, or a statute;

b. Obtaining this permit by misrepresentation or failure to disclose fully all material facts; or

c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

The filing of a request by the permittee for a permit modification or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

6. Toxic Pollutants

The permittee shall comply with any applicable effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

7. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privilege.

8. Permit References

Except for effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and standards for sewage sludge use or disposal established under Section 405(d) of the Clean Water Act, all rules and statutes referred to in this permit are those in effect on the date this permit is issued.

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls, and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Duty to Halt or Reduce Activity

For industrial or commercial facilities, upon reduction, loss, or failure of the treatment facility, the permittee shall, to the extent necessary to maintain compliance with its permit, control production or all discharges or both until the facility is restored or an alternative method of treatment is provided. This requirement applies, for example, when the primary source of power of the treatment facility fails or is reduced or lost. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Bypass of Treatment Facilities

a. Definitions

(1) "Bypass" means intentional diversion of waste streams from any portion of the treatment facility. The term "bypass" does not include nonuse of singular or multiple units or processes of a treatment works when the nonuse is insignificant to the quality and/or

quantity of the effluent produced by the treatment works. The term "bypass" does not apply if the diversion does not cause effluent limitations to be exceeded, provided the diversion is to allow essential maintenance to assure efficient operation.

(2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities or treatment processes which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Prohibition of bypass.

(1) Bypass is prohibited unless:

(a) Bypass was necessary to prevent loss of life, personal injury, or severe property damage;

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgement to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and

(c) The permittee submitted notices and requests as required under General Condition B.3.c.

(2) The Director may approve an anticipated bypass, after considering its adverse effects and any alternatives to bypassing, when the Director determines that it will meet the three conditions listed above in General Condition B.3.b.(1).

c. Notice and request for bypass.

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior written notice, if possible at least ten days before the date of the bypass.

(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in General Condition D.5.

4. <u>Upset</u>

a. Definition. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operation error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.

b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of

General Condition B.4.c are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the causes(s) of the upset;

(2) The permitted facility was at the time being properly operated;

(3) The permittee submitted notice of the upset as required in General Condition D.5, hereof (24-hour notice); and

(4) The permittee complied with any remedial measures required under General Condition A.3 hereof.

d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

5. Treatment of Single Operational Event

For purposes of this permit, A Single Operational Event which leads to simultaneous violations of more than one pollutant parameter shall be treated as a single violation. A single operational event is an exceptional incident which causes simultaneous, unintentional, unknowing (not the result of a knowing act or omission), temporary noncompliance with more than one Clean Water Act effluent discharge pollutant parameter. A single operational event does not include Clean Water Act violations involving discharge without a NPDES permit or noncompliance to the extent caused by improperly designed or inadequate treatment facilities. Each day of a single operational event is a violation.

6. Overflows from Wastewater Conveyance Systems and Associated Pump Stations

a. Definitions

(1) "Overflow" means the diversion and discharge of waste streams from any portion of the wastewater conveyance system including pump stations, through a designed overflow device or structure, other than discharges to the wastewater treatment facility.

(2) "Severe property damage" means substantial physical damage to property, damage to the conveyance system or pump station which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of an overflow.

(3) "Uncontrolled overflow" means the diversion of waste streams other than through a designed overflow device or structure, for example to overflowing manholes or overflowing into residences, commercial establishments, or industries that may be connected to a conveyance system.

b. Prohibition of overflows. Overflows are prohibited unless:

(1) Overflows were unavoidable to prevent an uncontrolled overflow, loss of life, personal injury, or severe property damage;

(2) There were no feasible alternatives to the overflows, such as the use of auxiliary pumping or conveyance systems, or maximization of conveyance system storage; and

(3) The overflows are the result of an upset as defined in General Condition B.4. and meeting all requirements of this condition.

c. Uncontrolled overflows are prohibited where wastewater is likely to escape or be carried into the waters of the State by any means.

d. Reporting required. Unless otherwise specified in writing by the Department, all overflows and uncontrolled overflows must be reported orally to the Department within 24 hours from the time the permittee becomes aware of the overflow. Reporting procedures are described in more detail in General Condition D.5.

7. Public Notification of Effluent Violation or Overflow

If effluent limitations specified in this permit are exceeded or an overflow occurs, upon request by the Department, the permittee shall take such steps as are necessary to alert the public about the extent and nature of the discharge. Such steps may include, but are not limited to, posting of the river at access points and other places, news releases, and paid announcements on radio and television.

8. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in such a manner as to prevent any pollutant from such materials from entering public waters, causing nuisance conditions, or creating a public health hazard.

SECTION C. MONITORING AND RECORDS

1. Representative Sampling

Sampling and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this permit and shall be taken, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the Director.

2. Flow Measurements

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to insure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected shall be

capable of measuring flows with a maximum deviation of less than ± 10 percent from true discharge rates throughout the range of expected discharge volumes.

3. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

4. Penalties of Tampering

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than two years, or by both. If a conviction of a person is for a violation committed after a first conviction of such person, punishment is a fine not more than $20,000 per day of violation, or by imprisonment of not more than four years or both.

5. Reporting of Monitoring Results

Monitoring results shall be summarized each month on a Discharge Monitoring Report form approved by the Department. The reports shall be submitted monthly and are to be mailed, delivered or otherwise transmitted by the 15th day of the following month unless specifically approved otherwise in Schedule B of this permit.

6. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharge Monitoring Report. Such increased frequency shall also be indicated. For a pollutant parameter that may be sampled more than once per day (e.g., Total Chlorine Residual), only the average daily value shall be recorded unless otherwise specified in this permit.

7. Averaging of Measurements

Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean, except for bacteria which shall be averaged as specified in this permit.

8. Retention of Records

Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records of all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

9. Records Contents

Records of monitoring information shall include:

a. The date, exact place, time and methods of sampling or measurements;

b. The individual(s) who performed the sampling or measurements;

c. The date(s) analyses were performed;

d. The individual(s) who performed the analyses;

e. The analytical techniques or methods used; and

f. The results of such analyses.

10. Inspection and Entry

The permittee shall allow the Director, or an authorized representative upon the presentation of credentials to:

a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit, and

d. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by state law, any substances or parameters at any location.

SECTION D. REPORTING REQUIREMENTS

1. Planned Changes

The permittee shall comply with Oregon Administrative Rules (OAR) 340, Division 52, "Review of Plans and Specifications". Except where exempted under OAR 340-52, no construction, installation, or modification involving disposal systems, treatment works, sewerage systems, or common sewers shall be commenced until the plans and specifications are submitted to and approved by the Department. The permittee shall give notice to the Department as soon as possible of any planned physical alternations or additions to the permitted facility.

2. Anticipated Noncompliance

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

3. Transfers

This permit may be transferred to a new permittee provided the transferee acquires a property interest in the permitted activity and agrees in writing to fully comply with all the terms and conditions of the permit and the rules of the Commission. No permit shall be transferred to a third party without prior written approval from the Director. The permittee shall notify the Department when a transfer of property interest takes place.

4. Compliance Schedule

Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirements.

5. Twenty-Four Hour Reporting

The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally (by telephone) within 24 hours, unless otherwise specified in this permit, from the time the permittee becomes aware of the circumstances. During normal business hours, the Department's Regional office shall be called. Outside of normal business hours, the Department shall be contacted at 1-800-452-0311 (Oregon Emergency Response System).

A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. If the permittee is establishing an affirmative defense of upset or bypass to any offense under ORS 468.922 to 468.946, and in which case if the original reporting notice was oral, delivered written notice must be made to the Department or other agency with regulatory jurisdiction within 4 (four) calendar days. The written submission shall contain:

a. A description of the noncompliance and its cause;

b. The period of noncompliance, including exact dates and times;

c. The estimated time noncompliance is expected to continue if it has not been corrected;

d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and

e. Public notification steps taken, pursuant to General Condition B.7.

The following shall be included as information which must be reported within 24 hours under this paragraph:

a. Any unanticipated bypass which exceeds any effluent limitation in this permit.

b. Any upset which exceeds any effluent limitation in this permit.

c. Violation of maximum daily discharge limitation for any of the pollutants listed by the Director in this permit.

The Department may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

6. Other Noncompliance

The permittee shall report all instances of noncompliance not reported under General Condition D.4 or D.5, at the time monitoring reports are submitted. The reports shall contain:

a. A description of the noncompliance and its cause;

b. The period of noncompliance, including exact dates and times;

c. The estimated time noncompliance is expected to continue if it has not been corrected; and

d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

7. Duty to Provide Information

The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine compliance with this permit. The permittee shall also furnish to the Department, upon request, copies of records required to be kept by this permit.

Other Information: When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Department, it shall promptly submit such facts or information.

8. Signatory Requirements

All applications, reports or information submitted to the Department shall be signed and certified in accordance with 40 CFR 122.22.

9. Falsification of Information

A person who supplies the Department with false information, or omits material or required information, as specified in ORS 468.953 is subject to criminal prosecution.

10. Changes to Indirect Dischargers - **[Applicable to Publicly Owned Treatment Works (POTW) only]**

The permittee must provide adequate notice to the Department of the following:

a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of the Clean Water Act if it were directly discharging those pollutants and;

b. Any substantial change in the volume or character of pollutants being introduced into the POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

c. For the purposes of this paragraph, adequate notice shall include information on (i) the quality and quantity of effluent introduced into the POTW, and (ii) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

11. Changes to Discharges of Toxic Pollutant - **[Applicable to existing manufacturing, commercial, mining, and silvicultural dischargers only]**

The permittee must notify the Department as soon as they know or have reason to believe of the following:

a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:

(1) One hundred micrograms per liter (100 μg/L);

(2) Two hundred micrograms per liter (200 μg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 μg/L) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;

(3) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or

(4) The level established by the Department in accordance with 40 CFR 122.44(f).

b. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

(1) Five hundred micrograms per liter (500 μg/L);

(2) One milligram per liter (1 mg/L) for antimony;

(3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or

(4) The level established by the Department in accordance with 40 CFR 122.44(f).

SECTION E. DEFINITIONS

1. BOD means five-day biochemical oxygen demand.

2. TSS means total suspended solids.

3. mg/L means milligrams per liter.

4. kg means kilograms.

5. m^3/d means cubic meters per day.

6. MGD means million gallons per day.

7. Composite sample means a sample formed by collecting and mixing discrete samples taken periodically and based on time or flow.

8. FC means fecal coliform bacteria.

9. Technology based permit effluent limitations means technology-based treatment requirements as defined in 40 CFR 125.3, and concentration and mass load effluent limitations that are based on minimum design criteria specified in OAR 340-41.

10. CBOD means five day carbonaceous biochemical oxygen demand.

11. Grab sample means an individual discrete sample collected over a period of time not to exceed 15 minutes.

12. Quarter means January through March, April through June, July through September, or October through December.

13. Month means calendar month.

14. Week means a calendar week of Sunday through Saturday.

15. Total residual chlorine means combined chlorine forms plus free residual chlorine.

16. The term "bacteria" includes but is not limited to fecal coliform bacteria, total coliform bacteria, and E. coli bacteria.

17. POTW means a publicly owned treatment works.

Oregon
Theodore R. Kulongoski, Governor

Department of Environmental Quality
Western Region
221 Stewart Ave., Suite 201
Medford, OR 97501
541-776-6010
FAX 541-776-6262

February 22, 2008

RECEIVED
FEB 25 2008
K/J - Eugene

The Honorable Chuck Spindel, Mayor
City of Canyonville
PO Box 765
Canyonville, OR 97417

RE: **Mutual Agreement and Order Amendment #1**
MAO No. WQ/M-WR-04-087
Canyonville STP
WQ File Number 13745

Dear Mr. Spindel:

We have received your October 10, 2007 letter formally requesting a modification to the schedule in Mutual Agreement and Order (MAO) No. WQ/M-WR-04-087. The City is negotiating a contract with the Cow Creek Band of Umpqua of Indians (Tribe) which would allow the tribe to irrigate treated effluent from the City's wastewater treatment plant on tribal lands.

Paragraph 8.A.1 of the MAO requires the City to submit a draft wastewater treatment facilities plan by April 12, 2008. However, if the treated wastewater is transferred to the Tribe on a long term basis, the City will not need to upgrade the facilities to comply with the requirements of the South Umpqua TMDL. While other upgrades, such as dechlorination and wet weather improvements are needed, the City may be able to accomplish these more minor upgrades without public funding. Therefore, the requirement to submit an updated facilities plan may unnecessarily delay implementation of the TMDL and may be an unnecessary expense to the City.

The Department is satisfied that this modification has the potential to expedite implementation of the TMDL. Therefore, pursuant to paragraph 9 of the MAO, the Department is replacing Paragraph 8.A.1., 8.A.2., and 8.A.3.with the following:

1) By May 1, 2008, the City shall submit a draft engineering study which evaluates the option of providing treated effluent to the Cow Creek Tribe on a long term basis to comply with the requirements of the South Umpqua TMDL. The engineering study must update the City population and wastewater flow projections, estimate the amount of effluent that would need to be irrigated to comply with the South Umpqua TMDL, and identify and estimate the cost of wastewater treatment plant improvements necessary for reliable compliance with wet weather treatment requirements, including dechlorination.

2) By November 1, 2008, the City shall either submit a copy of a signed agreement with the Cow Creek Tribe to land apply the treated effluent on a long term basis and/or a letter stating that the City will prepare a draft facilities plan by no later than November 1, 2009.

3) Within one (1) year after submittal of the signed agreement with the Cow Creek Tribe, or Department approval of a facilities plan, whichever comes first, the City shall submit to the

Department a predesign report for construction of the necessary improvements and Permittee shall document that they have secured funding for any necessary treatment plant upgrades. Permittee shall notify the Department no later than eight (8) months after submittal of the signed agreement with the Cow Creek Tribe, or Department approval of a facilities plan, whichever comes first, if funding schedule can not be met.

The remainder of the MAO is unchanged.

Thank you for your continued attention to the MAO compliance schedule including the approved modification. Should you have any questions about the content of this letter, please contact Paul Kennedy at (541)440-3338 ext. 228 or via e-mail at kennedy.paul@deq.state.or.us.

Sincerely,

John Blanchard
Western Region Lead Water Quality Manager

cc: Steve Celeste, Kennedy/Jenks Consultants, 240 Country Club Rd., Ste. A, Eugene, OR 97401
Paul Kennedy, DEQ WQ Inspector, Roseburg
John Ruscigno, DEQ Western Region WQ Manager, Salem
Jennifer Claussen, DEQ Western Region WQ Permit Coordinator, Salem
Jon Gasik, DEQ Senior Engineer, Medford, via email only
USEPA

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION

OF THE STATE OF OREGON

IN THE MATTER OF:	)	MUTUAL AGREEMENT AND ORDER
City of Canyonville Permittee	)	NO. WQ/M-WR-04-087 DOUGLAS COUNTY

WHEREAS:

1. On June 29, 2004, the Department of Environmental Quality (Department or DEQ) issued National Pollutant Discharge Elimination System (NPDES) Waste Discharge Permit Number 100532 (Permit) to the City of Canyonville (Permittee). The Permit authorizes the Permittee to construct, install, modify or operate wastewater treatment control and disposal facilities (facilities) and discharge adequately treated wastewaters into the South Umpqua River, waters of the state, in conformance with the requirements, limitations and conditions set forth in the Permit. The Permit expires on May 31, 2009.

2. Condition 1 of Schedule A of the Permit does not allow Permittee to exceed the waste discharge limitations for total residual chlorine and ammonia at Outfall 001 after the Permit issuance date. The total residual chlorine limitations are 0.1 mg/L weekly average and 0.04 mg/L monthly average from May 1 through October 31 and 0.48 mg/L weekly average and 0.18 mg/L monthly average from November 1 through April 30. The ammonia limitations are 11 mg/ weekly average and 5.4 mg/L monthly average.

3. On August 12, 1997 the Department and the Permittee signed Mutual Agreement and Order (MAO) No. WQMW-WR-97-008 because the Permittee was unable to consistently comply with all permit conditions. That MAO contains a schedule to come into compliance with the permit conditions. I 1998, the Department met with the Permittee and agreed to postpone submittal of revisions to the facilities plan until the South Umpqua Total Maximum Daily Load (TMDL) is finalized and approved by the United States Environmental Protection Agency (USEPA). The South Umpqua TMDL is scheduled to be finalized in early 2005.

RECEIVED
APR 07 2005
DEQ - MEDFORD

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION

OF THE STATE OF OREGON

IN THE MATTER OF:	)	MUTUAL AGREEMENT AND ORDER
City of Canyonville Permittee	)	NO. WQ/M-WR-04-087 DOUGLAS COUNTY

WHEREAS:

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RECEIVED
APR 07 2005
DEQ - MEDFORD

4. DEQ and the Permittee recognize that until new or modified facilities are constructed and put into full operation, Permittee will likely violate the total residual chlorine and ammonia effluent limitations at times.

5. Permittee presently is capable of treating its effluent so as to meet the following interim effluent limitations, measured as specified in the Permit:

Year Around

Total Chlorine Residual	Shall not exceed 2.5 mg/l daily maximum and 1.5 mg/l monthly average
Ammonia	Shall not exceed 35 mg/l weekly average and 25 mg/l monthly average

6. The Department and Permittee recognize that the Environmental Quality Commission has the power to impose a civil penalty and to issue an abatement order for violations of conditions of the Permit. Therefore, pursuant to ORS 183.415(5), the Department and Permittee wish to limit and resolve the future violations referred to in Paragraph 4 in advance by this Mutual Agreement and Order (MAO).

7. This MAO is not intended to settle any violation of any interim effluent limitations. Furthermore, this MAO is not intended to limit, in any way, the Department's right to proceed against Permittee in any forum for any past or future violations not expressly settled herein.

NOW THEREFORE, it is stipulated and agreed that:

8. The Environmental Quality Commission shall issue a final order which will supersede and terminate MAO number WQMW-WR-97-008:

A. Requiring Permittee to comply with the following schedule:

(1) Within one (1) year of USEPA approval of the South Umpqua TMDL, Permittee shall submit to the Department a draft updated wastewater treatment facilities plan (draft facilities plan). The draft facilities plan must meet all the requirements of the document "Guidelines for the Preparation of Facilities Plans and Environmental Reports",

April 12, 2008 Steeley

1 Oregon Department of Environmental Quality, November 12, 1999 (or as updated).

2 (2) Permittee shall notify the Department no later than one (1) months

3 after Department approval of the draft facilities plan if funding schedule can not be met.

4 (3) Within one (1) year of Department approval of the draft facilities

5 plan, Permittee shall submit to the Department a predesign report for construction of the

6 necessary facility improvements and Permittee shall document that they have secured funding

7 for treatment plant upgrade.

8 (4) Within one (1) year of Department approval of the predesign report,

9 Permittee shall submit Final Engineering Plans and Specifications for upgrading the wastewater

10 treatment facilities as needed to assure that the Permittee can continuously comply with permit

11 conditions and all other applicable water quality standards.

12 (5) Within three (3) months after Department approval of Final Plans

13 and Specifications Permittee shall award the construction bids.

14 (6) Within two (2) years after Department approval of Final Plans and

15 Specifications, the wastewater facility upgrades shall be constructed and operational.

16 B. Requiring Permittee to meet the interim effluent limitations set forth in

17 Paragraph 5 above until the wastewater treatment facility improvements in Paragraph 8A above

18 are completed.

19 C. Requiring Permittee, should Permittee fail to comply with the above

20 schedule, to cease allowing new connections to Permittee's sewage collection system upon

21 written requirement of the Department.

22 D. Requiring Permittee, upon receipt of a written Penalty Demand Notice from

23 the Department, to pay the following civil penalties:

24 (1) $250 for each day of each violation of the compliance schedule set

25 forth in Paragraph 8A.

26 (2) $100 for each violation of each daily or weekly average waste

1 Department and Permittee.

2 13. The Department may amend the compliance schedule and conditions in this MAO
3 upon finding that such modification is necessary because of changed circumstances or to
4 protect public health and the environment. The Department shall provide Permittee a
5 minimum of thirty (30) days written notice prior to issuing an Amended Order modifying any
6 compliance schedules or conditions. If Permittee contests the Amended Order, the applicable
7 procedures for conduct of contested cases in such matters shall apply.

8 14. This MAO shall be binding on the parties and their respective successors, agents,
9 and assigns. The undersigned representative of each party certifies that he or she is fully
10 authorized to execute and bind such party to this MAO. No change in ownership or corporate
11 or partnership status relating to the facility shall in any way alter Permittee's obligations under
12 this MAO, unless otherwise approved in writing by DEQ.

13 15. All reports, notices and other communications required under or relating to this
14 MAO should be directed to Paul Kennedy, DEQ Roseburg Regional Office, 725 SE Main St.,
15 Oregon, 97447, phone number 541-440-3338, ext228. The contact person for Permittee shall
16 be Tony Lakey, PO Box 765, Canyonville OR 97417, phone number (541) 839-4447.

17 16. Permittee acknowledges that it has actual notice of the contents and requirements
18 of the MAO and that failure to fulfill any of the requirements hereof would constitute a
19 violation of this MAO and subject Permittee to payment of civil penalties pursuant to
20 Paragraph 8D above.

21 17. Any stipulated civil penalty imposed pursuant to Paragraph 8D shall be due upon
22 written demand. Stipulated civil penalties shall be paid by check or money order made payable
23 to the "Oregon State Treasurer" and sent to: Business Office, Department of Environmental
24 Quality, 811 S.W. Sixth Avenue, Portland, Oregon 97204. Within 21 days of receipt of a
25 "Demand for Payment of Stipulated Civil Penalty" Notice from the Department, Permittee may
26 request a hearing to contest the Demand Notice. At any such hearing, the issue shall be

limited to Permittee's compliance or non-compliance with this MAO. The amount of each stipulated civil penalty for each violation and/or day of violation is established in advance by this MAO and shall not be a contestable issue.

18. Providing Permittee has paid in full all stipulated civil penalties pursuant to Paragraph 17 above, this MAO shall terminate 60 days after Permittee demonstrates full compliance with the requirements of the schedule set forth in Paragraph 8A above.

PERMITTEE

JUN 29 2004
Date

Chuck Spindel
Mayor

DEPARTMENT OF ENVIRONMENTAL QUALITY

JUN 29 2004
Date

Kerri L. Nelson, Western Region Administrator

FINAL ORDER

IT IS SO ORDERED:

ENVIRONMENTAL QUALITY COMMISSION

JUN 29 2004
Date

Kerri L. Nelson, Western Region Administrator
Department of Environmental Quality
Pursuant to OAR 340-011-0136(1)

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Appendix G

DEQ Phosphorus Allocation Memorandum

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OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY
Memorandum
WESTERN REGION - MEDFORD

State of Oregon Department of Environmental Quality

To: **Canyonville STP Permit Development File** **Date: 7/29/2009**

From: Jonathan Gasik, MS, PE, Senior Engineer
Western Region Medford Office

Subject: Conversion of S. Umpqua TMDL TP WLAs to permit limits
Canyonville STP - File No. 13745

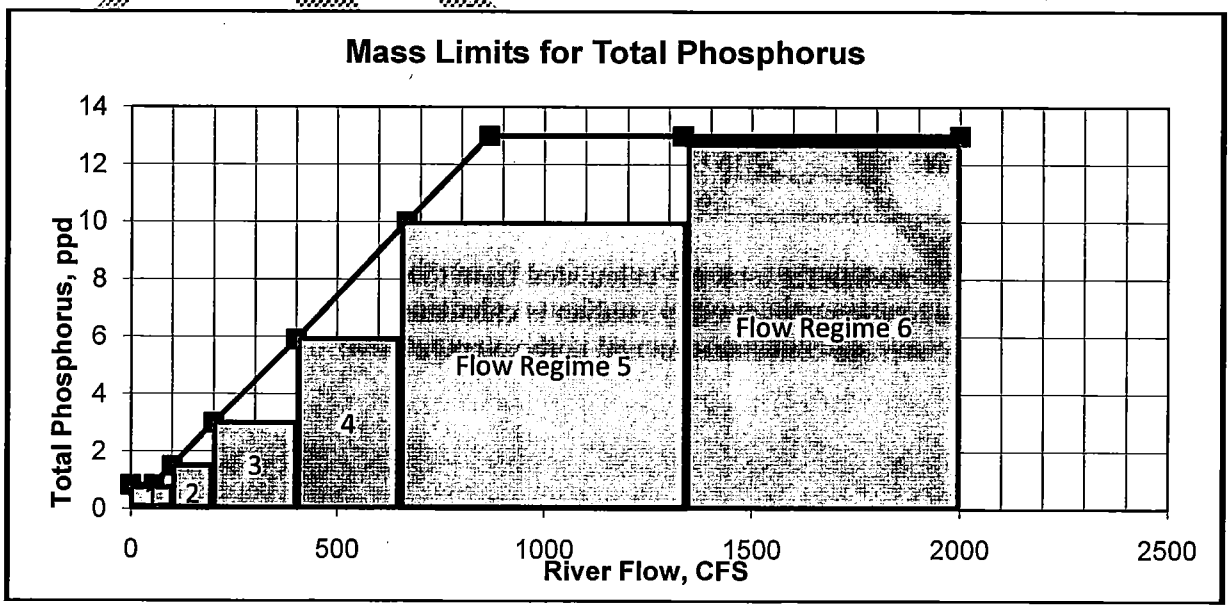
BACKGROUND

The South Umpqua Total Maximum Daily Load (TMDL) contains Waste Load Allocation (WLAs) for total phosphorus. For calculating the WLA for the Canyonville STP, DEQ established a critical condition (14Q3) of 56 cfs at the USGS gage South Umpqua River at Tiller. The WLA for Canyonville at this critical condition is 0.83 pounds per day (ppd). The TMDL also contains WLAs that allow for the discharge of higher loads of phosphorus when stream flows are higher. To present these flow-based WLAs, the TMDL chose certain flow regimes and calculated WLAs associated with those regimes. The TMDL also states: "For each flow regime, the lowest flow was used to calculate the appropriate loading. This allocation strategy could be used to further refine the flow regimes. Flow regimes are defined as the median flow for a month calculated from the observed mean daily values reported on the USGS website for that specific month / year".

The City has requested that the flow regimes be further refined and that the permit limit be based both on the median flow for a month calculated from the observed mean daily values and the median load (in ppd) for a month calculated from the observed mean daily values.

DISCUSSION

The following graph represents both the WLAs for Canyonville as presented in Table and a "smoothed" line with the maximum WLAs.



The maximum flow-based WLA for Canyonville in the graph above can be defined as follows:

River Flow (Qr)	WLA
< 56 cfs	0.83 ppd
56 cfs to 867 cfs	=Qr*0.015 ppd
> 867 cfs	13 ppd

While less conservative than either a critical case only limit or the flow regime method presented in the TMDL, effluent limits based on this maximum flow-based WLA method would be protective of water quality.

Canyonville proposes to meet this limit by upgrading the treatment plant to include biological nutrient removal (BNR). Basic BNR methods are typically capable of reducing total phosphorus to 1 mg/L under good conditions. The target concentration for Canyonville is 0.751 mg/l under current design conditions (0.5 mgd). Therefore, optimization of the BNR system and/or some chemical enhancement will be needed to meet these requirements. However, many variables contribute to proper functioning of BNR systems, such as consistency of influent flows, influent BOD concentrations, influent phosphorus concentrations, temperature, and antecedent conditions. Therefore, to account for fluctuations in these variables, DEQ has permitted treatment plants that use BNR to comply with nutrient limits to use the median load (in ppd) for a month calculated from the observed mean daily values.

SUMMARY

When renewed, the proposed effluent limits Canyonville's NPDES permit should be as follows:

1. Treated Effluent Outfall 001

a. May 1 - October 31:

Parameter	Monthly Median River Flow (Qr) at USGS Gage South Umpqua at Tiller 14308000*	Monthly* Median lb/day
Total Phosphorus	< 56	0.83
	56 to 867	= Qr*0.015
	> 867	13

* - Monthly Median is the median for a month calculated from the observed mean daily values. In the case of phosphorus loading, the monthly median is calculated from the daily load, which is calculated from the daily average concentration and daily average flow.

Pg. 6-6, Paragraph 2. The DEQ memo is in error. The values provided were for inorganic phosphorus, not total phosphorus. The correct values for total phosphorus are as follows:

River Flow	Pounds Phosphorus per day
<56	1.2
56 to 867	River flow (cfs) x 0.0147
>867	20

(JG)

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Appendix H

Effluent Ammonia Limits

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Permit Limits - Chlorine and Ammonia

Facility Name: Canyonville STP

Date: 4/28/2010

Salmonid Data	
Salmonids Present? (Y/N)	y
Salmonid Spawning? (Y/N)	y
probability basis	99%

	WATER QUALITY CRITERIA				Allocations									Concentration Limits	
	1 Hour	4 Day	30 Day	Back-					#	Acute	4 day	30 day	Min	95%	99%
	(CMC)	(CCC)	(CCC)	ground	Acute	4 Day	30 Day		Samples	LTA	LTA	LTA	LTA	Monthly	Daily
Month	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/L	CV	/Mo	mg/l	mg/l	mg/L	mg/l	mg/l	mg/l
May	4.6	0.5	n/a	0.02	174.67	52.26	n/a	0.6	4	56.07	27.56	n/a	27.56	**42.8**	**85.9**
June	2.2	0.4	n/a	0.02	83.72	17.25	n/a	0.6	4	26.88	9.10	n/a	9.10	**14.1**	**28.3**
July	1.6	0.3	n/a	0.02	31.57	6.52	n/a	0.6	4	10.13	3.44	n/a	3.44	**5.3**	**10.7**
August	2.0	0.4	n/a	0.02	25.94	5.09	n/a	0.6	4	8.33	2.69	n/a	2.69	**4.2**	**8.4**
September	2.7	0.5	n/a	0.02	29.75	5.54	n/a	0.6	4	9.55	2.92	n/a	2.92	**4.5**	**9.1**
October	5.3	0.6	n/a	0.02	67.58	7.90	n/a	0.6	4	21.69	4.17	n/a	4.17	**6.5**	**13.0**
November	6.0	0.8	n/a	0.02	94.47	15.35	n/a	0.6	4	30.33	8.09	n/a	8.09	**12.6**	**25.2**

Calculations											
				CAPa	CAPc	FPHa	FPHc	FTa	FTc	TIOc	A
σ^2	σ_4^2	σ_{30}^2	σ_n^2								
0.31	0.09	0.01	0.09		20	15	1	1	1.00	1.41	16
0.31	0.09	0.01	0.09		20	15	1	1	1.00	1.41	16
0.31	0.09	0.01	0.09		20	15	1	1	1.00	1.41	16
0.31	0.09	0.01	0.09		20	15	1	1	1.00	1.41	16
0.31	0.09	0.01	0.09		20	15	1	1	1.00	1.41	16
0.31	0.09	0.01	0.09		20	15	1	1	1.15	1.41	16
0.31	0.09	0.01	0.09		20	15	1.008	1	1.85	1.87	16

NOTES :

Temperature must be between 0 and 30 ° C
pH must be between 6.5 and 9
Ammonia is mg/l ammonia as N.

Calculation of pH of a mixture of two flows.
Based on the procedure in EPA's DESCON program (EPA, 1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington D.C.)

	INPUT										OUTPUT															
	Upstream Charactistics						Effluent Characteristics				Dilutions		Ionization Constants		Ionization Fractions		Total Inorganic Carbon		Conditions at ZID Boundary					Conditions at MZ Boundary			
	1Q10 Stream Flow (CFS)	7Q10 Stream Flow (CFS)	Percent of Stream Flow allowed for mixing	Temperature (deg C):	pH:	Alkalinity (mg CaCO3/L)	Effluent Flow	Temperature (deg C):	pH:	Alkalinity (mg CaCO3/L)	Dilution Factor at ZID	Dilution Factor at MZ	Upstream/Background pKa:	Effluent pKa:	Upstream/Background Ionization Fraction:	Effluent Ionization Fraction:	Upstream/Background Total Inorganic Carbon (mg CaCO3/L)	Effluent Total Inorganic Carbon (mg CaCO3/L):	Temperature (deg C):	Alkalinity (mg CaCO3/L)	Total Inorganic Carbon (mg CaCO3/L):	pKa:	pH at Mixing Zone/ZID Boundary	Temperature (deg C):	Alkalinity (mg CaCO3/L)	Total Inorganic Carbon (mg CaCO3/L):	pKa:
May	113	294	0.25	20.0	8.2	30.0	0.7	18.0	7.5	80.0	38.4	99.57	6.4	6.4	1.0	0.9	30.5	86.3	**19.9**	31.3	31.9	6.4	**8.09**	**20.0**	30.5	31.0	6.4
June	113	125	0.25	23.7	8.5	38.0	0.7	20.0	7.5	80.0	38.4	42.48	6.4	6.4	1.0	0.9	38.3	86.1	**23.6**	39.1	39.5	6.4	**8.32**	**23.6**	39.0	39.4	6.4
July	57.2	62.1	0.25	28.0	8.8	43.0	0.7	22.0	7.5	80.0	19.6	21.23	6.3	6.4	1.0	0.9	43.1	85.9	**27.7**	44.9	45.3	6.3	**8.34**	**27.7**	44.7	45.2	6.3
August	37.7	39.6	0.25	25.0	9.1	47.0	0.7	23.0	7.5	80.0	13.0	13.63	6.4	6.4	1.0	0.9	47.1	85.8	**24.8**	49.5	50.1	6.4	**8.33**	**24.9**	49.4	49.9	6.4
September	32.6	36.2	0.25	22.4	8.9	50.0	0.7	22.0	7.5	80.0	11.3	12.48	6.4	6.4	1.0	0.9	50.1	85.9	**22.4**	52.7	53.3	6.4	**8.27**	**22.4**	52.4	53.0	6.4
October	36.8	37.8	0.25	18.0	8.2	48.0	0.7	18.0	7.5	80.0	12.7	13.02	6.4	6.4	1.0	0.9	48.8	86.3	**18.0**	50.5	51.7	6.4	**8.02**	**18.0**	50.5	51.6	6.4
November	46.1	58	0.25	10.6	8.1	40.0	0.7	18.0	7.5	80.0	15.8	19.84	6.5	6.4	1.0	0.9	40.9	86.3	**11.1**	42.5	43.8	6.5	**7.98**	**11.0**	42.0	43.2	6.5

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Appendix I

Biosolids Metals Testing Requirements

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Title 40: Protection of Environment

PART 503—STANDARDS FOR THE USE OR DISPOSAL OF SEWAGE SLUDGE

§ 503.8 Sampling and analysis.

(a) *Sampling.* Representative samples of sewage sludge that is applied to the land, placed on a surface disposal site, or fired in a sewage sludge incinerator shall be collected and analyzed.

(b) *Methods* . The materials listed below are incorporated by reference in this part. These incorporations by reference were approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. The materials are incorporated as they exist on the date of approval, and notice of any change in these materials will be published in the Federal Register. They are available for inspection at the HQ Water Docket Center, EPA/DC, EPA West, Room B102, 1301 Constitution Ave., NW., Washington, DC, and at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.* Copies may be obtained from the standard producer or publisher listed in the regulation. The methods in the materials listed below (or in 40 CFR Part 136) shall be used to analyze samples of sewage sludge.

(1) *Enteric viruses.* ASTM Designation: D 4994–89, “Standard Practice for Recovery of Viruses From Wastewater Sludges”, 1992 Annual Book of ASTM Standards: Section 11—Water and Environmental Technology, ASTM, 1916 Race Street, Philadelphia, PA 19103–1187.

(2) *Fecal coliform.* Part 9221 E. or Part 9222 D., “Standard Methods for the Examination of Water and Wastewater”, 18th Edition, 1992, American Public Health Association, 1015 15th Street, NW., Washington, DC 20005.

(3) *Helminth ova.* Yanko, W.A., “Occurrence of Pathogens in Distribution and Marketing Municipal Sludges”, EPA 600/1–87–014, 1987. National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161 (PB 88–154273/AS).

(4) *Inorganic pollutants.* “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods”, EPA Publication SW–846, Second Edition (1982) with Updates I (April 1984) and II (April 1985) and Third Edition (November 1986) with Revision I (December 1987). Second Edition and Updates I and II are available from the National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161 (PB–87–120–291). Third Edition and Revision I are available from Superintendent of Documents, Government Printing Office, 941 North Capitol Street, NE., Washington, DC 20002 (Document Number 955–001–00000–1).

(5) *Salmonella sp. bacteria.* Part 9260 D., “Standard Methods for the Examination of Water and Wastewater”, 18th Edition, 1992, American Public Health Association, 1015 15th Street, NW., Washington, DC 20005; or

Kenner, B.A. and H.P. Clark, “Detection and enumeration of *Salmonella* and *Pseudomonas aeruginosa* ”, Journal of the Water Pollution Control Federation, Vol. 46, no. 9, September 1974, pp. 2163–2171. Water Environment Federation, 601 Wythe Street, Alexandria, Virginia 22314.

(6) *Specific oxygen uptake rate.* Part 2710 B., “Standard Methods for the Examination of Water and Wastewater”, 18th Edition, 1992, American Public Health Association, 1015 15th Street, NW., Washington, DC 20005.

(7) *Total, fixed, and volatile solids.* Part 2540 G., “Standard Methods for the Examination of Water and Wastewater”, 18th Edition, 1992, American Public Health Association, 1015 15th Street, NW., Washington, DC 20005.

[58 FR 9387, Feb. 19, 1993, as amended at 69 FR 18803, Apr. 9, 2004; 72 FR 14233, Mar. 26, 2007]

§ 503.13 Pollutant limits.

(a) *Sewage sludge.* (1) Bulk sewage sludge or sewage sludge sold or given away in a bag or other container shall not be applied to the land if the concentration of any pollutant in the sewage sludge exceeds the ceiling concentration for the pollutant in Table 1 of §503.13.

(2) If bulk sewage sludge is applied to agricultural land, forest, a public contact site, or a reclamation site, either:

(i) The cumulative loading rate for each pollutant shall not exceed the cumulative pollutant loading rate for the pollutant in Table 2 of §503.13; or

(ii) The concentration of each pollutant in the sewage sludge shall not exceed the concentration for the pollutant in Table 3 of §503.13.

(3) If bulk sewage sludge is applied to a lawn or a home garden, the concentration of each pollutant in the sewage sludge shall not exceed the concentration for the pollutant in Table 3 of §503.13.

(4) If sewage sludge is sold or given away in a bag or other container for application to the land, either:

(i) The concentration of each pollutant in the sewage sludge shall not exceed the concentration for the pollutant in Table 3 of §503.13; or

(ii) The product of the concentration of each pollutant in the sewage sludge and the annual whole sludge application rate for the sewage sludge shall not cause the annual pollutant loading rate for the pollutant in Table 4 of §503.13 to be exceeded. The procedure used to determine the annual whole sludge application rate is presented in appendix A of this part.

(b) *Pollutant concentrations and loading rates—sewage sludge* —(1) *Ceiling concentrations.*

Table 1 of §503.13—Ceiling Concentrations

Pollutant	Ceiling concentration (milligrams per kilogram)[1]
Arsenic	75
Cadmium	85
Copper	4300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420

Selenium	100
Zinc	7500

[1]Dry weight basis.

(2) *Cumulative pollutant loading rates.*

Table 2 of §503.13—Cumulative Pollutant Loading Rates

Pollutant	Cumulative pollutant loading rate (kilograms per hectare)
Arsenic	41
Cadmium	39
Copper	1500
Lead	300
Mercury	17
Nickel	420
Selenium	100
Zinc	2800

(3) *Pollutant concentrations.*

Table 3 of §503.13—Pollutant Concentrations

Pollutant	Monthly average concentration (milligrams per kilogram)[1]
Arsenic	41
Cadmium	39
Copper	1500
Lead	300
Mercury	17
Nickel	420
Selenium	100
Zinc	2800

[1]Dry weight basis.

(4) *Annual pollutant loading rates.*

Table 4 of §503.13—Annual Pollutant Loading Rates

Pollutant	Annual pollutant loading rate (kilograms per hectare per 365 day period)
Arsenic	2.0
Cadmium	1.9
Copper	75
Lead	15
Mercury	0.85
Nickel	21
Selenium	5.0
Zinc	140

(c) *Domestic septage.* The annual application rate for domestic septage applied to agricultural land, forest, or a reclamation site shall not exceed the annual application rate calculated using equation (1).

$$AAR = \frac{N}{0.0026} \qquad Eq.\ (1)$$

Where:

AAR=Annual application rate in gallons per acre per 365 day period.

N=Amount of nitrogen in pounds per acre per 365 day period needed by the crop or vegetation grown on the land.

[58 FR 9387, Feb. 19, 1993, as amended at 58 FR 9099, Feb. 25, 1994; 60 FR 54769, Oct. 25, 1995]

Appendix J

Biosolids Report

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Annual Biosolids Report
and
Management Plan

2009

City of Canyonville

Douglas County, Oregon

File Number: **13754**
Permit Number: **100532**

Prepared by:
Tony Lakey
Grade 4 Wastewater Operator

Tony Lakey: (541) 839-4235
Wastewater Plant: (541) 839-4447
Fax: (541) 839-4680

Wastewater Treatment Process

The Canyonville Wastewater Treatment Facility consists of influent manhole mixing and emergency bypass structure plus influent wetwell with three pumps, one 7.5 hp and two 5 hp pumps. Raw sewage is then fed through a Pista Degritter and a series of three manually cleaned bar screens. The plant is operated in plug flow consisting of three aerated basins. The effluent from the third basin is clarified and the waste activated sludge is pumped to a solids holding tank and the return activated sludge is pumped back to the first aerated basin. The clarifier effluent is pumped to a pressure filter then chlorinated and gravity drains to the chlorine contact basin for detention time before being discharged to the South Umpqua River. The raw sewage consists of 80% domestic, 20% commercial, no industrial.

The average quantity of sewage processed is 0.4 mgd winter flow and 0.25 mgd summer flow. This facility does not accept septage or septic tank waste. There is no industrial pre-treatment done in Canyonville.

The unit clarifier holds 39,693 gallons. The solids holding tank holds 60,879 gallons. The three lime stabilization tanks hold 6,000 gallons each.

Solids Processing

Waste solids are removed from the process by a centrifugal pump. It is taken from the clarifier to our solids holding tank for gravity thickening, where dewatering is done by decanting supernatant back to the headworks. Thickened solids are then pumped to the lime stabilization tanks. Additional decanting is performed at this point to reach solids concentrations of 2.0 to 3.5%. 245 lbs of hydrated lime is added in slurry form per 6000 gallons of solids which is then mixed by way of subsurface aeration and recirculation. Two-hour active mix is required and a ph of 12.0 must be maintained during that time. A minimum ph of 11.5 must be maintained for an additional 22 hours and remain so up to, and at, the time of land application.

Transportation and Land Application Implements.

Transport of biosolids is accomplished with a 4500 gallon tanker truck. During the summer month's biosolids are directly applied to the land via truck mounted spreader. Maintenance is primarily performed by the operators and by outside shops as needed. Pertinent records are maintained at the plant office. Yearly solids production is approximately 40 dry tons.

Sludge Site Management Information

The city currently has two ranch sites consisting of approximately 126.1 acres approved by D.E.Q. Atwood's ranch consists of 26.1 acres and Easterbrook's Crown T Ranch consists of approximately 100 acres. These lands are closed to public access. The City has agreements with the landowners to limit the amount of commercial fertilizer that can be applied per year. Farming and irrigation practices are regulated under this agreement.

Breakdown Protection

We maintain our facility so that we always have enough storage space available to allow us to repair any serious breakdown that may occur.

Biosolids Analysis

A copy of the 2009 Biosolids Analysis, performed by the certified laboratory Umpqua Research Company is attached for review.

Records of biosolids concentrations, percent of solids, pounds/gallons applied to each site, and when application took place are maintained at the plant office. All of the biosolids handling equipment belongs to the city. The operators are Tony Lakey, Mark Wilson, Mark Norris, Chris Masotto, and Robin Siegrist.

Planned Changes and Improvements

The City of Canyonville is currently under a M.O.A. with D.E.Q. We are in negotiations with the Cow Creek Band of the Umpqua Indians regarding an effluent reuse project which would potentially allow the City of Canyonville to curtail discharge of treated effluent to the South Umpqua River during the summer and shoulder months.

Class B biosolids Certification Statement

I certify, under penalty of law, that the information used to determine compliance with the Class B Pathogen Reduction requirements in Sec. 503.32(b)(2) (Processes to Significantly Reduce Pathogens (PSRP) alkaline stabilization) and the Vector Attraction Reduction requirement under Sec.503.33(b)(6)(alkaline stabilization) was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I certify that all Class B biosolids land applied has met the above mentioned Pathogen and Vector Attraction Reduction requirements. I also certify that all Class B biosolids were land applied at agronomic rates. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment.

Date: December 28, 2009

Signature: Tony Lakey

Methods of Biosolids Land Application

Biosolids are applied to subject property by means of a portable pump and irrigation gun to fields A, B, and C year round at Atwood's Ranch. Fields A,B,C, and D of Atwood's Ranch and all fields of Easterbrook's Ranch are applicable from the spreader mounted on the back of the truck, used to transport biosolids from the treatment facility to the approved site, by driving directly on the fields during the summer months.

Indication of Crop Grown

Hay crop is grown on subject properties. Crop harvest method is grazing year round. Fields A, B, and C are classified as year-round application. Field D of Atwood's Ranch is summer application only from June 1 through October 1. All fields of Easterbrook's Ranch are summer application only from June 1 through October 31.

Forecast of Biosolids Application Rate

321,000 gallons of biosolids equaling 30.2 dry tons.

Figures taken from 2009 production figures, accounting for population served.

UMPQUA Research Company
626 NE Division St. - P.O. Box 609, Myrtle Creek,
Oregon 97457(541) 863-5201 Fax: (541) 863-6199
E-mail: Lab@URCmail.net
Internet: http://ChemLab.cc
ORELAP ID# OR100031

ANALYSIS REPORT
URC # 9052815

City of Canyonville	Project: Sludge Analysis	Date Reported: 06/15/09
P O Box 765		Date Sampled: 05/28/09 09:00
Canyonville, OR 97417		Date Received: 05/28/09 16:21
	Client Contact: Tony Lakey	Sampled By: C. Masotto

Sample Location: Lime Tanks — URC Sample #: 9052815-01 — Matrix: Sludge

Analyte	Code	Result	Units	MRL	MCL	Prepared	Analyzed	Analyst	Qualifier
Inorganics									
EPA 300.0									
Nitrate as N NO3		27.4	mg/kg dry	1.71		05/29/09 13:57	05/29/09	TDL	
Nitrite as N NO2		ND	mg/kg dry	8.57		05/29/09 13:57	05/29/09	TDL	
SM 2540B									
TS		1.15	% by Weight			05/28/09	06/04/09	MLH	
SM 2540E									
Volatile Solids		73.5	% by Weight (of TS)			05/28/09	06/04/09	MLH	
SM 4500 NH3									
Ammonia as N NH3		30500	mg/kg dry	4350		06/02/09	06/05/09	MLH	
SM 4500-H B									
pH		7.5	pH Units	0.1		05/28/09 16:34	05/29/09	MLH	
SM 4500Norg B									
Total Kjeldahl Nitrogen TKN		72100	mg/kg dry	8700		06/02/09	06/05/09	MLH	
SM 4500P									
Phosphorus-Total P		20900	mg/kg dry	4.35		05/29/09	05/29/09	TDL	

UMPQUA Research Company/MC

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

6/15/9

Wm.F. Michalek, Laboratory Manager

UMPQUA Research Company
626 NE Division St. - P.O. Box 609, Myrtle Creek,
Oregon 97457(541) 863-5201 Fax: (541) 863-6199
E-mail: Lab@URCmail.net
Internet: http://ChemLab.cc
ORELAP ID# OR100031

ANALYSIS REPORT
URC # 9052815

City of Canyonville	Project: Sludge Analysis	Date Reported: 06/15/09
P O Box 765		Date Sampled: 05/28/09 09:00
Canyonville, OR 97417		Date Received: 05/28/09 16:21
	Client Contact: Tony Lakey	Sampled By: C. Masotto

Sample Location: Lime Tanks — URC Sample #: 9052815-01 — Matrix: Sludge

Analyte	Code	Result	Units	MRL	MCL	Prepared	Analyzed	Analyst	Qualifier
Metals									
EPA 245.1									
Mercury		**2.13**	mg/kg dry	0.100		06/11/09	06/12/09	JMR	
EPA 6020									
Arsenic		**2.97**	mg/kg dry	0.010		06/03/09	06/04/09	JMR	
Cadmium		**1.06**	mg/kg dry	0.100		06/03/09	06/04/09	JMR	
Chromium		**16.6**	mg/kg dry	0.025		06/03/09	06/04/09	JMR	
Copper		**263**	mg/kg dry	0.100		06/03/09	06/04/09	JMR	
Lead		**20.3**	mg/kg dry	0.100		06/03/09	06/04/09	JMR	
Molybdenum		**ND**	mg/kg dry	10.0		06/03/09	06/04/09	JMR	
Nickel		**28.0**	mg/kg dry	0.100		06/03/09	06/04/09	JMR	
Selenium		**10.1**	mg/kg dry	0.020		06/03/09	06/04/09	JMR	
Zinc		**459**	mg/kg dry	1.00		06/03/09	06/04/09	JMR	
SM 3111B									
Potassium		**6630**	mg/kg dry	10.0		06/11/09	06/11/09	JMR	

UMPQUA Research Company/MC

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Wm.F. Michalek, Laboratory Manager

UMPQUA Research Company
626 NE Division St. - P.O. Box 609, Myrtle Creek,
Oregon 97457(541) 863-5201 Fax: (541) 863-6199
E-mail: Lab@URCmail.net
Internet: http://ChemLab.cc
ORELAP ID# OR100031

ANALYSIS REPORT
URC # 9052815

Qualifiers and Definitions

QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS recovery within the acceptance limits
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the MRL (minimum reporting limit)
NA	Not Applicable
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MRL	Minimum Reporting Limit
MDL	Minimum Detection Limit
MCL	Maximum Contamination Level
(‡)	ORELAP Accredited Analyte
(~)	Due to rounding of individual analytes, the "total" may vary slightly from the sum of the individual analyte values

UMPQUA Research Company/MC

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

6-5-15

Wm.F. Michalek, Laboratory Manager

CHAIN OF CUSTODY RECORD

ANALYTICAL SERVICES

UMPQUA Research Company
626 N.E. DIVISION ST. - P.O. BOX 609
MYRTLE CREEK, OR 97457
Ph (541) 863-5201 Fax (541) 863-6199
ORELAP ID # OR100031

[redacted]

CLIENT NAME: CITY OF CANYONVILLE
BILLING ADDRESS: PO BOX 765
CANYONVILLE OR 97417
PO Number:
Date: 5-28-09

PROJECT NAME: WWTP

[redacted]

CLIENT CONTACT PERSON: TONY LAKEY
TELEPHONE: 839-4447 FAX 839-4680
SAMPLE COLLECTED BY: C. MASOTTO
If the sample was collected by a URC Lab Technician, enter the Sample Collection Fee miles and hours to be charged to client: ____ Miles ____ Lab Tech Hours

Lab Use Only URC SAMPLE ID No.	SAMPLE LOCATION / CLIENT SAMPLE ID No.	COLLECTION DATE	COLLECTION TIME	Number of Bottles	MATRIX DW	MATRIX Aqueous	MATRIX Soil	ANALYSIS REQUIRED
905281501	LIME TANKS	5-28-09	0900	1				SLUDGE ANALYSIS

Relinquished By Customer/Sample Collector: Signature [signature] Date/Time 5-28-09/1545
Relinquished By Sample Custodian (if applicable): Signature [signature] Date/Time 5-28-09/1621
Relinquished By Log In: Signature [signature] Date/Time 5/28/09 16:25
QC Level (Circle One) 1 2 3 Other
Sampling Procedure Number:

Received By Sample Custodian: Signature Date/Time
Received By Login: Signature [signature] Date/Time 5/28/09 16:21
Received by Analyst/Custodian: Signature [signature] Date/Time 5-28-09 1635
LAB USE ONLY
Temperature at receipt: ____ °
Temp Gun ID# Q2074
URC Containers: (circle one) ALL SOME NONE
Cooler: Client / URC
Cooling process, on ice: yes no

F-236 10/10/07 QA SR

UMPQUA Research Company
Sample Receipt and Preservation
Analytical Services

Project/Client: City of Canyonville

URC Sample ID #	Ammonium Chloride	Ascorbic Acid	EDA	MCAA Buffer	Sodium Sulfite	SodiuM Thiosulfate	1:1 HCl	1:1 HNO_3	1:1 H_2SO_4	10N NaOH	No Preservation	pH <2.0	VOA Vials No Air	SPLIT SAMPLE	COMMENTS
1. 9052815-01											✓ 5-28-09 MLH				
2.															
3.															
4.															
5.															
6.															
7.															
8.															
9.															
10.															

√and initial/date in box if received preserved.
P and initial/date in box for all preservatives added after receipt.

F-293 11/07/06 QA S

City of Canyonville

Annual Sludge Production
Permit #100532

Month	Gallons Applied	Dry Pounds	Lime Pounds
January	0	0	0
February	0	0	0
March	0	0	0
April	0	0	0
May	0	0	875
June	102,000	18,308	4,340
July	87,000	12,797	3,115
August	39,000	6,996	2,485
September	72,000	13,350	2,205
October	21,000	8,942	980
November	0	0	0
December	0	0	0
Total	321,000	60,393	14,000
Maximum	102,000	18,308	4,340
Minimum	0	0	0
Average	26,750	5,033	1,167

Ground water monitoring Record

2009

Easterbrook's Ranch

	Date	Water Level Inches	Biosolids Applied Gallons	17.14 Acres Field #7 LBS	7.72 Acres Field #9 LBS	
June	1	0	12000	1485		
	2	0	6000	1115		
	3					
	4					
	5	0	6000	1124		
	6					
	7					
	8	0	12000	2709		
	9					
	10					
	11	0	6000	1002		
	12					
	13					
	14					
	15					
	16	0	6000	676		
	17	0	12000	1470		
	18	0	6000	1257		
	19					
	20					
	21					
	22	0	12000	2659		
	23	0	6000	1206		
	24	0	12000	2439		
	25	0	6000	1166		
	26					
	27					
	28					
	29					
	30					
	31					
			Total	Total	Total	
			102000	18308	0	

Ground water monitoring Record

2009

Easterbrook's Ranch

	Date	Water Level Inches	Biosolids Applied Gallons	17.14 Acres Field #7 LBS	7.72 Acres Field #9 LBS	
July	1					
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13	0	12000		1968	
	14					
	15	0	6000		910	
	16					
	17					
	18					
	19					
	20					
	21	0	3000		128	
	22					
	23	0	9000		773	
	24	0	3000		209	
	25					
	26					
	27					
	28					
	29	0	9000		534	
	30	0	9000		981	
	31					
			Total	Total	Total	
			51000	0	5503	

Ground water monitoring Record

2009

Easterbrook's Ranch

	Date	Water Level Inches	Biosolids Applied Gallons	17.14 Acres Field #7 LBS	7.72 Acres Field #9 LBS
August	1				
	2				
	3				
	4				
	5				
	6				
	7	0	9000		1962
	8				
	9				
	10				
	11				
	12				
	13				
	14				
	15				
	16				
	17				
	18	0	9000		1279
	19	0	3000		468
	20	0	6000		1004
	21	0	6000		974
	22				
	23				
	24				
	25	0	6000		1309
	26				
	27				
	28				
	29				
	30				
	31				
			Total	Total	Total
			39000	0	6996

Ground water monitoring Record

2009

Easterbrook's Ranch

	Date	Water Level Inches	Biosolids Applied Gallons	17.14 Acres Field #7 LBS	7.72 Acres Field #9 LBS
Sept.	1	0	6000		1501
	2	0	3000		710
	3	0	9000		2526
	4				
	5				
	6				
	7				
	8	0	9000		1522
	9	0	9000		1326
	10				
	11				
	12				
	13				
	14	0	6000		1014
	15	0	9000		1068
	16	0	3000		252
	17				
	18	0	6000		828
	19				
	20				
	21	0	6000		1363
	22				
	23				
	24				
	25				
	26				
	27				
	28				
	29	0	6000		1240
	30				
	31				
			Total	Total	Total
			72000	0	13350

Ground water monitoring Record

2009

Easterbrook's Ranch

	Date	Water Level Inches	Biosolids Applied Gallons	17.14 Acres Field #7 LBS	7.72 Acres Field #9 LBS
October	1				
	2				
	3				
	4				
	5				
	6				
	7	0	6000		1818
	8	0	6000		764
	9				
	10				
	11				
	12				
	13				
	14				
	15				
	16				
	17				
	18				
	19				
	20	0	6000		4147
	21				
	22	0	3000		2213
	23				
	24				
	25				
	26				
	27				
	28				
	29				
	30				
	31				
			Total	Total	Total
			21000	0	8942

Name	Canyonville
File No.	13754
Phone No.	541-839-4447

Biosolid Analysis

Lab analysis # 9052815 **Date 5/28/2009** 39961

	mg/kg dry-wt.
Arsenic	2.97
Cadmium	1.06
Chromium	16.6
Copper	263
Lead	20.3
Mercury	2.13
Molybdenum	0
Nickel	28
Selenium	10.1
Zinc	459

Total Mertic tons	**27.18**	**Total US tons**	30.19698
Total US tons	**30.20**	**Total Mertic tons**	27.18
Acres land applied	**24.86**		

Conversion
US-> Metric tons multiply by 1.1
Metric -> US tons multiply by 0.9

Replace the 1 with the appropriate decimal

Cake Biosolid	0.85	0.85
Liquid Biosolid	0.5	0.5 Dewater (10-50%) and Liquid
Liquid gal/yr	321000	
% Total Solids	1.15	
% Volatile Solids	73.5	

Total Organic	4.16	41600	**Organic N = (%TKN-%NH4)**
TKN	7.21	72100	
NH4	3.05	30500	**Inorganic N = (%NH4 + %NO3)**
NO3	0.00274	27.4	
pH	7.5		
Fecal Coliform org./100ml		<2,000,000 /dry gr. Total Solids	

color key

	requires entered value
	calculated value
	replace the 1 with # from selection

Anaerobic D.	0.2	0.2	Replace the 1 with the appropriate decimal
Aerobic D.	0.3	0.3	Replace the 1 with the appropriate decimal
Drying Bed	0.15	0.15	Replace the 1 with the appropriate decimal
Gal/yr.	321000		
lb. TS/yr.	60400		
Dry TS US ton/y	30.20		

%TS x 8.34 x gal/y = TS lb./ yr	30816.642
Total US tons	15.41
Total Metric ton	13.87

Metal	Biosolid concentration mg/kg	503.13 Table 3 Conc. mg/kg	503.13 Table 3 metal lb./ton biosolid	Yearly lb. Metal per ton biosolids	Yearly Loading lb./ac-yr.	Yearly Loading kg/ha

Arsenic	2.97	41	0.082	0.17939	0.00722	0.008
Cadmium	1.06	39	0.078	0.06402	0.00258	0.003
Chromium	16.6	1200	2.400	1.00264	0.04033	0.045
Copper	263	1500	3.000	15.88520	0.63899	0.716
Lead	20.3	300	0.600	1.22612	0.04932	0.055
Mercury	2.13	17	0.034	0.12865	0.00518	0.006
Molybdenum	0	18	0.036	0.00000	0.00000	0.000
Nickel	28	420	0.840	1.69120	0.06803	0.076
Selenium	10.1	36	0.072	0.61004	0.02454	0.027
Zinc	459	2800	5.600	27.72360	1.11519	1.249

	mg/kg dry-wt.	lb. N / yr.	lb./ac-yr.	kg/ha
Total Organic	4.16	22.6138	0.9096	1.0188
TKN	7.21	39.1936	175.1746	196.1955
NH4	3.05	782.9350	31.4938	35.2730
NO3	0.00274	1.6550	0.06657	0.07456

lb. mineralized organic N/dry ton	0.7488		
lb. inorganic N/dry ton	25.9798		
Total lb. available N/dry ton	26.729		
Nitrogen loading rate N lb./acre	100.000	112	kg/ha
Total lb. Org-N produced per year	22.614	8.381	metric ton/ha
Total lb. NH4 produced per year	782.935		
Total lb. NO3 produced per year	1.65496		
Total lb. Available N per year	807.204		
Number dry tons land applied per acre	3.741		
Total number of acres required per year	8.07		

Trace Metals
Sample calculation:
[([(5.0 mg As/1000000 mgTS X 140000 lb. Total Solids) = 0.07 lb. As/yr.
(((5.0 mg As/ 1000000 mg TS) x 140000 lb. TS) / 52 ac = 0.013 lb. As/ac-yr.

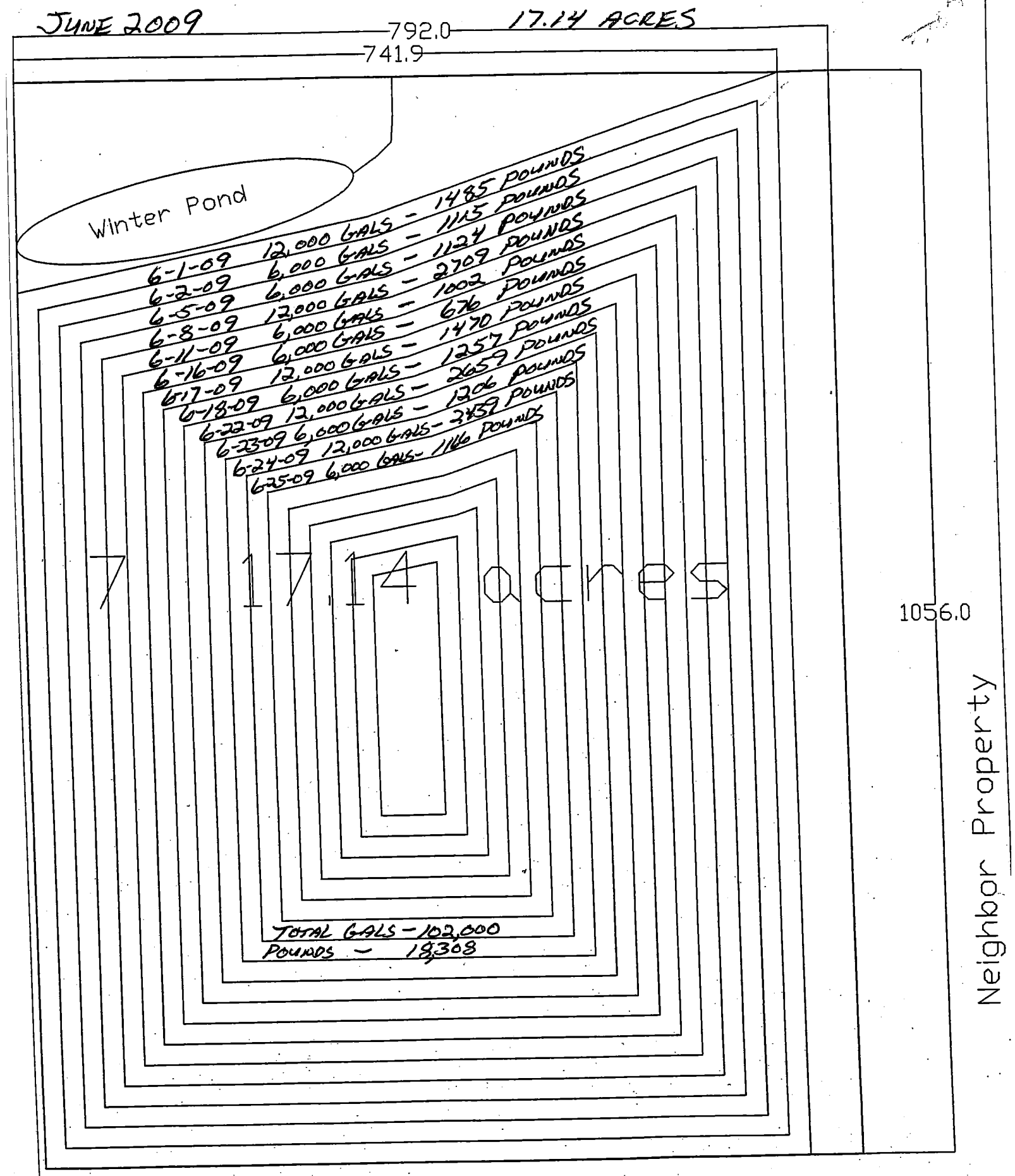
(EPA cumulative loading 41 total lb. As/ac / 0.013 lb. As/ac/yr.) = 2719.3 yr. site life for As
(0.013 lb. As/ac-yr.) x 1.12 conversion factor = 0.015 kg/ha-yr.
(2.6 tons biosolid is equivalent to a loading rate of 100 lb. total available N/ac) .

Metal	Analysis Biosolid concentration mg/kg	Ceiling Limits 40 CFR 503.13 Table 2 Conc. mg/ha	40 CFR 503.13 Table 2 metal lb./ac biosolid	Yearly lb. Metal per ton biosolids	Biosolid Loading lb./ac-yr.	Biosolid Loading kg/ha-yr.
Arsenic	2.97	41	45.920	0.416	0.0167	0.019
Cadmium	1.06	39	43.680	0.148	0.0060	0.007
Chromium	16.6	1200	1344.000	2.324	0.0935	0.105
Copper	263	1500	1680.000	36.820	1.4811	1.659
Lead	20.3	300	336.000	2.842	0.1143	0.128
Mercury	2.13	17	19.040	0.298	0.0120	0.013
Molybdenum	0	18	20.160	0.000	0.0000	0.000
Nickel	28	420	470.400	3.920	0.1577	0.177
Selenium	10.1	100	112.000	1.414	0.0569	0.064
Zinc	459	2800	3136.000	64.260	2.5849	2.895

Metal	Biosolid Analysis mg/kg	Table 2 metal mg/ha	lb. Metal per /ac biosolid	Loading lb./ac-yr.	Loading kg/ha-yr.	Site Life in years
Arsenic	2.97	41	45.920	0.007	0.008	5073.10172
Cadmium	1.06	39	43.680	0.003	0.003	13520.87833
Chromium	16.6	1200	1344.000	0.040	0.045	26565.58115
Copper	263	1500	1680.000	0.639	0.716	2095.953646
Lead	20.3	300	336.000	0.049	0.055	5430.894669
Mercury	2.13	17	19.040	0.005	0.006	2933.023083
Molybdenum	0	18	20.160	0.000	0.000	#DIV/0!
Nickel	28	420	470.400	0.068	0.076	5512.358089
Selenium	10.1	100	112.000	0.025	0.027	3638.520191
Zinc	459	2800	3136.000	1.115	1.249	2241.772353

JUNE 2009

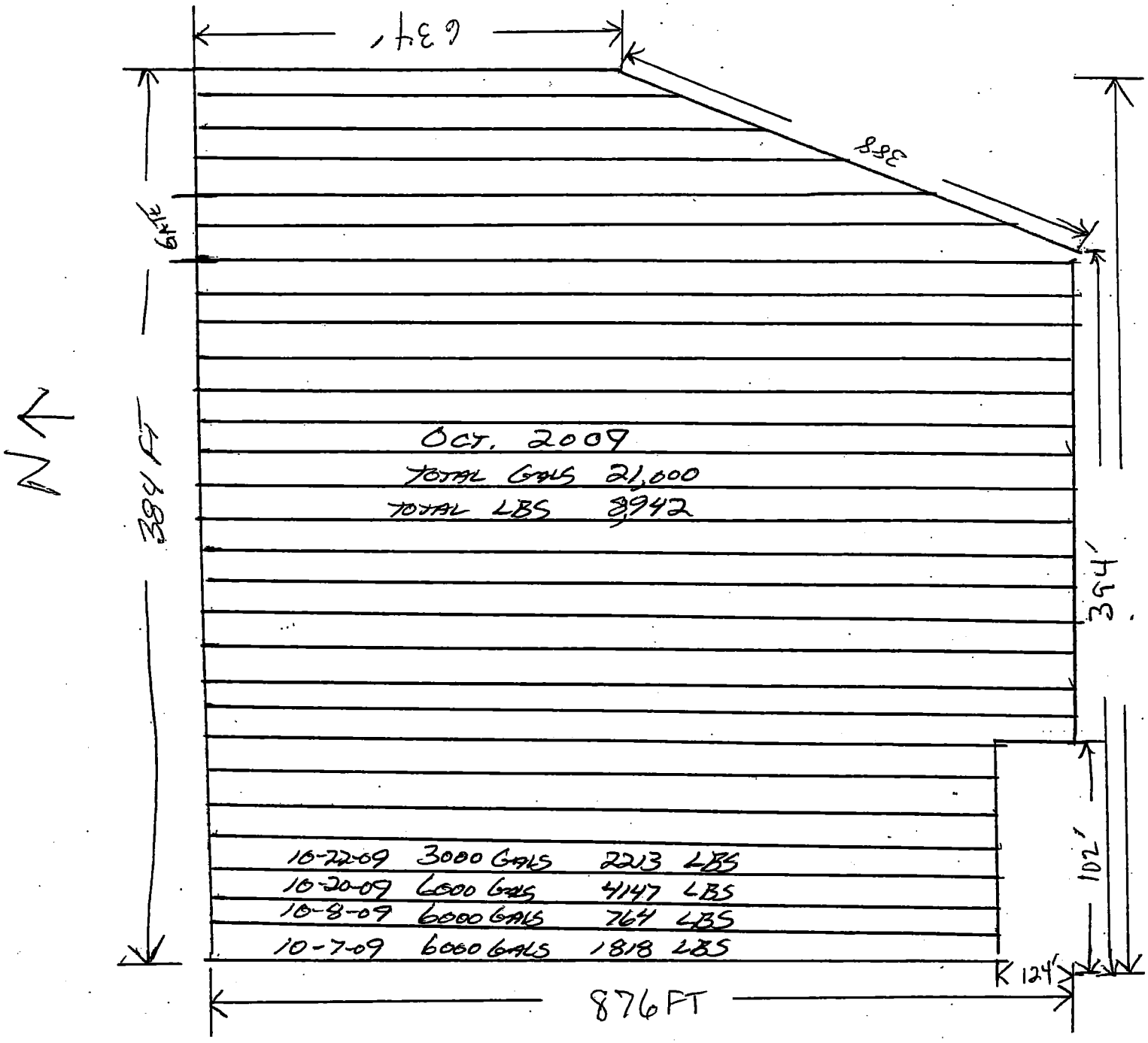
17.14 ACRES



FIELD # 9

7.72 ACRES

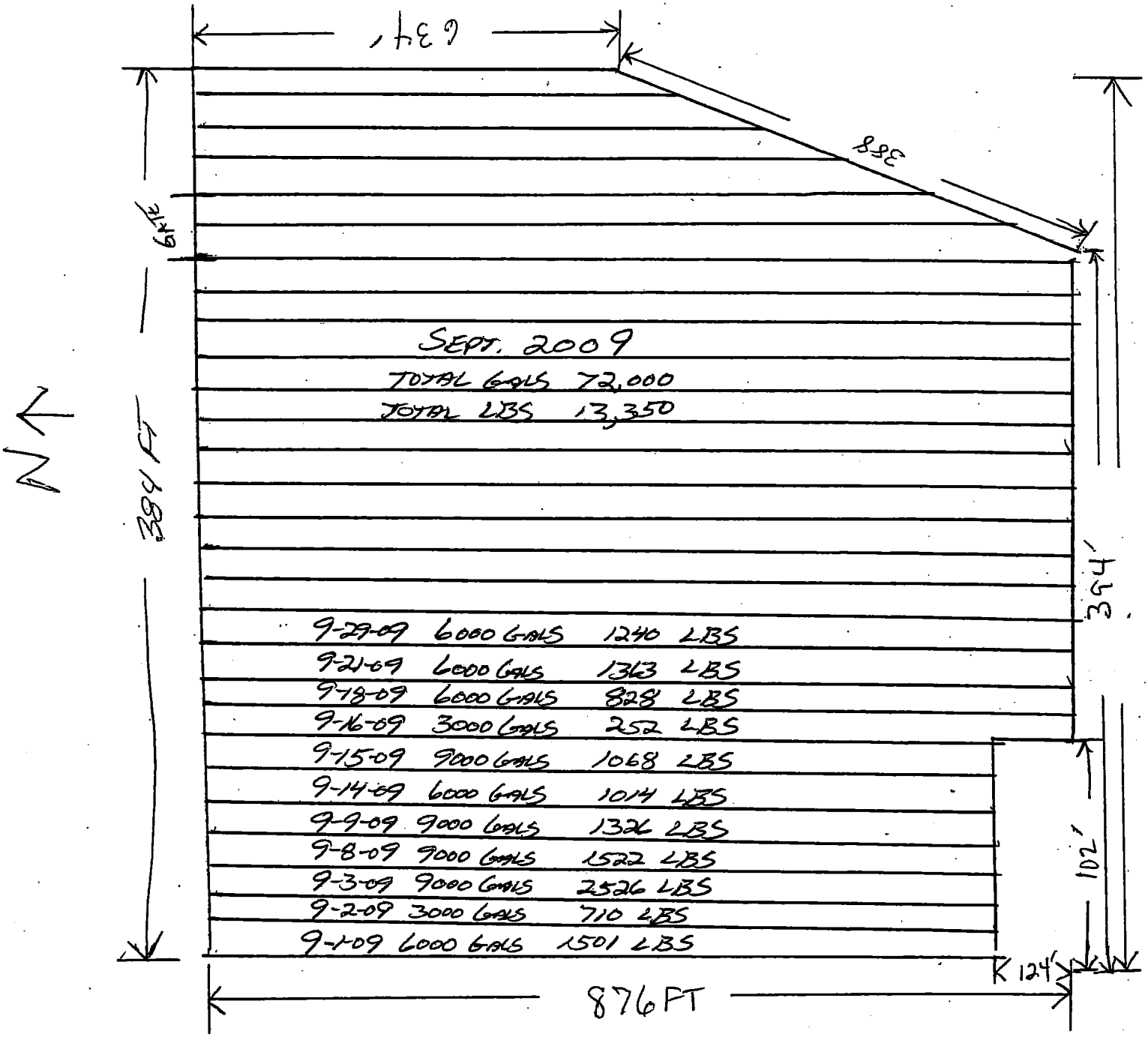
336,384 FT² / 43560



FIELD # 9

7.72 ACRES

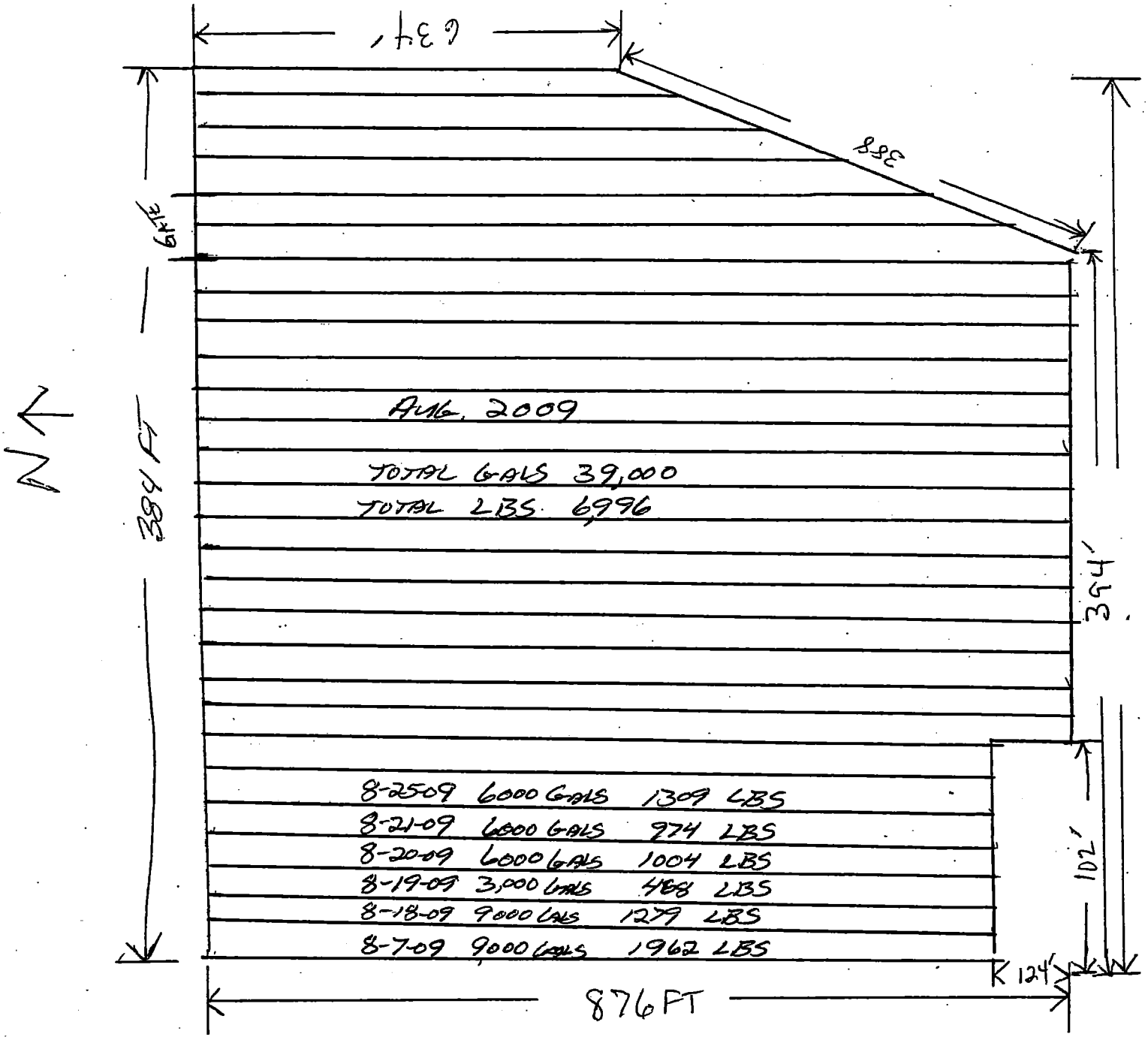
336,384 FT^2 / 43560



FIELD # 9

7.72 ACRES

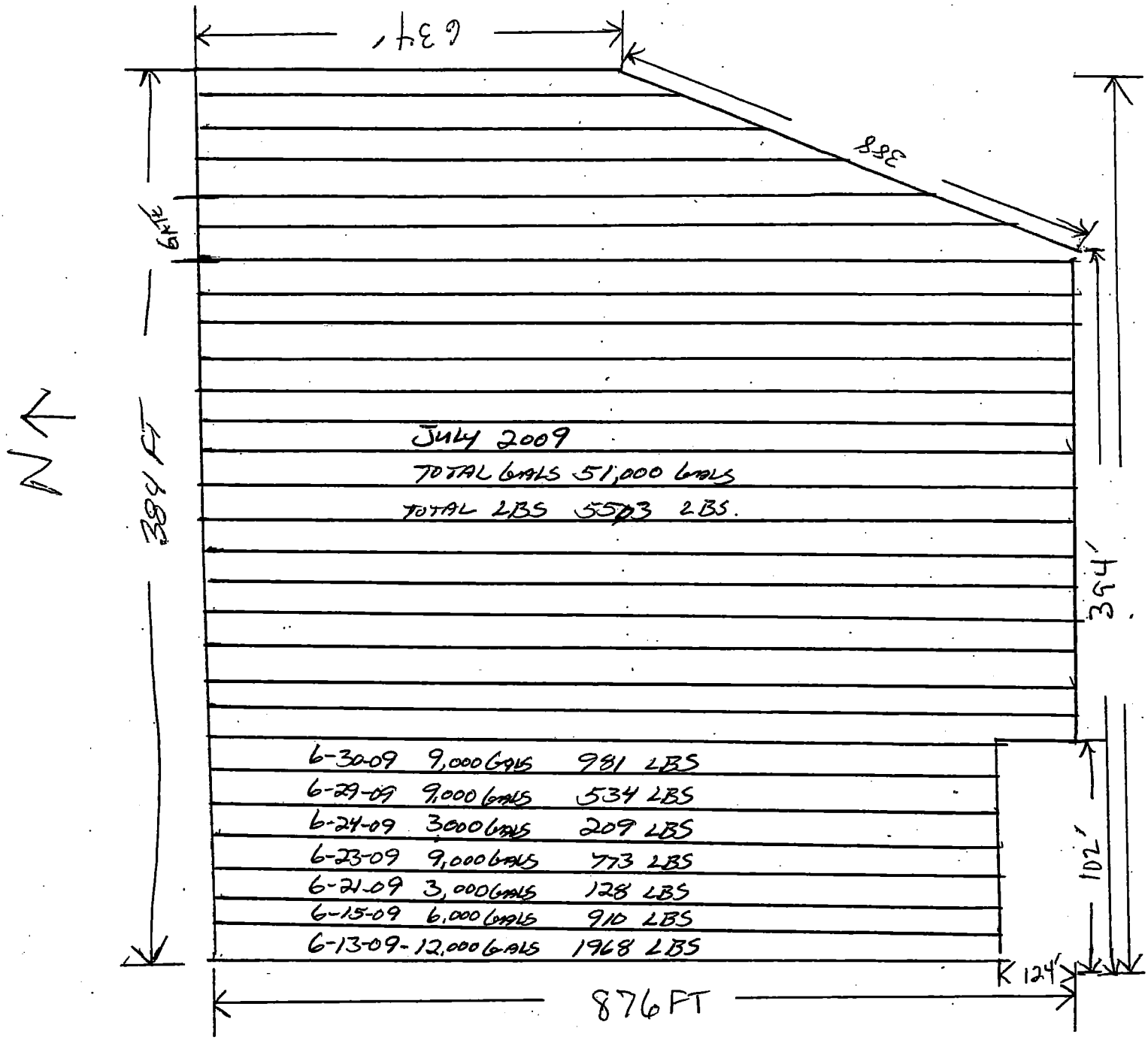
336,384 FT² / 43560



FIELD # 9

7.72 ACRES

336,384 FT² / 43560



City of Canyonville

Pioneers of the Past

250 N. Main Street
PO Box 765
Canyonville, OR 97417

Pioneers of the Future

Ph. (541) 839-4258
Fax (541) 839-4680
publicworks@cityofcanyonville.com

January 28, 2010

To: Paul Kennedy
Natural Resource Specialist 3
D.E.Q.
Western Region Eugene Office
165 E. 7th Ave. Suite 100
Eugene, Or. 97401

2009 Biosolids report addendum

I certify, under penalty of law, that the information used to determine compliance with the Class B Pathogen Reduction requirements in 40 CFR Part 503 Sec. (b) (2) and the Vector Attraction Reduction requirements in 40 CFR part 503.33 Sec. (b)(1) was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluated this information. I certify that all Class B Biosolids land applied has met the above-mentioned Pathogen and Vector Attraction Reduction requirements. I also certify that all Class B Biosolids were land applied at agronomic rates. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment.

January 28, 2010

Tony Lakey

Tony Lakey
Public Works Superintendent

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Appendix K

Cost Tables

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ENGINEER'S ESTIMATE OF PROBABLE COST **KENNEDY/JENKS CONSULTANTS**

Project: **Canyonville Facilities Plan**
Alternative H1 - Screening Upstream

Prepared By: BIB
Date Prepared: 1-Sep-09
K/J Proj. No.: 0976004*00
Months to Midpoint of Constr.: 24

SUMMARY BY AREA

DIV NO.	ITEM DESCRIPTION	QUANTITY	MATERIALS	INSTALLATION	SUB-CONTRACTOR	TOTAL
1		1 LS				
2	Site Construction	1 LS				15,000
3	Concrete	1 LS				120,000
4		1 LS				
5		1 LS				
6		1 LS				
7		1 LS				
8		1 LS				
9		1 LS				
10		1 LS				
11	Equipment	1 LS				500,000
12		1 LS				
13	Special Construction	1 LS				365,000
14		1 LS				
15	Mechanical	1 LS				50,000
16	Electrical	1 LS				40,000
17	I&C	1 LS				100,000
	Subtotals					1,190,000
	Contractor General Conditions @	15%				178,500
	Subtotals					1,368,500
	Contractor Overhead and Profit @	15%				205,275
	Subtotals					1,573,775
	Contingency @	30%				472,133
	Subtotals					2,045,908
	Engineering, Legal and Administration @	25%				511,477
	Subtotals					2,557,384
	Escalate to Midpt of Const. @ 0.16% per month	3.8%				98,204
	Estimated Construction Cost					2,700,000

DETAILED COST ESTIMATE

Project: WWTP MASTER PLAN
Job #: KJ 0976004
Location: CANYONVILLE, OREGON
Element: 02 ALT H-1 HEADWORKS

Date : August 28, 2009
By : D. Van Kirk
Reviewed:

SPEC. NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL	TOTAL
	Division 02 - Site Construction					
02300	Structure Excavation @ Headworks	492.00	CY	$2.56	$1,259	
02300	Native Structure Backfill @ Headworks	234.00	CY	$35.96	$8,415	
02300	Imported Granular Fill Under Slabs	2.07	CY	$65.87	$136	
02300	Imported Granular Fill Under Slabs	21.41	CY	$65.87	$1,410	
02300	Haul & Dispose Exc. Matl @ Headworks	186.67	CY	$6.18	$1,154	
	Total Site Construction					**$12,374**
	Division 03 - Concrete					
03300	Wet Well Floor Slab	3.26	CY	$388.96	$1,268	
03300	Wet Well Floor Slab	0.75	CY	$388.96	$292	
03300	Valve Vault Floor Slab	4.45	CY	$388.96	$1,731	
03300	Manual Screen Room Floor Slab	5.70	CY	$388.96	$2,217	
03300	Aqua Gard Screen Room Floor Slab	2.59	CY	$388.96	$1,007	
03300	Edge Forms	120.00	LF	$13.41	$1,610	
03300	West Process Slab @ Grade	15.11	CY	$388.96	$5,877	
03300	South Process Slab @ Grade	3.85	CY	$388.96	$1,497	
03300	East Process Slab @ Grade	3.11	CY	$388.96	$1,210	
03300	East Process Slab @ Grade	-1.19	CY	$388.96	-$463	
03300	Edge Forms	58.00	LF	$13.41	$778	
03300	Edge Forms	30.00	LF	$13.41	$402	
03300	Edge Forms	24.00	LF	$13.41	$322	
03300	Headcell Containment Wall	14.81	CY	$1,161.00	$17,194	
03300	Valve Vault Walls	3.56	CY	$1,161.00	$4,133	
03300	Wet Well Walls	24.00	CY	$1,161.00	$27,864	
03300	Manual Screen Room Walls	22.22	CY	$1,161.00	$25,797	
03300	Aqua Gard Screen Room Walls	7.26	CY	$1,161.00	$8,429	
03300	Valve Vault Elevated Slab	4.45	CY	$448.52	$1,996	
03300	Wet Well Elevated Slab	3.26	CY	$448.52	$1,462	
03300	Wet Well Elevated Slab	0.75	CY	$448.52	$336	
03300	Manual Screen Room elevated Slab	5.70	CY	$448.52	$2,557	
03300	Aqua Gard Screen Room Elevated Slab	2.59	CY	$448.52	$1,162	
	Misc. Embeds & Waste, Allow	1.00	10%	$10,867.89	$10,868	
	Total Concrete					**$119,547**
	Division 11 - Equipment					
11000	Headcell and Teacup	1.00	LS	$167,695.40	$167,695	
11000	Eutek Grit Snail	1.00	EA	$118,643.00	$118,643	
11293	Slide Gate, 24" X 24"	2.00	EA	$692.87	$1,386	
11312	Submersible Pumps, 5HP	4.00	EA	$10,446.82	$41,787	
11332	AquaGuard Screen	1.00	EA	$150,835.28	$150,835	
11332	1/2" Manual Bar Screen	1.00	EA	$10,126.15	$10,126	
	Total Equipment					**$490,473**
	Division 13 - Special Construction					
13000	Ultrasonic Level Sensor	1.00	EA	$5,000.00	$5,000	
13000	Refrigerated Automatic Sampler	1.00	EA	$7,500.00	$7,500	
	Total Special Construction					**$12,500**
	Division 15 - Mechanical					
15114	6"- 200 Psi Ci Fxf Swing Check Valve	4.00	EA	$2,189.46	$8,758	

15116	6" Fxf Cast Iron Plug Valve W/Handwheel	4.00	EA	$1,175.76	$4,703	
15116	Add For Motor Operator 2.5" Through 10"	4.00	EA	$2,991.00	$11,964	
15251	6" Flg Cldi Pipe In Bldg	10.00	LF	$60.32	$603	
15251	6" 90° 125# Cldi Fxf Ell	2.00	EA	$934.26	$1,869	
15251	6" Cldi Flg Straight Tee In Place	3.00	EA	$1,399.30	$4,198	
15251	4" Flg Cldi Pipe In Bldg	60.00	LF	$41.64	$2,498	
15251	4" 90° 125# Cldi Fxf Ell	4.00	EA	$652.23	$2,609	
15251	4" 90° 125# Cldi Fxf Base Ell	4.00	EA	$765.87	$3,063	
15251	4" 45° 125# Cldi Fxf Ell	4.00	EA	$652.23	$2,609	
15251	6"X 4" 125# Cldi Fxf Concentric Rdcr	4.00	EA	$876.39	$3,506	
	Total Mechanical					**$46,379**
	Division 16 - Electrical I&C					
16000	Electrical, I&C at Headworks H-1	1.00	20%	$136,254.66	$136,255	
	Total Electrical I&C					**$136,255**
	TOTAL ALT H-1					**$817,528**

ENGINEER'S ESTIMATE OF PROBABLE COST **KENNEDY/JENKS CONSULTANTS**

Project: **Canyonville Facilities Plan**
Alternative H2 - Pumping Upstream

Prepared By: BIB
Date Prepared: 1-Sep-09
K/J Proj. No.: 0976004*00
Months to Midpoint of Constr.: 24

SUMMARY BY AREA

DIV NO.	ITEM DESCRIPTION	QUANTITY	MATERIALS	INSTALLATION	SUB-CONTRACTOR	TOTAL
1		1 LS				
2	Site Construction	1 LS				10,000
3	Concrete	1 LS				50,000
4		1 LS				
5		1 LS				
6		1 LS				
7		1 LS				
8		1 LS				
9		1 LS				
10		1 LS				
11	Equipment	1 LS				340,000
12		1 LS				
13	Special Construction	1 LS				365,000
14		1 LS				
15	Mechanical	1 LS				60,000
16	Electrical	1 LS				10,000
17	I&C	1 LS				90,000
	Subtotals					925,000
	Contractor General Conditions @	15%				138,750
	Subtotals					1,063,750
	Contractor Overhead and Profit @	15%				159,563
	Subtotals					1,223,313
	Contingency @	30%				366,994
	Subtotals					1,590,306
	Engineering, Legal and Administration @	25%				397,577
	Subtotals					1,987,883
	Escalate to Midpt of Const. @ 0.16% per month	3.8%				76,335
	Estimated Construction Cost					2,100,000

VKTS

DETAILED COST ESTIMATE

Project: WWTP MASTER PLAN
Job #: KJ 0976004
Location: CANYONVILLE, OREGON
Element: 03 ALT H-2 HEADWORKS

Date : August 28, 2009
By : D. Van Kirk
Reviewed:

SPEC. NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL	TOTAL
	Division 02 - Site Construction					
02300	Structure Excavation @ Headworks	272.00	CY	$4.88	$1,328	
02300	Native Structure Backfill @ Headworks	147.00	CY	$35.96	$5,286	
02300	Imported Granular Fill Under Slabs	24.00	CY	$65.87	$1,581	
02300	Haul & Dispose Exc. Matl @ Headworks	125.00	CY	$6.18	$773	
	Total Site Construction					**$8,968**
	Division 03 - Concrete					
03300	Wet Well Floor Slab	3.26	CY	$388.96	$1,268	
03300	Wet Well Floor Slab	0.75	CY	$388.96	$292	
03300	Valve Vault Floor Slab	4.45	CY	$388.96	$1,731	
03300	Edge Forms	58.00	LF	$13.41	$778	
03300	Valve Vault Walls	3.56	CY	$1,161.00	$4,133	
03300	Wet Well Walls	24.00	CY	$1,161.00	$27,864	
03300	Valve Vault Elevated Slab	4.45	CY	$448.52	$1,996	
03300	Wet Well Elevated Slab	3.26	CY	$448.52	$1,462	
03300	Wet Well Elevated Slab	0.75	CY	$448.52	$336	
03300	South Process Slab @ Grade	12.00	CY	$388.96	$4,668	
03300	Edge Forms	54.00	LF	$13.41	$724	
	Misc. Embeds & Waste, Allow	1.00	10%	$4,525.20	$4,525	
	Total Concrete					**$49,777**
	Division 11 - Equipment					
11000	Hycor Screen	1.00	EA	$113,405.50	$113,405	
11000	1/2" Manual Bar Screen, Allow	1.00	EA	$10,126.15	$10,126	
11000	Pistagrit Vortex Chamber	1.00	EA	$51,170.17	$51,170	
11000	Wemco Grit Pump & Classifier	1.00	EA	$123,060.70	$123,061	
11312	Submersible Pumps, 5 HP	4.00	EA	$10,446.82	$41,787	
	Total Equipment					**$339,550**
	Division 13 - Special Construction					
13000	Ultrasonic Level Sensor	1.00	EA	$5,000.00	$5,000	
13000	Refrigerated Automatic Sampler	1.00	EA	$7,500.00	$7,500	
	Total Special Construction					**$12,500**
	Division 15 - Mechanical					
15114	6"- 200 Psi Ci Fxf Swing Check Valve	4.00	EA	$2,189.46	$8,758	
15116	6" Fxf Cast Iron Plug Valve	4.00	EA	$1,175.76	$4,703	
15116	Add For Motor Operator 2.5" Through 10"	4.00	EA	$3,290.10	$13,160	
15251	6" Flg Cldi Pipe In Bldg	10.00	LF	$60.32	$603	
15251	6" 90° 125# Cldi Fxf Ell	2.00	EA	$934.26	$1,869	
15251	6" Cldi Flg Straight Tee In Place	3.00	EA	$1,399.30	$4,198	
15251	4" Flg Cldi Pipe In Bldg	60.00	LF	$41.64	$2,498	
15251	4" 90° 125# Cldi Fxf Ell	4.00	EA	$652.23	$2,609	
15251	4" 90° 125# Cldi Fxf Base Ell	4.00	EA	$765.87	$3,063	
15251	4" 45° 125# Cldi Fxf Ell	4.00	EA	$652.23	$2,609	
15251	6"X 4" 125# Cldi Fxf Concentric Rdcr	4.00	EA	$876.39	$3,506	
	Misc. Fittings, Supports & Waste	1.00	20%	$9,515.16	$9,515	
	Total Mechanical					**$57,091**
	Division 16 - Electrical I&C					

16000	Electrical, I&C at Headworks H-1	1.00	20%	$93,577.14	$93,577	
	Total Electrical I&C					**$93,577**
	TOTAL ALT H2					**$561,463**

ENGINEER'S ESTIMATE OF PROBABLE COST **KENNEDY/JENKS CONSULTANTS**

Project: **Canyonville Facilities Plan**
Alternative S1 - Modify Existing Aeration Basins

Prepared By: BIB
Date Prepared: 1-Sep-09
K/J Proj. No.: 0976004*00
Months to Midpoint of Constr.: 24

SUMMARY BY AREA

DIV NO.	ITEM DESCRIPTION	QUANTITY	MATERIALS	INSTALLATION	SUB-CONTRACTOR	TOTAL
	Modify Existing Aeration Basins					
1		1 LS				
2	Site Construction	1 LS				
3	Concrete	1 LS				100,000
4		1 LS				
5	Metals	1 LS				
6	Wood and Platics	1 LS				
7		1 LS				
8		1 LS				
9		1 LS				
10		1 LS				
11	Equipment	1 LS				300,000
12		1 LS				
13		1 LS				
14		1 LS				
15	Mechanical	1 LS				10,000
16	Electrical	1 LS				
17	I&C	1 LS				
	New Secondary Clarifiers					
1		1 LS				
2	Site Construction	1 LS				60,000
3	Concrete	1 LS				360,000
4		1 LS				
5	Metals	1 LS				60,000
6	Wood and Platics	1 LS				40,000
7		1 LS				
8		1 LS				
9		1 LS				
10		1 LS				
11	Equipment	1 LS				354,000

DIV NO.	ITEM DESCRIPTION	QUANTITY	MATERIALS	INSTALLATION	SUB-CONTRACTOR	TOTAL
12		1 LS				
13		1 LS				
14		1 LS				
15	Mechanical	1 LS				100,000
16	Electrical	1 LS				40,000
17	I&C	1 LS				100,000
	Subtotals					$1,524,000
	Contractor General Conditions @	15%				$228,600
	Subtotals					$1,752,600
	Contractor Overhead and Profit @	15%				$262,890
	Subtotals					$2,015,490
	Contingency @	30%				$604,647
	Subtotals					$2,620,137
	Engineering, Legal and Administration @	25%				$655,034
	Subtotals					$3,275,171
	Escalate to Midpt of Const. @ 0.16% per month	3.8%				$125,767
	Estimated Construction Cost					$3,400,000

VKTS

DETAILED COST ESTIMATE

Project: WWTP MASTER PLAN
Job #: KJ 0976004
Location: CANYONVILLE, OREGON
Element: Alt S1: Conventional Activated Sludge - Non-Nitrifying

Date : August 28, 2009
By : D. Van Kirk
Reviewed:

SPEC. NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL	TOTAL
	MODIFY EXST AERATION BASIN					
	Division 2 - Site Construction					
02000	Demo Exst Clarifier Internals	1	LS	$2,592.20	$2,592	
02220	12 " Wall Penetration	2	LF	$150.75	$301	
	Total Division 2					**$2,894**
	TOTAL MODIFICATIONS					**$2,894**
	NEW SECONDARY CLARIFIERS					
	Division 02 - Site Construction					
02300	Structure Excavation @ Clarifiers	1920	CY	$2.56	$4,914	
02300	Imported Fill Under Slab	24	CY	$65.87	$1,581	
02300	Native Structure Backfill @ Clarifiers	1046	CY	$35.96	$37,614	
02300	Haul & Dispose Excess Excavated Material	1123	CY	$6.18	$6,939	
02300	Structure Excavation Between Clarifiers	332	CY	$2.56	$850	
02300	Imported Fill Under Slabs	19	CY	$65.87	$1,252	
02300	Native Structure Backfill Between Clarifiers	40	CY	$35.96	$1,438	
02300	Haul & Dispose Excess Excavated Material	375	CY	$6.18	$2,318	
	Total					**$56,905**
	Division 03 - Concrete					
03300	Clarifier Floor Slabs	30	CY	$363.84	$10,839	
03300	Clarifier Footings	45	CY	$510.89	$23,036	
03300	Clarifier Exterior Walls	123	CY	$1,238.39	$152,161	
03300	Clarifier Launder Walls	7	CY	$2,105.99	$14,194	
03300	Clarifier Launder Slabs	9	CY	$486.53	$4,345	
03300	RAS Pump Station Floor Slab	6	CY	$388.96	$2,419	
03300	RAS Pump Station Floor Slab	4	CY	$388.96	$1,408	
03300	RAS Pump Station Floor Slab	7	CY	$388.96	$2,528	
03300	RAS Pump Station Floor Slab Edge Forms	181	LF	$388.96	$70,402	
03300	RAS Pump Station Floor Slab Edge Forms	181	LF	$13.41	$2,428	
03300	Ras Pump Station Walls	30	CY	$1,170.48	$35,618	
03300	Ras Pump Station Walls	3	CY	$1,160.72	$3,459	
03300	Clarifier Effluent Box Slabs	2	CY	$388.96	$953	
03300	Clarifier Effluent Box Edge Forms	35	LF	$13.41	$465	
03300	Clarifier Effluent Box Walls	9	CY	$1,170.48	$10,792	
03300	Clarifier Effluent Box Walls	5	CY	$1,170.48	$5,267	
03300	Clarifier Center Pier	6	CY	$309.85	$1,946	
03300	Clarifier Center Pier Forms	38	LF	$36.39	$1,383	
03000	Add for Misc. Embeds & Waste @ Clarifiers	1	LS	$17,182.13	$17,182	
	Total					**$360,825**
	Division 05 - Metals					
05500	Aluminum Grating	122	SF	$58.98	$7,195	
05500	Checkered Aluminum Pit Frame & Cover	120	SF	$209.20	$25,104	
05500	Aluminum Handrails	275	LF	$87.35	$24,022	
05000	Add for Rebate & Waste at Clarifiers	1	LS	$431.73	$432	
	Total					**$56,754**

	Division 06 - Wood and Plastics					
06000	Fiberglass Weirs	182	LF	$29.91	$5,444	
06000	Fiberglass Scum Baffles	829	SF	$42.87	$35,555	
	Total					**$40,999**
	Division 11 - Equipment					
11000	WAS Pumps, 3HP Submersible	4	EA	$6,696.82	$26,787	
11312	RAS Pumps, 5 HP Submersible	4	EA	$10,446.82	$41,787	
11353	Clarifier Mechanism, 32' Diameter	2	EA	$8,097.31	$16,195	
	Total					**$84,769**
	Division 15 - Mechanical					
15000	Clarifier Piping and Valves, Allow	1	LS	$3,238.93	$3,239	
15000	RAS PS Piping & Valves, Allow	1	LS	$95,773.41	$95,773	
	Total					**$99,012**
	Division 16 - Electrical, I&C					
16000	Electrical, I&C , Allow	1	20%	$139,852.86	$139,853	
	Total Electrical, I&C					**$139,853**
	TOTAL NEW CLARIFIERS					**$839,117**
	TOTAL ALT S-1					**$842,011**

ENGINEER'S ESTIMATE OF PROBABLE COST **KENNEDY/JENKS CONSULTANTS**

Project: **Canyonville Facilities Plan**
Alternative S2 - Construct New Aeration Basins

Prepared By: BIB
Date Prepared: 1-Sep-09
K/J Proj. No.: 0976004*00
Months to Midpoint of Constr.: 24

SUMMARY BY AREA

DIV NO.	ITEM DESCRIPTION	QUANTITY	MATERIALS	INSTALLATION	SUB-CONTRACTOR	TOTAL
	New Aeration Basins					
1		1 LS				
2	Site Construction	1 LS				80,000
3	Concrete	1 LS				440,000
4		1 LS				
5	Metals	1 LS				100,000
6	Wood and Platics	1 LS				30,000
7		1 LS				
8		1 LS				
9		1 LS				
10		1 LS				
11	Equipment	1 LS				500,000
12		1 LS				
13		1 LS				
14		1 LS				
15	Mechanical	1 LS				10,000
16	Electrical	1 LS				60,000
17	I&C	1 LS				100,000
	New Secondary Clarifiers					
1		1 LS				
2	Site Construction	1 LS				60,000
3	Concrete	1 LS				360,000
4		1 LS				
5	Metals	1 LS				60,000
6	Wood and Platics	1 LS				40,000
7		1 LS				
8		1 LS				
9		1 LS				
10		1 LS				
11	Equipment	1 LS				354,000

DIV NO.	ITEM DESCRIPTION	QUANTITY	MATERIALS	INSTALLATION	SUB-CONTRACTOR	TOTAL
12		1 LS				
13		1 LS				
14		1 LS				
15	Mechanical	1 LS				100,000
16	Electrical	1 LS				40,000
17	I&C	1 LS				100,000
	Subtotals					$2,434,000
	Contractor General Conditions @	15%				$365,100
	Subtotals					$2,799,100
	Contractor Overhead and Profit @	15%				$419,865
	Subtotals					$3,218,965
	Contingency @	30%				$965,690
	Subtotals					$4,184,655
	Engineering, Legal and Administration @	25%				$1,046,164
	Subtotals					$5,230,818
	Escalate to Midpt of Const. @ 0.16% per month	3.8%				$200,863
	Estimated Construction Cost					$5,400,000

VKTS

DETAILED COST ESTIMATE

Project: WWTP MASTER PLAN
Job #: KJ 0976004
Location: CANYONVILLE, OREGON
Element: Alt S2 Conventional Activated Sludge - Nitrifying

Date : August 28, 2009
By : D. Van Kirk
Reviewed:

SPEC. NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL	TOTAL
	NEW AERATION BASINS					
02300	Imported Fill Under Slab	178	CY	$1.91	$340	
02300	Structure Excavation @ Aeration Basin	3990	CY	$1.91	$7,622	
02300	Imported Fill Under Slab	178	CY	$65.87	$11,725	
02300	Native Structure Backfill @ Aeration Basin	1856	CY	$35.96	$66,742	
02300	Haul & Dispose Excess Excavated Material	1956	CY	$6.18	$12,091	
	Total Earthwork					**$98,520**
	Division 03 - Concrete					
03300	Aeration Basin Bottom Floor Slab	177	CY	$388.96	$68,846	
03300	12" Edge Forms, Slab On Grade, Add	328	LF	$13.41	$4,399	
03300	Aeration Basin Exterior Walls	213	CY	$1,161.00	$247,676	
03300	Aeration Basin Bottom Center Wall	48	CY	$1,161.00	$55,809	
03300	Aeration Basin Upper Slab	194	CY	$448.52	$86,928	
03300	Aeration Basin Channel Top Slab	14	CY	$448.52	$6,208	
03300	Aeration Basin Inner Upper Walls	79	CY	$1,161.00	$91,336	
03300	Aeration Influent Box Slab on Grade	3	CY	$388.96	$1,299	
03300	Aeration Influent Box Walls	3	CY	$1,170.48	$3,312	
03300	Aeration Influent Box Walls	1	CY	$1,160.72	$1,370	
03300	Aeration Influent Box Walls	1	CY	$1,160.72	$917	
03300	Aeration Effluent Box Floor	3	CY	$1,160.72	$3,610	
03300	Aeration Effluent Box Floor	3	CY	$448.52	$1,395	
03300	Aeration Effluent Box End Walls	0	CY	$1,160.72	$464	
03300	Aeration Effluent Box Side Wall	3	CY	$1,160.72	$3,227	
03000	Allow for Fillets, Embeds & Waste	1	LS	$62,805.36	$62,805	
	Total Concrete					**$639,601**
	Division 05 - Metals					
05500	Aluminum Grating, 2-1/2"	718	SF	$58.98	$42,318	
05500	Aluminum Osha Handrail	560	LF	$87.35	$48,918	
05000	Allow for Rebate, Misc. Anchors & Waste	1	LS	$4,561.78	$4,562	
	Total Metals					**$95,797**
	Division 06 - Wood and Plastics					
06000	Redwood Baffle Walls	594	SF	$49.85	$29,611	
	Total Wood & Plastics					**$29,611**
	Division 11 - Equipment					
11000	Aeration Basin Blowers	0	EA	$0.00	$0	
11000	Aeration Basin Fine Bubble Diffusers	0	EA	$0.00	$0	
11293	Slide Gate, 36" X 36"	5	EA	$3,881.83	$19,409	
	Total Equipment					**$19,409**
	Division 15 - Mechanical					
15000	Process Piping, Allow	1	LS	$6,405.02	$6,405	
	Total Mechanical					**$6,405**
	Division 16 - Electrical, I&C					
16000	Electrical, I&C , Allow	1	20%	$177,868.61	$177,869	
	Total Electrical, I&C					**$177,869**
	TOTAL NEW AERATION BASINS					**$1,067,212**
	NEW SECONDARY CLARIFIERS					
	Division 02 - Site Construction					

02300	Structure Excavation @ Clarifiers	1920	CY	$2.56	$4,914	
02300	Imported Fill Under Slab	24	CY	$65.87	$1,581	
02300	Native Structure Backfill @ Clarifiers	1046	CY	$35.96	$37,614	
02300	Haul & Dispose Excess Excavated Material	1123	CY	$6.18	$6,939	
02300	Structure Excavation Between Clarifiers	332	CY	$2.56	$850	
02300	Imported Fill Under Slabs	19	CY	$65.87	$1,252	
02300	Native Structure Backfill Between Clarifiers	40	CY	$16.61	$665	
02300	Haul & Dispose Excess Excavated Material	375	CY	$6.18	$2,318	
	Total					**$56,131**
	Division 03 - Concrete					
03300	Clarifier Floor Slabs	30	CY	$363.84	$10,839	
03300	Clarifier Footings	45	CY	$510.89	$23,036	
03300	Clarifier Exterior Walls	123	CY	$1,238.39	$152,161	
03300	Clarifier Launder Walls	7	CY	$2,105.99	$14,194	
03300	Clarifier Launder Slabs	9	CY	$486.53	$4,345	
03300	RAS Pump Station Floor Slab	6	CY	$388.96	$2,419	
03300	RAS Pump Station Floor Slab	4	CY	$388.96	$1,408	
03300	RAS Pump Station Floor Slab	7	CY	$388.96	$2,528	
03300	RAS Pump Station Floor Slab Edge Forms	181	LF	$388.96	$70,402	
03300	RAS Pump Station Floor Slab Edge Forms	181	LF	$13.41	$2,428	
03300	Ras Pump Station Walls	30	CY	$1,170.48	$35,618	
03300	Ras Pump Station Walls	3	CY	$1,160.72	$3,459	
03300	Clarifier Effluent Box Slabs	2	CY	$388.96	$953	
03300	Clarifier Effluent Box Edge Forms	35	LF	$13.41	$465	
03300	Clarifier Effluent Box Walls	9	CY	$1,170.48	$10,792	
03300	Clarifier Effluent Box Walls	5	CY	$1,170.48	$5,267	
03300	Clarifier Center Pier	6	CY	$309.85	$1,946	
03300	Clarifier Center Pier Forms	38	LF	$36.39	$1,383	
03000	Add for Misc. Embeds & Waste @ Clarifiers	1	LS	$17,182.13	$17,182	
	Total					**$360,825**
	Division 05 - Metals					
05500	Aluminum Grating	122	SF	$58.98	$7,195	
05500	Checkered Aluminum Pit Frame & Cover	120	SF	$209.20	$25,104	
05500	Aluminum Handrails	275	LF	$87.35	$24,022	
05000	Add for Rebate & Waste at Clarifiers	1	LS	$431.73	$432	
	Total					**$56,754**
	Division 06 - Wood and Plastics					
06000	Fiberglass Weirs	182	LF	$29.91	$5,444	
06000	Fiberglass Scum Baffles	829	SF	$42.87	$35,555	
	Total					**$40,999**
	Division 11 - Equipment					
11000	WAS Pumps, 3HP Submersible	4	EA	$6,696.82	$26,787	
11312	RAS Pumps, 5 HP Submersible	4	EA	$10,446.82	$41,787	
11353	Clarifier Mechanism, 32' Diameter	2	EA	$8,097.31	$16,195	
	Total					**$84,769**
	Division 15 - Mechanical					
15000	Clarifier Piping and Valves, Allow	1	LS	$3,238.93	$3,239	
15000	RAS PS Piping & Valves, Allow	1	LS	$95,773.41	$95,773	
	Total					**$99,012**
	Division 16 - Electrical, I&C					
16000	Electrical, I&C , Allow	1	20%	$139,698.09	$139,698	
	Total Electrical, I&C					**$139,698**
	TOTAL NEW CLARIFIERS					**$838,189**
	TOTAL ALT S-2					**$1,905,400**

ENGINEER'S ESTIMATE OF PROBABLE COST **KENNEDY/JENKS CONSULTANTS**

Project: **Canyonville Facilities Plan**
Alternative S3 - Sequencing Batch Reactor

Prepared By: BIB
Date Prepared: 1-Sep-09
K/J Proj. No.: 0976004*00
Months to Midpoint of Constr.: 24

SUMMARY BY AREA

DIV NO.	ITEM DESCRIPTION	QUANTITY	MATERIALS	INSTALLATION	SUB-CONTRACTOR	TOTAL
	SBR					
1		1 LS				
2	Site Construction	1 LS				100,000
3	Concrete	1 LS				530,000
4		1 LS				
5	Metals	1 LS				105,000
6	Wood and Platics	1 LS				
7		1 LS				
8		1 LS				
9		1 LS				
10		1 LS				
11	Equipment	1 LS				705,000
12		1 LS				
13		1 LS				
14		1 LS				
15	Mechanical	1 LS				180,000
16	Electrical	1 LS				280,000
17	I&C	1 LS				
	Subtotals					$1,900,000
	Contractor General Conditions @	15%				$285,000
	Subtotals					$2,185,000
	Contractor Overhead and Profit @	15%				$327,750
	Subtotals					$2,512,750
	Contingency @	30%				$753,825
	Subtotals					$3,266,575
	Engineering, Legal and Administration @	25%				$816,644
	Subtotals					$4,083,219
	Escalate to Midpt of Const. @ 0.16% per month	3.8%				$156,796
	Estimated Construction Cost					$4,200,000

VKTS

DETAILED COST ESTIMATE

Project: WWTP MASTER PLAN
Job #: KJ 0976004
Location: CANYONVILLE, OREGON
Element: 06 ALT S3 SBR's

Date : August 28, 2009
By : D. Van Kirk
Reviewed:

SPEC. NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL	TOTAL
	Division 02 - Site Construction					
02300	Stripping @ SBR Tanks	219	CY	$7.02	$1,538	
02300	Stripping @ Equalization Tank	72	CY	$7.02	$503	
02300	Structure Exc. @ SBR Tanks	2,819	CY	$2.56	$7,217	
02300	Structure Exc. @ Equal. Tank	679	CY	$2.56	$1,738	
02300	Imported Gran. Fill Under SBRS	139	CY	$3.21	$445	
02300	Imported Gran. Fill Under Equal. Tank	23	CY	$3.21	$74	
02300	Native Struct. Backfill @ SBRS	1,572	CY	$35.96	$56,529	
02300	Native Struct. Backfill @ Equal. Tank	193	CY	$35.96	$6,940	
02300	Haul & Dispose Excess Exc. @ SBRS	1,247	CY	$6.18	$7,708	
02300	Haul & Dispose Excess Exc. @ Equal. Tank	486	CY	$6.18	$3,004	
	Total Site Construction					**$85,698**
	Division 03 - Concrete					
03300	Floor Slab @ SBRS	139	CY	$363.84	$50,414	
03300	Edge Forms	260	LF	$13.41	$3,487	
03300	Walls @ SBRS	223	CY	$1,161.00	$258,857	
03300	Roof Slab @ SBRS	139	CY	$448.52	$62,147	
03300	Floor Slab @ Equal. Tank	23	CY	$363.84	$8,423	
03300	Edge Forms	100	LF	$13.41	$1,341	
03300	Walls @ Equal Tank	74	CY	$1,161.00	$85,995	
	Misc. Embeds & Waste, Allow	1	10%	$47,066.38	$47,066	
	Total Concrete					**$517,730**
	Division 05 - Metals					
05500	Handrail @ Equal. Tank	100	LF	$42.49	$4,249	
	Total Metals					**$4,249**
	Division 11 - Equipment					
11000	SBR Equipment	1	LS	$616,649.00	$616,649	
	Total Equipment					**$616,649**
	Division 15 - Mechanical					
15000	Mechanical Piping & Valves, Allow	1	LS	$172,000.00	$172,000	
	Total Mechanical					**$172,000**
	Division 16 - Electrical, I&C					
16000	Electrical, I&C, Allow	1	20%	$279,265.21	$279,265	
	Total Electrical, I&C					**$279,265**
	TOTAL ALT S-3					**$1,675,591**

ENGINEER'S ESTIMATE OF PROBABLE COST **KENNEDY/JENKS CONSULTANTS**

Project: **Canyonville Facilities Plan**
Alternative S4 - Oxidation Ditch

Prepared By: BIB
Date Prepared: 1-Sep-09
K/J Proj. No.: 0976004*00
Months to Midpoint of Constr.: 24

SUMMARY BY AREA

DIV NO.	ITEM DESCRIPTION	QUANTITY	MATERIALS	INSTALLATION	SUB-CONTRACTOR	TOTAL
	Anaerobic Tank					
1		1 LS				
2	Site Construction	1 LS				5,000
3	Concrete	1 LS				45,000
4		1 LS				
5	Metals	1 LS				
6	Wood and Platics	1 LS				
7		1 LS				
8		1 LS				
9		1 LS				
10		1 LS				
11	Equipment	1 LS				30,000
12		1 LS				
13		1 LS				
14		1 LS				
15	Mechanical	1 LS				
16	Electrical	1 LS				
17	I&C	1 LS				
	Oxidation Ditch					**880,000.00**
1		1 LS				
2	Site Construction	1 LS				
3	Concrete	1 LS				
4		1 LS				
5	Metals	1 LS				
6	Wood and Platics	1 LS				
7		1 LS				
8		1 LS				
9		1 LS				
10		1 LS				
11	Equipment	1 LS				
12		1 LS				

DIV NO.	ITEM DESCRIPTION	QUANTITY	MATERIALS	INSTALLATION	SUB-CONTRACTOR	TOTAL
13		1 LS				
14		1 LS				
15	Mechanical	1 LS				
16	Electrical	1 LS				
17	I&C	1 LS				
	New Secondary Clarifiers					
1		1 LS				
2	Site Construction	1 LS				60,000
3	Concrete	1 LS				360,000
4		1 LS				
5	Metals	1 LS				60,000
6	Wood and Platics	1 LS				40,000
7		1 LS				
8		1 LS				
9		1 LS				
10		1 LS				
11	Equipment	1 LS				354,000
12		1 LS				
13		1 LS				
14		1 LS				
15	Mechanical	1 LS				100,000
16	Electrical	1 LS				40,000
17	I&C	1 LS				100,000
	Subtotals					$2,074,000
	Contractor General Conditions @	15%				$311,100
	Subtotals					$2,385,100
	Contractor Overhead and Profit @	15%				$357,765
	Subtotals					$2,742,865
	Contingency @	30%				$822,860
	Subtotals					$3,565,725
	Engineering, Legal and Administration @	25%				$891,431
	Subtotals					$4,457,156
	Escalate to Midpt of Const. @ 0.16% per month	3.8%				$171,155
	Estimated Construction Cost					$4,600,000

VKTS

DETAILED COST ESTIMATE

Project: WWTP MASTER PLAN
Job #: KJ 0976004
Location: CANYONVILLE, OREGON
Element: 07 S4 OXIDATION DITCH

Date : August 28, 2009
By : D. Van Kirk
Reviewed:

SPEC. NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL	TOTAL
	Division 02 - Site Construction					
02300	Structure Excavation @ anaerobic tank	150.00	CY	$2.56	$384	
02300	Imported Granular Fill Under Slab @ anaerobic tank	9.00	CY	$65.87	$593	
02300	Native Backfill @ anaerobic tank	64.00	CY	$35.96	$2,301	
02300	Haul & Dispose Excess Excavated Mat'l @ anaerobic tank	86.00	CY	$6.18	$531	
02300	Stripping @ Oxidation Ditch	328.93	CY	$7.02	$2,309	
02300	Structure Excavaton @ Oxidation Ditch	2,684.00	CY	$2.56	$6,871	
02300	Imported Granular Fill Under Slab	244.00	CY	$65.87	$16,072	
02300	Native Backfill @ Oxidation Ditch	247.00	CY	$35.96	$8,882	
02300	Haul & Dispose Excess Excavated Mat'l @ Ditch	3,046.00	CY	$6.18	$18,824	
	Total Site Construction					**$56,768.56**
	Division 03 - Concrete					
03300	Concrete Floor Slab anaerobic tank	11.00	CY	$388.96	$4,279	
03300	Concrete Walls anaerobic tank	34.00	CY	$1,069.47	$36,362	
03300	Misc. Embeds & Waste, Allow. For anaerobic tank	1.00	5%	$2,032.03	$2,032	
03300	Concrete Floor Slab (From Orbal), 12"	154.00	CY	$388.96	$59,900	
03300	Concrete Walls (From Orbal), 12"	256.00	CY	$1,069.47	$273,784	
03300	Misc. Embeds & Waste, Allow	1.00	5%	$16,684.21	$16,684	
	Total Concrete					**$393,041**
	Division 11 - Equipment					
	ML Recycle pump	1.00	LS	$15,000.00	$15,000	
	Anaerobic tank mixer	1.00	LS	$15,000.00	$15,000	
11000	Oxidation Ditch Equipment (Orbal)	1.00	LS	$200,000.00	$200,000	
11000	Installation of Orbal Equipment	1.00	LS	$11,000.00	$11,000	
	Total Equipment					**$241,000.00**
	Division 15 - Mechanical					
15000	Mechanical Piping, Valves, etc., Allow	1.00	LS	$92,000.00	$92,000	
	Total Mechanical					**$92,000.00**
	Division 16 - Electrical, I&C					
16000	Electrical, I&C, Allow	1.00	20%	$156,561.90	$156,562	
	Total Electrical, I&C					**$156,561.90**
	TOTAL ALT S-4					**$939,371**

ENGINEER'S ESTIMATE OF PROBABLE COST **KENNEDY/JENKS CONSULTANTS**

Project: **Canyonville Facilities Plan**
Alternative S1A - Membrane Bioreactor (MBR)

Prepared By: BIB
Date Prepared: 1-Sep-09
K/J Proj. No.: 0976004*00
Months to Midpoint of Constr.: 24

SUMMARY BY AREA

DIV NO.	ITEM DESCRIPTION	QUANTITY	MATERIALS	INSTALLATION	SUB-CONTRACTOR	TOTAL
	Modify Existing Aeration Basins and Add MBR Tanks/Equipment					
1		1 LS				
2	Site Construction	1 LS				2,489
3	Concrete	1 LS				31,659
4		1 LS				
5	Metals	1 LS				25,772
6	Wood and Platics	1 LS				1,196
7		1 LS				
8		1 LS				
9		1 LS				
10		1 LS				
11	Equipment	1 LS				2,625,575
12		1 LS				
13		1 LS				
14		1 LS				
15	Mechanical	1 LS				3,239
16	Electrical	1 LS				537,986
17	I&C	1 LS				
	Subtotals					$3,227,916
	Contractor General Conditions @	15%				$484,187
	Subtotals					$3,712,104
	Contractor Overhead and Profit @	15%				$556,816
	Subtotals					$4,268,919
	Contingency @	30%				$1,280,676
	Subtotals					$5,549,595
	Engineering, Legal and Administration @	25%				$1,387,399
	Subtotals					$6,936,994
	Escalate to Midpt of Const. @ 0.16% per month	3.8%				$266,381
	Estimated Construction Cost					$7,200,000

VKTS

DETAILED COST ESTIMATE

Project: WWTP MASTER PLAN
Job #: KJ 0976004
Location: CANYONVILLE, OREGON
Element: Alt S1A: MBR Alt.

Date : August 28, 2009
By : D. Van Kirk
Reviewed:

SPEC. NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL	TOTAL
	MODIFY EXST AERATION BASIN					
	Division 2 - Site Construction					
	Total Division 2					
	TOTAL MODIFICATIONS					**$0**
	NEW SECONDARY CLARIFIERS					
	Division 02 - Site Construction					
02300	Structure Excavation @ MBR	80	CY	$2.56	$205	
02300	Imported Fill Under Slab	20	CY	$65.87	$1,317	
02300	Native Structure Backfill @ MBR	20	CY	$35.96	$719	
02300	Haul & Dispose Excess Excavated Material	40	CY	$6.18	$247	
	Total					**$2,489**
	Division 03 - Concrete					
03300	MBR Tank Slabs	30	CY	$363.84	$10,839	
03300	Splitter Boxes	10	CY	$363.84	$3,638	
03000	Add for Misc. Embeds & Waste @ MBR Tanks	1	LS	$17,182.13	$17,182	
	Total					**$31,659**
	Division 05 - Metals					
05500	Aluminum Grating	200	SF	$58.98	$11,796	
05500	Aluminum Handrails	160	LF	$87.35	$13,977	
	Total					**$25,772**
	Division 06 - Wood and Plastics					
06000	Overflow Weirs	40	LF	$29.91	$1,196	
	Total					**$1,196**
	Division 11 - Equipment					
11000	Blowers	2	EA	$20,000.00	$40,000	
11000	WAS Pumps, 3HP Submersible	4	EA	$6,696.82	$26,787	
11312	RAS Pumps, 5 HP Submersible	4	EA	$10,446.82	$41,787	
11XXX	MBR Tanks and Equipment	1	EA	$2,517,000.00	$2,517,000	
	Total					**$2,625,575**
	Division 15 - Mechanical					
15000	Clarifier Piping and Valves, Allow	1	LS	$3,238.93	$3,239	
	Total					**$3,239**
	Division 16 - Electrical, I&C					
16000	Electrical, I&C , Allow	1	20%	$537,986.05	$537,986	
	Total Electrical, I&C					**$537,986**
	TOTAL MBR Alt.					**$3,227,916**
	TOTAL ALT S1A					**$3,227,916**

ENGINEER'S ESTIMATE OF PROBABLE COST **KENNEDY/JENKS CONSULTANTS**

Project: **Canyonville Facilities Plan**
Alternative S1B - Integrated Fixed-Film Activated Sludge (IFAS)

Prepared By: BIB
Date Prepared: 1-Sep-09
K/J Proj. No.: 0976004*00
Months to Midpoint of Constr.: 24

SUMMARY BY AREA

DIV NO.	ITEM DESCRIPTION	QUANTITY	MATERIALS	INSTALLATION	SUB-CONTRACTOR	TOTAL
	Modify Existing Aeration Basins					
1		1 LS				
2	Site Construction	1 LS				
3	Concrete	1 LS				100,000
4		1 LS				
5	Metals	1 LS				
6	Wood and Platics	1 LS				
7		1 LS				
8		1 LS				
9		1 LS				
10		1 LS				
11	Equipment	1 LS				300,000
12		1 LS				
13		1 LS				
14		1 LS				
15	Mechanical	1 LS				10,000
16	Electrical	1 LS				
17	I&C	1 LS				
	New Secondary Clarifiers					
1		1 LS				
2	Site Construction	1 LS				60,000
3	Concrete	1 LS				360,000
4		1 LS				
5	Metals	1 LS				60,000
6	Wood and Platics	1 LS				40,000
7		1 LS				
8		1 LS				
9		1 LS				
10		1 LS				
11	Equipment	1 LS				354,000
12		1 LS				

DIV NO.	ITEM DESCRIPTION	QUANTITY	MATERIALS	INSTALLATION	SUB-CONTRACTOR	TOTAL
13		1 LS				
14		1 LS				
15	Mechanical	1 LS				100,000
16	Electrical	1 LS				40,000
17	I&C	1 LS				100,000
	Add MBR Tanks/Equipment					
1		1 LS				
2	Site Construction	1 LS				
3	Concrete	1 LS				
4		1 LS				
5	Metals	1 LS				
6	Wood and Platics	1 LS				
7		1 LS				
8		1 LS				
9		1 LS				
10		1 LS				
11	Equipment	1 LS				831,960
12		1 LS				
13		1 LS				
14		1 LS				
15	Mechanical	1 LS				
16	Electrical	1 LS				83,196
17	I&C	1 LS				
	Subtotals					$2,439,156
	Contractor General Conditions @	15%				$365,873
	Subtotals					$2,805,029
	Contractor Overhead and Profit @	15%				$420,754
	Subtotals					$3,225,784
	Contingency @	30%				$967,735
	Subtotals					$4,193,519
	Engineering, Legal and Administration @	25%				$1,048,380
	Subtotals					$5,241,899
	Escalate to Midpt of Const. @ 0.16% per month	3.8%				$201,289
	Estimated Construction Cost					$5,400,000

VKTS

DETAILED COST ESTIMATE

Project: WWTP MASTER PLAN
Job #: KJ 0976004
Location: CANYONVILLE, OREGON
Element: Alt S1B: IFAS Alt.

Date : August 28, 2009
By : D. Van Kirk
Reviewed:

SPEC. NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL	TOTAL
	Division 02 - Site Construction					
	Total					**$0**
	Division 03 - Concrete					
	Total					**$0**
	Division 05 - Metals					
	Total					**$0**
	Division 06 - Wood and Plastics					
	Total					**$0**
	Division 11 - Equipment					
11XXX	IFAS Media and Aeration	1	EA	$831,960.00	$831,960	
	Total					**$831,960**
	Division 15 - Mechanical					
	Total					**$0**
	Division 16 - Electrical, I&C					
16000	Electrical, I&C , Allow	1	10%	$83,196.00	$83,196	
	Total Electrical, I&C					**$83,196**
	TOTAL IFAS Alt. - adder					**$915,156**
	TOTAL ALT S1B - adder					**$915,156**

ENGINEER'S ESTIMATE OF PROBABLE COST **KENNEDY/JENKS CONSULTANTS**

Project: **Canyonville Facilities Plan**
Alternative T1 - Chemical Coagulation and Filtration

Prepared By: LOW
Date Prepared: 3-Sep-09
K/J Proj. No.: 0976004*00
Months to Midpoint of Constr.: 24

SUMMARY BY AREA

DIV NO.	ITEM DESCRIPTION	QUANTITY	MATERIALS	INSTALLATION	SUB-CONTRACTOR	TOTAL
1		1 LS				
2	Site Construction	1 LS				10,000
3	Concrete	1 LS				30,000
4		1 LS				
5		1 LS				
6		1 LS				
7		1 LS				
8		1 LS				
9		1 LS				
10		1 LS				
11	Equipment	1 LS				60,000
12		1 LS				
13	Special Construction	1 LS				580,000
14		1 LS				
15	Mechanical	1 LS				40,000
16	Electrical	1 LS				140,000
17		1 LS				
	Subtotals					860,000
	Contractor General Conditions @	15%				129,000
	Subtotals					989,000
	Contractor Overhead and Profit @	15%				148,350
	Subtotals					1,137,350
	Contingency @	30%				341,205
	Subtotals					1,478,555
	Engineering, Legal and Administration @	25%				369,639
	Subtotals					1,848,194
	Escalate to Midpt of Const. @ 0.16% per month	3.8%				70,971
	Estimated Construction Cost					1,900,000

VKTS

DETAILED COST ESTIMATE

Project: WWTP MASTER PLAN
Job #: KJ 0976004
Location: CANYONVILLE, OREGON
Element: 08 T-1: CHEMICAL COAGULATION & FILTRATION

Date : August 28, 2009
By : D. Van Kirk
Reviewed:

SPEC. NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL	TOTAL
	Division 02 - Site Construction					
02300	Stripping for Process Slab	8.56	CY	$9.88	$85	
02300	Structure Excavation @ Process Slab	50.37	CY	$1.79	$90	
02300	Granular Fill Under Process Slab	50.37	CY	$65.87	$3,318	
02300	Dispose Excess Excavated Material	58.93	CY	$6.18	$364	
	Total					**$3,857**
	Division 03 - Concrete					
03300	Process Slab on Grade	50.37	CY	$388.96	$19,592	
03300	Edge Forms	148.00	LF	$13.41	$1,985	
03300	Housekeeping Pad @ Filters	4.36	CY	$353.91	$1,543	
03300	Housekeeping Pad @ Pumps	2.22	CY	$353.91	$786	
03300	Edge Forms	154.00	LF	$4.77	$734	
03300	Misc. Embeds & Waste, Allow	1.00	10%	$2,464.01	$2,464	
	Total					**$27,104**
	Division 11 - Equipment					
~~11000~~	~~Effluent Filter Feed Pumps~~	~~2.00~~	~~EA~~		~~$.00~~	
11312	Reject Water Pumps	2.00	EA	$10,171.32	$20,343	
11000	Alum Dosing System	1.00	EA	$25,000.00	$25,000.00	
11000	Propellor Mixer	1.00	EA	$10,000.00	$10,000.00	
	Total Equipment					**$55,343**
	Division 13 - Special Construction					
13000	Concrete Building	950.00	SF	$250.00	$237,500.00	
13000	Media (sand) + airwash	1.00	EA	$25,000.00	$25,000.00	
13000	16,000 Gal Steel Filter Tank w/Internal Cells	1.00	EA	$264,204.99	$264,204.99	
13000	8' Dia. Cone-Bottom Floc Reactor Tank	1.00	EA	$8,474.50	$8,474.50	
13206	10' Dia. Plastic Alum Storage Tank, 3,000 Gal	1.00	EA	$3,688.90	$3,688.90	
13000	HVAC	1.00	EA	$40,000.00	$40,000.00	
	Total Special Construction					**$578,868**
	Division 15 - Mechanical					
15251	10" Flg DI Pipe and Fittings	200.00	LF	$100.35	$20,069.69	
15251	6" Flg DI Pipe & Fittings	100.00	LF	$60.32	$6,031.82	
15251	Misc. Fittings & Supports, Allow	1.00	50%	$13,050.75	$13,050.75	
	Total Mechanical					**$39,152**
	Division 16 - Electrical, I&C					
16000	Electrical, I&C @ Filtraton	1.00	20%	$134,672.66	$134,672.66	
	Total Electrical, I&C					**$134,673**
	TOTAL ALT T-1					**$838,997**

ENGINEER'S ESTIMATE OF PROBABLE COST **KENNEDY/JENKS CONSULTANTS**

Project: **Canyonville Facilities Plan**
Alternative T2 - Reactive Filtration

Prepared By: LOW
Date Prepared: 3-Sep-09
K/J Proj. No.: 0976004*00
Months to Midpoint of Constr.: 24

SUMMARY BY AREA

DIV NO.	ITEM DESCRIPTION	QUANTITY	MATERIALS	INSTALLATION	SUB-CONTRACTOR	TOTAL
1		1 LS				
2	Site Construction	1 LS				10,000
3	Concrete	1 LS				30,000
4		1 LS				
5		1 LS				
6		1 LS				
7		1 LS				
8		1 LS				
9		1 LS				
10		1 LS				
11	Equipment	1 LS				360,000
12		1 LS				
13	Special Construction	1 LS				310,000
14		1 LS				
15	Mechanical	1 LS				40,000
16	Electrical	1 LS				150,000
17		1 LS				
	Subtotals					900,000
	Contractor General Conditions @	15%				135,000
	Subtotals					1,035,000
	Contractor Overhead and Profit @	15%				155,250
	Subtotals					1,190,250
	Contingency @	30%				357,075
	Subtotals					1,547,325
	Engineering, Legal and Administration @	25%				386,831
	Subtotals					1,934,156
	Escalate to Midpt of Const. @ 0.16% per month	3.8%				74,272
	Estimated Construction Cost					2,100,000

VKTS

DETAILED COST ESTIMATE

Project: WWTP MASTER PLAN
Job #: KJ 0976004
Location: CANYONVILLE, OREGON
Element: 09 T-2 HFO SAND FILTRATION

Date : August 28, 2009
By : D. Van Kirk
Reviewed:

SPEC. NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL	TOTAL
	Division 02 - Site Construction					
02300	Stripping for Process Slab	8.56	CY	$9.88	$85	
02300	Structure Excavation @ Process Slab	50.37	CY	$1.79	$90	
02300	Granular Fill Under Process Slab	50.37	CY	$65.87	$3,318	
02300	Dispose Excess Excavated Material	58.93	CY	$6.18	$364	
	Total					**$3,857**
	Division 03 - Concrete					
03300	Process Slab on Grade	50.37	CY	$388.96	$19,592	
03300	Edge Forms	148.00	LF	$13.41	$1,985	
03300	Housekeeping Pad @ Filters	4.36	CY	$353.91	$1,543	
03300	Housekeeping Pad @ Pumps	2.22	CY	$353.91	$786	
03300	Edge Forms	154.00	LF	$4.77	$734	
03300	Misc. Embeds & Waste, Allow	1.00	10%	$2,464.01	$2,464	
	Total					**$27,104**
	Division 11 - Equipment					
11000	Filter Cells	3.00	EA	$110,000.00	$330,000	
11312	Reject Water Pumps	2.00	EA	$10,171.32	$20,343	
	Total					**$350,343**
	Division 13 - Special Construction					
13000	Concrete Building	1,216.00	SF	$250.00	$304,000.00	
	Total					**$304,000**
	Division 15 - Mechanical					
15251	8" DI Pipe	200.00	LF	$77.17	$15,435	
15251	4" DI Pipe	200.00	LF	$41.64	$8,327	
15251	Misc. Fittings & Supports	1.00	50%	$11,880.92	$11,881	
	Total					**$35,643**
	Division 16 - Electrical					
16000	Electrical, I&C @ HFO Filters	1.00	20%	$144,189.28	$144,189	
	Total					**$144,189**
	TOTAL ALT T-2					**$865,136**

ENGINEER'S ESTIMATE OF PROBABLE COST **KENNEDY/JENKS CONSULTANTS**

Project: **Canyonville Facilities Plan**
Alternative D1 - Chlorine Contact Tank

Prepared By: BIB
Date Prepared: 1-Sep-09
K/J Proj. No.: 0976004*00
Months to Midpoint of Constr.: 24

SUMMARY BY AREA

DIV NO.	ITEM DESCRIPTION	QUANTITY	MATERIALS	INSTALLATION	SUB-CONTRACTOR	TOTAL
1		1 LS				
2	Site Construction	1 LS				70,000
3	Concrete	1 LS				330,000
4		1 LS				
5	Metals	1 LS				15,000
6		1 LS				
7		1 LS				
8		1 LS				
9		1 LS				
10		1 LS				
11	Equipment	1 LS				210,000
12		1 LS				
13	Special Construction	1 LS				110,000
14		1 LS				
15	Mechanical	1 LS				15,000
16	Electrical	1 LS				40,000
17	I&C	1 LS				70,000
	Subtotals					860,000
	Contractor General Conditions @	15%				129,000
	Subtotals					989,000
	Contractor Overhead and Profit @	15%				148,350
	Subtotals					1,137,350
	Contingency @	30%				341,205
	Subtotals					1,478,555
	Engineering, Legal and Administration @	25%				369,639
	Subtotals					1,848,194
	Escalate to Midpt of Const. @ 0.16% per month	3.8%				70,971
	Estimated Construction Cost					1,900,000

VKTS

DETAILED COST ESTIMATE

Project: WWTP MASTER PLAN
Job #: KJ 0976004
Location: CANYONVILLE, OREGON
Element: 11 D-1 CHLORINE CONTACT

Date : August 28, 2009
By : D. Van Kirk
Reviewed:

SPEC. NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL	TOTAL
	Division 02 - Site Construction					
02300	Stripping @ ChlorineContact Basin	206.00	CY	$9.88	$2,035	
02300	Struct Excavation @ Chlorine Contact Basin	2,155.00	CY	$2.56	$5,515	
02300	Imported Granular Fill Below Slab @ CL	56.00	CY	$65.87	$3,689	
02300	Native Struct. Backfill @ CL Contact Basin	1,366.00	CY	$35.96	$49,121	
02300	Haul & Dispose Excess Exc. Matl @ Cl	986.00	CY	$6.18	$6,095	
	Total Site Construction					**$66,456**
	Division 03 - Concrete					
03300	Basin Floor Slab	53.20	CY	$388.96	$20,693	
03300	Edge Forms	134.00	LF	$23.78	$3,186	
03300	Exterior Walls	30.56	CY	$1,161.00	$35,480	
03300	Exterior Walls	58.67	CY	$1,161.00	$68,116	
03300	Internal Baffle Walls	84.33	CY	$1,161.00	$97,907	
03300	Center Wall	19.56	CY	$1,161.00	$22,709	
03300	Distribution Box Wall	4.28	CY	$1,161.00	$4,969	
03300	Effluent Box Cross-Wall	28.11	CY	$1,161.00	$32,636	
03300	Overflow Box Wall	3.06	CY	$1,161.00	$3,553	
03300	Elevated Slab	5.93	CY	$832.65	$4,938	
03300	Misc. Embeds & Waste, Allow	1.00	10%	$29,418.66	$29,419	
	Total Concrete					**$323,605**
	Division 05 - Metals					
05500	Aluminum Grating, 2-1/2"	14.00	SF	$58.98	$826	
05500	Aluminum Grating, 2-1/2"	180.10	SF	$58.98	$10,622	
05500	Misc. Rebate, Waste	1.00	20%	$2,289.57	$2,290	
	Total Metals					**$13,737**
	Division 11 - Equipment					
11000	Parshall Flume	1.00	EA	$6,729.00	$6,729	
11224	Mixer, Assume 5HP Suspended	2.00	EA	$11,949.63	$23,899	
11242	Hypochlorite Metering Pump	2.00	EA	$5,000.00	$10,000	
11242	Bisulfite Metering Pump	2.00	EA	$5,000.00	$10,000	
11293	Slide Gate, 14" x 14"	1.00	EA	$2,686.87	$2,687	
11294	Sluice Gate, 36" x 36"	7.00	EA	$16,934.63	$118,542	
	UW Pumps	2.00	EA	$10,000.00	$20,000	
	Chlorine residual analyzer and pump	1.00	LS	$20,000.00	$20,000	
	Total Equipment					**$211,858**
	Division 13 - Special Construction					
13000	Chlorine Building, Pre-Eng. Metal Bldg	500.00	SF	$199.40	$99,700	
13206	Hypochlorite Tank, Plastic 300 Gal.	2.00	EA	$1,470.57	$2,941	
13206	Bisulfite Tank, Plastic 55 Gal.	2.00	EA	$573.27	$1,147	
	Total Special Construction					**$103,788**
	Division 15 - Mechanical					
15000	Process Piping @ Contact Basin, Allow	1.00	LS	$100,000.00	$100,000	
15000	Piping & HVAC @ Chlorine Building, Allow	500.00	SF	$25.00	$12,500	
	Total Mechanical					**$12,500**
	Division 16 - Electrical, I&C					
16000	Electrical, I&C @ Chlorine Building, Allow	1.00	15%	$109,791.52	$109,792	
	Total Electrical, I&C					**$109,792**
	TOTAL ALT D-1					**$841,735**

ENGINEER'S ESTIMATE OF PROBABLE COST **KENNEDY/JENKS CONSULTANTS**

Project: **Canyonville Facilities Plan**
Alternative D2 - UV Disinfection

Prepared By: BIB
Date Prepared: 1-Sep-09
K/J Proj. No.: 0976004*00
Months to Midpoint of Constr.: 24

SUMMARY BY AREA

DIV NO.	ITEM DESCRIPTION	QUANTITY	MATERIALS	INSTALLATION	SUB-CONTRACTOR	TOTAL
1		1 LS				
2	Site Construction	1 LS				10,000
3	Concrete	1 LS				100,000
4	Masonry	1 LS				5,000
5	Metals	1 LS				30,000
6		1 LS				
7	Thermal and Moisture	1 LS				5,000
8		1 LS				
9		1 LS				
10		1 LS				
11	Equipment	1 LS				180,000
12		1 LS				
13	Special Construction	1 LS				5,000
14		1 LS				
15	Mechanical	1 LS				5,000
16	Electrical	1 LS				20,000
17	I&C	1 LS				50,000
	Subtotals					410,000
	Contractor General Conditions @	15%				61,500
	Subtotals					471,500
	Contractor Overhead and Profit @	15%				70,725
	Subtotals					542,225
	Contingency @	30%				162,668
	Subtotals					704,893
	Engineering, Legal and Administration @	25%				176,223
	Subtotals					881,116
	Escalate to Midpt of Const. @ 0.16% per month	3.8%				33,835
	Estimated Construction Cost					900,000

VKTS

DETAILED COST ESTIMATE

Project: WWTP MASTER PLAN
Job #: KJ 0976004
Location: CANYONVILLE, OREGON
Element: 12 D-2 UV STERILIZATION

Date : August 28, 2009
By : D. Van Kirk
Reviewed:

SPEC. NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL	TOTAL
	Division 02 - Site Construction					
02300	Stripping @ UV Channel	16.00	CY	$9.88	$158	
02300	Structure Excavation @ UV Channel	412.00	CY	$2.56	$1,054	
02300	Imported Granular Material Under UV Slabs	7.00	CY	$65.87	$461	
02300	Native Structure Backfill @ UV Channel	81.00	CY	$35.96	$2,913	
02300	Haul & Dispose Excess Excavated Material @	419.00	CY	$6.18	$2,590	
	Total Site Construction					**$7,176**
	Division 03 - Concrete					
03300	Inlet Slab @ UV	1.56	CY	$388.96	$607	
03300	UV Channel Floor Slab	2.00	CY	$388.96	$778	
03300	UV Channel Floor Slab	1.36	CY	$391.30	$532	
03300	Slab @ Parshall Flume	1.50	CY	$391.30	$587	
03300	Effluent Box Floor Slab	3.15	CY	$388.96	$1,225	
03300	Utility Water Sump Floor Slab	1.11	CY	$388.96	$432	
03300	Effluent Sampler Slab	0.30	CY	$353.91	$106	
03300	Building Floor Slab	3.70	CY	$353.91	$1,309	
03300	Edge Forms	136.00	LF	$13.41	$1,824	
03300	Electrical & Control Housekeeping Pad	0.56	CY	$353.91	$198	
03300	Inlet Box Walls @ UV	9.78	CY	$1,161.00	$11,355	
03300	UV Channel Walls	12.74	CY	$1,161.00	$14,791	
03300	Concrete Around Parshall Flume	8.89	CY	$556.40	$4,946	
03300	Effluent Box Walls	20.60	CY	$1,161.00	$23,917	
03300	Utility Water Sump Walls	18.50	CY	$1,161.00	$21,479	
03300	Misc. Embeds & Waste, Allow	1.00	10%	$8,408.59	$8,409	
	Total Concrete					**$92,495**
	Division 04 - Masonry					
04220	Masonry Wall	160.00	SF	$14.94	$2,391	
04220	Seismic Reinforcement Adder	160.00	SF	$1.85	$297	
04220	Bond Beam Adder	160.00	SF	$1.79	$287	
04220	Full Grout (All Cells)	160.00	SF	$1.50	$239	
04220	Misc. Embeds, Cleaning & Waste, Allow	1.00	15%	$482.13	$482	
	Total					**$3,696**
	Division 05 - Metals					
05000	Metal Roof Structure	300.00	SF	$19.94	$5,982	
05000	Roof Support Columns	2.00	EA	$1,555.32	$3,111	
05500	Aluminum Grating	153.00	SF	$58.98	$9,024	
05500	Misc. Rebate, Fasteners & Waste	1.00	25%	$4,529.11	$4,529	
	Total					**$22,646**
	Division 07 - Thermal and Moisture					
07400	Metal Roofing	300.00	SF	$6.88	$2,064	
	Total					**$2,064**
	Division 11 - Equipment					
11000	Trojan UV Equipment	1.00	LS	$133,928.00	$133,928	
11000	Hypropneumatic Tank	1.00	EA	$5,000.00	$5,000	
11000	Parshall Flume	1.00	EA	$6,729.75	$6,730	
11294	12" Sluice Gate	1.00	EA	$6,399.02	$6,399	
11312	Utility Water Pumps	2.00	EA	$14,226.43	$28,453	
	Total					**$180,510**

	Division 13 - Special Construction					
13000	Effluent Sampler, Allow	1.00	EA	$5,000.00	$5,000	
	Total					**$5,000**
	Division 15 - Mechanical					
15000	Utility Water Piping, Allow	1.00	LS	$5,000.00	$5,000	
	Total					**$5,000**
	Division 16 - Electrical					
16000	Electrical, I&C @ UV, Allow	1.00	20%	$63,717.24	$63,717	
	Total					**$63,717**
	Grand Total					**$382,303**

ENGINEER'S ESTIMATE OF PROBABLE COST **KENNEDY/JENKS CONSULTANTS**

Project: **Canyonville Facilities Plan**
Alternative E1 - Year Round River Discharge

Prepared By: BIB
Date Prepared: 1-Sep-09
K/J Proj. No.: 0976004*00
Months to Midpoint of Constr.: 24

SUMMARY BY AREA

DIV NO.	ITEM DESCRIPTION	QUANTITY	MATERIALS	INSTALLATION	SUB-CONTRACTOR	TOTAL
1		1 LS				
2	Site Construction	1 LS				180,000
3		1 LS				
4		1 LS				
5		1 LS				
6		1 LS				
7		1 LS				
8		1 LS				
9		1 LS				
10		1 LS				
11		1 LS				
12		1 LS				
13		1 LS				
14		1 LS				
15	Mechanical	1 LS				30,000
16		1 LS				
17		1 LS				
	Subtotals					210,000
	Contractor General Conditions @	15%				31,500
	Subtotals					241,500
	Contractor Overhead and Profit @	15%				36,225
	Subtotals					277,725
	Contingency @	30%				83,318
	Subtotals					361,043
	Engineering, Legal and Administration @	25%				90,261
	Subtotals					451,303
	Escalate to Midpt of Const. @ 0.16% per month	3.8%				17,330
	Estimated Construction Cost					500,000

VKTS

DETAILED COST ESTIMATE

Project: WWTP MASTER PLAN
Job #: KJ 0976004
Location: CANYONVILLE, OREGON
Element: 13 E-1 OUTFALL

Date : August 28, 2009
By : D. Van Kirk
Reviewed:

SPEC. NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL	TOTAL
	OUTFALL					
	Division 02 - Site Construction					
02000	Silt Filtration, Allow	1.00	LS	$10,000.00	$10,000	
02000	Imported Rock Fill Above Outfall Diffus	36.34	CY	$99.70	$3,623	
02000	Dewater Diffuser Line Trench	2.00	DA	$537.38	$1,075	
02300	Topsoil Strip & Stockpile To 250 Cy @	28.00	CY	$9.88	$277	
02300	Trench Excavation for Outfall Line	138.27	CY	$4.88	$675	
02300	Imported Pipe Bedding & Pipe Zone	62.68	CY	$65.87	$4,129	
02300	Backfill Above Pipe Zone @ Outfall	72.69	CY	$35.96	$2,614	
02300	Dispose Excess Excavated Material	65.59	CY	$6.18	$405	
02300	In-River Rock Excavation @ Diffuser	69.14	CY	$3.21	$222	
02300	Imported Pipe Bedding & Pipe Zone	31.34	CY	$74.86	$2,346	
	Total Site Construction					**$180,000**
	Division 15 - Mechanical					
15000	12" Rubber Diffuser Ports	3.00	EA	$5,458.57	$16,376	
15251	12" DIMJ Outfall Pipe	100.00	LF	$45.17	$4,517	
15251	12" DIMJ Diffuser Pipe	50.00	LF	$45.17	$2,258	
15251	12" X 12" Cldi Mj Cross	1.00	EA	$2,551.62	$2,552	
	Allow for Fittings & Waste	1.00	10%	$2,570.28	$2,570	
	Total Mechanical					**$28,273**
	TOTAL E-1 OUTFALL					**$208,273**

ENGINEER'S ESTIMATE OF PROBABLE COST **KENNEDY/JENKS CONSULTANTS**

Project: **Canyonville Facilities Plan**
Alternative E2 - Indirect Discharge

Prepared By: BIB
Date Prepared: 1-Sep-09
K/J Proj. No.: 0976004*00
Months to Midpoint of Constr.: 24

SUMMARY BY AREA

DIV NO.	ITEM DESCRIPTION	QUANTITY	MATERIALS	INSTALLATION	SUB-CONTRACTOR	TOTAL
1		1 LS				
2	Site Construction	1 LS				
3	Concrete	1 LS				
4		1 LS				
5	Metals	1 LS				
6		1 LS				
7		1 LS				
8		1 LS				
9		1 LS				
10		1 LS				
11	Equipment	1 LS				
12		1 LS				
13	Special Construction	1 LS				385,000
14		1 LS				
15	Mechanical	1 LS				940,000
16	Electrical	1 LS				
17	I&C	1 LS				
	Subtotals					1,325,000
	Contractor General Conditions @	15%				198,750
	Subtotals					1,523,750
	Contractor Overhead and Profit @	15%				228,563
	Subtotals					1,752,313
	Contingency @	30%				525,694
	Subtotals					2,278,006
	Engineering, Legal and Administration @	25%				569,502
	Subtotals					2,847,508
	Escalate to Midpt of Const. @ 0.16% per month	3.8%				109,344
	Estimated Construction Cost					3,000,000

VKTS

DETAILED COST ESTIMATE

Project: WWTP MASTER PLAN
Job #: KJ 0976004
Location: CANYONVILLE, OREGON
Element: 15 E-2 : INDIRECT DISCHARGE

Date : August 28, 2009
By : D. Van Kirk
Reviewed:

SPEC. NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL	TOTAL
	Division 02 - Site Construction					
	EFFLUENT PUMP STATION					
	Division 13 - Special Construction					
13000	Effluent Pump Station	2.20	MGD	$175,000.00	$385,000	
	Total Effluent Pump Station					**$385,000**
	EXFILTRATION SYSTEM					
	Division 02 - Site Construction					
02300	Stripping @ Exfiltration System	785	CY	$1,061.76	$833,026	
02300	Trench Excavation @ Exfiltration System	5,281	CY	$4.88	$25,787	
02300	Imported Backfill @ Exfiltration System	5,261	CY	$3.21	$16,895	
02300	Excess Excavated Material @ Exfilt.	954	CY	$16.61	$15,843	
02300	Surface Restoration @ Exfiltration System	785	CY	$7.02	$5,509	
02000	Geotextile Fabric Wrap	1,550	LF	$.10	$155	
02000	Bankside Outfall @ Exfiltration System	1	LS	$.00	$0	
02000	Monitoring Wells @ Exfiltration System	10	EA	$1,000.00	$10,000	
	Division 15 - Mechanical					
15265	Exfiltration Piping, 8" PVC	1,550	LF	$30.00	$46,500	
	Allow for Fittings & Waste	1	0.10	$4,650.00	$4,650	
	Total Exfiltration System					**$958,364**
	TOTAL Alt E-2					**$1,343,364**

ENGINEER'S ESTIMATE OF PROBABLE COST **KENNEDY/JENKS CONSULTANTS**

Project: **Canyonville Facilities Plan**
Alternative E3 - Dry Weather Reuse, Wet Weather RiverDischarge

Prepared By: BIB
Date Prepared: 1-Sep-09
K/J Proj. No.: 0976004*00
Months to Midpoint of Constr.: 24

SUMMARY BY AREA

DIV NO.	ITEM DESCRIPTION	QUANTITY	MATERIALS	INSTALLATION	SUB-CONTRACTOR	TOTAL
1		1 LS				
2	Site Construction	1 LS				910,000
3	Concrete	1 LS				
4		1 LS				
5	Metals	1 LS				
6		1 LS				
7		1 LS				
8		1 LS				
9		1 LS				
10		1 LS				
11	Equipment	1 LS				
12		1 LS				
13	Special Construction	1 LS				890,000
14		1 LS				
15	Mechanical	1 LS				390,000
16	Electrical	1 LS				
17	I&C	1 LS				
	Subtotals					2,190,000
	Contractor General Conditions @	15%				328,500
	Subtotals					2,518,500
	Contractor Overhead and Profit @	15%				377,775
	Subtotals					2,896,275
	Contingency @	30%				868,883
	Subtotals					3,765,158
	Engineering, Legal and Administration @	25%				941,289
	Subtotals					4,706,447
	Escalate to Midpt of Const. @ 0.16% per month	3.8%				180,728
	Estimated Construction Cost					4,900,000

VKTS

DETAILED COST ESTIMATE

Project: WWTP MASTER PLAN
Job #: KJ 0976004
Location: CANYONVILLE, OREGON
Element: 14 E-3 DRY WEATHER RE-USE, WET WEATHER DISCHARGE

Date : August 28, 2009
By : D. Van Kirk
Reviewed:

SPEC. NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL	TOTAL
	OUTFALL					
	Division 02 - Site Construction					
02000	Silt Filtration, Allow	1.00	LS	$10,000.00	$10,000	
02000	Imported Rock Fill Above Outfall Diffuser	36.34	CY	$99.70	$3,623	
02000	Dewater Diffuser Line Trench	2.00	DA	$537.38	$1,075	
02300	Topsoil Strip & Stockpile To 250 Cy @ Outfall	28.00	CY	$9.88	$277	
02300	Trench Excavation for Outfall Line	138.27	CY	$4.88	$675	
02300	Imported Pipe Bedding & Pipe Zone @ Outfall	62.68	CY	$65.87	$4,129	
02300	Backfill Above Pipe Zone @ Outfall	72.69	CY	$35.96	$2,614	
02300	Dispose Excess Excavated Material @ Outfall	65.59	CY	$6.18	$405	
02300	In-River Rock Excavation @ Diffuser	69.14	CY	$3.21	$222	
02300	Imported Pipe Bedding & Pipe Zone @ Diffuser	31.34	CY	$74.86	$2,346	
	Total Site Construction					**$180,000**
	Division 15 - Mechanical					
15000	12" Rubber Diffuser Ports	3.00	EA	$5,458.57	$16,376	
15251	12" DIMJ Outfall Pipe	100.00	LF	$45.17	$4,517	
15251	12" DIMJ Diffuser Pipe	50.00	LF	$45.17	$2,258	
15251	12" X 12" Cldi Mj Cross	1.00	EA	$2,551.62	$2,552	
	Allow for Fittings & Waste	1.00	0.10	$2,570.28	$2,570	
	Total Mechanical					**$28,273**
	Total Outfall					**$208,273**
	RECYCLED WATER PUMP STATION					
13000	Recycled Water Pump Station	1.73	MGD	$175,000.00	$302,750	
	Total Recycled Water Pump Station					**$302,750**
	RECYCLED WATER TRANSMISSION MAIN					
	Division 02 - Site Construction					
02300	Stripping @ Recycle Main	709.88	CY	$6.08	$4,317	
02300	Trench Exc. For Recycled Water Main	3,456.79	CY	$4.88	$16,878	
02300	Imported Pipe Bedding & Zone @ Recycle Main	1,566.94	CY	$65.87	$103,214	
02300	Backfill Above Pipe Zone @ Recycle Main	1,639.66	CY	$16.61	$27,241	
02300	Dispose Excess Excavated Material @ Recycle	1,639.66	CY	$6.18	$10,135	
	Total Site Construction					**$161,786**
	Division 15 - Mechanical					
15251	12" DIMJ Recycle Main	2,500.00	LF	$45.17	$112,925	
15000	Suspend 12" Recycle Main on Bridge	100.00	LF	$300.00	$30,000	
	Allow for Fittings & Waste	1.00	15%	$21,438.74	$21,439	
	Total Mechanical					**$164,364**
	Total Recycled Water Transmission Main					**$326,149**
	RECYCLED WATER STORAGE RESERVOIR					
	Division 02 - Site Construction					
02300	Stripping @ Recycle Reservoir	6,050.00	CY	$6.08	$36,792	
02300	Excavation and Dike Placement @ Storage	36,000.00	CY	$3.92	$141,149	
02300	Imported Sand Layer in Storage Reservoir	5,843.00	CY	$17.02	$99,476	
02666	HDPE Membrane Liner	326,700.00	SF	$.63	$205,204	
02666	Cushion for HDPE Liner	326,700.00	SF	$.21	$68,401	
02000	Inlet and Outlet Structures	2.00	EA	$25,000.00	$50,000	
	Total Site Construction					**$601,022**
	Division 13 - Special Construction					
13000	Control Building @ Reservoir	500.00	SF	$300.00	$150,000	

	Total Special Construction					**$150,000**
	Division 15 - Mechanical					
15265	Perforated Underdrain Piping, 6" PVC	3,800.00	LF	$17.17	$65,240	
	Allow for Fittings & Waste	1.00	10%	$6,523.97	$6,524	
	Total Mechanical					**$71,764**
	Total Recycled Water Storage Reservoir					**$751,022**
	IRRIGATION PUMP STATION					
	Division 13 - Special Construction					
13000	Irrigation Pump Station	2.90	MGD	$150,000.00	$435,000.00	
	Total Special Construction					**$435,000**
	Total Irrigation Pump Station					**$435,000**
	IRRIGATION WATER TRANSMISSION LINE					
	Division 02 Site Construction					
02300	Stripping @ Irrigation Main	1,049	CY	$6.08	$6,379	
02300	Trench Excavation @ Irrigation Main	5,432	CY	$2.56	$13,902	
02300	Imported Bed & Zone @ Irrigation Main	2,555	CY	$35.76	$91,357	
02300	Native Trench Backfill @ Irrigation Main	4,328	CY	$35.96	$155,635	
02300	Surface Restoration @ Irrigation Main	1,049	CY	$5.40	$5,661	
02300	Haul & Dispose Excess Exc @ Irrigation Main	2,701	CY	$16.61	$44,874	
	Total Site Construction					**$317,808**
	Division 15 Mechanical					
15265	12" PVC Irrigation Water Transmission Main	5,000	LF	$29.42	$147,088	
	Total Mechanical					**$147,088**
	Total Irrigation Water Transmission Main					**$464,896**
	TOTAL ALT E-3					**$2,488,090**

ENGINEER'S ESTIMATE OF PROBABLE COST **KENNEDY/JENKS CONSULTANTS**

Project: **Canyonville Facilities Plan**
E4 - Dry Weather Recycled Water to Tribe, Wet Weather River Discharge

Prepared By: BIB
Date Prepared: 1-Sep-09
K/J Proj. No.: 0976004*00
Months to Midpoint of Constr.: 24

SUMMARY BY AREA

DIV NO.	ITEM DESCRIPTION	QUANTITY	MATERIALS	INSTALLATION	SUB-CONTRACTOR	TOTAL
1		1 LS				
2	Site Construction	1 LS				
3	Concrete	1 LS				
4		1 LS				
5	Metals	1 LS				
6		1 LS				
7		1 LS				
8		1 LS				
9		1 LS				
10		1 LS				
11	Equipment	1 LS				
12		1 LS				
13	Special Construction	1 LS				1,730,000
14		1 LS				
15	Mechanical	1 LS				228,000
16	Electrical	1 LS				
17	I&C	1 LS				
	Subtotals					1,958,000
	Contractor General Conditions @	15%				293,700
	Subtotals					2,251,700
	Contractor Overhead and Profit @	15%				337,755
	Subtotals					2,589,455
	Contingency @	30%				776,837
	Subtotals					3,366,292
	Engineering, Legal and Administration @	25%				841,573
	Subtotals					4,207,864
	Escalate to Midpt of Const. @ 0.16% per month	3.8%				161,582
	Estimated Construction Cost					4,400,000

DETAILED COST ESTIMATE

Project: WWTP MASTER PLAN
Job #: KJ 0976004
Location: CANYONVILLE, OREGON
Element: 17 E-4A DRY WEATHER

Date : August 28, 2009
By : D. Van Kirk
Reviewed:

SPEC. NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL	TOTAL
	Div 13 - Special Construction					
13210	1.9 MG Surface Reservoir	1.00	EA	$1,375,000.00	$1,375,000	
	Total Special Construction					**$1,375,000**
	Div 15 - Mechanical					
15000	Valves & Misc. Piping, Allow	1	15%	$206,250.00	$206,250	
	Total Mechanical					**$206,250**
	TOTAL ALT E-4A					**$1,581,250**

PLEASE NOTE:
THE $1,375,000 FOR THE RESERVOIR ABOVE INCLUDES CONTRACTOR OVERHEAD & PROFIT.

ENGINEER'S ESTIMATE OF PROBABLE COST **KENNEDY/JENKS CONSULTANTS**

Project: **Canyonville Facilities Plan**
Alternative B1 - Lime Pretreatment

Prepared By: LOW
Date Prepared: 3-Sep-09
K/J Proj. No.: 0976004*00
Months to Midpoint of Constr.: 24

SUMMARY BY AREA

DIV NO.	ITEM DESCRIPTION	QUANTITY	MATERIALS	INSTALLATION	SUB-CONTRACTOR	TOTAL
1		1 LS				
2	Site Construction	1 LS				10,000
3	Concrete	1 LS				20,000
4		1 LS				
5		1 LS				
6		1 LS				
7		1 LS				
8		1 LS				
9		1 LS				
10		1 LS				
11	Equipment	1 LS				510,000
12		1 LS				
13	Special Construction	1 LS				330,000
14		1 LS				
15	Mechanical	1 LS				40,000
16	Electrical	1 LS				180,000
17	I&C	1 LS				
	Subtotals					1,090,000
	Contractor General Conditions @	15%				163,500
	Subtotals					1,253,500
	Contractor Overhead and Profit @	15%				188,025
	Subtotals					1,441,525
	Contingency @	30%				432,458
	Subtotals					1,873,983
	Engineering, Legal and Administration @	25%				468,496
	Subtotals					2,342,478
	Escalate to Midpt of Const. @ 0.16% per month	3.8%				89,951
	Estimated Construction Cost					2,400,000

VKTS

DETAILED COST ESTIMATE

Project: WWTP MASTER PLAN
Job #: KJ 0976004
Location: CANYONVILLE, OREGON
Element: 20 B-1 LIME PRETREATMENT

Date : August 28, 2009
By : D. Van Kirk
Reviewed:

SPEC. NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL	TOTAL
	Division 02 - Site Construction					
02300	Struct Exc. @ Dewatering Slab	10.37	CY	$8.40	$87	
02300	Imported Granular Fill @ Dewatering Slab	4.00	CY	$65.87	$263	
02300	Haul & Dispose Excess Exc. Matl @ Dewatering Slab	10.37	CY	$6.18	$64	
02300	Struct Exc. @ Lime Stabilization Slab	15.41	CY	$8.40	$129	
02300	Imported Granular Fill @ Lime Stab. Slab	5.33	CY	$65.87	$351	
02300	Haul & Dispose Excess Exc. Matl @ Lime Stab. Slab	15.41	CY	$6.18	$95	
	Total Site Construction					**$990**
	Division 03 - Concrete					
03300	Dewatering Slab	4.00	CY	$388.96	$1,556	
03300	Lime Stabilization Slab	5.33	CY	$388.96	$2,073	
03300	Edge Forms @ Dewatering Slab	60.00	LF	$4.77	$286	
03300	Edge Forms @ Lime Stabilization Slab	72.00	LF	$4.77	$343	
03300	Containment Wall @ Lime Stabilization Slab	4.00	CY	$1,435.15	$5,741	
03300	Housekeeping Pads	1.19	CY	$388.96	$463	
03300	Edge Forms @ Housekeeping Pads	48.00	LF	$4.77	$229	
03300	Misc. Embeds & Waste, Allow	1.00	10%	$1,069.09	$1,069	
	Total Concrete					**$11,760**
	Division 11 - Equipment					
11000	FKC Screw Press w/Hopper & Conveyor	1.00	EA	$380,000.00	$380,000	
11224	5 HP Propellor Mixer	1.00	EA	$11,949.63	$11,950	
11312	10 HP Lime Transfer Pump	2.00	EA	$32,000.00	$64,000	
11312	5HP Truck Loading Pump	2.00	EA	$26,000.00	$52,000	
	Total Equipment					**$507,950**
	Division 13 - Special Construction					
13000	Concrete Building	750.00	SF	$250.00	$187,500.00	
13206	7500 Gal HDPE Lime Stabilization Tanks	2.00	EA	$42,000.00	$84,000	
13206	200 Gal. Lime Mixing Tank	1.00	EA	$2,000.00	$2,000	
13000	HVAC and Odor Scrubber	1.00	EA	$50,000.00	$50,000	
	Total Special Construction					**$323,500**
	Division 15 - Mechanical					
15251	6" FLG DI Piping	300.00	LF	$60.32	$18,095	
15251	3" FLG DI Piping	100.00	LF	$41.64	$4,164	
15251	Misc. Fittings, Supports & Waste, Allow	1.00	50%	$11,129.48	$11,129	
	Total Mechanical					**$33,388**
	Division 16 - Electrical, I&C					
16000	Electrical, I&C @ Lime Pretreatment	1.00	20%	$175,517.70	$175,518	
	Total Electrical, I&C					**$175,518**
	TOTAL ALT B-1					**$1,053,106**

ENGINEER'S ESTIMATE OF PROBABLE COST **KENNEDY/JENKS CONSULTANTS**

Project: **Canyonville Facilities Plan**
Alternative B2 - Lime Posttreatment

Prepared By: LOW
Date Prepared: 3-Sep-09
K/J Proj. No.: 0976004*00
Months to Midpoint of Constr.: 24

SUMMARY BY AREA

DIV NO.	ITEM DESCRIPTION	QUANTITY	MATERIALS	INSTALLATION	SUB-CONTRACTOR	TOTAL
1		1 LS				
2	Site Construction	1 LS				10,000
3	Concrete	1 LS				10,000
4		1 LS				
5		1 LS				
6		1 LS				
7		1 LS				
8		1 LS				
9		1 LS				
10		1 LS				
11	Equipment	1 LS				450,000
12		1 LS				
13	Special Construction	1 LS				230,000
14		1 LS				
15	Mechanical	1 LS				40,000
16	Electrical	1 LS				150,000
17	I&C	1 LS				
	Subtotals					890,000
	Contractor General Conditions @	15%				133,500
	Subtotals					1,023,500
	Contractor Overhead and Profit @	15%				153,525
	Subtotals					1,177,025
	Contingency @	30%				353,108
	Subtotals					1,530,133
	Engineering, Legal and Administration @	25%				382,533
	Subtotals					1,912,666
	Escalate to Midpt of Const. @ 0.16% per month	3.8%				73,446
	Estimated Construction Cost					2,000,000

VKTS

DETAILED COST ESTIMATE

Project: WWTP MASTER PLAN
Job #: KJ 0976004
Location: CANYONVILLE, OREGON
Element: 21 B-2 LIME POST TREATMENT

Date : August 28, 2009
By : D. Van Kirk
Reviewed:

SPEC. NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL	TOTAL
	Division 02 - Site Construction					
02300	Struct. Exc. @ Slab	26.07	CY	$8.40	$219	
02300	Imported Granular Fill @ Slab	11.11	CY	$65.87	$732	
02300	Haul & Dispose Excess Exc. Matl @ Slab	26.07	CY	$6.18	$161	
	Total					**$1,112**
	Division 03 - Concrete					
03300	Process Slab on Grade	11.11	CY	$388.96	$4,321	
03300	Housekeeping Pad	0.59	CY	$388.96	$229	
03300	Edge Forms	124.00	LF	$4.77	$591	
03300	Misc. Embeds & Waste	1.00	5%	257.12	$257	
	Total					**$5,399**
	Division 11 - Equipment					
11000	Screw Conveyor and Hopper, 5 HP	1.00	EA	$120,000.00	$120,000	
11312	5HP Self Priming Centrifugal Sludge Pump	2.00	EA	$18,000.00	$36,000	
11312	3HP Progressive Cavity Sludge Pump	2.00	EA	$18,000.00	$36,000	
11000	Lime Slurry System	1.00	LS	$75,000.00	$75,000	
11362	Belt Filter Press	1.00	EA	$181,129.21	$181,129	
	Total					**$448,129**
	Division 13 - Special Construction					
13000	Concrete Building	600.00	SF	$250.00	$150,000.00	
13000	HVAC and Odor Scrubber	1.00	EA	$75,000.00	$75,000	
	Total Special Construction					**$225,000**
	Division 15 - Mechanical					
15251	6" DI Piping	400.00	LF	$60.32	$24,128	
15251	Misc. Fittings, Supports & Waste, Allow	1.00	50%	$12,064.00	$12,064	
	Total					**$36,192**
	Division 16 - Electrical					
16000	Electrical, I&C	1.00	20%	$143,166.51	$143,167	
	Total					**$143,167**
	TOTAL ALT B-2					**$858,999**

ENGINEER'S ESTIMATE OF PROBABLE COST **KENNEDY/JENKS CONSULTANTS**

Project: **Canyonville Facilities Plan**
Alternative B3 - Lime Stabilization Only

Prepared By: LOW
Date Prepared: 3-Sep-09
K/J Proj. No.: 0976004*00
Months to Midpoint of Constr.: 24

SUMMARY BY AREA

DIV NO.	ITEM DESCRIPTION	QUANTITY	MATERIALS	INSTALLATION	SUB-CONTRACTOR	TOTAL
1		1 LS				
2	Site Construction	1 LS				10,000
3	Concrete	1 LS				70,000
4		1 LS				
5	Metals	1 LS				
6		1 LS				
7		1 LS				
8		1 LS				
9		1 LS				
10		1 LS				
11	Equipment	1 LS				80,000
12		1 LS				
13	Special Construction	1 LS				1,260,000
14		1 LS				
15	Mechanical	1 LS				20,000
16	Electrical	1 LS				290,000
17	I&C	1 LS				
	Subtotals					1,730,000
	Contractor General Conditions @	15%				259,500
	Subtotals					1,989,500
	Contractor Overhead and Profit @	15%				298,425
	Subtotals					2,287,925
	Contingency @	30%				686,378
	Subtotals					2,974,303
	Engineering, Legal and Administration @	25%				743,576
	Subtotals					3,717,878
	Escalate to Midpt of Const. @ 0.16% per month	3.8%				142,767
	Estimated Construction Cost					3,900,000

VKTS

DETAILED COST ESTIMATE

Project: WWTP MASTER PLAN
Job #: KJ 0976004
Location: CANYONVILLE, OREGON
Element: 22 B-3 LIME STABILIZATION

Date : August 28, 2009
By : D. Van Kirk
Reviewed:

SPEC. NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL	TOTAL
	Division 02 - Site Construction					
02300	Struct Exc. @ Lime Stabilization Slab	15.41	CY	$8.40	$129	
02300	Imported Granular Fill @ Lime Stab. Slab	5.33	CY	$3.21	$17	
02300	Haul & Dispose Excess Exc. Matl @ Lime Stab. Slab	15.41	CY	$16.61	$256	
	Total Site Construction					**$403**
	Division 03 - Concrete					
03300	Lime Stabilization Slab	5.33	CY	$388.96	$2,073	
03300	Edge Forms @ Lime Stabilization Slab	72.00	LF	$510.89	$36,784	
03300	Containment Wall @ Lime Stabilization Slab	4.00	CY	$1,435.15	$5,741	
03300	Housekeeping Pads	1.19	CY	$388.96	$463	
03300	Edge Forms @ Housekeeping Pads	48.00	LF	$353.91	$16,988	
03300	Misc. Embeds & Waste, Allow	1.00	5%	$3,102.42	$3,102	
	Total Concrete					**$65,151**
	Division 11 - Equipment					
11224	5 HP Propellor Mixer	1.00	EA	$11,949.63	$11,950	
11312	10 HP Lime Transfer Pump	2.00	EA	$32,000.00	$64,000	
	Total Equipment					**$75,950**
	Division 13 - Special Construction					
13000	7500 Gal HDPE Lime Stabilization Tanks	2.00	EA	$42,000.00	$84,000	
13000	200 Gal. Lime Mixing Tank	1.00	EA	$2,000.00	$2,000	
13210	1.9 MG Surface Reservoir	1.00	EA	$1,168,750.00	$1,168,750	
	Total Special Construction					**$1,254,750**
	Division 15 - Mechanical					
15251	6" FLG DI Piping	300.00	LF	$60.32	$18,096	
15251	Misc. Fittings, Supports & Waste, Allow	1.00	50%	$821.04	$821	
	Total Mechanical					**$18,917**
	Division 16 - Electrical, I&C					
	Electrical, I&C, Allow	1.00	20%	$283,034.00	$283,034	
						$283,034
	TOTAL ALT B-3					**$1,698,204**