

WHATCOM COUNTY
Planning & Development Services
5280 Northwest Drive
Bellingham, WA 98226-9097
360-676-6907, TTY 800-833-6384
360-738-2525 Fax



J.E. "Sam" Ryan
Director

SEPA Determination of Nonsignificance (DNS)

File: SEP2011-00089

Project Description: Cedarville landfill leachate management system improvements, including installation of an on-site treatment system which includes a lined lagoon, active aeration, and lined bio-infiltration swale.

Proponent: Whatcom County Public Works, Solid Waste Division

Address and Parcel #: 3463 Cedarville Road, APN # 390428150307

Lead Agency: Whatcom County Planning & Development Services

Zoning: Rural **Comp Plan:** Rural

The lead agency for this proposal has determined that with proper mitigation, no significant adverse environmental impacts are likely. Pursuant to RCW 43.21C.030(2)(c), an environmental impact statement (EIS) is not required. This decision was made following review of a completed SEPA environmental checklist and other information on file with the lead agency. This information is available to the public on request.

There is no comment period for this DNS.

Pursuant to WAC 197-11-340(2), the lead agency will not act on this proposal for 14 days from the date of issuance indicated below. Comments must be received by November 14, 2011 and should be sent to: Tyler Schroeder

Responsible Official: Tyler Schroeder

Title: Current Planning Supervisor

Telephone: 360-676-6907

Address: 5280 Northwest Drive
Bellingham, WA 98226

Date of Issuance: 11-14-2011

Signature: _____

An aggrieved agency or person may appeal this determination to the Whatcom County Hearing Examiner. Application for appeal must be filed on a form provided by and submitted to the Whatcom County Current Planning Division located at 5280 Northwest Drive, Bellingham, WA 98226, during the ten days following the comment period, concluding December 8, 2011.

You should be prepared to make a specific factual objection. Contact Whatcom County Current Planning Division for information about the procedures for SEPA appeals.

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SEPA Distribution List
SEP2011-00089
Date of Issuance: 11-14-2011

Please review this determination. If you have further comments, questions or would like a copy of the SEPA checklist, phone the responsible official at (360) 676-6907. Please submit your response by the comment date noted on the attached notice of determination.

SEPA Unit, WA State Department of Ecology, Olympia via email
sepaunit@ecy.wa.gov

WA State Department of Archaeological and Historic Preservation

WA State Department of Fish and Wildlife

WA State Department of Natural Resources

Lummi Nation

Attn: Natural Resources Department
Attn: Cultural Resources Department

Nooksack Indian Tribe

Attn: Natural Resources Department
Attn: Cultural Resources Department

City of Bellingham

Attn: Kurt Nabbefeld
Attn: Brent Baldwin
Attn: Clare Fogelsong

Applicant: Roland Middleton, WC Public Works

Other:

Additional DOE Contacts:

Ed Abbasi, P.E.; Environmental Engineer eabb461@ecy.wa.gov
Mark Henderson, Water Quality Specialist mhen461@ecy.wa.gov

SEP 2011-00089

REVIEWED BY
TRS
11/7/11

WAC 197-11-960 Environmental checklist.

ENVIRONMENTAL CHECKLIST

Purpose of checklist:

The State Environmental Policy Act (SEPA), chapter 43.21C RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. An environmental impact statement (EIS) must be prepared for all proposals with probable significant adverse impacts on the quality of the environment. The purpose of this checklist is to provide information to help you and the agency identify impacts from your proposal (and to reduce or avoid impacts from the proposal, if it can be done) and to help the agency decide whether an EIS is required.

Instructions for applicants:

This environmental checklist asks you to describe some basic information about your proposal. Governmental agencies use this checklist to determine whether the environmental impacts of your proposal are significant, requiring preparation of an EIS. Answer the questions briefly, with the most precise information known, or give the best description you can.

You must answer each question accurately and carefully, to the best of your knowledge. In most cases, you should be able to answer the questions from your own observations or project plans without the need to hire experts. If you really do not know the answer, or if a question does not apply to your proposal, write "do not know" or "does not apply." Complete answers to the questions now may avoid unnecessary delays later.

Some questions ask about governmental regulations, such as zoning, shoreline, and landmark designations. Answer these questions if you can. If you have problems, the governmental agencies can assist you.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Use of checklist for nonproject proposals:

Complete this checklist for nonproject proposals, even though questions may be answered "does not apply." IN ADDITION, complete the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D).

For nonproject actions, the references in the checklist to the words "project," "applicant," and "property or site" should be read as "proposal," "proposer," and "affected geographic area," respectively.

A. BACKGROUND

1. Name of proposed project, if applicable: **Cedarville landfill leachate management system improvements**

2. Name of applicant: **Whatcom County Public Works, Solid Waste Division**

3. Address and phone number of applicant and contact person:

**Roland Middleton
322 N. Commercial Bellingham, WA 98225
676-6876 x 50211**

4. Date checklist prepared: **August 30, 2011**

5. Agency requesting checklist: **Whatcom County**

6. Proposed timing or schedule (including phasing, if applicable):

Construction 2012; ongoing monitoring determined by NPDES permit

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

No

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

**Conceptual Design Report - Evaluation of Leachate Management Alternatives (January 2010) and
Final Design Report - Proposed Leachate Management System Improvements (July 20, 2011)
Bennett Engineering, LLC**

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

No

10. List any government approvals or permits that will be needed for your proposal, if known.

**Land disturbance application review; Forest Practices Application; NPDES permit;
Whatcom County Health Department review;**

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

Installation of an on-site treatment system for leachate management of closed Cedarville landfill. System to include lined lagoon, active aeration, and lined bioinfiltration swale.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

APN 390428150307

Pond to be located behind Cowden Gravel, located at 3463 Cedarville Road.

B. ENVIRONMENTAL ELEMENTS

1. Earth

- a. General description of the site (circle one): Flat, rolling, hilly, steep slopes, mountainous, other

Project site is flat: located at the base of the hill

- b. What is the steepest slope on the site (approximate percent slope)?

Project site is flat: located at the base of the hill

- c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.

No agricultural soils; mostly rocky sandy loam;

- d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

No

- e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

Approximately 1360 cubic yards of top soil and 1610 cubic yards of sandy gravel will be moved in construction of the pond. An additional 715 cubic yards of material (Quarry spalls, crushed rock, drain rock, sand, and amended sand media) will be imported for construction of the pond, access road, and bio swale.

- f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Yes, very minor construction erosion could occur.

- g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Only a 12 foot gravel access road and a small utility/pump base;

- h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

All 12 elements of the 2005 DOE stormwater manual and Chapter 2 of the Whatcom County Development Standards are addressed (please see TESC plan, Drawing C-4)

2. Air

- a. What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.

Only minor construction emissions;

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

No

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

None

3. Water

a. Surface:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

Nooksack River approximately ½ mile;

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

No

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

None

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

No

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

No

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

The potential contaminants of concern in the leachate are ammonia, COD, TDS, conductivity, iron, manganese, TSS, and turbidity.

b. Ground:

- 1) Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.

No

- 2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

None

c. Water runoff (including stormwater):

- 1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

Treated water would discharge into existing stormwater system (See Drawing c-3)

- 2) Could waste materials enter ground or surface waters? If so, generally describe.

Yes

d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:

From the July 20, 2011 Final Design Report - Proposed Leachate Management System Improvements:

Page 2:

The preliminary treatability study was completed during the summer of 2010. The lab-scale test apparatus included an aeration basin and an amended sand filter unit to model the proposed full-scale system. The test variables included passive versus active aeration, aeration contact time, and filter application rate. The main conclusions and recommendations of the study were that the proposed treatment system is effective in reducing TSS, turbidity, ammonia, and total iron concentrations. The system also achieved marginal reductions in TDS, conductivity, and total arsenic and manganese, and some neutralization of pH, although additional consideration is required to improve manganese removal in the full-scale system. Active aeration improved the removal efficiencies of most of the test parameters and should be incorporated into the full-scale system. The raw leachate had an observed acute toxicity effect to fathead minnows at 100% concentration, but no acute toxicity effect to *Ceriodaphnia* at the same concentration. The treated effluent sample had no acute toxicity effect to either test species at 100% concentration. (Emphasis added)

Page 7:

2.5.2 Preliminary Leachate Treatment Study Report

The preliminary leachate treatability study was completed during the summer of 2010. The proposed treatment system presented in the *Conceptual Design Report* included: passive aeration; filtration through a bioinfiltration swale; and storage of the treated effluent in an open, lined pond. The lab-scale test apparatus included an aeration basin and an amended sand filter unit to model the proposed full-scale system. The test variables included passive versus active aeration, aeration contact time, and filter application rate. Water quality analyses were performed on a raw leachate sample obtained on June 22, 2010, and from the four laboratory trials conducted between June 22 and 28, 2010. The analytical results are presented in Table D (Appendix III). Acute toxicity testing was also performed using samples of the raw leachate and treated effluent from Trial #4. The treated effluent results presented in Table D are considered representative of the water quality that would enter the storage pond in the proposed full-scale system, and not the effluent quality at the point of discharge to surface water. The conclusions from the

study are summarized in the following bullets:

- parameter concentrations in the raw leachate tested in the treatability study were generally lower than historic data ranges for the leachate, except for the elevated dissolved arsenic concentration reported for this study;
- the proposed treatment system, with both passive and active aeration, was effective in reducing TSS, turbidity, ammonia, and iron concentrations, with some marginal reduction also occurring in conductivity and TDS levels;
- manganese removal ranged from approximately 30 to 42%, which was lower than expected, especially for the active aeration trials;
- active aeration appeared to have a greater effect than passive aeration on neutralizing the pH of the treated effluent, and improving removal efficiencies for turbidity, ammonia, and total arsenic and iron;
- treated effluent from Trials #2, 3, and 4 met surface water standards for turbidity, ammonia, and arsenic, and the Trial #4 effluent complied with the pH standard;
- treated effluent from Trials #2, 3, and 4 also met the WAC 173-200 ground water standards for TDS and iron;
- there are no surface water standards for manganese, however, manganese concentrations in the treated effluent exceeded the WAC 173-200 ground water standard (0.05 mg/L), but fell below the MTCA Method B (2.24 mg/L) and Method C (4.90 mg/L) cleanup levels;
- raw leachate had an observed acute toxicity effect to fathead minnows at the 100% concentration, but no observed effect at the 50% concentration;
- raw leachate had no acute toxic effect to *Ceriodaphnia* at the 100% concentration;
- treated effluent from Trial #4 had no acute toxic effect to either fathead minnows or *Ceriodaphnia* at the 100% concentration.

One of the issues identified in regards to future permitting and engineering design of the full-scale treatment system was improving the removal efficiency for the dissolved manganese present in the raw leachate. However, the proposed full-scale system would likely be more effective than the lab-scale system in reducing manganese concentrations for many reasons:

- The aeration system/rate will be designed to improve oxygen transfer to the leachate.
- Direct rainfall into the storage pond would result, on average, in a 34% reduction in parameter concentrations compared to the effluent exiting the treatment system.
- The full-scale system includes storage of the treated effluent in an open, 550,000-gallon pond. Assuming an average discharge rate of 7.5 gpm from the pond, the aeration contact time for the treated effluent would be around 50 days under full pond conditions, compared to a maximum of 2 hours for the lab-scale study.
- The gradation of the filter media for the full-scale amended sand filter will have a higher fines content than the test filter used in this study, which will effectively reduce the flow rate and improve the cation exchange capacity in the media.
- Studies show that manganese removal is significantly enhanced in the presence of other metal oxides, such as manganese dioxide (MnO_2) or ferric hydroxide ($Fe(OH)_3$) (WHO, 2004), which will form during long-term operation of the treatment system.
- Analytical results for a similar leachate treatment system installed at the Airport Woodwaste Landfill (NPDES Permit #WA-003223-9) have shown a high manganese removal efficiency (>95%) following initial conditioning of the amended sand filter.

The source of the acute toxicity observed with the fathead minnows exposed to raw leachate is unknown, but may be associated with the manganese concentrations present in the leachate, based on previous toxicity studies completed by others with freshwater invertebrates and fish. In those studies, the manganese concentrations that caused 50% mortality of *Ceriodaphnia* after 48-hours of exposure (48-hour LC_{50}) ranged from 5.7 to 9.1 mg/L. For freshwater fish, no data were reviewed regarding fathead minnows; however, the more sensitive species included coho salmon (96-hour LC_{50} = 2.4 to 17.4 mg Mn/L), brown trout (3.8 to 49.9 mg Mn/L), and rainbow trout (4.8 mg Mn/L). By comparison, the manganese concentrations in the raw leachate were 2.56 mg/L for the June 2010 test and 4.63 mg/L in the October 2009 test.

4. **Plants**

a. Check or circle types of vegetation found on the site:

- _____ deciduous tree: alder, maple, aspen, other cottonwood
- _____ evergreen tree: fir, cedar, pine, other
- _____ shrubs
- _____ grass
- _____ pasture
- _____ crop or grain
- _____ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
- _____ water plants: water lily, eelgrass, milfoil, other
- _____ other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

Select trees and shrubs will be removed for construction of pond

c. List threatened or endangered species known to be on or near the site.

None known

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

Pond designed to maintain as much tree canopy as possible

5. **Animals**

a. Circle any birds and animals which have been observed on or near the site or are known to be on or near the site:

- birds: hawk, heron, eagle, songbirds, other:
- mammals: deer, bear, elk, beaver, raccoon etc.
- fish: bass, salmon, trout, herring, shellfish, other:

b. List any threatened or endangered species known to be on or near the site.

None

c. Is the site part of a migration route? If so, explain.

Project site within the Pacific Flyway

d. Proposed measures to preserve or enhance wildlife, if any:

None

6. **Energy and natural resources**

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Electricity for filtration and aeration pumps

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

None

7. Environmental health

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

Minor amounts; for additional information see answer to question 3.a (6)

1) Describe special emergency services that might be required.

None

2) Proposed measures to reduce or control environmental health hazards, if any:

See: answer to question 3.a (6)

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

None

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

None

3) Proposed measures to reduce or control noise impacts, if any:

None

8. Land and shoreline use

a. What is the current use of the site and adjacent properties?

Landfill to the South; remaining project site surrounded by gravel and heavy construction yard;

b. Has the site been used for agriculture? If so, describe.

No

c. Describe any structures on the site.

Small utility shed/pump house

d. Will any structures be demolished? If so, what?

Small utility shed/pump house

e. What is the current zoning classification of the site?

R5A

f. What is the current comprehensive plan designation of the site?

Rural

g. If applicable, what is the current shoreline master program designation of the site?

N/A

h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.

No

i. Approximately how many people would reside or work in the completed project?

None

j. Approximately how many people would the completed project displace?

None

k. Proposed measures to avoid or reduce displacement impacts, if any:

None

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

None

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

None

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

None

c. Proposed measures to reduce or control housing impacts, if any:

None

10. Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed? **4 to 5 foot utility box**

b. What views in the immediate vicinity would be altered or obstructed?

None

c. Proposed measures to reduce or control aesthetic impacts, if any:

None

11. Light and glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

None

b. Could light or glare from the finished project be a safety hazard or interfere with views?

No

c. What existing off-site sources of light or glare may affect your proposal?

None

d. Proposed measures to reduce or control light and glare impacts, if any:

None

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

None

b. Would the proposed project displace any existing recreational uses? If so, describe.

No

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

None

13. Historic and cultural preservation

a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.

No

b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.

None

c. Proposed measures to reduce or control impacts, if any:

None

14. Transportation

- a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.

Cedarville Road

- b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?

No

- c. How many parking spaces would the completed project have? How many would the project eliminate?

None

- d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).

No

- e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

No

- f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.

None

- g. Proposed measures to reduce or control transportation impacts, if any:

None

15. Public services

- a. Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.

No

- b. Proposed measures to reduce or control direct impacts on public services, if any.

None

16. Utilities

- a. Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.

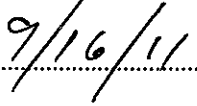
- b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

Electricity for pumps

C. SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: 

Date Submitted: 

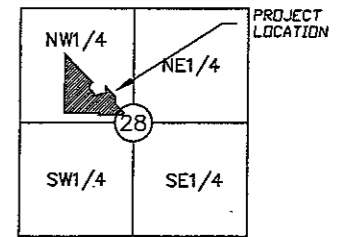
LEACHATE MANAGEMENT SYSTEM IMPROVEMENTS

CEDARVILLE LANDFILL

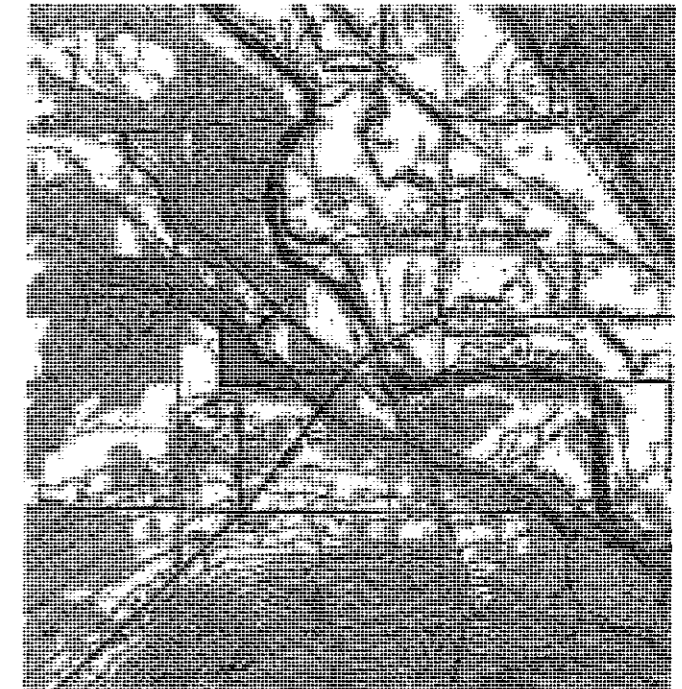
WHATCOM COUNTY

JUNE 2011

INDEX MAP



SECTION 28, TWN 39N, RGE 04E, W.M.



VICINITY MAP

1" = 2,000'

OWNER/APPLICANT
 WHATCOM COUNTY PUBLIC WORKS DEPT.
 322 N. COMMERCIAL STREET, #210
 BELLINGHAM, WA 98225
 CONTACT: JON HUTCHINGS, ASST. PUBLIC WORKS DIR.
 (360) 676-7695

ENGINEER
 BENNETT ENGINEERING, LLC
 2000 FRANKLIN ST. SUITE 101
 BELLINGHAM, WA 98225
 CONTACT: TOM BENNETT, P.E.
 (360) 671-2600

SURVEYOR
 NORTHWEST SURVEYING & GPS
 407 5TH STREET
 LYNDEN, WA 98264
 CONTACT: DENNIS DEMEYER, P.L.S.
 (360) 354-1950

SHEET INDEX

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- C-4 TESC PLAN
- C-5 TREATMENT SYSTEM PLAN & SECTIONS
- C-6 STORAGE POND SECTIONS & DETAILS
- C-7 ELECTRICAL PLAN
- C-8 DETAILS
- C-9 CONSTRUCTION NOTES

CONSTRUCTION SEQUENCE

THIS CONSTRUCTION SEQUENCE IS INTENDED AS A GENERAL GUIDELINE FOR THE LEACHATE MANAGEMENT SYSTEM (LMS) IMPROVEMENTS AT THE CEDARVILLE LANDFILL. ANY SIGNIFICANT CHANGES TO THE SEQUENCE SHALL BE DISCUSSED WITH AND APPROVED BY THE WHATCOM COUNTY PUBLIC WORKS DEPARTMENT (WCPWD), WHATCOM COUNTY HEALTH DEPARTMENT (WCHD), DEPARTMENT OF ECOLOGY (ECOLOGY), AND PROJECT ENGINEER.

1. ARRANGE AND ATTEND PRE-CONSTRUCTION MEETING WITH REPRESENTATIVES OF THE WCPWD, WCHD, ECOLOGY, AND PROJECT ENGINEER.
2. SUBMIT MATERIAL TEST DATA AND SPECIFICATION SHEETS FOR ALL CONSTRUCTION MATERIALS AND EQUIPMENT TO THE PROJECT ENGINEER FOR REVIEW AND APPROVAL.
3. ESTABLISH SURVEY CONTROL AT THE SITE. MARK CLEARING LIMITS.
4. INSTALL TESC FACILITIES, INCLUDING SILT FENCING, STABILIZED CONSTRUCTION ENTRANCE, ROCK CHECK DAMS, AND BANK STABILIZATION, AS SHOWN ON SHEET C-4.
5. PUMP LEACHATE SYSTEM TO EMPTY THE STORAGE TANK AND LEACHATE MAIN, AS PRACTICABLE. CLOSE 6" VALVE ON LEACHATE STORAGE TANK INLET.
6. EXCAVATE TEST HOLES, AS NEEDED, TO VERIFY THE LOCATION AND DEPTH OF THE EXISTING 6-INCH LEACHATE MAIN BETWEEN THE STORAGE TANK AND EFFLUENT TRANSFER STATION (ETS) BUILDING.
7. REMOVE PORTION OF EXISTING 6-INCH LEACHATE MAIN LOCATED WITHIN THE PROJECT AREA, AS SHOWN ON SHEET C-3.
8. CLEAR AND GRUB TREES AND VEGETATION WITHIN THE CLEARING LIMITS AND DISPOSE OFF-SITE AT THE DIRECTION OF THE WCPWD. STRIP TOPSOILS FROM THE PROJECT AREA AND STOCKPILE IN THE DESIGNATED AREA.
9. ROUGH GRADE WITHIN THE EFFLUENT STORAGE POND FOOTPRINT TO ESTABLISH SUBGRADE ELEVATIONS. CONSTRUCT POND BERMS USING NATIVE SANDY GRAVEL MATERIAL, AS SHOWN ON SHEET C-6. PERFORM COMPACTION TESTING, AS REQUIRED.
10. CONSTRUCT STORAGE POND, INCLUDING THE BOTTOM POND LINER, 12-INCH SAND LAYER, LEAK DETECTION PIPING, UPPER POND LINER, 12-INCH TOPSOIL LAYER, AND ALL PIPE PENETRATIONS THROUGH THE LINERS.
11. INSTALL EFFLUENT DISCHARGE MANHOLE, METER VAULT, AND ASSOCIATED PIPING, AS SHOWN ON SHEET C-6.
12. EXTEND NEW 6-INCH LEACHATE MAIN TO THE AERATION VAULT LOCATION. INSTALL AERATION VAULT AND UTILITY CABINET, BIOFILTRATION SWALE, AND AMENDED SAND FILTER, AS SHOWN ON SHEET C-5.
13. REMOVE EXISTING LEACHATE PIPING, VALVING, AND FITTINGS FROM THE ETS BUILDING, AND MAKE STRUCTURAL REPAIRS TO THE BUILDING, AS SHOWN ON SHEET C-8.
14. INSTALL ELECTRICAL SYSTEM UPGRADES IN THE ETS BUILDING, AND MAKE STRUCTURAL REPAIRS TO THE BUILDING, AS SHOWN ON SHEET C-8.
15. EXTEND ELECTRICAL SERVICE TO THE AERATION VAULT AND METER VAULT, AND INSTALL PUMP SYSTEMS AT THOSE LOCATIONS.
16. TEST ALL NEW ELECTRICAL AND MECHANICAL SYSTEMS TO VERIFY PROPER OPERATION.
17. CONSTRUCT POND ACCESS RAMP, OVERFLOW WEIR, AND GRAVEL ACCESS ROAD ON EAST POND BERM. INSTALL QUARRY SPALLS AT ALL PIPE INLETS AND OUTLETS.
18. CLEAN UP AND RESTORE DISTURBED CONSTRUCTION AND STOCKPILE AREAS. HYDROSEED THE STORAGE POND, AMENDED SAND FILTER, AND ALL OTHER EXPOSED SOILS.
19. OPEN 6" LEACHATE LINE VALVE AND INITIATE OPERATION OF THE LMS IMPROVEMENTS UPON APPROVAL BY THE WCPWD, WCHD, ECOLOGY, AND PROJECT ENGINEER.
20. MAINTAIN TESC FACILITIES, AS REQUIRED, AND REMOVE TESC FACILITIES ONCE THE SITE HAS STABILIZED, AS APPROVED BY THE PROJECT ENGINEER.
21. PROVIDE THREE COPIES OF OPERATION AND MAINTENANCE MANUALS FOR ALL ELECTRICAL AND MECHANICAL COMPONENTS.

DRAFT

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②			
③			
④			
NO.	REVISION	BY	DATE

BENNETT
ENGINEERING, LLC

CIVIL
ENVIRONMENTAL
2000 FRANKLIN ST. SUITE 101
BELLINGHAM, WA 98225
Ph: (360) 671-2600
Fax: (360) 671-0122

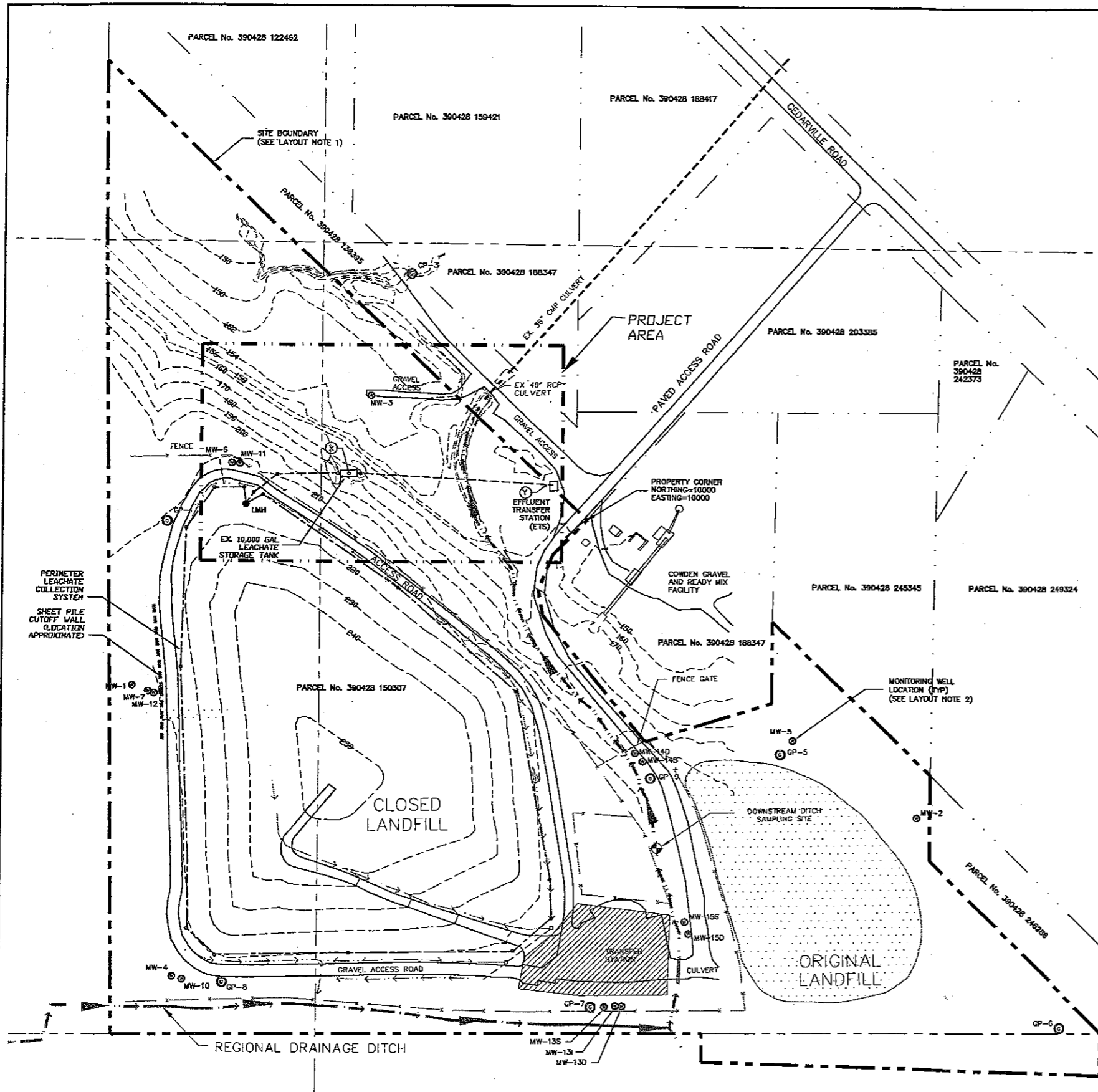
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DWG. NAME:	11003-01-COVER
DESIGNED BY:	NCS
DRAWN BY:	NCS
CHECKED BY:	TEB

WHATCOM COUNTY PUBLIC WORKS
322 N. COMMERCIAL ST., SUITE 210
BELLINGHAM, WA 98225

COVER SHEET
CEDARVILLE LANDFILL
WHATCOM COUNTY, WASHINGTON

DATE: JUNE 2011 SCALE: H: 1"=100' V: N/A

DRAWING: C-1
SHEET: 1 of 9



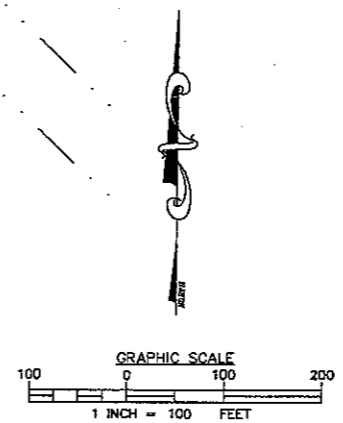
PROPERTY DATA

GEOGRAPHIC ID	OWNER	PROPERTY ADDRESS
390428 122462	MICHAEL D TENKLEY	3397 CEDARVILLE RD
390428 138395	STEVEN B & KARLA G COWDEN	CEDARVILLE ROAD
390428 150307	WHATCOM COUNTY PUBLIC WORKS	CEDARVILLE ROAD
390428 151460	LEONARD E & DIANNE M COWDEN	3417 CEDARVILLE ROAD
390428 159421	COWDEN, INC.	CEDARVILLE ROAD
390428 188374	COWDEN, INC.	CEDARVILLE ROAD
390428 203385	COWDEN, INC.	3483 CEDARVILLE ROAD
390428 225345	COWDEN, INC.	CEDARVILLE ROAD
390428 242373	COWDEN, INC.	3483 CEDARVILLE ROAD
390428 248286	COWDEN, INC.	CEDARVILLE ROAD
390428 249324	COWDEN, INC.	3497 CEDARVILLE ROAD

SITE COORDINATE DATA

LOCATION	DESCRIPTION	ELEVATION	NORTHING*	EASTING*
MW-3	TOP OF 2" PVC CASING	153.77'	10212.77	9647.71
MW-6	TOP OF 2" PVC CASING	215.54'	10093.76	9420.82
MW-11	TOP OF 2" PVC CASING	214.93'	10093.04	9433.62
POINT X	CTR OF 30" TANK ACCESS MH	186.80'	10052.73	9612.47
POINT Y	TOP OF VALVE BOX COVER	157.90'	10058.79	9937.80

* COORDINATES 10000, 10000 SET AT PROPERTY CORNER SOUTH OF PAVED ACCESS ROAD



GENERAL LAYOUT NOTES:

- SITE BOUNDARY IS APPROXIMATE AND BASED ON WHATCOM COUNTY ASSESSOR'S MAPS OF SECTION 2B, TOWNSHIP 39 NORTH, RANGE 4 EAST AND AVAILABLE FILE INFORMATION.
 - MONITORING WELL LOCATIONS FROM HARDING LAWSON ASSOCIATES, INC. JUNE 1994.
- PROJECT AREA TOPOGRAPHIC SURVEY NOTES (NORTHWEST SURVEYING & GPS, FEB., 2011):
- THIS SURVEY WAS PERFORMED BY STANDARD FIELD TRAVERSE USING A NIKON NPL-352 TOTAL STATION WITH A CARLSON EXPLORER 600+ COLLECTOR/FIELD COMPUTER IN FEBRUARY OF 2011.
 - THIS SURVEY TIED INTO CONTROL POINTS FROM OUR PREVIOUS WORK WITHIN THE AREA AND DEED CORNERS ALONG CEDARVILLE ROAD.
 - VERTICAL DATUM IS PER MONITORING WELL INFORMATION PROVIDED BY BENNETT ENGINEERING L.L.C. TBM = MONITORING WELL (MW-3) EL. = 153.77' AS SHOWN.
 - CONTOUR INTERVALS ARE 1 FOOT NORTHERLY OF THE BOTTOM OF BANK AND 2 FOOT SOUTHERLY OF SAID BOTTOM OF BANK AS SHOWN. CONTOURS ARE COMPUTER GENERATED FROM GROUND FIELD TOPOGRAPHY GATHERED FOR THIS SURVEY.
 - NORTHWEST SURVEYING & GPS INC. ASSUMES NO LIABILITY FOR ANY SUBSURFACE CONDITIONS OR UTILITIES NOT SHOWN HEREON. UNDERGROUND UTILITIES MAY EXIST WITHIN THE AREA OF CONSTRUCTION. THE LOCATION OF EXISTING UTILITIES SHOWN ARE BASED UPON FIELD SURVEY AND VISUAL IDENTIFICATION. ALL EXISTING UTILITIES MAY NOT BE INDICATED WITHIN THE CONSTRUCTION DOCUMENTS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY ANY AND ALL UNDERGROUND UTILITY LOCATIONS PRIOR TO CONSTRUCTION AND TO ALERT THE ENGINEER AND OWNER PROMPTLY IN CASE OF CONFLICT.

DRAFT

NO.	REVISION	BY	DATE
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BENNETT ENGINEERING, LLC

CIVIL ENVIRONMENTAL
2000 FRANKLIN ST. SUITE 101
BELLINGHAM, WA 98225
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Fax: (360) 671-0122

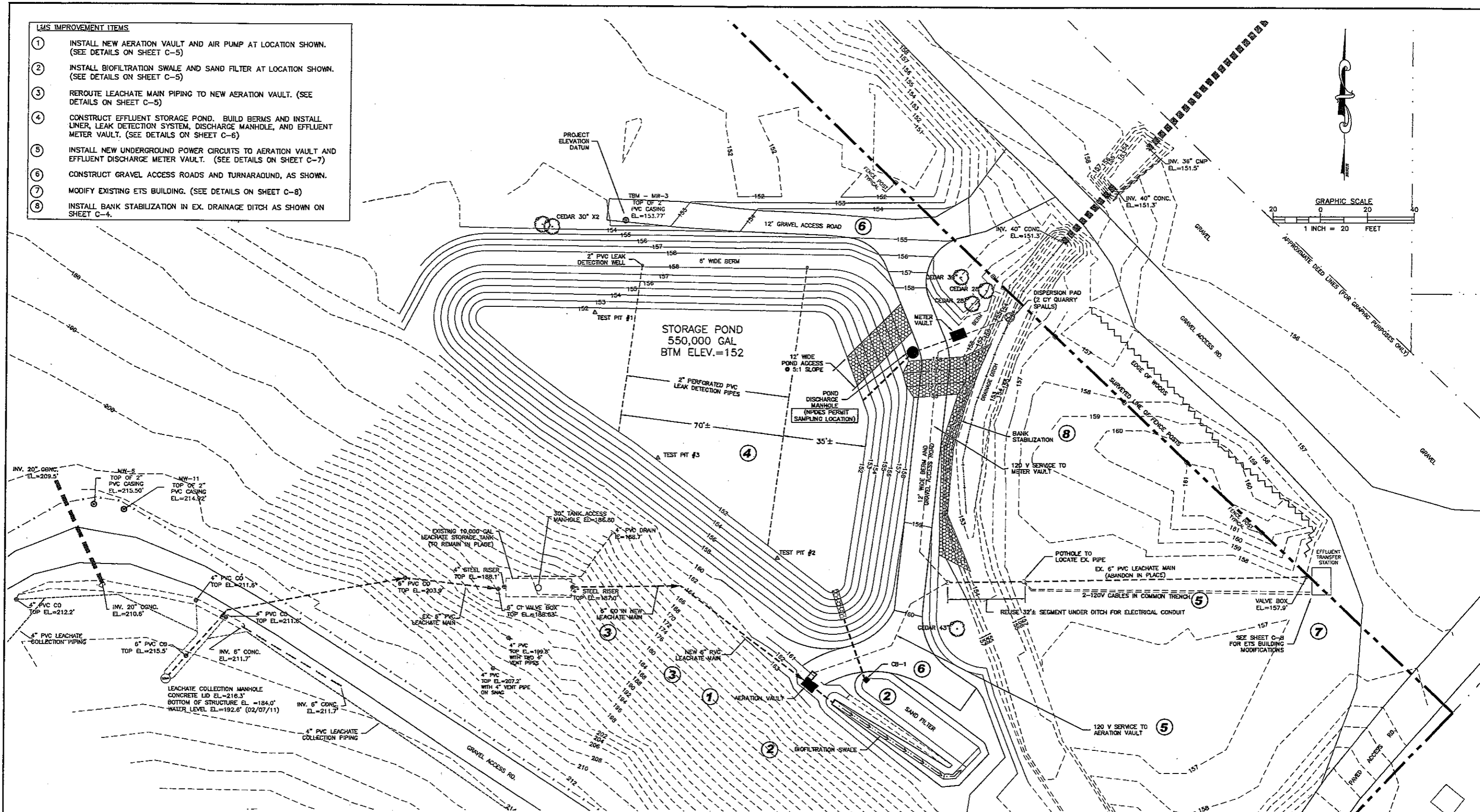
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DWG. NAME:	11003-02-EXISTING
DESIGNED BY:	NCS
DRAWN BY:	NCS
CHECKED BY:	TEB

WHATCOM COUNTY PUBLIC WORKS
322 N. COMMERCIAL ST., SUITE 210
BELLINGHAM, WA 98225

EXISTING CONDITIONS CEDARVILLE LANDFILL WHATCOM COUNTY, WASHINGTON		DRAWING: C-2
DATE: JUNE 2011	SCALE: H: 1"=100'	SHEET: 2 OF 9
V: N/A		

LMS IMPROVEMENT ITEMS

- ① INSTALL NEW AERATION VAULT AND AIR PUMP AT LOCATION SHOWN. (SEE DETAILS ON SHEET C-5)
- ② INSTALL BIOFILTRATION SWALE AND SAND FILTER AT LOCATION SHOWN. (SEE DETAILS ON SHEET C-5)
- ③ REROUTE LEACHATE MAIN PIPING TO NEW AERATION VAULT. (SEE DETAILS ON SHEET C-5)
- ④ CONSTRUCT EFFLUENT STORAGE POND. BUILD BERMS AND INSTALL LINER, LEAK DETECTION SYSTEM, DISCHARGE MANHOLE, AND EFFLUENT METER VAULT. (SEE DETAILS ON SHEET C-6)
- ⑤ INSTALL NEW UNDERGROUND POWER CIRCUITS TO AERATION VAULT AND EFFLUENT DISCHARGE METER VAULT. (SEE DETAILS ON SHEET C-7)
- ⑥ CONSTRUCT GRAVEL ACCESS ROADS AND TURNAROUND, AS SHOWN.
- ⑦ MODIFY EXISTING ETS BUILDING. (SEE DETAILS ON SHEET C-8)
- ⑧ INSTALL BANK STABILIZATION IN EX. DRAINAGE DITCH AS SHOWN ON SHEET C-4.



DRAFT

NO.	REVISION	BY	DATE
1			
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 Ph: (360) 671-2600
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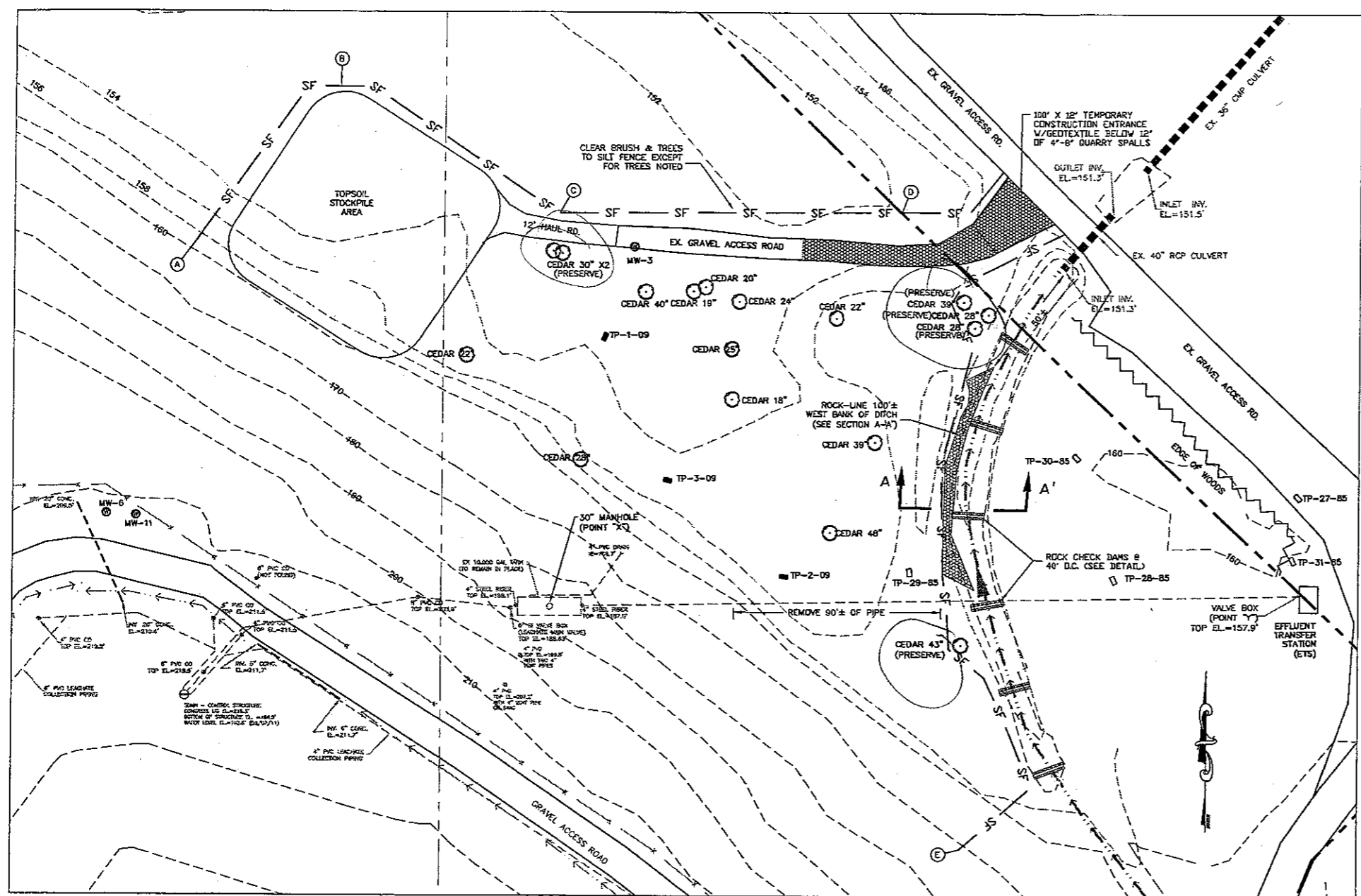
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 DWG. NAME: 11003-03-PROPOSED
 DESIGNED BY: NCS
 DRAWN BY: NCS
 CHECKED BY: TEB

WHATCOM COUNTY PUBLIC WORKS
 322 N. COMMERCIAL ST., SUITE 210
 BELLINGHAM, WA 98225

LEACHATE MANAGEMENT PLAN
 CEDARVILLE LANDFILL
 WHATCOM COUNTY, WASHINGTON

DRAWING: C-3
 SHEET: 3 OF 9

DATE: JUNE 2011 SCALE: H: 1"=20' V: N/A



TESC ELEMENTS

TWELVE EROSION AND SEDIMENT CONTROL ELEMENTS ARE REQUIRED FOR ALL LARGE DEVELOPMENT PROJECTS IN ACCORDANCE WITH THE 2005 ECOLOGY STORMWATER MANUAL AND CHAPTER 2 - STORMWATER MANAGEMENT OF THE WHATCOM COUNTY DEVELOPMENT STANDARDS (CURRENT EDITION). THE VARIOUS ELEMENTS ARE LISTED BELOW WITH A SUMMARY OF HOW THE ELEMENT HAS BEEN INCORPORATED INTO THE PROJECT DESIGN.

ELEMENT #1: CONSTRUCTION ACCESS ROUTES

ACCESS TO THE PROJECT SITE FOR CONSTRUCTION EQUIPMENT AND MATERIALS WILL BE PROVIDED VIA THE EXISTING PAVED ROAD FROM CEDARVILLE ROAD AND EXISTING GRAVEL ROAD ON THE COWDEN PROPERTY (PARCEL #390428-138395). A STABILIZED CONSTRUCTION ENTRANCE WILL BE INSTALLED AT THE EXISTING GRAVEL ACCESS APRON TO THE PROJECT SITE. THE SOIL STOCKPILE AREA WILL BE USED FOR MATERIAL STORAGE AND EQUIPMENT PARKING.

IF SEDIMENT IS TRANSPORTED ONTO THE PAVED ROAD SURFACES (PUBLIC OR PRIVATE), THE ROAD SHALL BE ROUTINELY CLEANED DURING THE DAY AND THOROUGHLY CLEANED AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO SOIL STOCKPILE AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER.

ELEMENT #2: STABILIZATION OF DISTURBED AREAS

FROM OCTOBER 1 TO APRIL 30, NO SUBSTANTIALLY UNWORKED SOIL AREAS SHALL REMAIN EXPOSED FOR MORE THAN TWO DAYS. FROM MAY 1 TO SEPTEMBER 30, NO SUBSTANTIALLY UNWORKED SOIL AREAS SHALL REMAIN EXPOSED FOR MORE THAN SEVEN DAYS. ALL EXPOSED AND UNWORKED SOILS SHALL BE STABILIZED BY SUITABLE APPLICATION OF BMPs, INCLUDING GRAVEL SURFACING, TOPSOIL WITH MULCHING AND/OR HYDROSEEDING, AND PLASTIC COVERING. ADDITIONAL BMPs SHALL BE APPLIED AS NECESSARY TO STABILIZE THE SITE AND MAINTAIN THE QUALITY OF STORMWATER RUNOFF FROM THE PROJECT SITE.

ELEMENT #3: CONTAINMENT OF SEDIMENT ON-SITE

CLEARING AND GRADING ACTIVITIES ARE SCHEDULED TO BE COMPLETED DURING THE SUMMER AND FALL OF 2012. SILT FENCING SHALL BE INSTALLED DOWNGRADIENT OF THE SOIL STOCKPILE AREA AND ALL DISTURBED CONSTRUCTION AREAS. ADDITIONAL EROSION CONTROL MEASURES WILL BE IMPLEMENTED AS NECESSARY DURING CONSTRUCTION.

ELEMENT #4: CONTROLLING OFF-SITE DAMAGE

THE POTENTIAL FOR OFF-SITE EROSION DURING CONSTRUCTION WILL BE CONTROLLED BY SURFACE GRADING AND MAINTAINING NATIVE VEGETATION AROUND THE PERIMETER OF THE PROJECT SITE. THE PRIMARY POLLUTANTS OTHER THAN SEDIMENT, THAT HAVE BEEN IDENTIFIED INCLUDE SOLID WASTES FROM CONSTRUCTION ACTIVITIES, PETROLEUM PRODUCTS ASSOCIATED WITH FUELING AND LUBRICATING CONSTRUCTION EQUIPMENT AND VEHICLES, AND LANDFILL LEACHATE. THE CONTRACTOR WILL BE RESPONSIBLE TO KEEP THE PROJECT SITE IN A NEAT AND ORDERLY CONDITION. ALL REFUSE AND CONSTRUCTION DEBRIS WILL BE REMOVED FROM THE SITE ON A REGULAR BASIS, AS SOON AS PRACTICAL. ALL FUEL AND OIL SPILLS WILL BE CLEANED UP IMMEDIATELY. THE LEACHATE MAIN VALVE WILL BE CLOSED DURING CONSTRUCTION. THE CONTRACTOR WILL BE RESPONSIBLE FOR RESTORING ALL OFF-SITE AREAS TO THEIR ORIGINAL CONDITION BY THE END OF THE PROJECT.

ELEMENT #5: DELINEATING CLEARING AND EASEMENT LIMITS

THE CLEARING LIMITS SHALL BE FLAGGED IN THE FIELD PRIOR TO ANY SITE DISTURBANCE.

ELEMENT #6: TIMING AND STABILIZATION OF SITE CONTAINMENT

THE TESC MEASURES SHALL BE INSTALLED PRIOR TO CLEARING, GRUBBING, AND ROUGH GRADING OF THE SITE, INCLUDING THE SILT FENCING, STABILIZED CONSTRUCTION ENTRANCE, AND ROCK CHECK DAMS.

ELEMENT #7: CUT AND FILL SLOPES

PERMANENT CUT AND FILL SLOPES WILL BE LIMITED TO 3:1 (OR FLATTER) WITHIN THE PROJECT AREA. ALL CUT AND FILL SLOPES WILL BE STABILIZED BY INSTALLING TOPSOIL, EQUIPMENT TRACKING, AND HYDROSEEDING, OR OTHER EROSION CONTROL MEASURES, SUCH AS MULCHING OR PLASTIC SHEETING.

ELEMENT #8: STORM DRAIN INLET PROTECTION

THERE ARE NO EXISTING STORM DRAIN CATCH BASINS NEAR THE PROJECT SITE, AND NO CATCH BASINS ARE PROPOSED FOR THE PROJECT.

ELEMENT #9: STABILIZATION OF TEMPORARY CONVEYANCE CHANNELS AND OUTLETS

QUARRY SPALLS WILL BE INSTALLED, AS SHOWN, TO STABILIZE THE EXISTING WEST BANK OF THE DRAINAGE DITCH. A ROCK OUTFALL PAD WILL BE INSTALLED AT THE POINT OF EFFLUENT DISCHARGE TO THE DITCH. ROCK CHECK DAMS WILL BE INSTALLED IN DITCH AT 40 FEET O.C. A ROCK OVERFLOW WEIR WILL BE INSTALLED IN THE EAST BERM OF THE POND.

ELEMENT #10: DEWATERING CONSTRUCTION SITES

IF DEWATERING IS REQUIRED DURING INSTALLATION OF UNDERGROUND VAULTS, WATER WILL BE PUMPED FROM THE EXCAVATION TO THE EFFLUENT STORAGE POND. NO MORE THAN 500 FEET OF UTILITY TRENCH SHALL BE OPEN AT ONE TIME. EXCAVATED MATERIALS WILL BE PLACED ON THE UPGRADE SIDE OF THE TRENCH EXCAVATIONS, IF PRACTICAL, TO MINIMIZE THE AMOUNT OF SURFACE WATER RUNOFF ENTERING THE EXCAVATIONS.

ELEMENT #11: MAINTENANCE

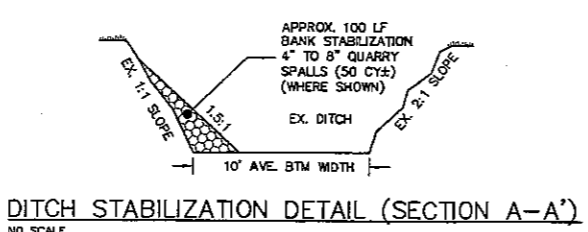
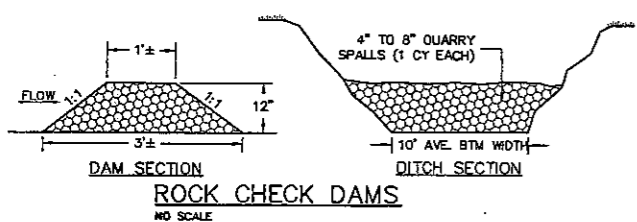
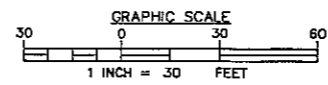
THE TESC FACILITIES WILL BE INSPECTED ON A DAILY BASIS BY A CERTIFIED EROSION AND SEDIMENTATION CONTROL LEAD (CESCL) DURING THE PERIOD OF CONSTRUCTION, AND IMMEDIATELY FOLLOWING SIGNIFICANT STORM EVENTS (> 0.5 INCH PRECIPITATION IN 24-HOUR PERIOD). REPAIRS, IF NEEDED, WILL BE MADE IMMEDIATELY. ACCUMULATED SEDIMENT WILL BE REMOVED FROM THE SILT FENCING AND ROCK CHECK DAMS, AS NEEDED, TO MAINTAIN ADEQUATE STORMWATER CONVEYANCE. THE CONTRACTOR WILL BE RESPONSIBLE FOR SATISFACTORY MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROLS UNTIL CONSTRUCTION ACTIVITIES ARE COMPLETED, PERMANENT DRAINAGE FACILITIES ARE OPERATIONAL, AND THE POTENTIAL FOR ON-SITE EROSION HAS PASSED.

ELEMENT #12: REMOVAL OF TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES

ALL TEMPORARY NON-BIODEGRADABLE EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION IS ACHIEVED OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED. EXCESS SOILS IN THE STOCKPILE AREA SHALL BE GRADED SMOOTH. ALL EXPOSED SOIL AREAS REMAINING AT THE END OF THE PROJECT SHALL BE PERMANENTLY STABILIZED BY INSTALLING TOPSOIL, EQUIPMENT TRACKING, AND HYDROSEEDING WITH AN EROSION CONTROL SEED MIX.

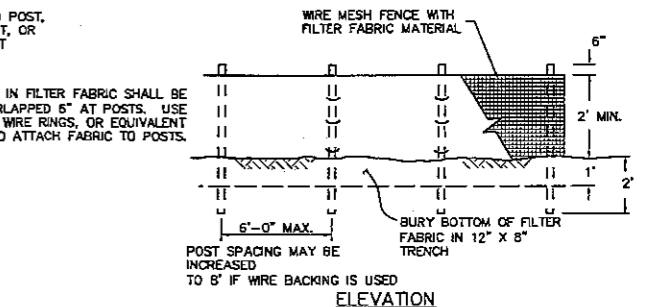
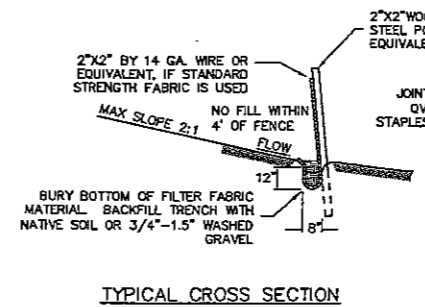
- LEGEND**
- ⊙ MONITORING WELL
 - TP-27-85 1985 TEST PIT, CONVERSE CONSULTANTS
 - TP-1-09 2009 TEST PIT, BENNETT ENGINEERING

DRAFT



SILT FENCE COORDINATE DATA

POINT	NORTHING	EASTING
A	10203.92'	9450.35'
B	10294.08'	9520.57'
C	10237.26'	9621.10'
D	10237.26'	9767.61'
E	9942.61'	9781.85'



NO.	REVISION	BY	DATE
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BENNETT ENGINEERING, LLC

CIVIL ENVIRONMENTAL
2000 FRANKLIN ST. SUITE 101
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Ph: (360) 671-2600
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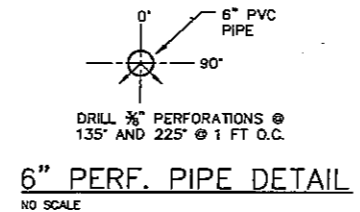
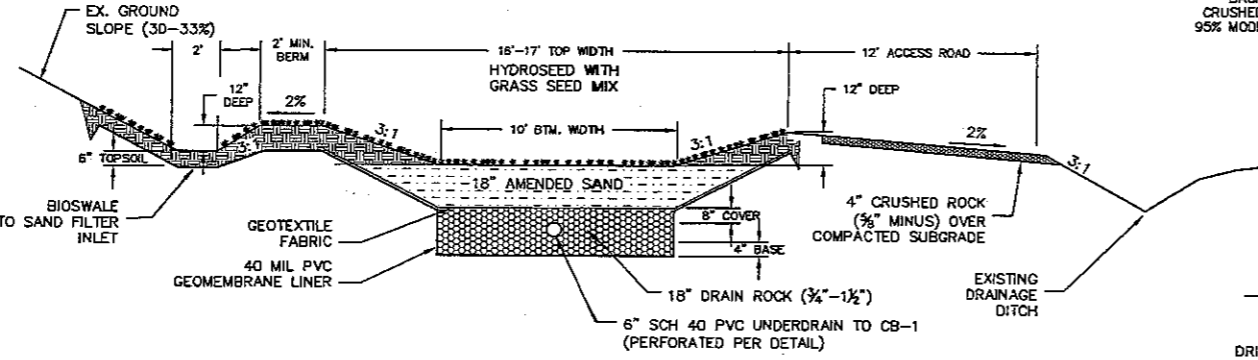
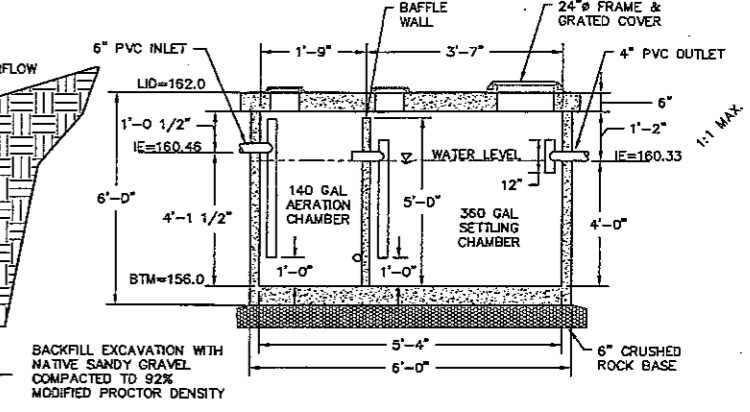
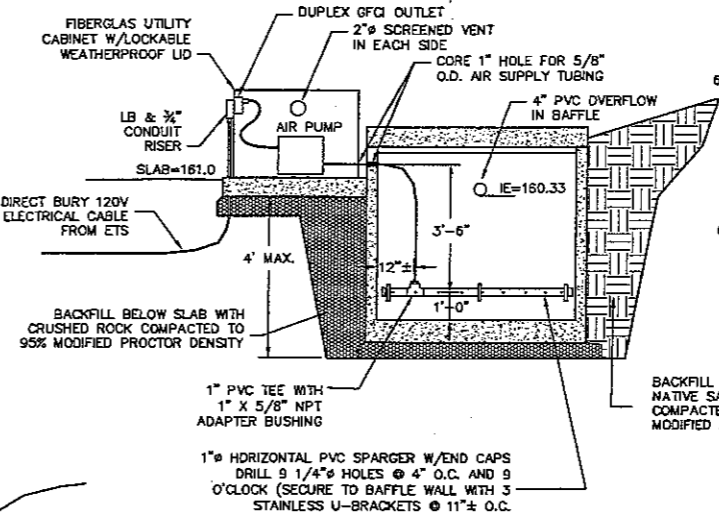
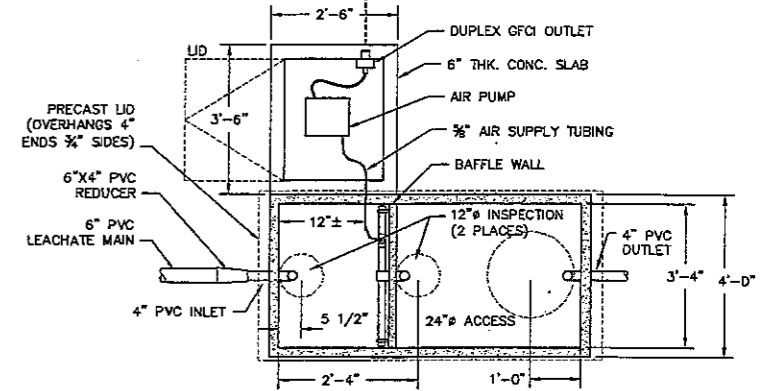
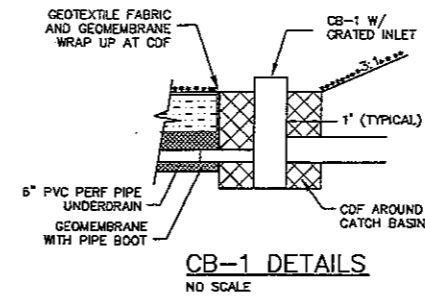
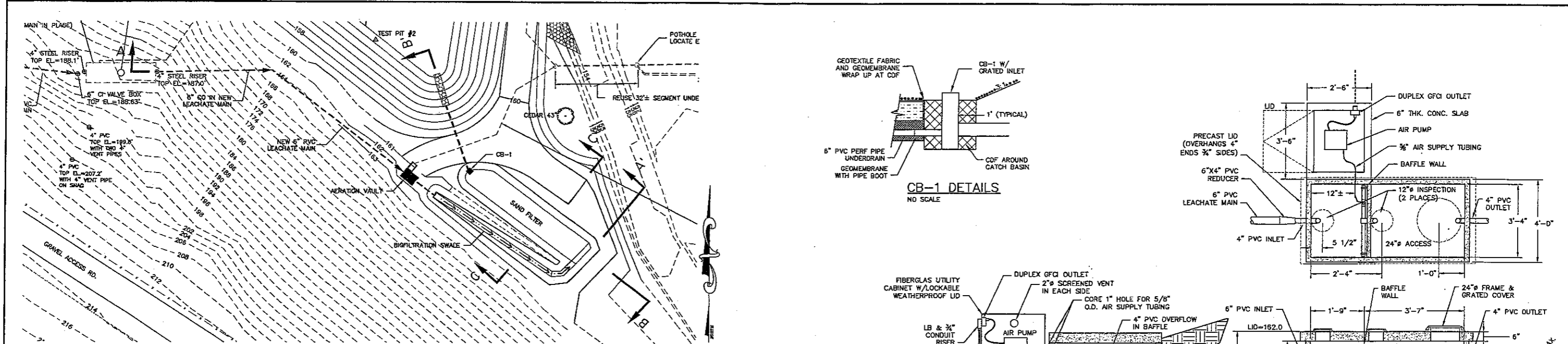
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CHECKED BY: TEB

WHATCOM COUNTY PUBLIC WORKS
322 N. COMMERCIAL ST., SUITE 210
BELLINGHAM, WA 98225

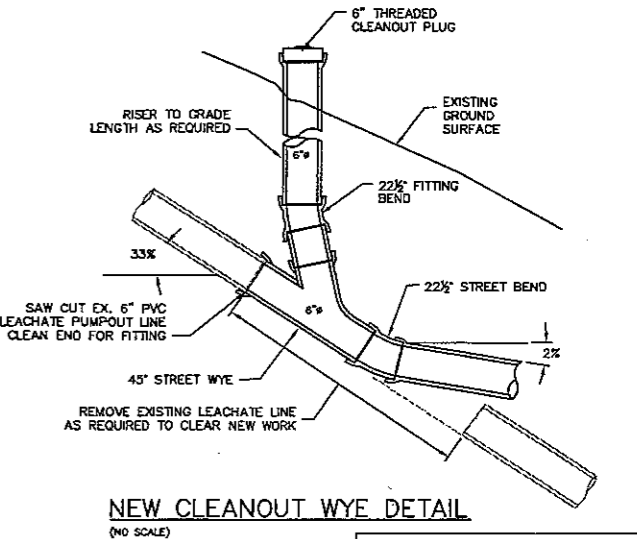
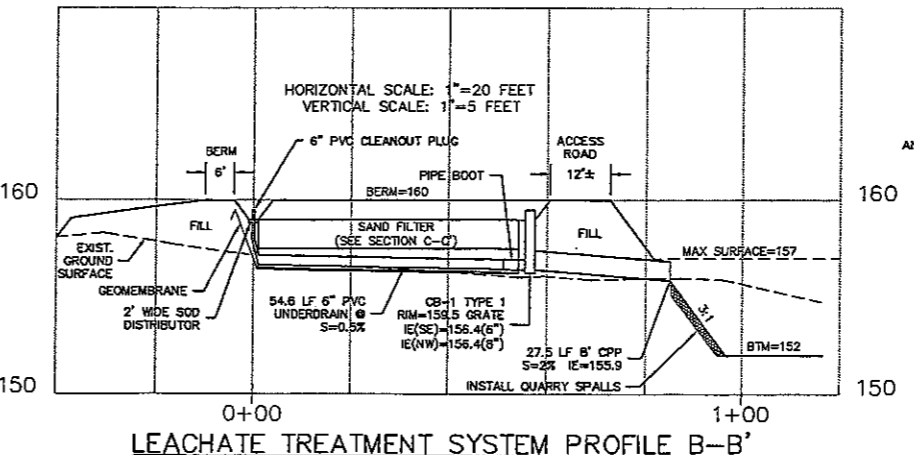
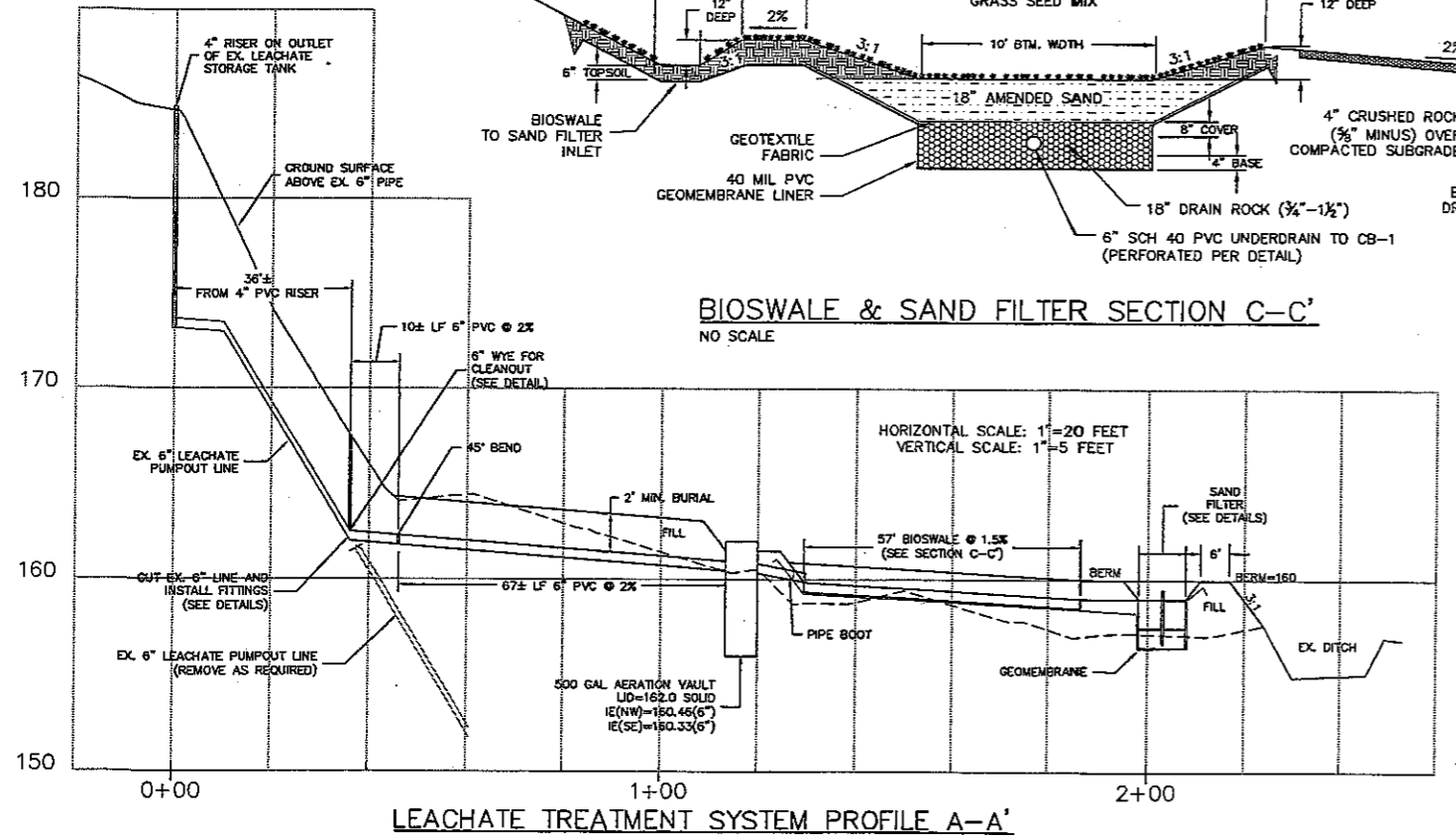
TESC PLAN
CEDARVILLE LANDFILL
WHATCOM COUNTY, WASHINGTON

DRAWING: C-4
SHEET: 4 OF 9

DATE: JUNE 2011 SCALE: H: 1"=30' V: N/A



DRAFT



CALL 48 HOURS BEFORE YOU DIG
1-800-424-5555

NO.	REVISION	BY	DATE

BENNETT ENGINEERING, LLC

CIVIL ENVIRONMENTAL
2000 FRANKLIN ST. SUITE 101
BELLINGHAM, WA 98225
Ph: (360) 671-2600
Fax: (360) 671-0122

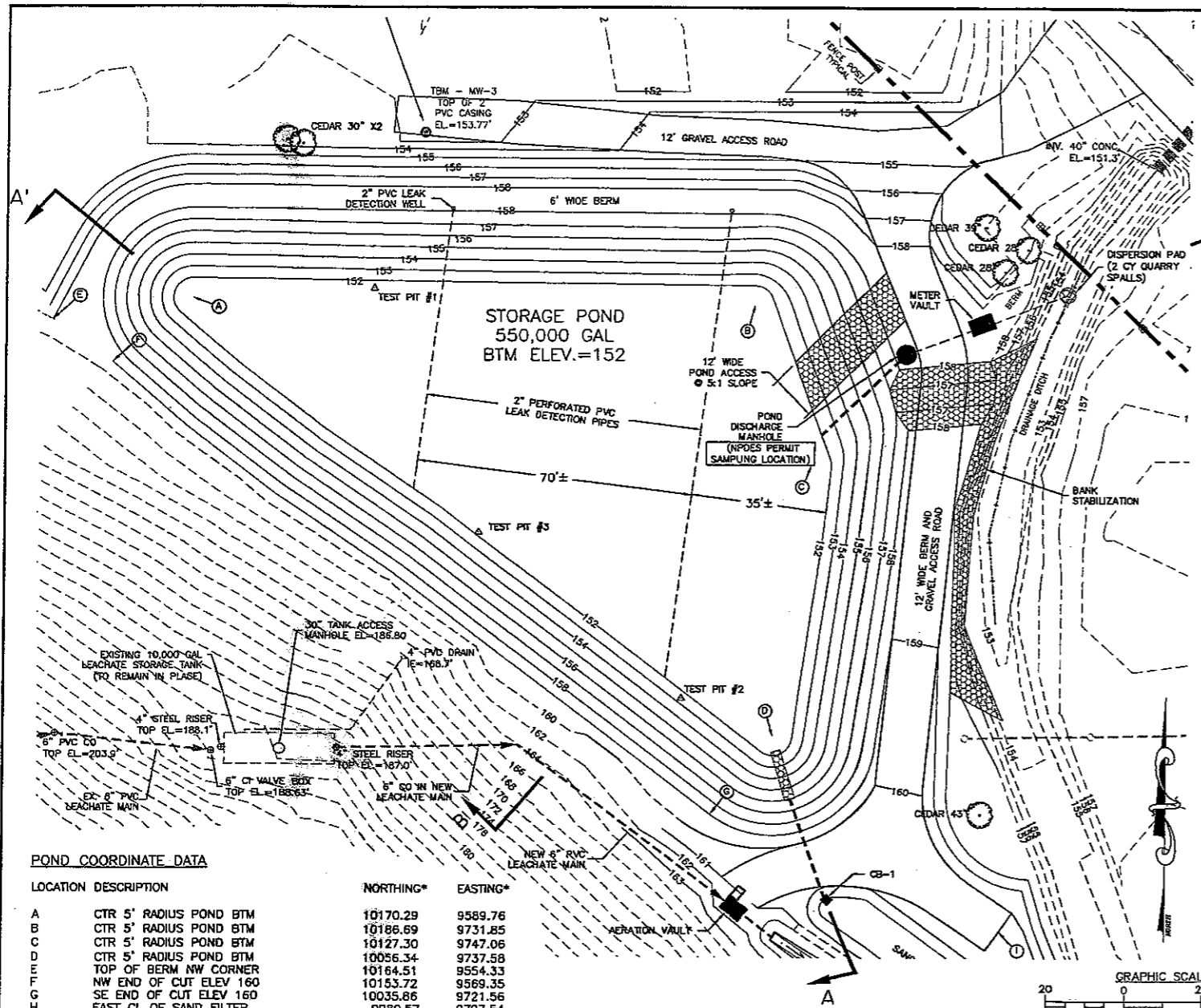
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DWG. NAME: 11003-05-TREATMENT
DESIGNED BY: NCS
DRAWN BY: NCS
CHECKED BY: TEB

WHATCOM COUNTY PUBLIC WORKS
322 N. COMMERCIAL ST., SUITE 210
BELLINGHAM, WA 98225

TREATMENT SYSTEM PLAN & SECTIONS
CEDARVILLE LANDFILL
WHATCOM COUNTY, WASHINGTON

DATE: MAY 2011 SCALE: H: 1" = 20' V: 1" = 5'

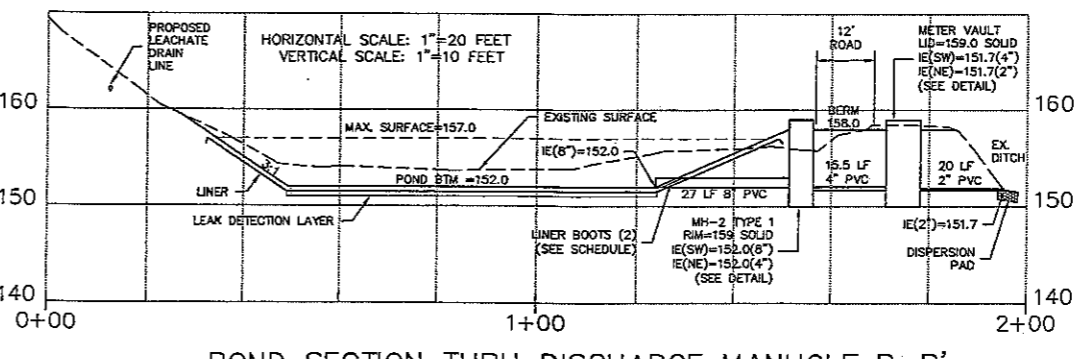
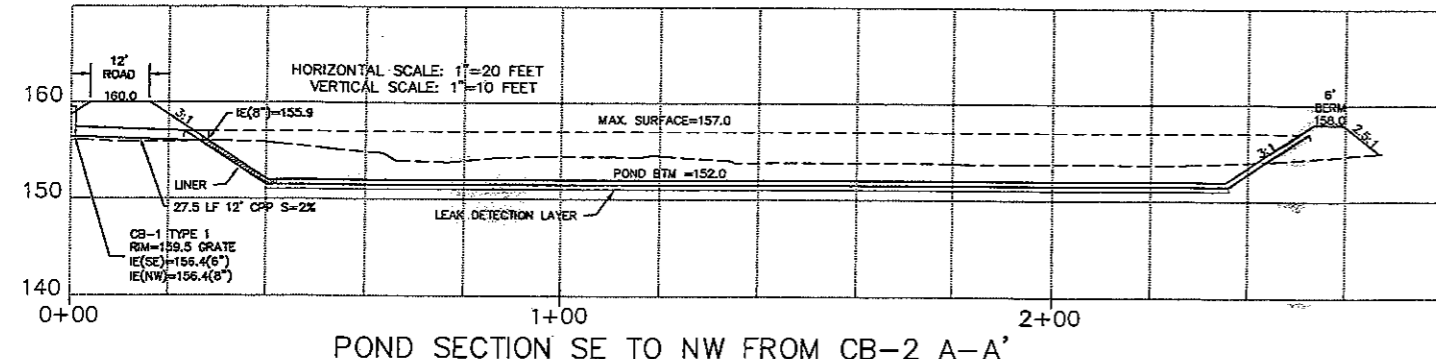
DRAWING: C-5
SHEET: 5 OF 9



POND COORDINATE DATA

LOCATION DESCRIPTION	NORTHING*	EASTING*
A CTR 5' RADIUS POND BTM	10170.29	9589.76
B CTR 5' RADIUS POND BTM	10186.69	9731.85
C CTR 5' RADIUS POND BTM	10127.30	9747.06
D CTR 5' RADIUS POND BTM	10056.34	9737.58
E TOP OF BERM NW CORNER	10164.51	9554.33
F NW END OF CUT ELEV 160	10153.72	9569.35
G SE END OF CUT ELEV 160	10035.86	9721.56
H EAST CL OF SAND FILTER	9980.57	9797.54
I CL EAST END OF TURNAROUND	10005.41	9785.43
AERATION VAULT	10011.09	9728.05
CB-1	10013.57	9752.08
DISCHARGE MANHOLE	10156.15	9770.53
METER VAULT	10163.93	9789.63

* COORDINATES 10000, 10000 SET AT PROPERTY CORNER SOUTH OF PAVED ACCESS ROAD



LINER BOOT SCHEDULE

FROM	TO LOCATION	DIAMETER
AERATION VAULT	BIOFILTRATION SWALE	4"
SAND FILTER	CB-1	6"
CB-1	POND	8"
POND	DISCHARGE MANHOLE	8" (2 REQ'D)
POND	LEAK DETECTION WELLS	2" (2 REQ'D)

CALL 48 HOURS BEFORE YOU DIG
1-800-424-5555

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NO.	REVISION	BY	DATE
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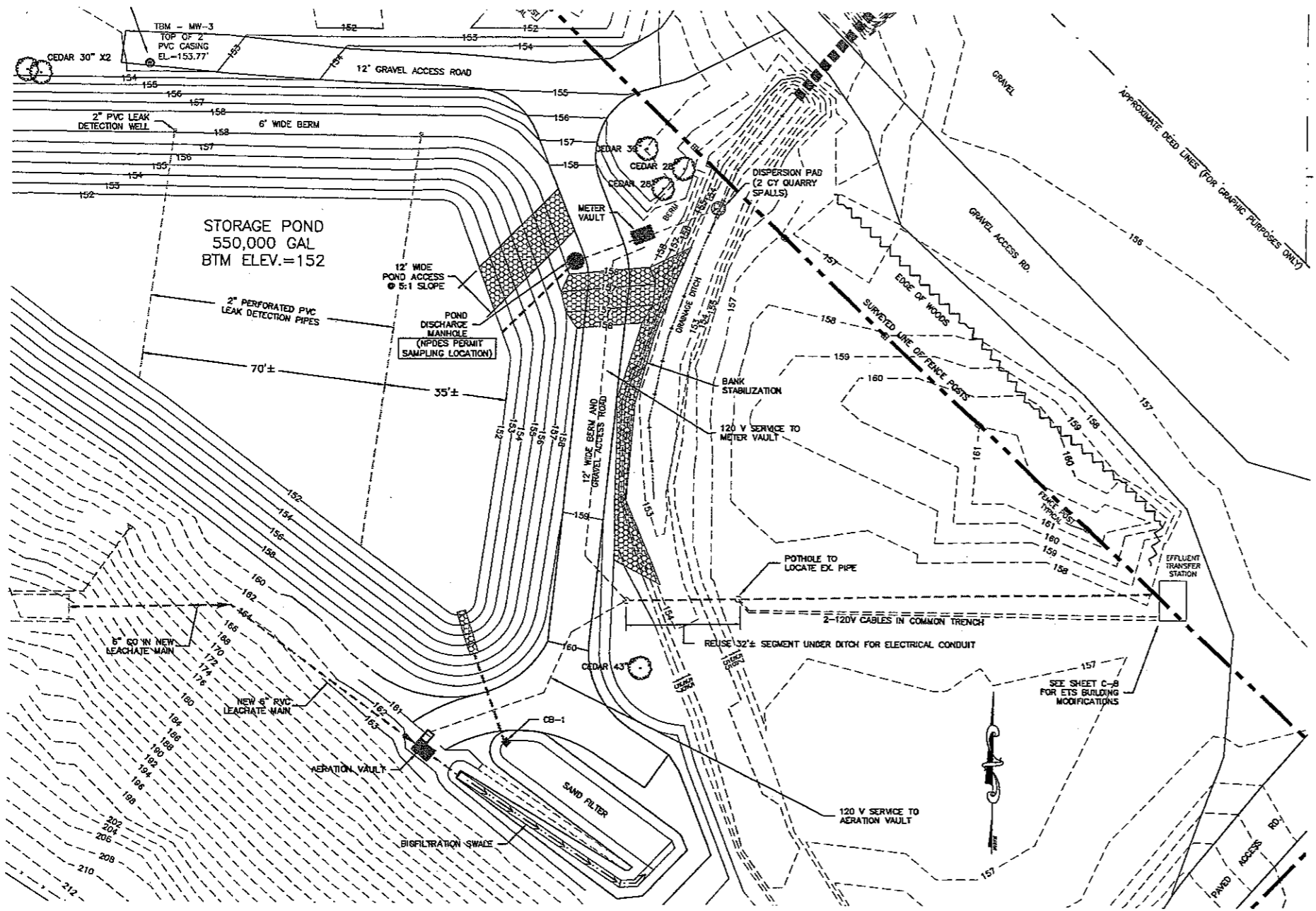
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DWG. NAME: I1003-06-POND
DESIGNED BY: NCS
DRAWN BY: NCS
CHECKED BY: TEB

WHATCOM COUNTY PUBLIC WORKS
322 N. COMMERCIAL ST., SUITE 210
BELLINGHAM, WA 98225

STORAGE POND SECTIONS & DETAILS
CEDARVILLE LANDFILL
WHATCOM COUNTY, WASHINGTON

DRAWING: C-6
SHEET: 6 OF 9

DATE: JUNE 2011
SCALE: H: 1"=20' V: 1"=10'



ELECTRICAL NOTES

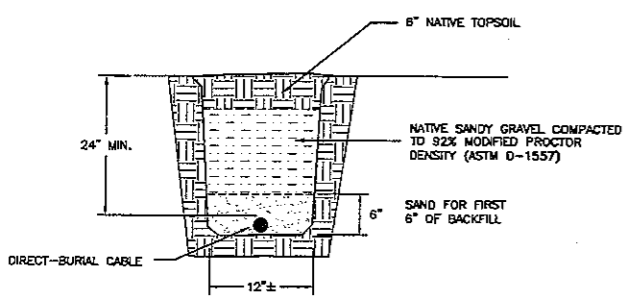
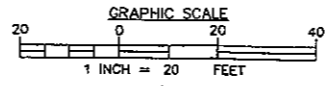
- ALL WORK SHALL MEET OR EXCEED THE REQUIREMENTS OF THE WASHINGTON ADMINISTRATIVE CODE, THE NATIONAL ELECTRIC SAFETY CODE, AND DEPT. OF LABOR AND INDUSTRY (L&I) STANDARDS. LOCAL REQUIREMENTS MAY BE MORE STRINGENT, AND IN THOSE CASES THEY SHALL TAKE PRECEDENCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ELECTRICAL PERMITS.
- ALL ELECTRICAL INSTALLATION SHALL BE COMPLETED BY A LICENSED ELECTRICIAN IN THE STATE OF WASHINGTON. NO WORK SHALL BE BACKFILLED, COVERED, OR CONCEALED UNTIL IT HAS BEEN INSPECTED AND APPROVED IN ACCORDANCE WITH THE REQUIREMENTS OF THE ELECTRICAL PERMIT. L&I SHALL ASSIGN AN INSPECTOR TO OVERSEE THE INSTALLATION OF NEW EQUIPMENT. NO WORK SHALL BE COVERED OR CONCEALED UNTIL IT HAS BEEN INSPECTED AND APPROVED BY THE L&I INSPECTOR.
- PRIMARY ELECTRICAL SERVICE HAS BEEN PREVIOUSLY EXTENDED TO THE ETS BUILDING. THE EXISTING ELECTRICAL COMPONENTS IN THE BUILDING GENERALLY CONSIST OF A METER BOX, BREAKER PANEL, AND A 240-VOLT DISCONNECT. THE COMPONENTS ARE MOUNTED TO A STAND-ALONE STEEL FRAME, WHICH IS FOUNDED IN THE FLOOR OF THE BUILDING. THE METER BOX SHALL BE MAINTAINED FOR USE IN THE CURRENT PROJECT; OTHERWISE ALL EXISTING COMPONENTS SHALL BE REMOVED. THE LOCAL UTILITY SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING THE NEW METER AND ENERGIZING THE PRIMARY SERVICE.
- NEW ELECTRICAL IMPROVEMENTS WITHIN THE ETS BUILDING SHALL CONSIST OF A WALL MOUNTED LIGHT FIXTURE, LIGHT SWITCH, AND 2-PLUG GFCI OUTLET. ALL WIRING RUNS SHALL BE INSTALLED IN WALL MOUNTED CONDUIT.
- SEPARATE 120-VOLT SECONDARY SERVICES SHALL BE EXTENDED FROM ETS BUILDING TO THE AERATION AND METER VAULTS, RESPECTIVELY. THE SERVICES SHALL CONSIST OF DIRECT BURIAL CABLES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EXCAVATION OF THE UTILITY TRENCHES, PROVIDING AND INSTALLING ALL ELECTRICAL CABLE AND COMPONENTS, PLACEMENT AND COMPACTION OF TRENCH BACKFILL, FINAL RESTORATION, AND TESTING, AS SPECIFIED IN THESE PLANS.
- ALL EXCAVATIONS SHALL BE SMOOTH, LEVEL AND FREE FROM ROCKS (>2-INCH DIAMETER), OBSTRUCTIONS, SHARP OBJECTS, GARBAGE, AND CONSTRUCTION DEBRIS. ACCUMULATED WATER SHALL BE REMOVED FROM THE EXCAVATIONS BY PUMPING OR DRAINING PRIOR TO INSTALLATION OF ELECTRICAL FACILITIES.
- BACKFILLING SHALL BE PERFORMED BY THE CONTRACTOR AS SOON AS PRACTICAL AFTER FACILITIES ARE PLACED AND INSPECTED. SIX INCHES OF SAND BEDDING SHALL BE PLACED OVER THE CABLE. THE NATIVE SANDY GRAVEL SOIL ENCOUNTERED AT THE SITE IS GENERALLY ACCEPTABLE FOR BACKFILL OVER THE SAND BEDDING. ALL BACKFILL SHALL BE PLACED IN 6" TO 12" LOOSE LIFTS AND COMPACTED TO 92% MODIFIED PROCTOR DENSITY (ASTM D-1557). THE GROUND SURFACE SHALL BE RE-ESTABLISHED WITH 6 INCHES OF TOPSOIL AND HYDROSEEDING, EXCEPT WHERE CRUSHED ROCK SURFACING IS SPECIFIED WITHIN THE POND BERM SECTION.
- IF PRACTICABLE, THE SEGMENT OF THE EXISTING 6-INCH LEACHATE MAIN LOCATED UNDER THE DRAINAGE DITCH SHALL BE USED AS A CONDUIT FOR THE SECONDARY SERVICES. THE APPROXIMATE DEPTH OF THE PIPING IS 5 FEET. THE CONTRACTOR SHALL LOCATE AND EXPOSE THE EAST AND WEST ENDS OF THE PIPE SEGMENT TO VERIFY ITS CONDITION AND TO CLEAR ANY OBSTRUCTIONS, IF PRESENT, PRIOR TO PULLING THE CABLES.
- THE ELECTRICAL SERVICE AT THE AERATION VAULT SHALL CONSIST OF A 2-PLUG GFCI OUTLET INSTALLED IN THE UTILITY CABINET LOCATED NEXT TO THE VAULT. THE AIR PUMP SHALL ALSO BE MOUNTED IN THE CABINET AND SHALL PLUG INTO THE OUTLET.
- THE ELECTRICAL SERVICE AT THE METER VAULT SHALL CONSIST OF A 2-PLUG GFCI OUTLET INSTALLED WITHIN THE UPPER 12 INCHES OF THE INTERIOR WALL OF THE VAULT. THE SUMP PUMP MOUNTED IN THE VAULT SHALL PLUG INTO THE OUTLET.

ELECTRICAL COMPONENT REQUIREMENTS

LOCATION	COMPONENT	NUMBER	HP	VOLTS	AMPS
ETS	GFCI DUPLEX UTILITY OUTLET	1	N/A	120	20
	NEW 50 AMP SUBPANEL	1	N/A	120	50
	CEILING LIGHT	1	N/A	120	15
	WALL SWITCH	1	N/A	120	15
METER VAULT	GFCI DUPLEX UTILITY OUTLET	1	N/A	120	20
	SUMP PUMP	1	0.2	120	20
AERATION VAULT	GFCI DUPLEX UTILITY OUTLET	1	N/A	120	20
	AIR COMPRESSOR	1	0.3	120	20

UNDERGROUND CABLE RUNS

FROM	TO	APPROX. LENGTH(ft)	VOLTAGE	AMPERAGE
NEW PANEL IN ETS	AERATION VAULT	240	120	20
NEW PANEL IN ETS	DISCHARGE METER VAULT	280	120	20



TYPICAL POWER TRENCH (SEE NOTE 7)
NO SCALE

DRAFT

CALL 48 HOURS BEFORE YOU DIG
1-800-424-5555

NO.	REVISION	BY	DATE
0			
1			
2			
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4			

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JOB NO.: 11003
DWG. NAME: 11003-07-ELECTRICAL
DESIGNED BY: NCS
DRAWN BY: NCS
CHECKED BY: TEB

WHATCOM COUNTY PUBLIC WORKS
322 N. COMMERCIAL ST., SUITE 210
BELLINGHAM, WA 98225

ELECTRICAL PLAN
CEDARVILLE LANDFILL
WHATCOM COUNTY, WASHINGTON

DATE: JUNE 2011 SCALE: H: 1"=20' V: N/A

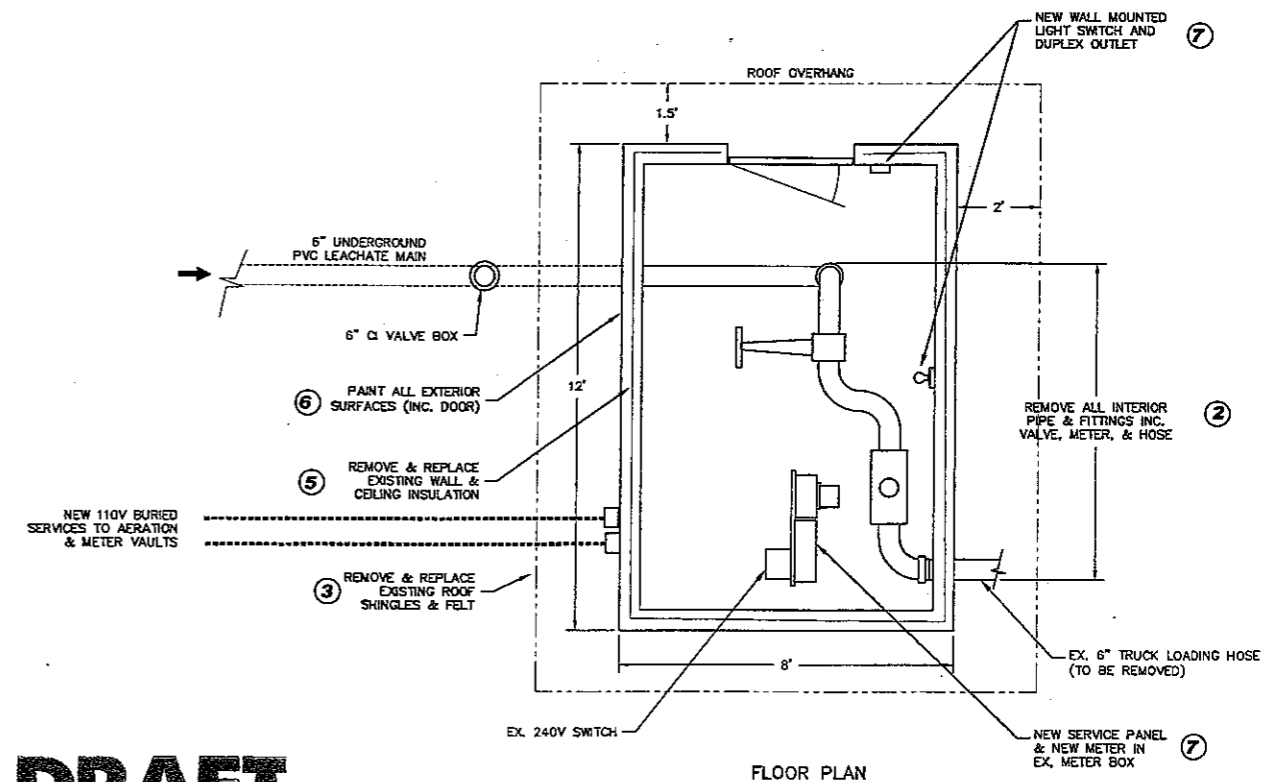
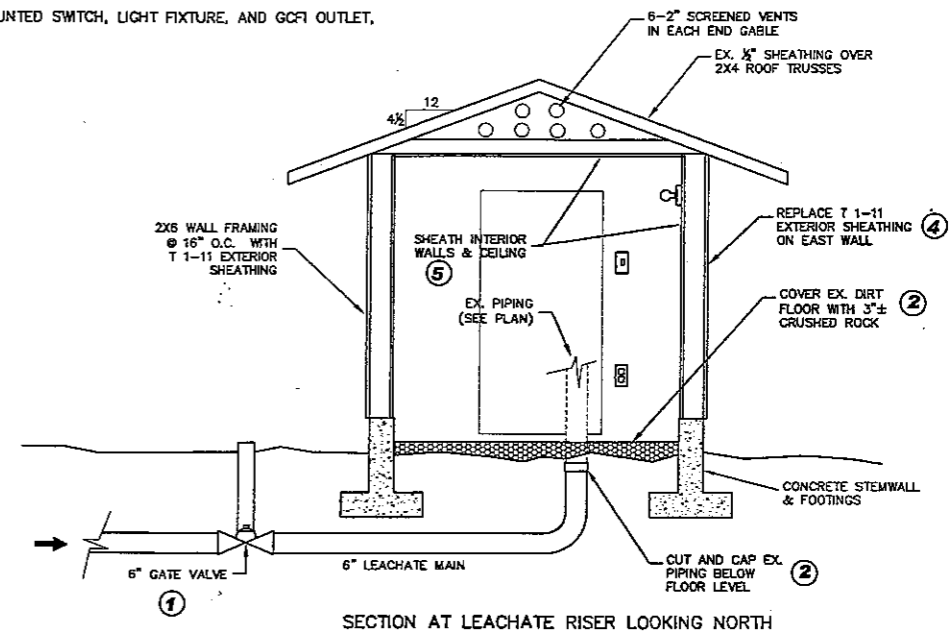
DRAWING: C-7
SHEET: 7 of 9

BUILDING REPAIR NOTES

1. THE GENERAL SCOPE OF THE REPAIR WORK FOR THE EXISTING EFFLUENT TRANSFER STATION BUILDING INCLUDES REMOVAL AND DISPOSAL OF THE LEACHATE PIPING, FITTINGS, VALVES, AND METER; REMOVAL AND REPLACEMENT OF THE ASPHALT SHINGLE ROOFING, THE EXTERIOR SHEETING ON THE EAST WALL OF THE BUILDING, AND THE WALL INSULATION; INSTALLATION OF NEW SHEATHING ON THE INTERIOR WALLS AND CEILING; AND PAINTING THE EXTERIOR WALLS AND DOOR. ELECTRICAL SYSTEM IMPROVEMENTS IN THE BUILDING ARE ADDRESSED SEPARATELY ON SHEET C-7.
2. ALL WORK AND MATERIALS SHALL CONFORM TO THE MINIMUM PROVISIONS OF THE IBC 2006 AND THE REQUIREMENTS OF THE WHATCOM COUNTY BUILDING OFFICIAL.
3. THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER FOR RESOLUTION OF ANY CONFLICTS ARE ENCOUNTERED BETWEEN THE CONSTRUCTION DETAILS AND THE EXISTING STRUCTURE.
4. STRUCTURAL INSPECTION SHALL BE PERFORMED FROM TIME TO TIME BY THE PROJECT ENGINEER. AT A MINIMUM, THE CONTRACTOR SHALL CALL FOR INSPECTIONS AT THE FOLLOWING POINTS: (1) FOLLOWING REMOVAL OF THE EXISTING ROOFING, EXTERIOR SIDING, AND WALL INSULATION TO ASSESS THE CONDITION OF THE EXISTING STRUCTURAL ELEMENTS; (2) FOLLOWING INSTALLATION OF THE NEW ROOFING, EXTERIOR SIDING, AND WALL INSULATION; (3) FOLLOWING INSTALLATION OF THE INTERIOR SHEATHING; AND (4) FOLLOWING EXTERIOR PAINTING.
5. ROOFING MATERIALS: ROOFING SHALL BE 275 #/SQUARE, THREE-TAB SHINGLES, OVER 15# FELT OVER THE EXISTING ROOF SHEATHING. INSTALL ROOFING MATERIALS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
6. WOOD MATERIALS: WOOD STUDS, SILLS, BLOCKING, PLATES (IF REQUIRED) - HEM FIR #2; EXTERIOR WALL SIDING - 1/2" MINIMUM T1-11 SIDING; INTERIOR WALL SHEATHING - 7/16" APA RATED OSB (BLOCK ALL EDGES); ROOF SHEATHING (IF REQUIRED) - 15/32" APA RATED PLYWOOD.
7. CONNECTORS: ALL NAILS SHALL BE 8d GALVANIZED BOX NAILS.
8. SHEATHING: INSTALL ROOF/CEILING SHEATHING WITH THE LONG DIMENSION PERPENDICULAR TO THE ROOF/CEILING JOISTS. INSTALL INTERIOR AND EXTERIOR WALL SHEATHING IN AN UP-RIGHT ORIENTATION. USE THE FOLLOWING NAIL PATTERN WITH ALL SHEATHING - EDGES AT 6" MINIMUM O.C. AND FIELD AT 12" MINIMUM O.C. BLOCK ALL INTERIOR PANEL EDGES. CAULK ALL EXTERIOR PANEL JOINTS WITH EXTERIOR GRADE PAINTABLE CAULKING.
9. WALL AND CEILING INSULATION: R-11 BATT INSULATION.
10. PAINT: THE NEW SECTION OF EXTERIOR SIDING (EAST WALL) SHALL BE PRIMED WITH ONE COAT OF AN ALKYD EXTERIOR OIL-BASED WOOD PRIMER. THE EXISTING NORTH, SOUTH, AND WEST WALLS AND DOOR SURFACE SHALL BE THOROUGHLY CLEANED USING TRISODIUM PHOSPHATE IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS. THE ENTIRE BUILDING EXTERIOR SHALL THEN BE PAINTED WITH TWO COATS OF 100% ACRYLIC LATEX (SHEARWIN-WILLIAMS SUPERPAINT, OR EQUIVALENT). PAINT COLOR SHALL BE BEIGE OR OTHER COLOR APPROVED BY THE WCPWD.

BUILDING WORK ITEMS

1. CLOSE 6-INCH GATE VALVE LOCATED WEST OF THE BUILDING.
2. REMOVE AND DISPOSE OF THE EXISTING 6-INCH LEACHATE PIPING, METER, AND FITTINGS LOCATED WITHIN THE BUILDING. CAP 6-INCH PIPING AT FLOOR LEVEL. PLACE AND GRADE 3 INCHES OF NEW CRUSHED ROCK ON BUILDING FLOOR.
3. REMOVE AND DISPOSE OF THE EXISTING ASPHALT SHINGLE ROOFING. INSTALL NEW ROOFING FELT AND ASPHALT SHINGLES (APPROX 12'10" X 15' ROOF SURFACE).
4. REMOVE AND DISPOSE OF THE EXTERIOR SIDING ON THE EAST WALL OF THE BUILDING. INSTALL NEW T1-11 SIDING (APPROX 76" X 144").
5. REMOVE AND DISPOSE OF THE EXISTING WALL AND CEILING INSULATION. INSTALL NEW INSULATION. INSTALL NEW SHEATHING ON THE INTERIOR WALLS AND CEILING.
6. PAINT THE EXTERIOR WALLS AND DOOR.
7. INSTALL ELECTRICAL SYSTEM IMPROVEMENTS IN THE BUILDING, INCLUDING A WALL MOUNTED SWITCH, LIGHT FIXTURE, AND GCFI OUTLET, AS SHOWN.



DRAFT

ETS BUILDING MODIFICATIONS
NO SCALE

NO.	REVISION	BY	DATE

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DWG. NAME:	I1003-08-DETAILS
DESIGNED BY:	NCS
DRAWN BY:	NCS
CHECKED BY:	TEB

WHATCOM COUNTY PUBLIC WORKS
322 N. COMMERCIAL ST., SUITE 210
BELLINGHAM, WA 98225

DATE:	JUNE 2011	SCALE:	H: N/A	V: N/A
DRAWING:	C-8	SHEET:	8 OF 9	

GENERAL

- ALL WORK AND MATERIALS SHALL CONFORM TO CURRENT EDITIONS OF THE STANDARD PLANS AND SPECIFICATIONS OF THE WASHINGTON DEPARTMENT OF TRANSPORTATION (WDOT), AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM), WHATCOM COUNTY DEVELOPMENT STANDARDS, AND AMENDMENTS TO THESE SPECIFICATIONS AS CONTAINED HEREIN. IN CASE OF A CONFLICT BETWEEN THE REGULATORY STANDARDS OR SPECIFICATIONS, THE MORE STRINGENT SHALL APPLY.
- PRIOR TO COMMENCEMENT OF SITE WORK, A PRE-CONSTRUCTION CONFERENCE SHALL BE CONDUCTED BETWEEN THE CONTRACTOR, WHATCOM COUNTY PUBLIC WORKS DEPARTMENT (WCPWD), WHATCOM COUNTY HEALTH DEPARTMENT (WCHD), DEPARTMENT OF ECOLOGY (ECOLGY), AND PROJECT ENGINEER. THE MEETING SHALL BE SCHEDULED A MINIMUM OF FIVE WORKING DAYS PRIOR TO THE START OF WORK.
- EXISTING UNDERGROUND UTILITIES ARE PRESENT WITHIN THE AREA OF CONSTRUCTION. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO IDENTIFY UTILITY LOCATIONS IN THE FIELD AND MAINTAIN THE INTEGRITY OF THE UTILITIES THROUGHOUT CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER (THOMAS E. BENNETT, P.E., 360-671-2600) PROMPTLY OF ANY CONFLICT WITH EXISTING UTILITIES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE SAFEGUARDS, BARRIERS, SAFETY DEVICES, PROTECTIVE EQUIPMENT, FLAGGERS, AND ANY OTHER NEEDED ACTIONS TO PROTECT THE LIFE, HEALTH AND SAFETY OF THE PUBLIC AND PROPERTY IN CONNECTION WITH PERFORMANCE OF THE WORK.
- THE CEDARVILLE LANDFILL IS A MUNICIPAL LANDFILL THAT WAS CLOSED IN 1993. LEACHATE FLOW FROM THE LANDFILL WILL BE SHUTOFF AT THE EX. 6-INCH GATE VALVE IN THE LEACHATE MAIN DURING THE PROJECT. THE PROJECT ENGINEER SHALL PREPARE A SITE SPECIFIC HEALTH AND SAFETY PLAN FOR THE PROJECT. ALL WORKERS AND OPERATORS THAT ENTER THE SITE SHALL READ AND SIGN THE HEALTH AND SAFETY PLAN. WORKERS THAT ARE POTENTIALLY EXPOSED TO THE LEACHATE OR CONFINED SPACES SHALL HAVE A MINIMUM OF 24 HOURS OF HEALTH AND SAFETY TRAINING FOR HAZARDOUS WASTE SITES IN ACCORDANCE WITH 29 CFR 1910.12D AND WAC 296-62-3040.
- THE CONTRACTOR SHALL KEEP A SET OF APPROVED CONSTRUCTION DRAWINGS AT THE PROJECT SITE. THE CONTRACTOR SHALL COLLECT AS-BUILT DATA, INCLUDING THE LOCATION AND ELEVATION OF ALL UNDERGROUND STRUCTURES, PIPING, LINERS, ETC. PROPOSED FIELD CHANGES SHALL BE SUBMITTED TO THE WCPWD AND PROJECT ENGINEER FOR REVIEW AND APPROVAL UPON COMPLETION OF THE WORK. THE CONTRACTOR SHALL SUBMIT AS-BUILT DRAWINGS TO THE PROJECT ENGINEER FOR USE IN PREPARATION OF RECORD DRAWINGS.
- THE CONTRACTOR SHALL LAY OUT AND SET ANY CONSTRUCTION STAKING AND MARKS NEEDED TO ESTABLISH THE LINES, GRADES, SLOPES, AND CROSS-SECTIONS SHOWN ON THESE PLANS. HORIZONTAL AND VERTICAL SURVEY CONTROL POINTS ARE PROVIDED ON SHEET C-2.
- THROUGHOUT CONSTRUCTION, THE CONTRACTOR SHALL COMPLY WITH ALL COUNTY AND STATE PERMITS AND APPLICABLE CODES.

EARTHWORK

- THE CONTRACTOR SHALL MEET AT THE PROJECT SITE WITH THE WCPWD AND PROJECT ENGINEER TO ESTABLISH SOIL AND MATERIAL STOCKPILE AREAS, SITE ACCESS, HAUL ROADS, CLEARING LIMITS, LEACHATE MAIN VALVE LOCATION, ETC.
- THE CONTRACTOR SHALL CLEAR, GRUB, AND DISPOSE OF ALL TREES, STUMPS, BRUSH, AND OTHER VEGETATION WITHIN THE CLEARING LIMITS SHOWN ON SHEET C-4.
- THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, UTILITY PIPING, FENCING, AND OTHER OBSTRUCTIONS THAT LIE WITHIN THE PROJECT LIMITS.
- THE CONTRACTOR SHALL EXCAVATE AND GRADE TO THE ALIGNMENT, GRADE, AND CROSS-SECTIONS SHOWN IN THE PLANS. TOPSOIL AND UNDERLYING NATIVE SANDY GRAVEL SOILS SHALL BE STOCKPILED IN DESIGNATED AREAS. REUSE OF THE TOPSOIL AND NATIVE SOIL MATERIALS SHALL BE REVIEWED AND APPROVED BY THE PROJECT ENGINEER. EXCESS SOIL MATERIALS SHALL BE UNIFORMLY GRADED SMOOTH IN THE STOCKPILE AREA AND STABILIZED AT THE END OF THE PROJECT.
- THE SUBGRADE BELOW THE GEOMEMBRANE LINER SHALL CONSIST OF DENSE, UNYIELDING NATIVE SANDY GRAVEL. IN CUT SECTIONS, THE NATIVE SOIL MAY BE EXCAVATED TO SUBGRADE ELEVATION AND PROOF-ROLLED. IN THE POND BERMS AND OTHER FILL SECTIONS, THE NATIVE SOIL AND ALL CRUSHED ROCK MATERIAL SHALL BE PLACED IN 8" TO 10" LOOSE HORIZONTAL LIFTS AND COMPACTED TO 95% MODIFIED PROCTOR DENSITY, BASED ON THE ASTM D-1557 TEST METHOD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL IN-PLACE COMPACTION TESTING IN ACCORDANCE WITH THE FOLLOWING TABLE.
- PRIOR TO LINER PLACEMENT, THE FINAL SUBGRADE SHALL BE PREPARED AND COMPACTED IN ACCORDANCE WITH THE LINER MANUFACTURER'S RECOMMENDATIONS. THE SUBGRADE SHALL BE SMOOTHLY GRADED WITH NO ABRUPT CHANGES OR BREAK IN GRADE. THE FINAL SURFACE SHALL BE FREE OF LOOSE SOIL, ROCKS, ROOTS, AND OTHER SHARP OBJECTS OR DEBRIS. NO STANDING WATER OR EXCESSIVE SOIL MOISTURE CONTENT SHALL BE ALLOWED DURING LINER PLACEMENT.
- THE LEAK DETECTION SYSTEM SHALL BE INSTALLED IN THE BOTTOM OF THE POND OVER THE LOWER GEOMEMBRANE LINER. THE SYSTEM SHALL CONSIST OF A PERFORATED PIPE INSTALLED IN A 12-INCH SAND LAYER, AS SHOWN ON SHEET C-6. THE UPPER POND LINER SHALL BE PLACED OVER SAND LAYER.
- A MINIMUM OF 12 INCHES OF TOPSOIL SHALL BE INSTALLED OVER THE UPPER POND LINER. A MINIMUM OF 6 INCHES OF TOPSOIL SHALL BE INSTALLED OVER ALL OTHER DISTURBED SOILS IN NON-TRAFFIC AND STOCKPILE AREAS. TOPSOIL SHALL NOT BE PLACED WHEN THE GROUND IS EXCESSIVELY WET, OR IN THE OPINION OF THE PROJECT ENGINEER, IN A CONDITION DETRIMENTAL TO THE WORK. THE TOPSOIL SHALL BE GRADED TO ESTABLISH A UNIFORM GRADE, TRACKED PARALLEL TO THE SLOPE, AND HYDROSEEDED.
- PERMANENT ACCESS ROADS SHALL BE SURFACED WITH A MINIMUM OF 4 INCHES OF COMPACTED CRUSHED ROCK (5/8-INCH MINUS) OVER COMPACTED NATIVE SANDY GRAVEL.
- COMPACTION TESTING SHALL BE PERFORMED BY WABO-CERTIFIED PERSONNEL. MODIFIED PROCTOR DENSITY TESTING SHALL BE PERFORMED ON REPRESENTATIVE SAMPLES OF THE NATIVE SANDY GRAVEL AND IMPORTED CRUSHED ROCK MATERIALS. DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR IN-PLACE COMPACTION TESTING IN ACCORDANCE WITH THE FOLLOWING TABLE:

WORK ITEM	TESTING FREQUENCY	CRITERIA
PIPE TRENCH BACKFILL	1 TEST/PIPE RUN	92% MODIFIED PROCTOR
ELECTRICAL TRENCH BACKFILL	3 TESTS TOTAL	92% MODIFIED PROCTOR
CRUSHED ROCK BENEATH VAULTS	1 TEST PER STRUCTURE	95% MODIFIED PROCTOR
POND BOTTOM AREA	3 TESTS TOTAL	95% MODIFIED PROCTOR
POND BERMS	2 TESTS PER LIFT	95% MODIFIED PROCTOR

PIPING AND FITTINGS

- ALL BURIED PIPING AND FITTINGS SHALL BE LAID ON A PROPERLY PREPARED FOUNDATION IN ACCORDANCE WITH WDOT 7-08.3(1), INCLUDING LEVELING AND COMPACTING THE TRENCH BOTTOM AND PIPE BEDDING TO A UNIFORM GRADE SO THAT THE ENTIRE PIPE IS SUPPORTED BY A DENSE UNYIELDING BASE.
- TRENCHING FOR UNDERGROUND PIPING SHALL EXTEND A MINIMUM 6 INCHES HORIZONTALLY OUTSIDE THE PIPE DIAMETER.
- PIPE BEDDING SHALL CONSIST OF SAND. THE BEDDING SECTION SHALL EXTEND FROM 4 INCHES BELOW THE PIPE TO 6 INCHES ABOVE THE PIPE.
- ALL PIPING SHALL HAVE A MINIMUM OF 24 INCHES COVER AT THE TOP OF THE BELL, OR SHALL HAVE THE MINIMUM COVER SPECIFIED BY THE MANUFACTURER, WHICHEVER IS GREATER. TRENCH BACKFILL MAY CONSIST OF NATIVE SANDY GRAVEL MATERIAL AS APPROVED BY THE PROJECT ENGINEER, COMPACTED TO 92% MODIFIED PROCTOR DENSITY, BASED ON THE ASTM D-1557 TEST METHOD.
- ALL SOLID AND PERFORATED PIPING, ELECTRICAL CONDUIT, AND ASSOCIATED FITTINGS THAT ARE LESS THAN 8 INCHES IN DIAMETER SHALL BE POLYVINYL CHLORIDE (PVC), SCHEDULE 40, MANUFACTURED IN ACCORDANCE WITH ASTM D-1785.
- ALL PIPING THAT IS 8 INCHES OR LARGER IN DIAMETER SHALL BE PVC, SDR 35, CONFORMING TO WDOT 9-05 AND MANUFACTURED IN ACCORDANCE WITH ASTM D-3034.
- PIPE PENETRATIONS AT STRUCTURES SHALL BE GROUTED WITH A NON-SHRINKING MORTAR MIX TO CREATE A WATERTIGHT SEAL.
- THE SLOTTED OUTLET SCREEN INSTALLED IN THE DISCHARGE MANHOLE SHALL BE 10-INCH SCH 40 WITH 0.062-INCH SLOTS ON 90 DEGREE CENTERS AND 0.5-INCH SPACING. THE OUTLET SCREEN SHALL BE INSTALLED WITH A SCH 40 PVC CAP ON TOP, AND A 10" X 10" X 4" PVC TEE AT THE INVERT ELEVATION OF THE 4-INCH OUTLET PIPE. THE BOTTOM OF THE SCREEN SHALL SET ON A CONCRETE BASE AND SHALL BE SECURED TO THE WALL OF THE MANHOLE AT TWO LOCATIONS (SHEET C-5).

MECHANICAL/ELECTRICAL

- LOCATIONS AND LAYOUTS SHOWN FOR NEW MECHANICAL AND ELECTRICAL EQUIPMENT ARE GENERALLY APPROXIMATE, UNLESS DIMENSIONED. ACTUAL LOCATIONS OF EQUIPMENT AND ROUTING OF CONNECTIONS SHALL BE COORDINATED WITH THE PROJECT ENGINEER AND MAY BE AFFECTED BY STRUCTURAL CONDITIONS, PHYSICAL INTERFERENCES, AND THE LOCATION OF TERMINATIONS ON THE EQUIPMENT.
- THE CONTRACTOR SHALL APPLY FOR AND OBTAIN ALL REQUIRED ELECTRICAL PERMITS. THE PERMITS SHALL BE POSTED AT THE PROJECT SITE AND COPIES OF THE PERMIT SHALL BE SUBMITTED TO THE WCPWD AND PROJECT ENGINEER.
- THE CONTRACTOR SHALL COMPLY WITH APPLICABLE LOCAL, STATE, AND FEDERAL CODES AND REGULATIONS AFFECTING MATERIALS AND METHODS OF INSTALLATION OF MECHANICAL/ELECTRICAL SYSTEMS, INCLUDING THE UNIFORM MECHANICAL CODE, UNIFORM PLUMBING CODE, INTERNATIONAL BUILDING CODE, NATIONAL ELECTRICAL SAFETY CODE, AND STATE OF WASHINGTON ELECTRICAL CODE.
- THE CONTRACTOR SHALL SUBMIT SPECIFICATION SHEETS FOR ALL MECHANICAL AND ELECTRICAL EQUIPMENT TO THE PROJECT ENGINEER FOR REVIEW AND APPROVAL. ALL EQUIPMENT SHALL BE NEW, STANDARD EQUIPMENT OF SPECIFIED QUALITY IN FIRST-CLASS CONDITION. ALL EQUIPMENT SHALL BE APPROVED AND LISTED BY UL FOR ITS INTENDED USE.
- INSPECTION AND TESTING: THE PROJECT WILL BE SUBJECT TO CONTINUOUS INSPECTION DURING CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER A MINIMUM OF 48 HOURS PRIOR TO ANY TESTING OF MECHANICAL AND ELECTRICAL EQUIPMENT. ANY DEFICIENCIES OBSERVED DURING TESTING SHALL BE IMMEDIATELY CORRECTED AND THE TESTS REPEATED UNTIL THE SYSTEM IS APPROVED. NO PIPING, EQUIPMENT, OR OTHER PORTIONS OF THE MECHANICAL/ELECTRICAL INSTALLATIONS SHALL BE COVERED OR CONCEALED UNTIL SATISFACTORY TESTS ARE CONDUCTED AND APPROVED BY THE PROJECT ENGINEER.
- THE CONTRACTOR SHALL SUBMIT THREE BOUND SETS OF EQUIPMENT MANUALS AND OPERATING INSTRUCTIONS TO THE PROJECT ENGINEER. THE MANUALS SHALL CONSIST OF COMPLETE DESCRIPTIVE DATA AND DIAGRAMS PERTINENT TO ALL FIXTURES, EQUIPMENT, AND AUTOMATIC CONTROLS. THE MANUALS SHALL INCLUDE A COMPLETE LIST OF REPAIR AND REPLACEMENT PARTS ESSENTIAL FOR MAINTENANCE AND GENERAL SERVICING OF ALL EQUIPMENT.
- FLOW METER: THE FLOW METER SHALL BE 1.5-INCH BADGER TURBO 160 TOTALIZING METERS (OR APPROVED EQUAL) WITH ANALOG DIRECT READINGS IN GALLONS.
- VALVING: ALL VALVING SHALL BE PVC BALL VALVES, EXCEPT FOR THE FLOW CONTROL VALVE, WHICH SHALL BE A BRONZE GLOBE VALVE, OR APPROVED EQUAL.
- AIR PUMP (HAKKO AIR PUMPS MODEL HK40L OR EQUAL): LEACHATE WILL BE MECHANICALLY AERATED ON A CONTINUOUS BASIS IN THE FIRST CHAMBER OF THE AERATION VAULT. THE AIR PUMP SHALL BE UL LISTED FOR EXTERIOR USE AND MEET THE FOLLOWING SPECIFICATIONS: 115 VOLTS, AIR FLOW CAPACITY = 1.5 CFM @ 4 FEET WATER DEPTH, POWER CORD = 10 FEET.
- FIBERGLASS UTILITY CABINET (THOMAS PRODUCTS MODEL DB-2): THE AIR PUMP SHALL BE MOUNTED IN A NEMA-4 RATED FIBERGLASS UTILITY CABINET ADJACENT TO THE VAULT (SHEET C-4). THE ELECTRICAL CORD FOR THE PUMP SHALL PLUG INTO A GFCI OUTLET MOUNTED ON THE INTERIOR WALL OF THE CABINET. THE CABINET SHALL HAVE A HINGED LID WITH A LOCKABLE LATCH. TWO 2-INCH SCREENED VENTS SHALL BE INSTALLED IN OPPOSITE SIDES OF THE CABINET. THE CABINET SHALL BE BOLTED TO A 6-INCH CONCRETE SLAB WITH A MINIMUM OF FOUR 1/2-INCH CONCRETE ANCHORS.
- SUMP PUMP AT METER VAULT (DAYTON MODEL 3YU69): THE SUMP PUMP SHALL BE INSTALLED IN THE 12-INCH SUMP IN THE BASE OF THE METER VAULT (SHEET C-5). THE ELECTRICAL CORD FOR THE PUMP SHALL PLUG INTO A GFCI OUTLET MOUNTED ON THE INTERIOR WALL OF THE VAULT. THE SUMP PUMP SHALL BE UL LISTED FOR EXTERIOR USE AND MEET THE FOLLOWING SPECIFICATIONS: 115 VOLTS, PUMP CAPACITY = 10 GPM @ 10 FEET TDH, POWER CORD = 10 FEET. WATER SHALL BE PUMPED THROUGH A 3/4-INCH FLEXIBLE HOSE TO THE ROCK-LINED OVERFLOW WEIR LOCATED SOUTH OF THE METER VAULT.
- THE STRAINER IN THE METER VAULT SHALL BE A HAYWARD MODEL 4-INCH PVC SOCKET Y-STRAINER, OR EQUAL.

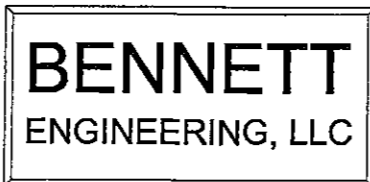
CONSTRUCTION MATERIALS/STRUCTURES

- THE CONTRACTOR SHALL SUBMIT SPECIFICATION SHEETS FOR ALL CONSTRUCTION MATERIALS TO THE PROJECT ENGINEER FOR REVIEW AND APPROVAL. ALL MATERIALS SHALL BE NEW, STANDARD MATERIALS OF SPECIFIED QUALITY IN FIRST-CLASS CONDITION.
- GEOMEMBRANE LINER: THE LINER MATERIAL UNDERLYING THE BIOFILTRATION SWALE, AMENDED SAND FILTER, AND EFFLUENT STORAGE POND SHALL CONSIST OF 40-MIL PVC (LAYFIELD PVC 40, OR EQUAL), WHICH MEETS THE REQUIREMENTS OF ASTM D7176-06, STANDARD SPECIFICATION FOR NON-REINFORCED POLYVINYL CHLORIDE GEOMEMBRANES USED IN BURIED APPLICATIONS. THE LINER MATERIAL, ALL FIELD SEAMS, AND BOOTS AT PIPE PENETRATIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- NON-WOVEN GEOTEXTILE FABRIC: THE GEOTEXTILE SEPARATION FABRIC INSTALLED IN THE BIOFILTRATION SWALE AND AMENDED SAND FILTER SHALL BE LAYFIELD LB8, OR EQUAL, WHICH SHALL CONFORM TO CLASS A, MODERATE SURVIVABILITY SPECIFICATIONS FOUND IN WDOT 9-33.2(1). THE GEOTEXTILE MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. GEOTEXTILE PANELS SHALL HAVE A MINIMUM 3-FOOT OVERLAP AT ALL FIELD SEAMS.
- SAND: THE SAND USED FOR PIPE AND CABLE BEDDING AND THE LEAK DETECTION SYSTEM OF THE POND SHALL BE FREE FROM WOOD, BARK, OR OTHER EXTRANEIOUS MATERIAL AND SHALL MEET THE GRADATION REQUIREMENTS OF WDOT 9-03.13. THAT PORTION RETAINED ON THE NO. 4 SIEVE SHALL CONTAIN NOT MORE THAN 0.05% BY WEIGHT OF WOOD WASTE.
- DRAIN ROCK: THE GRAVEL AGGREGATE USED IN THE UNDERDRAIN OF THE AMENDED SAND FILTER SHALL MEET THE GRADATION REQUIREMENTS OF WDOT 9-03.12(4), WITH NO MORE THAN 2% PASSING THE U.S. NO. 200 SIEVE, BASED ON A WET SIEVE ANALYSIS OF THAT PORTION PASSING THE U.S. NO. 4 SIEVE.
- CRUSHED ROCK: CRUSHED ROCK USED FOR ROAD SURFACING AND VAULT AND SLAB FOUNDATIONS SHALL BE 5/8-INCH MINUS MEETING THE REQUIREMENTS OF WDOT 9-03.9(3).
- QUARRY SPALLS: QUARRY SPALLS USED FOR REINFORCING PIPING HEADWALLS, BANK STABILIZATION, AND ROCK CHECK DAMS SHALL MEET THE GRADATION REQUIREMENTS OF WDOT 9-13.6.
- CONTROLLED DENSITY CONCRETE FILL (CDF): CDF SHALL COMPLY WITH AMERICAN CONCRETE INSTITUTE (ACI) 301 SPECIFICATIONS FOR STRUCTURAL CONCRETE AND ASTM C-94 SPECIFICATIONS FOR READY MIX CONCRETE. THE CDF MIX DESIGN SHALL MEET THE FOLLOWING CRITERIA: 28-DAY COMPRESSIVE STRENGTH = 100-500 PSI; SLUMP = 8-8 INCHES; AGGREGATE = SAND (#4 MINUS); AND CEMENTITIOUS MATERIAL = 3-6 SACK. PLASTICIZER MAY BE ADDED AS NEEDED TO ACHIEVE THE DESIRED SLUMP.
- CONCRETE SLAB - FIBERGLASS UTILITY CABINET: THE CONCRETE MIX DESIGN USED FOR THE CONCRETE SLAB SHALL COMPLY WITH AMERICAN CONCRETE INSTITUTE (ACI) 301 SPECIFICATIONS FOR STRUCTURAL CONCRETE AND ASTM C-94 SPECIFICATIONS FOR READY MIX CONCRETE. THE CONCRETE MIX DESIGN SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH = 3000 PSI. REINFORCEMENT FOR THE SLAB SHALL CONSIST OF THREE #4 REBAR (ASTM A615, GRADE 40) EACH WAY AT EQUAL SPACING. MINIMUM COVER FOR THE REBAR SHALL BE 3 INCHES IN ALL DIRECTIONS.
- AMENDED SAND: A MINIMUM OF 18 INCHES OF AMENDED SAND SHALL BE INSTALLED WITHIN THE AMENDED SAND FILTER. THE TEXTURE OF THE SOIL COMPONENT OF THE AMENDED SAND SHALL BE LOAMY SAND PER THE USDA SOIL TEXTURE CLASSIFICATION. THE SOIL MIX SHALL CONSIST OF 60-85% LOAMY SAND MIXED WITH 35-40% COMPOSTED MATERIALS TO YIELD AN APPROPRIATE ORGANIC CONTENT OF 10% BY DRY WEIGHT. THE COMPOSTED MATERIALS SHALL HAVE AN ORGANIC CONTENT OF 35-65% PER ASTM D-2974, SHALL COMPLY WITH THE REQUIREMENTS OF WAC 173-350-220, AND SHALL BE FREE OF WEED SEEDS AND MANUFACTURED INERT MATERIALS (PLASTIC, CONCRETE, CERAMICS, ETC.). THE FINAL SOIL MIX SHALL BE UNIFORM AND FREE OF STONES, STUMPS, ROOTS, AND OTHER SIMILAR MATERIALS >2 INCHES IN DIAMETER.
- STRUCTURAL FILL: STRUCTURAL FILL MATERIALS USED FOR BERM CONSTRUCTION AND TRENCH BACKFILL SHALL CONSIST OF NATIVE SANDY GRAVEL OBTAINED FROM ON-SITE EXCAVATIONS OR OTHER APPROVED OFF-SITE SOURCES. FILL MATERIALS SHALL BE CLEAN, UNIFORM, AND FREE OF ORGANIC MATERIAL AND STONES, CLUMPS, AND OTHER SIMILAR MATERIALS >3 INCHES IN DIAMETER. THE CONTRACTOR SHALL PROVIDE MODIFIED PROCTOR DENSITY TESTING (PER ASTM D-1557) RESULTS TO THE PROJECT ENGINEER FOR EVERY 1000 CUBIC YARDS USED.
- TOPSOIL: TOPSOIL MATERIALS MAY BE OBTAINED FROM ON-SITE SOURCES OR OTHER APPROVED OFF-SITE SOURCES. TOPSOIL SHALL BE CLEAN, UNIFORM, AND FREE OF STONES, STUMPS, ROOTS, AND OTHER SIMILAR MATERIALS >3 INCHES IN DIAMETER AND SHALL MEET THE REQUIREMENTS OF TYPE B TOPSOIL (WDOT 8-02.3(4) AND 9-14.1).
- TURFCROSS SOD INSTALLED IN THE BIOFILTRATION SWALE SHALL BE GROWN FROM A SEED MIX COMPRISED OF 60% PERENNIAL RYGRASS VARIETIES, 15% KENTUCKY BLUEGRASS, 12.5% CREEPING RED FESCUE, AND 12.5% CHEWING'S FESCUE, OR APPROVED EQUAL. TURFCROSS SOD SHALL BE PLACED IN THE BIOSWALE AS SHOWN ON SHEET C-4. SOD SECTIONS SHALL BE INSTALLED PARALLEL TO THE FLOWLINE OF THE SWALE, IN ACCORDANCE WITH VENDOR RECOMMENDATIONS.
- HYDROSEED (GENERAL RESTORATION): FOLLOWING FINAL GRADING ACTIVITIES, DISTURBED CONSTRUCTION AREAS, INCLUDING BUT NOT LIMITED TO THE POND AREA, POND BERM, AND SOIL STOCKPILE AND DISPOSAL AREAS, SHALL BE HYDROSEEDED WITH THE FOLLOWING SEED MIX: 75-80% TALL OR MEADOW FESCUE, 10-15% COLONIAL BENTGRASS, 5-10% REDTOP, AND <0.1% WEED SEED (OR APPROVED EQUAL). HYDROSEED SHALL BE APPLIED AT THE FOLLOWING RATES: GRASS SEED - 3 POUNDS PER 1000 SF, FERTILIZER - 10 POUNDS PER 1000 SF OF TYPE 16-16-16 (N-P-K), AND HYDRONMULCH - 50 POUNDS PER 1000 SF.
- HYDROSEED (AMENDED SAND FILTER): THE FINISHED SURFACE OF THE AMENDED SAND FILTER SHALL BE HYDROSEEDED WITH THE FOLLOWING SEED MIX: 60% TALL OR MEADOW FESCUE, 10% SEASIDE BENTGRASS, 10% MEADOW FOXTAIL, 6% ALSIKE CLOVER, 6% REDTOP, AND <0.1% WEED SEED (OR APPROVED EQUAL). HYDROSEED SHALL BE APPLIED AT THE FOLLOWING RATES: GRASS SEED - 3 POUNDS PER 1000 SF, FERTILIZER - 10 POUNDS PER 1000 SF OF TYPE 16-16-16 (N-P-K), AND HYDRONMULCH - 50 POUNDS PER 1000 SF.
- CATCH BASIN CB-1 SHALL BE TYPE 1 WITH GRATED COVER, AS SPECIFIED, PER WDOT STANDARD PLAN B-5.20-00.
- THE AERATION/SETTLING VAULT SHALL BE A TWO-CHAMBERED VAULT WITH A NOMINAL 500-GALLON OPERATING STORAGE VOLUME. THE VAULT LID AND BASE SHALL MEET THE SPECIFICATIONS OF GRANITE PRECASTING MODEL 6X4 G (OR APPROVED EQUAL). THE LID SHALL HAVE ONE 24-INCH DIAMETER RING AND GRATED COVER AND TWO 12-INCH DIAMETER INSPECTION PORTS WITH RING AND SOLID COVER. THE VAULT SHALL BE FOUNDED ON 6 INCHES MINIMUM COMPACTED CRUSHED ROCK OVER A FIRM, UNYIELDING NATIVE SUBGRADE.
- THE METER VAULT UD, RISER SECTIONS, AND BASE SHALL MEET THE SPECIFICATIONS OF GRANITE PRECASTING MODEL 575 MV (OR APPROVED EQUAL). THE LID SHALL HAVE A SINGLE 36-INCH BY 36-INCH GALVANIZED ACCESS HATCH AND A GALVANIZED LADDER. THE VAULT SHALL BE FOUNDED ON 6 INCHES MINIMUM COMPACTED CRUSHED ROCK OVER A FIRM, UNYIELDING NATIVE SUBGRADE.
- THE EFFLUENT DISCHARGE MANHOLE SHALL BE A 60-INCH DIAMETER, TYPE II MANHOLE, PER WDOT STANDARD PLAN B-15.60-00. THE LID SHALL HAVE A 36-INCH BY 36-INCH ACCESS HATCH CENTERED OVER THE POLYPROPYLENE STEPS. THE MANHOLE SHALL BE FOUNDED ON 6 INCHES MINIMUM COMPACTED CRUSHED ROCK OVER A FIRM, UNYIELDING NATIVE SUBGRADE.

DRAFT

CALL 48 HOURS BEFORE YOU DIG
1-800-424-5555

NO.	REVISION	BY	DATE



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DESIGNED BY:	NCS
DRAWN BY:	NCS
CHECKED BY:	TEB

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CONSTRUCTION NOTES
CEDARVILLE LANDFILL
WHATCOM COUNTY, WASHINGTON

DATE: JUNE 2011 SCALE: H: N/A V: N/A

DRAWING: C-9
SHEET: 9 OF 9