DELTA COUNTY PLANNING COMMISSION

Delta County Board of County Commissioner's Room
560 Dodge St., Delta, CO 81416
Wednesday, March 23, 2022 @ 5:30 p.m.

Tom Kay, Chair
Tate Locke, Vice-Chair
Carl Holm, Director

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After registering, you will receive a confirmation email containing information about joining the meeting.

REGULAR AGENDA

5:30 P.M. – **CALL TO ORDER**

ROLL CALL

DISTRICT 1	DISTRICT 2	DISTRICT 3
Cindy Watson	Layne Brones	Jacob Gray
Steve Schrock	Tate Locke, Vice Chair	Tom Kay, Chair
Steve Shea	Hardy Hutto	Kate Darlington
Michelle Roberts, Associate	Vacant, Associate	David Marek, Associate

A. PUBLIC COMMENTS

This is time set aside for the public to comment on matters not on the agenda. The Chair may set a time limit for speakers.

B. AGENDA ADDITIONS, DELETIONS, AND CORRECTIONS

The Planning Commission Secretary will announce if there are any changes to the agenda that arose after posting of the agenda.

C. SCHEDULED ITEMS

1. **Meeting Minutes**
   a. March 9, 2022

   RECOMMENDATION: Approve the action minutes as presented

CERTIFICATION OF POSTING
On March 17, 2022 at 2:30 PM, Kim Henderson did post the above AGENDA as public notice of the March 23, 2022 meeting. The official notice is placed on the front entrance of the Delta County Courthouse located at 501 Palmer, Delta, Colorado and a courtesy copy is sent to the Delta County website at www.deltacounty.com.

2. **SD03-006/CHT Resources, LLC (formerly CB Industries)**
   Consider a Certificate of Designation (CD) updating an existing Compost Facility permit to change ownership from CB Industries to CHT Resources, LLC (new owner) and reflect minor corrections and revisions to the Engineering Design and Operations Plan (EDOP) for conformance with the new owner's operations and current regulations.
   RECOMMENDATION: Staff recommends that the Planning Commission recommend that the Board of County Commissioners:
   a. Find that SD03-006 complies with the Master Plan and Specific Development Regulations for a Certificate of Designation (CD) to operate a compost facility in the RI/C zone; and
   b. Approve SD03-006 Certificate of Designation (CD) for a change of Ownership from CB Industries to CHT Resources, LLC and the minor corrections and revisions to the Engineering Design and Operations Plan (EDOP) at 11289 Doughspoon Road, Delta (Parcel: 323721300003)
   c. Consider a draft Resolution for the Board of County Commissioners, including findings and conditions, that would replace and repeal all prior resolutions for SD03-006.

3. **PLN21-071/Armstrong Subdivision**
   Consider a 5-lot Clustered Subdivision (Preliminary Plat) in the A-20 zoning district; Lot 1 (2.286 acres), Lot 2 (2.162 acres), Lot 3 (1.227 acres), Lot 4 (0.863 acres), Lot 5 (31.048 acres). The property is located at 15627-15767 Bull Mesa Road (Parcel: 319536200013), Cedaredge
   RECOMMENDATION: Staff recommends that the Planning Commission (PC) recommend the following action(s) to the Board of County Commissioners (BoCC):
   a) Find that PLN21-071/Armstrong is consistent with applicable policies of the 2018 Master Plan and complies with requirements of the 2021 Land Use Code (LUC) for a Preliminary Plat (clustered subdivision), including Chapters 3, 4, 5 & 6; and
   b) Conditionally Approve PLN21-071/Armstrong, presented as a Preliminary Plat (clustered subdivision) creating five (5) parcels in the A-20 zoning designation located at 15627-15767 Bull Mesa Road, Cedaredge (Parcel: 319536200013), all with existing residential units and utilities.

D. COMMISSIONER COMMENTS, REQUESTS AND REFERRALS

This is time set aside for the Commission to comment, request, or refer a matter that is not on the agenda for future consideration.

E. DEPARTMENT REPORT

This is time set aside for the Director to report on matters affecting the Department.

ADJOURNMENT

Next Meeting: Wednesday, April 13, 2022 at 5:30 pm, Maloney House (Delta County Fairgrounds) 575 S River Ln, Hotchkiss, CO

CERTIFICATION OF POSTING

On March 17, 2022 at 2:30 PM, Kim Henderson did post the above AGENDA as public notice of the March 23, 2022 meeting. The official notice is placed on the front entrance of the Delta County Courthouse located at 501 Palmer, Delta, Colorado and a courtesy copy is sent to the Delta County website at www.deltacounty.com.

DELTA COUNTY
PLANNING & COMMUNITY DEVELOPMENT

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DELTA COUNTY PLANNING COMMISSION MEETING MINUTES
DELTA COUNTY BOARD OF COUNTY COMMISSIONER'S ROOM
560 DODGE ST., DELTA, CO 81416
March 9, 2022

Chair Tom Kay called the meeting to order at 5:30 p.m. in the Delta County Board of County Commissioner's Meeting Room.

ROLL CALL

Planning Commission Members in Attendance:

Tom Kay
Steve Schrock
Cindy Watson
David Marek (Associate)
Tate Locke
Michelle Roberts (Associate)
Hardy Hutto
Kate Darlington
Layne Brones
Jacob Gray

Absent Members:
Steve Shea

With member(s) absent from District 1, Michelle Roberts is a voting member.
With all member(s) present from District 3, David Marek can participate but is not able to vote.

Staff in Attendance:
Delta County Community Development & Natural Resource Director, Carl Holm
Delta County Community Development Planner I, Kate Kelly
Delta County Community Development Planner I, Angie Kemp
Delta County Planning & Community Development Administrative Assistant, Kim Henderson

PUBLIC COMMENT
None

AGENDA ADDITIONS, DELETION, AND CORRECTIONS
None

SCHEDULED ITEMS

Item #1: Meeting Minutes
a. February 23, 2022
RECOMMENDATION: Approve the action minutes as presented

Jacob Gray moved to approve the action minutes as presented. Cindy Watson seconded the motion.

Motion carried unanimously

Item #2: PLN22-002/Black Hills Energy
Consider a Limited Use Permit for three (3) Temporary Staging sites relative to a gas pipeline project from Collbran to Reed Junction (Phase A), including grading and storage of materials:
Site #1; U Road/Highway 65, 2.25 miles north of Cedaredge (Parcel 319305300046/Mingus/A-20 Zone)
Site #2; SW 11th Ave/Happy Hollow Road, 0.75 miles west of Cedaredge (Parcel 319330300037/Malmgren/A-20 Zone)
Site #3; North Road/Harts Basin Road, adjacent to the Town of Eckert (Parcel 323905100001/Grand Headwaters/A-352 Zone)
RECOMMENDATION: Staff recommends that the Planning Commission recommend that the Board of County Commissioners:

a. Find that PLN22-002/Black Hills Energy complies with the Land Use Code for Limited Use Permits; and

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b. Approve PLN22-002A, Limited Use Permit for temporary outdoor storage facilities located on the north side of U Road west of Highway 65 (23253 U Road), approximately 2.25 miles north of Cedaredge (Parcel 319305300046/Mingus/A-20 Zone).
c. Approve PLN22-002B, Limited Use Permit for temporary outdoor storage facilities located on the north side of SW 11th Avenue east of Happy Hollow Road (16408 Happy Hollow Road), approximately 0.75 miles west of Cedaredge (Parcel 319330300037/Malmgren/A20 Zone).
d. Approve PLN22-002C, Limited Use Permit for temporary outdoor storage facilities located on the north side of North Road where it intersects with Harts Basin Road, adjacent to the Town of Eckert (Parcel 323905100001/Grand Headwaters/A-35 Zone.
e. Consider approval subject to conditions recommended by staff.

Director Holm presented the project, and answered Commissioner questions.

Donald Green and Adam Clark representing Black Hills Energy provided additional information about the project, and answered Commissioner questions.

Chair Kay opened the public hearing. The Commission received public testimony, asked questions, and closed the public hearing.

Following deliberation by the Commissioners, Michelle Roberts moved to approve PLN22-002 with staff recommendations. Hardy Hutto seconded the motion.

Jacob Gray requested amending the motion to include the following condition (Condition #9):

9. Site #1 shall be limited to hours of operation being 9am-4pm weekdays (no weekends). Use of this site shall conclude and shall be reclaimed by December 31, 2022.

Michelle Roberts and Hardy Hutto accepted the amendment.

Motion carried unanimously

COMMISSIONER COMMENTS, REQUESTS AND REFERRALS

a. Planning Director Carl Holm summarized the process if a Commissioner recuses themselves, including the ability to participate with the same guidelines as a member of the public after stepping down from the table. He also provided copies of the pertinent PC Bylaws.
b. Chairman Kay requested having future agenda item to discuss the term “Compatibility” and how it applies to land use.

DEPARTMENT REPORT

None

ADJOURNMENT

The next meeting will be held on March 23, 2022 at 5:30pm in the Delta County Administration Building, Delta, CO.

Meeting adjourned at 6:58 p.m.

Respectfully submitted by:
Administrative Assistant, Kim Henderson

DRAFT

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STAFF REPORT

Delta County Planning Commission

Delta County Administrative Building
560 Dodge Street, Delta, CO 81416

Wednesday, March 23, 2022 @ 5:30 p.m.

SD03-006/CHT Resources, LLC (formerly CB Industries)

Consider a Certificate of Designation (CD) updating an existing Compost Facility permit to change ownership from CB Industries to CHT Resources, LLC (new owner) and reflect minor corrections and revisions to the Engineering Design and Operations Plan (EDOP) for conformance with the new owner's operations and current regulations. The project is located at 11289 Doughspoon Road, Delta (Parcel 323721300003).

PROJECT INFORMATION:
Property Owner: CHT Resources, LLC
Applicant: Erica Sparhawk, CEO of CHT Resources, LLC
Site Address: 11289 Dougspoon Road, Delta, CO 81416
Location: Section 21 & 28, Township 14S, Range 95W, 6thPM
Parcel ID/Acct: 323721300003/R022296
Parcel Size: 80-Acres
Zoning: RI/C

RECOMMENDATION:
Staff recommends that the Planning Commission recommend that the Board of County Commissioners:

a. Find that SD03-006 complies with the Master Plan and Specific Development Regulations for a Certificate of Designation (CD) to operate a compost facility in the RI/C zone; and

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b. Approve SD03-006 Certificate of Designation (CD) for a change of Ownership from CB Industries to CHT Resources, LLC and the minor corrections and revisions to the Engineering Design and Operations Plan (EDOP) at 11289 Doughspoon Road, Delta (Parcel: 323721300003) (**attached**); and
c. Consider a draft resolution for the Board of County Commissioners, including findings and conditions, that would replace and repeal all prior resolutions for SD03-006.

SUMMARY:
In 2020, CHT Resources, LLC entered a contract to purchase an 80-acre parcel (Parcel #323721300003) with existing permits to operate a compost facility. The property has frontage along the southern and northern boundary of Doughspoon Road (road runs through the parcel) about 1.76 miles westerly of the Town of Orchard City. Sale has been completed. State Department of Public Health and Environment (CDPHE) has allowed CHT to begin operations, but the Certificate of Designation (CD) needs to transfer ownership in order to operate the facility in a permanent capacity.

Delta County Board of County Commissioners (BoCC) approved Specific Development (SD03-006) in August 2003 for CB Industries to operate a Composting Facility, which included granting a CD. Resolution No. 2003-R-032 was recorded with the Clerk and Recorder's Office under Reception #570017 with a Development Agreement. This application is to transfer ownership of the CD from CB Industries to CHT Resources, LLC (New Owner) and to amend the Development Agreement for SD03-006 to include minor revisions to the Engineering Design and Operations Plan (EDOP).

Goal 5.1 of the Master Plan encourages business and industrial development while protecting resources that contribute to the economy and are integral to the quality of life. This project is being processed as an amendment to Specific Development (SD03-006) because it was submitted prior to January 1, 2021. Under the 2021 Land Use Code, this use would require a Conditional Use Permit.

Currently, CB Industries operates their facility to include long-term storage of contaminated soils. CHT Resources does not wish to continue the long-term storage of contaminated soils, so the EDOP removes all reference to contaminated soils (storage). The EDOP was initially reviewed by County staff and then went through the state's review process at CDPHE, which includes a publicly noticed review and comment period. No comments have been received to date.

Per State Statute, a CD by itself only requires action by the BoCC; however, a Specific Development Permit requires the PC to make a recommendation to the BoCC. Staff finds that this project complies with the Specific Development

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Regulations, in place at the time of submittal. Specific Development Applications (Conditional Use Permits) go before the Planning Commission (PC) that will make a recommendation to the Board of County Commissioners (BoCC) at noticed public hearings. Staff has prepared a resolution (**attached**) with applicable conditions from the prior Development Agreement(s) for consideration. This resolution will replace all prior resolutions/agreements to become the operating document for this facility.

DISCUSSION:

Background

- 2003
  - Application for CB Industries was submitted on February 28, 2003 by Tom Cronk
  - Technical Review Letter was sent to Tom Cronk (Owner) from CDPHE on June 4, 2003
  - June 4, 2003, Tom Cronk responded to the comments from the Technical Review Letter
  - Technical Referral Letter was sent to Delta County Board of County Commissioners from CDPHE on June 25, 2003 stating that the Division determined that that proposed facility can comply with the technical, environmental and public health standards as set forth in the Solid Waste and Disposal Sites and Facilities Act, Title 30, Article 20, Part 1 of the Colorado Revised Statutes
  - OWTS Permit was issued on November 26, 2003
  - On August 11, 2003, the Amended Resolution Conditionally Approving the Application of CB Industries for Specific Development SD03-006, for a Composting Facility, and Granting a Certificate of Designation (Resolution No. 2003-R-032) was recorded with the Clerk and Recorder's Office under Reception #570017 and replaced Resolution No. 2003-R-031
- 2004
  - Tom Cronk (Owner) sent a letter for Scheduled Date to Begin Operations on January 26, 2004 to Delta County
- 2005 (Amendment)
  - Tom Cronk (Owner) applied for an amendment to the Certificate of Designation
  - March 25, 2005, CDPHE sent Mr. Cronk an initial review letter for the amendment CD
  - Technical Referral Letter was sent to Delta County Board of County Commissioners from CDPHE on June 27, 2005 stating that the Division determined that the proposed facility amendment can comply with the technical, environmental and public health standards as set forth in the Solid Waste and Disposal Sites and Facilities Act, Title 30, Article 20, Part 1 of the Colorado Revised Statutes

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  - On August 16, 2005, the Resolution Amending the Certificate of Designation (Resolution No. 2003-R-031) for a Composting Facility Operated by CB Industries (Resolution No. 2005-R-034) was recorded with the Clerk and Recorder's Office under Reception #594584

- 2009
  - May 20, 2009, representatives of the Hazardous Materials and Waste Management Division Solid Waste Unit (Division) performed an inspection of CB Industries solid waste facility
  - A follow-up records review was conducted on September 3, 2009
  - On October 5, 2009, CDPHE sent a Compliance Review (Section 14) Letter to Mr. Cronk. The results of the inspection indicated that the facility was in Substantial Compliance with the Regulations and the approved EDOP dated 2003 and revised in 2005. As the facility was only in Substantial Compliance, they were not in full compliance with the Regulations. The letter listed numerous deficiency issues
  - On December 21, 2009, the Resolution Approving a Waiver to the Certificate of Designation (Resolution 2003-R-031 and 2003-R-032), as Amended by Resolution 2005-R-034, for a Composting Facility by CB Industries-Delta, Inc. (Resolution No. 2009-R-085) was recorded with the Clerk and Recorder's Office under Reception #639845
- 2011
  - On April 12, 2011, CDPHE sent Mr. Cronk (Owner) a Materially Deficient Letter in regards to the Petroleum Contaminated Soil (PCS) Operations Plan dated December 2010
  - The Hazardous Materials and Waste Management Division (Division) of the Colorado Department of Public Health and Environment (Department) reviewed the above referenced document that was attached to a Weaver Boos Consultants, LLC Cover Letter dated December 15, 2010. The referenced document was considered as an amendment to the EDOP incorporated in the facility's approved Application for Certificate of Designation for CB Industries Composting Facility (dated February 2003), as amended. Based on the review, the Division determined that the PCS Plan was materially deficient listing numerous deficiencies.
- 2014
  - A revised EDOP was submitted and approved by CDPHE in 2014, however, it did not formally follow the required process in place at the time in Delta County. The 2014 revision included design and operation plan updates to meet the applicable solid waste regulations. It also included design and operation plans for a contaminated soil landfill. However, the landfill was never constructed.

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In November 2020, CHT Resources, LLC contacted Delta County in regards to a change of ownership for SD03-006 and the possible amendment to the Engineering Design and Operations Plan (EDOP, 2014) for SD03-006. CHT met with County Staff in December of 2020 and it was determined then that the best route to address this Ownership change was to process an application for a new Certificate of Designation (CD) and EDOP that would also address the minor revisions that were being proposed. Per State Regulations, any facility that continues to operate under an outdated CD, would be in violation of the Solid Waste Act and Regulations.

On February 22, 2021, Erica Sparhawk, CEO of CHT Resources, LLC, submitted a letter (dated February 22, 2021) along with a revised EDOP (dated February 2021) requesting Delta County to review the Revision 4 EDOP and amend the Certificate of Designation, accordingly. Currently, CB Industries provides the following services:

- Composting treatment of septage, biosolids from municipal wastewater treatment plants, food and animal related waste, and grease trap waste
- Sand trap waste treatment
- Landfarming treatment of hydrocarbon impacted soil
- Long-term storage of contaminated soil

CB Industries operates under an EDOP plan that was approved by Delta County and CDPHE in 2003, with amendments in 2005 and 2009. A revised EDOP was submitted and approved by CDPHE in 2014, however, it did not formally follow the required process in place at the time in Delta County. The 2014 revision included design and operation plan updates to meet the applicable solid waste regulations. It also included design and operation plans for a contaminated soil landfill. The landfill was never constructed and CHT Resources, LLC does not wish to implement this part of the 2014 EDOP. If at any point in the future CHT wishes to proceed with the landfill, they will be required to submit a revised EDOP to Delta County and CDPHE for review and approval.

CHT is proposing to provide similar services as CB Industries, but may request minor revisions as they operate the facility. Any revisions made to the EDOP will require CHT to submit a CD (revised EDOP) to Delta County and CDPHE for review and approval.

On April 29, 2021, Staff sent a letter to CHT addressing the review of the revised EDOP for CHT Resources, LLC. Staff informed CHT that their application had been deemed incomplete due to numerous comments and areas of concern. The review that staff conducted was a technical review (do pages flow, are all appendix items included, do studies reflect current dates, etc.). This review was not completed as part of an Environmental Assessment of the application. The review also informed the applicants of any misrepresented information or inaccurate callouts (State Statutes, Regulation references).

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On May 13, 2021, Ms. Sparhawk sent an email to Staff with a link to a Google Drive that contained the revised CD Application (including an updated EDOP, dated May 2021) along with Staff's review letter that contained CHT's responses to Staff's comments. Ms. Sparhawk addressed numerous callouts, current years of operation, missing tables, and the Financial Assurance section of the EDOP, specifically.

On June 30, 2021, Staff sent a second revision letter to CHT addressing the Table of Contents errors along with other numerous errors (spelling and grammar).

On July 9, 2021, Staff confirmed with Delta County Environmental Health that they had no additional comments for the review of the revised EDOP. Staff also confirmed with CDPHE that they could begin the State review process parallel with the County review process. On July 13, 2021, Staff emailed the revised EDOP (dated May 2021) to Jerry Henderson, Unit Leader for the Solid Waste Permitting Unit and the Solid Waste and Materials Management Program, CDPHE. This EDOP was submitted to the CDPHE's Hazardous Materials and Waste Management Division (HMWMD) as based on the requirements of 6 CCR 1007-2, Part 1 (State Regulations) pertaining to Solid Waste Sites and Facilities. Compost facilities are subject to the rules promulgated by the solid and hazardous waste commission pursuant to 30-20-102(8) C.R.S. Compost regulations are found under Section 14 of 6 CCR 1007-2, Part 1.

<u>Certificate of Designation Application and EDOP Review Process (CDPHE):</u>

- *Any proposed, or currently operating solid waste disposal site or facility that requires a CD shall submit an application to the Local Governing Authority (LGA, e.g., Board of County Commissioners, City Council, Town Trustees) having jurisdiction for a CD pursuant to 30-20-103(1) C.R.S. and Section 1.3.3 of 6 CCR 1007-2, Part 1. The application is generally termed as an Engineering Design and Operations Plan (EDOP).*
    - The LGA is responsible for referring the EDOP to CDPHE for review.
- *Once an application is received by CDPHE, they will conduct an initial examination of the EDOP; this initial review is a completeness review and is meant to ensure all parts necessary for a complete EDOP are included in the application. CDPHE has 30 days to conduct their completeness review from the date of receipt of the EDOP from the LGA. A written notification to the applicant will be mailed within this time period regarding the department's decision to begin the full review of the EDOP or reject the EDOP based on incompleteness pursuant to 30-20-103(2) C.R.S. and Section 1.6.5 of 6 CCR 1007-2, Part 1.*
    - CDPHE sent the applicant an email on August 12, 2021 to inform them of the Division's Completeness Review, which resulted in a Completeness Determination (**attached**).

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- *Following the completeness determination, any EDOP determined to be complete will then be reviewed from a technical completeness aspect. The technical review of the EDOP will be conducted within 150 days from the date of the notification of completeness by either CDPHE or a private contractor selected by the department pursuant to 30-20-103(2) C.R.S. and Section 1.6.7 of 6 CCR 1007-2, Part 1.*
    - CDPHE sent the applicant an email on November 4, 2021 to inform them of the Division's Technical Review, and supplied a Comment Letter (**attached**) to CHT for the compost facility. CHT responded to the Comment Letter, addressing all comments brought forward by CDPHE and submitted a revised (final) version of the EDOP (dated December 2021) to both CDPHE and Delta County.
- *Pursuant to 30-20-104(3)(a) C.R.S. following the technical review CDPHE will issue a technical referral letter to the LGA having jurisdiction and provide the applicant a copy of the letter. The LGA will then conduct a public review period prior to issuance of a CD. Technical conditions made by CDPHE shall be incorporated into the EDOP. The CD application comprised of the EDOP, any comprehensive land use plan, relevant zoning ordinances and other pertinent information shall be presented to the LGA having jurisdiction at a public hearing only after a public notice is provided.*
    - Planning staff is awaiting the Technical Referral letter from CDPHE. CHT Resources contacted Staff on March 16, 2022, to inform them that their loan process for the Financial Assurance was taking longer than expected. Once the Financial Assurance is in place, CDPHE will be able to send the referral letter; which is required before this application can be presented to the BoCC.
    - Staff sent a Public Notice to Adjoining Property Owners (within a ½ mile radius from Parcel #323721300003) as required by the Specific Development Regulations. Notice was sent on March 8, 2022. Planning Staff have not received any feedback in regards to this application.

<u>Issuance of a Certificate of Designation (CDPHE):</u>

- *Once the LGA deems the CD should be granted to the applicant the LGA shall issue the CD. The applicant is required to display the CD in a prominent place at the solid waste site and facility pursuant to 30-20-105(1) C.R.S.*
- *Pursuant to 30-20-105(3) C.R.S. CDPHE shall then consult the LGA on behalf of the solid and hazardous waste commission and consider recommendations made by that governing body prior to establishing financial assurance for the solid waste site and facility pursuant to Section 4 of 6 CCR 1007-2, Part 1.*

A Certificate of Designation (CD) Process Flow Chart (CDPHE) has been attached to this report (**Appendix A**).

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OTHER AGENCIES INVOLVED:
Planning Staff sent the EDOP along with a summary to the Review Agencies for comment on January 24, 2022. Comments received during this comment period were: CDOT and DMEA (**attached**).

CDPHE conducted a Public Comment period from January 19, 2022 to February 18, 2022. A publication was printed in the Delta County Independent (**attached**) on January 19, 2022. CDPHE confirmed that no public comments were received for this application.

CHT Resources, LLC received a Letter of Support (**attached**) from West Montrose Sanitation District on January 19, 2022. The letter states that "approximately 30% of the septic waste loads that this facility receives from septic haulers are generated in Delta County." Receiving septic waste is not the core mission of this facility, and they do not want to be forced into a situation where they would need to limit receiving septage waste in order to reserve capacity for their primary function of receiving and treating wastewater in the West Montrose Sanitation District service area. Having another facility in the area relieves the strain on their system and reserves capacity for their primary purpose.

Prepared by: Kate Kelly, Planner I
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March 11, 2022

Attachment(s):
- EDOP (dated December 2021)
  - Facility Location Map (Figure 1)
  - Hydrograph for Monitoring Well MW07 (Figure 2)
  - Hydrograph for Monitoring Well MW03L (Figure 3)
  - Potentiometric Surface Map November 2020 (Figure 4)
  - Plates
    - Facility Location Map
    - Facility Site Plan
    - Facility Site Plan (North ½)
    - Facility Site Plan (South ½) (2)
    - Septage Treatment Basin
    - Sand Trap Receiving Basin
    - Compost Mixing Basin
    - Interim Pond Grading
- Completeness Review Letter (CDPHE)
- Technical Review Letter (Comment Letter) (CDPHE)
- Appendix A (CDPHE CD Flow Chart)
- Review Agency Comments
  - CDOT
  - DMEA
- Letter of Support (dated January 19, 2022)
- Publication (CDPHE)
- DRAFT BoCC Resolution (Development Agreement)

REVISED ENGINEERING DESIGN AND OPERATION PLAN
FOR
CHT RESOURCES LLC - COMPOST FACILITY
FORMERLY KNOWN AS
CB INDUSTRIES - DELTA, INC. (CBIDI)
SE1/4, SW1/4 and SW1/4, SE1/4, SEC 21, &
Portions of NE1/4, NW1/4 and NW1/4, NE1/4, SEC 28
DELTA COUNTY, COLORADO

Revision 5

December 2021

PREPARED FOR

CHT RESOURCES LLC

Prepared by

Knudsen Engineering, Inc.

7112 West Jefferson Ave, Suite 107Lakewood, Colorado 80235

720-480-4207

Email: gerald.knudsen@agritechconsulting.com

Contents

1.0 Introduction 6
1.1 Regulatory Authority 7
1.2 Facility Owners and Emergency Notification Protocol 7
1.3 Facility Location and Description 7
2.0 Site Characterization 11
2.1 Topography 11
2.2 Site Geology and Hydrological Conditions 11
2.3 Background Arsenic Level 14
2.4 Surface Water 15
2.5 Wells 16
2.6 Groundwater 17
3.0 Groundwater Monitoring 21
4.0 Stormwater Control 24
4.1 Existing Evaporation/Stormwater Retention Lagoon Liners 26
5.0 Facility Engineering Design 31
5.1 Concrete Receiving and Treatment Structures 31
5.1.1 Septage Receiving and Septage Treatment Structure 31
5.1.3 Compost Mixing Basin 31
5.2 Evaporation Impoundments 32
5.2.1 Evaporation Lagoons #1, #2 & #3 32
5.2.2 Compost Workpad - Formerly Lagoon #4 33
5.2.3 Stormwater Retention Lagoon #5 34
5.3 Work Pads 35
6.0 Quality Assurance/Quality Control 38
7.0 Site Inspections 40
8.0 Waste Delivery and Waste Characterization 42
8.1 Waste Generator Procedures 42
8.2 CHT Waste Acceptance Procedures 42
9.0 Facility Operations 44
9.1 Composting Operations 44
9.1.1 Septage, Food Grease, and Animal Wastes Composting 44
9.1.2 Biosolids Composting 44
9.3 Petroleum Contaminated Soil Long-Term Waste Storage and Disposal Categories 45
9.3.1 Use Category Level 1 – ERSL Residential Values with metal concentrations less than facility background 45

9.3.2 Use Category Level 2 – ERSL Industrial Values with metal concentrations less than facility background 46
9.3.3 Use Category Level 3 – Soil Characteristics exceeding ERSL Industrial Values or as defined by CDPHE 46
9.4 Beneficial Use Plan For Compost 47
10.0 Site Security Measures 49
11.0 Employee Training 51
12.0 Contingency Plan 53
12.1 Unacceptable Waste 53
12.2 Fire Protection Plan 54
12.3 Odor Management Plan 55
13.0 Closure and Post Closure Care 58
14.0 Financial Assurance 62
15.0 Certification 64
16.0 References 65

FIGURES

FIG. 1 - REGIONAL LOCATION MAP
FIG. 2 – HYDROGRAPH FOR MONITORING WELL MW07
FIG. 3 – HYDROGRAPH FOR MONITORING WELL MW03
FIG. 4 – POTENTIOMETRIC MAP

PLATES

PLATE P1 - FACILITY LOCATION MAP
PLATE P2 - FACILITY SITE PLAN-INFRASTRUCTURE
PLATE P3 - FACILITY SITE PLAN – NORTH ½
PLATE P4 – FACILITY SITE PLAN – SOUTH ½
PLATE S1 – SEPTAGE RECEIVING FACILITY
PLATE S2 – SEPTAGE TREATMENT BASIN
PLATE S3 – SAND TRAP RECEIVING BASIN
PLATE S4 – COMPOST MIXING BASIN
PLATE C7 – INTERIM POND GRADING

APPENDICES

APPENDIX A - DESIGN PARAMETERS & SIZING CALCULATIONS FOR EVAPORATION LAGOONS

APPENDIX B - STORMWATER RETENTION AND DRAINAGE CHANNELS/CULVERT SIZING CALCULATIONS

APPENDIX C - SURVEY & APPLICATION FOR WASTE DELIVERY

APPENDIX D - WASTE TRANSPORT MANIFEST

APPENDIX E - LETTER OF INTENT (CDPHE)

APPENDIX F - NOTICE OF INTENT (EPA REGION VIII)

APPENDIX G - GEOTECHNICAL ENGINEERING REPORT

APPENDIX G1 – BACKGROUND ARSENIC LEVELS

APPENDIX H - 100-YEAR FLOOD PLAIN ANALYSIS

APPENDIX I - GROUNDWATER MONITORING WELL INFORMATION

APPENDIX I1 – RESERVED

APPENDIX I2 – GROUNDWATER SAMPLING PROTOCOL

APPENDIX J - EMPLOYEE TRAINING SUMMARY RECORD

APPENDIX K - FACILITY GENERAL INSPECTION REPORT

APPENDIX L1 - SEPTAGE, FOOD GREASE, AND ANIMAL WASTES COMPOSTING OPERATIONS

APPENDIX L2 - BIOSOLIDS COMPOSTING OPERATIONS

APPENDIX M - ANALYTICAL METHODS, WASTE ACCEPTANCE CRITERIA, AND WASTE CHARACTERIZATION SUMMARY

APPENDIX N - EPA REGIONAL SCREENING LEVELS

1.0 INTRODUCTION

CHT Resources LLC (CHT) is in the process of acquiring CB Industries Delta, Inc. (CBIDI). CBIDI provides the following services for Delta County and the region:

- Composting treatment of septage, biosolids from municipal wastewater treatment plants, food and animal related waste, and grease trap waste
- Long-term storage of contaminated soil

CBIDI operates under an Engineering Design and Operation Plan (EDOP) approved by Delta County and the Colorado Department of Public Health and Environment (CDPHE) in 2003, with amendments in 2005 and 2009. A revised EDOP was submitted and approved by CDPHE in 2014 but a revision to the Certificate of Designation was not addressed by the Delta County Board of County Commissioners. The 2014 revision included design and operation plan updates to meet the applicable solid waste regulations. The EDOP also included design and operation plans for a contaminated soil landfill. The landfill was never constructed and CHT Resources does not want to implement those components, so references to that aspect have been removed.

CHT met with county and state personnel and determined that the best course of action for the ownership change was to resubmit the 2014 CDPHE-approved EDOP with all references to the landfill omitted. Knudsen Engineering, Inc. prepared this Revision 5 of the EDOP with landfill references removed. The revision also includes the CHT company information and key personnel emergency contacts.

CHT will provide similar services as CBIDI except CHT will not accept contaminated soils. CHT may request minor revisions to the operations as they operate the facility
A regional map showing the facility location is included as Fig. 1. A local facility location map is shown in Plate 1.

1.1 Regulatory Authority

The facility will be operated in accordance with all applicable local, state and federal regulations. This EDOP will address the requirements of the CDPHE Hazardous Materials and Waste Management Division "Regulations Pertaining to Solid Waste Sites and Facilities" (6 CCR 1007-2, Part 1). Specific sections of the regulations that apply to the site are:

- Section 1, Administrative Information
- Section 2, Minimum Standards
- Section 9, Waste Impoundments
- Section 14, Composting

1.2 Facility Owners and Emergency Notification Protocol

The facility will be owned by CHT Resources LLC. The names, addresses, and emergency notification telephone numbers of the principals of the firm follow.

Forrest Fulker
CHT Resources LLC
167 Garfield Avenue
Carbondale, CO 81623
Telephone: 970-355-9447

Erica Sparhawk, CEO
CHT Resources LLC
Telephone: 970-456-9447

Jake DeWolfe -–Operations Manager
CHT Resources, LLC
Telephone: 970-319-9786

1.3 Facility Location and Description

The facility's current operations are located on 13.26 acres located in the dry adobe clay soils near the intersection of Trap Club Road and Doughspoon Road in Delta County. The area of operation is approximately 2.5 miles southwest of the town of Cory, CO and approximately 4.9 miles northeast of the town of Delta, CO (see Fig. 1). The physical address of the facility is 11289 Doughspoon Road, Austin, CO 81410.

The facility name is *CHT RESOURCES LLC* – Compost Facility (CHT). The facility is located on an 80-acre parcel comprising the SE1/4, SW1/4 and SW1/4, SE1/4 of Section 21, and portions of the NE1/4, NW1/4 and NW1/4, NE1/4 of Section 28, Township 14S, Range 95W, 6th PM, Delta County, Colorado. The local site location and adjoining property owners are shown in Plate 1.

As shown in Plate 1, the adjoining property surrounding the site is owned by CHT Resources LLC or owned by the U.S. Bureau of Land Management (BLM). Tri-State Electric/DMEA owns a 35-acre parcel approximately 1,680 feet (0.32 miles) east of the site on which a power transformer station is located. The nearest residential property owner adjoins the eastern boundary of CHT owners' holdings approximately 4,180 feet (0.79 miles) east of the facility. Private property to the east of the facility is used for agricultural purposes except for the 35 acre parcel owned by Tri-State Electric. The closest residence is approximately 1 mile east of the facility with remaining homes being in excess of 1.5 miles away.

Access to the treatment facility is controlled by perimeter fencing and gates across access roads. The access gates are locked after business hours to control unauthorized access. The facility's hours of operation are from 7:00 A.M. to 4:00 P.M. Monday through Friday or by pre arranged appointment. Hours of operation and emergency notification information are posted at the entrance to the facility.

The following table lists the capacity and annual volumes that are anticipated at the site:

FACILITY	TOTAL VOLUME	ANNUAL VOLUME	UNITS
Septic Receiving	2,700	1,000,000	gallons
Grease Receiving	3,000	200,000	gallons
Septage Pretreatment	3,000	200,000	gallons
Grease Pretreatment	3,000	200,000	gallons
Compost Mixing Basin	100	10,000	cubic yards

Lagoon 1 – Septage Midwater Evaporation	233,718	198,739 cumulative monthly maximum	gallons
Lagoons 2 and 3 – Stormwater Evaporation	465,436	458,983	gallons
Lagoon 4 – Clean and closed. Compast curing/ workpad area.	305,000	200,000	gallons
Lagoon 5 – Stormwater Evaporation	775,000	630,225	gallons
Finished Compost Storage Area	3,100	As required	cubic yards
West Compost Work Pad	2,500	10,000	cubic yards
Biosolids and compost workpad	1,856	4,000	cubic yards
Compost Pad Expansion Area	1,216	As required	cubic yards
Compost work Pad	4,412	As Required	cubic yards
Level 1 PCS Storage and Long Term Management Area	43,000	No longer accepted	cubic yards
Level 2 PCS Storage and Long Term Management Area	50,000	No longer accepted	cubic yards

The facility may be operated in phases, depending on the demand and economic considerations.

. Septage and grease trap volumes are related to the economic conditions at the time.

2.0 SITE CHARACTERIZATION

An assessment of the potential impacts of the facility to existing surface water and groundwater is discussed in the following Sections.

2.1 Topography

The topography of the site is relatively flat, being located within a portion of the ancient alluvial/debris plain of Negro Creek. The ground surface in the vicinity of the site has an overall gradient to the east. The overall Negro Creek drainage in this area is over ½ mile wide and contains some small ridges and hills which are erosional remnants of the Mancos Shale Formation which is bedrock in this area. An existing gully of a branch of Negro Creek is present on the south side and another branch is present on the north side of the project. Most of the slopes of these gullies are relatively steep but are less than 8 feet high. There is evidence of some minor slope failure along the banks of some of the gullies. See Plate 2.

2.2 Site Geology and Hydrological Conditions

Several geotechnical investigations have been conducted on the site. The work consists of 14 soil borings as shown on Plate 2. Various samples were submitted to a geotechnical laboratory for analysis. The drilling logs are included in Appendix G, Geotechnical Engineering Report. The geologic materials encountered under the treatment portion of the site consist of 20 feet to 40 feet of surface soils which are underlain by a thick sequence of Mancos Shale. South of Negro Creek the surface soils were 5 to 10 feet thick on the steeper slopes. The surface soils on this site consist of a series of lean clay, silty clay and sandy clay/silt soils which are a product of alluvial, mud flow/debris flow features which originate on the south-facing slopes of Grand Mesa. The predominant alluvial/mud flow/debris flow feature is Negro Creek, with head waters

on the slopes of Grand Mesa to the northwest. These mudflow/debris flow features are a small part of a very extensive mudflow/debris flow complex along the base of the Grand Mesa and extending to the North Fork and Main Fork of the Gunnison River. The tract is not considered to be within an active debris flow hazard area, but is considered to be on the margins of the flood plain hazard associated with Negro Creek (see Appendix H).

The surface soils are an erosional product of the upper Mancos Shale, the Mesa Verde and possible Wasatch/Ohio Creek Formations, all of which are exposed on the upper slopes of the Grand Mesa. The soils contained within these mudflow/debris flow features normally exhibit a metastable condition. Based on field and laboratory testing of the soils on this site, the severity of the metastable soils can be described as slight. Surface soil types are discussed below.

Soil Type 1

Soil Type 1 was classified as slightly sandy silt (ML) under the Unified Classification System. These soils are rather typical of the top soil across the entire site. It is anticipated that these soils will be used for reclamation and landscaping purposes.

Soil Type 2

Soil Type 2 was classified as a lean clay (CL) under the Unified Classification System. These soils were observed in a rather blocky form in the soil profile and exhibited rather low concentrations of soluble sulfate salts (less than 50 ppm). Laboratory testing, conducted during initial site characterization in 2003, indicated these soils have a low to medium Liquid Limit (40 percent), and a Skempton's Activity number of 0.2 which would indicate that these soils will probably not exhibit excessive piping after reworking and compaction. The soil permeability was measured using Falling Head Methods. Testing of an in-situ sample from the lagoon area at a depth of 3 feet indicated a permeability of 1.6×10^{-7} cm/sec. Testing of an in-situ sample from the compost area at a depth of 3 feet indicated a permeability of 2.2×10^{-6} cm/sec. Testing of a

molded sample from the compost area at a depth of 3 feet indicated a permeability of 2.3 x 10^{-7} cm/sec.

Soil Type 3

Soil Type 3 was classified as a lean clay (CL) under the Unified Classification System. These soils were observed to have a slightly blocky to occasionally laminated form in the soil profile. These soils were determined to have a low Liquid Limit (28 percent), and a Skempton's Activity number of 0.1 which would indicate that these soils will probably not exhibit excessive piping after reworking and compaction. A sample from the interim storage lagoon area was remolded to approximately 90 percent of the soils proctor density at near optimum moisture content. This remolded sample (2003 site characterization) indicated a permeability of 4.8 x 10^{-8} cm/sec.

When soils of the types discussed above are sampled and subjected to laboratory testing, some collapse and consolidation is often times experienced. In some instances, desiccated soils similar to those found on this site have experienced slight to mild expansive properties when subjected to unsaturated moisture conditions. The alluvial soils on this site will tend to settle under some building loads or significant earth embankment loads. Standard geotechnical and structural engineering practices and construction techniques normally employed in the Delta County area should be sufficient to properly address the possibility of settlement on this site.

The surface soils are deposited over the dense formational material of the Mancos Shale of Cretaceous Age which is considered bedrock in the area. The Mancos Shale is described as a thin, bedded, drab, light-to-dark gray marine shale with thinly interbedded fine-grain sandstone and siltstone layers. Some portions of the Mancos Shale are bentonitic and therefore are highly expansive. The majority of the shale, however, has only a low to moderate expansion potential. The underlying Mancos Shales encountered in the borings vary from very weathered to weathered, to slightly weathered with increasing depth and are discussed below.

Very Weathered Mancos Shale

The very weathered portion of the Mancos Shale Formation is a soft, generally low density lean clay and occasionally slightly sandy lean clay. The clays and shale chips of the very weathered Mancos Shale which comprise this zone should be fairly easily compacted into a dense, low to very low permeable mass. These soils would be appropriate for a low permeability liner, cover and embankment.

Weathered Mancos Shale

The weathered Mancos Shale is also classified as a lean clay and was encountered in a more dense condition. The moisture content of this soil zone was generally observed to be slightly lower than the very weathered zone. It is believed that the weathered Mancos Shale is becoming sufficiently dense that water/moisture movement through this zone is hindered to the point that free water would not be encountered excepting the presence of open fractures.

Slightly Weathered Mancos Shale

The slightly weathered Mancos Shale was classified as a lean clay (CL) under the Unified Classification System. The material is of relatively high density and the drilling process produced large, hard chips of shale. These slightly weathered shales were generally found to have the lowest moisture content, partially due to the relatively high density conditions.

2.3 Background Arsenic Level

The CSEV Table 1 Note 10 states:

> "For many locations in Colorado, naturally occurring concentrations of arsenic in soil are expected to be higher than the risk-based value listed in Table 1. If adequate background sampling is available that confirms the naturally occurring background concentration of arsenic adjacent to a facility is higher than the table value, the background concentration may be used for site screening and remediation purposes. Users should also reference the document "Risk Management Guidance for Evaluating Arsenic Concentration is Soil" (CDPHE, June 2011)."

Soil samples were collected on March 17, 2010 and April 15, 2010 and analyzed to determine background arsenic levels. Sample locations and analytical results are given in Appendix G1. Based on the sampling program results as outlined in Appendix G1, the following background levels shall apply to the site:

- Shale Outcrop – 32.1 mg/kg
- All other areas – 24.4 mg/kg

2.4 Surface Water

Negro Creek is the only surface water feature located within one-half mile of the facility. Negro Creek is a typically dry desert arroyo or wash. The drainage basin associated with Negro Creek encompasses approximately 6 square miles beginning at an elevation of approximately 8,000 feet on the south slopes of the Grand Mesa Plateau to the north (Appendix H). Runoff is present in Negro Creek drainage basin only during localized storm events within the drainage basin excepting a north tributary to Negro Creek which flows across the site from north to east (Plate 2). The north tributary has exhibited perennial flow since approximately 2006. It is surmised the perennial flow is the result of spring development and irrigation activities approximately 5 miles upgradient along this tributary. Negro Creek discharges into Tongue Creek located approximately 1.1 miles east-southeast of the facility. Tongue Creek discharges into Surface Creek and then into the Gunnison River located some 2.6 miles south of the facility. None of the above mentioned surface flows serve as a domestic water source for the area.

A flood plain analysis of the Negro Creek drainage basin for the 100 year, 24 hour storm event is provided in Appendix H. Results of the floodplain investigation are shown in Plate 3, and Plate 4. As shown on these graphics, the treatment facility is not located in the 100 year, 24 hour storm flood plain associated with the area.

2.5 **Wells**

No domestic water supply wells, springs, or surface water intakes are located within 1 mile of the facility. As referenced through the State of Colorado, Division of Water Resources, Water Division Four well database (Appendix I), a well was drilled in 1967 in the NW 1/4, NW 1/4, of Section 21. This area is approximately 0.75 miles north of the facility. The well was drilled to a depth of 44 feet and produced 14 gpm. Maps showing the location of the well are in conflict and a field inspection of the area by Tom A. Cronk and Jeryl N. Beard in February, 2003 could not confirm the presence of a well in the described quarter/quarter section. Considering the poor water quality typically associated with the perched shallow groundwater of the area (see Section 2.6), it is doubtful if this well (if present) could serve as a domestic water supply source. Furthermore, the well in question (NW 1/4, NW 1/4 of Section 21) lies in the Doughspoon Creek drainage basin. The lowest elevation of Doughspoon Creek in this quarter/quarter section is approximately 5,300 feet above sea level. As shown in Plate 2, the elevation of the upgradient diversion berm at the treatment facility is 5,199 feet above sea level. If the well in question was completed to a depth of 44 feet, the water producing zone (if present) of the well would be approximately 57 feet or more above the elevation of the treatment facility, thus precluding the possibility of any facility contaminants affecting the water quality of the well.

Existing monitoring wells will not be decommissioned and no new wells will be constructed until the results of the baseline monitoring are evaluated. Decommissioning and the construction of new wells will be in accordance with discussions between the operator and CDPHE.

Consideration will be made for phased facilities.

2.6 Groundwater

As shown in Fig. 4 and Plate 2, twelve groundwater monitoring wells and two piezometers were installed at the treatment facility. The wells and piezometers were installed in accordance with applicable rules and regulations pursuant to the "Water Well and Pump Installation Contractors Act" (Title 37, Article 91, Part 1, CRS, as amended). Of the fourteen borings associated with the monitoring wells and piezometers, five borings are dry and do not contain groundwater (MW04, MW10, MW11, MW12, and PW13). The wells were screened from approximately 6 feet below ground surface (BGS) to the approximate contact with the unweathered Mancos Shale Formation. All wells are single completion with the exception of MW01, MW02, and MW03 which are dual completion. The groundwater monitoring system facilitates detection of the migration of any contaminants from facility lagoons and impoundments into the underlying perched groundwater zones which overlie the Mancos Shale.

Appendix I shows monitoring well groundwater levels. The water surface throughout the site mirrors the topography with a large influence from local surface water features. The influence of the surface water is observed from the groundwater levels recorded from monitoring wells located near the creek (Figure 2, Hydrograph for Monitoring Well MW07). For monitoring wells located at a distance from the creek, there is no influence from the surface water (Figure 3, Hydrograph for Monitoring Well MW03). When Negro Creek contains water, the subsurface directly beneath the creek bed becomes saturated. During the times of the year when Negro Creek is dry, the subsurface directly beneath the creek bed becomes unsaturated. This flow pattern is typical of low-permeability environments, with large vertical hydraulic gradients and small to no horizontal hydraulic gradients. A potentiometric surface map of the flow regime is shown in Figure 4 and Figure 5.

Monthly depth to groundwater levels are reported to CDPHE in the annual reports. The following table lists the depth to groundwater for monitoring wells MW03 and MW07 for December events from 2011 to 2020 to illustrate the changes in ground water levels.

DEPTH TO GROUNDWATER
MONITORING WELLS MW03
AND MW07

Date	MW03 Depth to Groundwater (FT)	MW07 Depth to Groundwater (FT)
12/19/2011	47.84	20.52
12/17/2012	47.78	21.62
12/9/2013	47.82	22.2
12/19/2014	47.84	21.36
12/18/2015	47.86	21.82
12/21/2016	48.64	19.68
12/18/2017	48.06	21.04
12/12/2018	48.20	22.30
12/16/2019	48.40	23.04
12/22/2020	47.52	23.44
Average	48.00	21.70
Maximum	48.64	23.44
Minimum	47.52	19.68

As shown on the table, the groundwater levels do not significantly change over time. Monitoring well MW03 had an average depth to groundwater of 48.00 feet and the maximum and minimum were 48.64 feet and 47.52 feet, respectively. Monitoring well MW07 had an average depth to groundwater of 21.70 feet and the maximum and minimum were 23.44 and 19.68 feet, respectively.

The shallow, “perched” groundwater is adjacent to the Mancos Shale and such waters are known for large amounts of sulfate salts and other minerals. This upper “perched” water is not normally considered to be potable. It is not believed the shallow “perched” groundwater on this site would be considered a water resource for either potable purposes or for extensive irrigation.

A true or deeper groundwater in this area is normally encountered at significant depths below the ground surface. Some sandstone beds within the Mancos Shale are known to contain groundwater, but, under most circumstances, this water is mineralized and often saline. These thin confined aquifers are usually erratic and have not been well studied. It is anticipated that significant confined aquifers may be located in the lower sandstones of the Dakota Formation and within thin sandstone beds of the underlying Somerville Formation, with more significant aquifers possibly located in the Entrada Sandstone Formation. These confined aquifer beds are believed to be approximately 2000 to 4000 feet below the ground surface.

3.0 GROUNDWATER MONITORING

A detection groundwater monitoring program was implemented at the facility upon startup in 2004. The three initial monitoring wells (MW01, MW02, and MW03) were sampled on a quarterly basis for two years after the commencement of facility operations. Well MW-4 has historically been dry. MW01, MW02 and MW03 are dually completed wells with a shallow and deeper screen interval. Groundwater levels were recorded for each well immediately prior to purging for groundwater sampling. Samples were analyzed for metals (EPA Publication SW-846), ammonia (SM-4500-NH_3), nitrates (SM-4500-NO_3), phosphorous (SM-4500-P), total petroleum hydrocarbons (EPA Method 8015m), VOCs (M8260B GC/MS), specific conductivity (SW-9050A), and pH (SM-9045A). Sample results from monitoring wells MW01 and MW02 were compared with sample results from monitoring well MW03 on an individual basis to determine if facility operations were affecting groundwater quality below the facility.

Upon approval by CDPHE, the monitoring well sampling frequency was reduced from quarterly to semi annually after the first two years of operation. Additionally, the sample suite for wells MW-1 through MW-4 was reduced to the following:

Alkalinity (as CaCO3) - method A4500-CO2D
Fecal Coliform – method A9222D
Diesel Range Organics – method SW8015M
Gasoline Range Organics – method SW8015
Anions by Ion Chromatography (Cl, SO4, NO3, NO2, NO3/NO2) – method SW9056
Metals by ICP-MS (Ca, Mg, Na, K, Pb, Cr, Se) – method SW6020A
Ammonia as Nitrogen – method A4500-NH3G
Phosphorus, total – method E365.1 R2.0
Organic Carbon, total – method E415.3
Volatile Organic Compounds (BTEX) – method SW8260
Field measurements – temperature, pH and conductivity

In 2011 the Division requested that the full suite of VOCs is monitored using the EPA method 8260 due to the petroleum contaminated soils and exploration and production wastes being requested for disposal as one time waivers. Therefore the currently approved groundwater monitoring analytical program is the program listed above plus the full list of VOCs in method 8260. Annual monitoring reports and appended laboratory reports and quality control will be submitted to the Division.

During site characterization for the CD Amendment in 2010/2011, subsurface drilling was used to install eight (8) additional (future) groundwater monitoring wells (MW05-MW12) and two piezometers (PW13 and PW14). Initial background groundwater quality sampling was initiated in November 2010. Sampling was conducted on a quarterly basis for two years and testing included the Appendix 1A and 1B lists in the Regulations. The information will be placed into the Operating Record.

A Statistical Analysis Plan for the groundwater monitoring program was reviewed and approved by CDPHE in 2013. A Sampling Protocol is attached as Appendix I2. No changes to the groundwater monitoring plan are contemplated in this revision. Future revisions to the monitoring plan will be submitted to CDPHE for review and approval as the newly permitted facilities are constructed or if any of the new wells offer improved monitoring over the original monitoring wells (MW-1 through 4).

4.0 STORMWATER CONTROL

As shown in Plate 2, a berm has been constructed across the upgradient (west) edge of the treatment facility to divert the majority of run-on surface flows around the site. The berm is approximately 3 feet high and 32 feet wide. The berm was constructed with native soil and also serves as an access road to the south part of the facility. A drainage swale was constructed along the upgradient edge of the berm to intercept existing drainage channels and direct flow around the facility infrastructure for eventual discharge south into Negro Creek (see Plates P2 and P3). Runoff from the drainage at the northwest corner of the site is managed by routing flows through a culvert in the berm. The flows are routed through the site into the north fork of Negro Creek. Culvert and drainage channel design for this diversion are discussed in Appendix B. On-site runoff is diverted to the Stormwater retention ponds.

Currently, runoff resulting from on-site precipitation on the existing treatment facility is contained in evaporation ponds 2 and 3 Information submitted in the EDOP has indicated that the ponds are in compliance with 6-CCR 1007-2 Section 14 Composting regulations (See Section 4.1). Demonstrations have been made and approved by CDPHE, that the Stormwater ponds meets Section 9 requirements in accordance with the regulatory schedule associated with the regulation (CPDHE, 2017). Stormwater runoff associated with the proposed compost workpad expansion (see Plates P2 and P3) will be directed to a proposed stormwater retention impoundment located along the downgradient edge (east edge) of the facility. Upon implementation of the workpad expansion, the proposed stormwater retention impoundment will be designed and constructed to contain 100% of the stormwater generated across the entire site from the 100-year, 24-hour storm event. The 100 year storm event is chosen for design purposes to facilitate leaving the stormwater retention structures in place at facility closure. Upon construction of the compost pad expansion, and as shown in Plates P2 and P3, site grading is designed to direct on-site runoff into the proposed stormwater retention impoundment along the facility eastern boundary. For the existing facility, on-site drainage flows into Lagoons 2, and 3 via diversion swales shown on Plates P2 and P3. Lagoon 1 is utilized for evaporation of septage

midwater. The exact flow patterns will be determined and constructed as new facilities come online, e.g. the new compost work pad and new retention lagoon. Lagoon 2 is primarily used for stormwater retetention but may be used for Lagoon 1 overflow during the winter when evaporation and runoff are low. Liquid in Lagoon 2 will be removed prior to the spring runoff events.

The Rational Method was used to estimate the volume of on-site runoff generated during a 100-year, 24-hour storm event. The 100 year design storm data is utilized to facilitate leaving the stormwater retention facilities in place at facility closure. The Rational Method was based on the equation:

$$V = P \times A \times C$$

where:

C = Runoff coefficient;

P = Total precipitation from the storm event in feet;

A = Area in square feet, and;

V = runoff volume resulting from a storm event in cubic feet.

(Source: *Stormwater Management Manual*, Public Works Department, City of Grand Junction, CO, June, 1994)

Precipitation for the 100-year, 24-hour storm event in the Cory area is estimated at 2.40 inches (NOAA Atlas II tables for the 100 year, 24 hour event). The soil types underlying the facility are classified as SCS Type "C" soil with a developed drainage slope of 1.5 percent. The runoff coefficient for these types of soils was 0.53 (Table 702, *Stormwater Management Manual*, Public Works Department, City of Grand Junction, CO, March, 2006).

As shown in Plate 2, stormwater drainage associated with approximately 577,619 square feet (sq ft) of existing site area is presently contained in the evaporation ponds. Currently, the volume of retained on-site runoff generated from the 100-year, 24-hour storm event is 61,278 cubic feet or 457,983 gallons being directed to the evaporation ponds.

The maximum retained volume of each existing evaporation lagoon is 232,718 gallons (31,112 cu. ft.) or 698,153 gallon (93,336 cu. ft.) total capacity for 3 lagoons. Historically, one evaporation lagoon is sufficient to contain and evaporate waste mid-waters generated during facility operations. As shown on Plate 2, Lagoon No. 1 is utilized for evaporation of septage midwater. Grease trap waste midwater historically has been less than 1,000 gallons/year and was directed to Lagoon No. 2. That material will now be incorporated into the compost. Lagoons 2 and 3 with a total capacity of 465,436 gallons (62,224 cu. ft.) are thus sufficient for retaining the 100 yr., 24 hr. storm event of 457,983 gallons (61,278 cu. ft.) as well as the 1,000 gallons/year (134 cu ft) of grease trap midwater.

The total site area including the proposed compost pad expansion is approximately 794,855 square feet (18.25 acres). To facilitate leaving the stormwater retention facility in place at closure, the proposed expansion area stormwater retention impoundment (lagoon 5) is designed to retain 100% of the onsite stormwater runoff generated from the 100 year, 24 hr. storm event. Using the Rational Method discussed above, lagoon 5 is sized to retain a stormwater runoff volume of 84,255 cubic feet or 630,225 gallons.

Design calculations and reference documents associated with stormwater retention sizing and all drainage channel/culvert sizing is presented in Appendix B.

In the event of a high flow storm event, excess stormwater retained in the evaporation ponds and stormwater retention impoundment will be tested to assess contaminant levels and utilized in the compost/landfarm waste treatment operations if contaminant levels permit. Stormwater ponds should be pumped out within 30 days to provide design capacity.

4.1 Existing Evaporation/Stormwater Retention Lagoon Liners

As stated above, the existing evaporation lagoons also serve as stormwater retention impoundments. The evaporation lagoons are constructed as lined lagoons consisting of a minimum of 12 inches of compacted native soils over 6 inches of scarified and recompacted soils. The native soils were recompacted to a minimum 90% of the Proctor density (ASTM D-698 A) to provide a liner permeability of 1×10^{-6} cm/s (Appendix G). Groundwater monitoring results indicate the native clays comprising the existing liner construction are sufficient to provide stormwater/leachate containment in accordance with Section 14.3.4 (C) (2) of 6 CCR 1007-2.

Evaporation Lagoon #3 was tested to determine if it was comparable to the 18 inches of 1×10^{-6} cm/sec regulatory requirement. Grand Junction Lincoln-DeVore, Inc. conducted a sampling and analysis investigation in June, 2011. Results of the analysis are included in Appendix G. Shelby tubes were used to collect undisturbed samples at four locations. In order to determine the characteristics in a worst-case condition, samples were taken on the lower slope, approximately four feet horizontal from the toe of the sidewall and one foot vertical from the floor. This location is the most difficult to construct and would give the poorest in-situ results. Also, the evaporation lagoon does not contain water on a full-time basis and the sample location along the lagoon sidewall would experience more desiccation than the lagoon floor (an additional worst case condition). Table 1 is a summary of the results of the investigation.

TABLE 1

Sample Designation	Depth (in)	Moisture (%)	Density (pcf)	Classification (UCS)	Permeability (cm/sec)
NE Corner	4	9.2	109.7	Lean Clay (CL)	
NE Corner	8	8.3, 11.7	112.4, 117.0	Lean Clay (CL)	1.39×10^{-7}
NW	Surface	11.3	115.9	Lean Clay (CL)	
NW	7	15.8, 18.2	100.1, 107.5	Lean Clay (CL)	8.17×10^{-8}
SE	3	15.5	110.6	Lean Clay (CL)	
SE	7	14.7	113.3	Lean Clay (CL)	
SW Corner	3	14.5, 17.4	96.3, 105.6	Lean Clay (CL)	2.16×10^{-7}
SW Corner	10	14.0, 13.9	102.6, 105.4	Lean Clay (CL)	1.79×10^{-6}
Average*					5.57×10^{-7}

*The moisture and density measurements were relatively consistent. Therefore, it is reasonable to take an average of the four samples

The equivalency of the constructed liner to the regulatory requirements can be determined by comparing seepage rates for both scenarios. Seepage can be calculated using Darcy's law:

$v = k(H+d)/d$

Where:

v = Amount of seepage through unit area of liner (cm/sec)

k = Permeability coefficient of soil liner (note: permeability units are actually volumetric flow (cm^3/sec) per unit area (cm^2), with units canceling out to be cm/sec)

H = Depth of liquid (ft)

d = Thickness of liner (ft)

<u>6-CCR 1007-2, Part 1, Section 14.3.4 (C) (2) Requirements:</u>

k = 1 x 10-6 cm/sec

H = 3.0 ft

d = 1.5 ft

$v = (1 \times 10^{-6}) ((3+1.5)/1.5) = 3.0 \times 10^{-6}$ cm/sec seepage

Actual Construction of Retention Pond

$k = 5.57 \times 10^{-7}$ cm/sec

H = 3.0 ft

d = 1 ft

$v = (5.57 \times 10^{-7})((3+1)/1) = 2.23 \times 10^{-6}$ cm/sec seepage

The seepage through the constructed liner is less than seepage through the prescribed liner. Therefore, it is reasonable to conclude that the constructed liner is equivalent to the regulatory requirements. In addition, the original geotechnical investigation for the site concluded the following:

> "Testing of an in-situ sample from the proposed lagoon area at a depth of 3 feet indicated a permeability of 1.6×10^{-7} cm/sec. Testing of an in-situ sample from the proposed compost area at a depth of 3 feet indicated a permeability of 2.2×10^{-6} cm/sec. Testing of a remolded sample from the proposed compost area at a depth of 3 feet indicated a permeability of 2.3×10^{-7} cm/sec. A sample from the interim storage lagoon area was remolded to approximately 90 percent of the soils proctor density at near optimum moisture content. This remolded sample indicated a permeability of 4.8×10^{-8} cm/sec."

These results demonstrate that the native soils have permeability similar to or exceeding the regulatory requirements and provide an extra level of protection. Note that additional demonstrations may be required if the ponds are used for storage, treatment, utilization, processing, or deposit and final treatment of solid waste as regulated under 6 CCR 1007-2, Section 9, Waste Impoundments. CHT will address ponds 1, 2, and 3 in accordance with the requirements and schedules for implementation of the Section 9 regulations.

5.0 FACILITY ENGINEERING DESIGN

A discussion of facility infrastructure engineering design follows. Existing infrastructure construction quality assurance/quality control information and analysis is included as Appendix O.

5.1 Concrete Receiving and Treatment Structures

See below for the details on the Concrete Receiving and Treatment Structures at the facility.

5.1.1 Septage Receiving and Septage Treatment Structure

The structures associated with the septage, grease trap, and sand trap receiving facilities are constructed of reinforced concrete. Concrete structures are poured in place or concrete precast. All poured in place structures have a concrete floor and sidewalls a minimum of 8 inches thick and reinforced with #4 rebar placed on a 12-inch grid. Concrete is a minimum 3000 psi Type V sulfate resistant. The septage receiving and septage treatment structures are shown in Plates S1 and S2 respectively.

Throughout the operation of the facility, odor from the open top structures has not been an issue. All piping associated with the waste receiving facilities is a minimum ASTM Schedule 40 PVC.

5.1.3 Compost Mixing Basin

A compost mixing basin may be constructed. If so, Plate S4 details the mixing basin to be constructed of poured-in-place reinforced concrete. Mixing of compost occurs when windrows are constructed in place on work pad and subsequently turned. Currently, a clay lined mixing basin is used to mix septic sludge with wood chips and sawdust. CHT is in the planning stages of implementing a process to mechanically dewater septic sludge which will eliminate the need for the clay lined or concrete basin.

5.2 Evaporation Impoundments

Evaporation impoundments 1 – 5 are shown on Figure 3 and Plate 2 and include:

- Three evaporation lagoons (#1, #2, and #3)
- A stormwater retention lagoon (#5)

5.2.1 Evaporation Lagoons #1, #2 & #3

As stated in Section 4.0, demonstrations and approval for liners for Evaporation Lagoons 1, 2, and 3 have been made regarding Section 9 Pond liner requirements. The evaporation lagoons were constructed to meet the original Section 14 Compost Regulations. The lagoons were constructed with a single liner designed to provide a permeability of 1×10^{-6} cm/sec. The evaporation lagoons and interim storage lagoon are actually lined with 12" of compacted native soils over 6 inches of scarified and recompacted soils. As discussed in Section 4.1, the liners exceed the Section 14 requirements for a stormwater retention pond liner. Groundwater monitoring indicates septage or grease trap midwater is not affecting the underlying groundwater.

Construction of the dikes and berms around the lagoons was consistent with construction of the clay liner. Berms and dikes consisting of recompacted native clays were compacted to 90% Proctor density in maximum 6-inch lifts. Banks associated with berms and dikes were held to a maximum slope of 3 horizontal to 1 vertical to minimize erosion and provide a means of egress for animals or personnel who may accidentally enter the lagoons.

5.2.2 **Compost Workpad - Formerly Lagoon #4**

Lagoon 4 was received clean closure approval from CDPHE. The facility has been repurposed as a compost workpad.
The original lagoon was constructed to meet the original Section 14 Compost Regulations.

Appendix G contains a February 13, 2012 geotechnical investigation report prepared by Grand Junction Lincoln-Devore, Inc. The report verifies that MW03 was developed in Boring 3 of the original 2003 geotechnical investigation. The 2003 report is also included in Appendix G.

The drilling log from Boring 3 identifies the subsurface to be 30 feet of lean clay (CL) and slightly sandy silt (ML). The text describes the material as "unconsolidated alluvial soils which are underlain by a thick sequence of sedimentary rocks" Ground water was found at a depth of 35 feet.

Liner construction data is included in Appendix G. The lagoon was constructed with a single liner designed to provide a permeability of 1 x 10^{-6} cm/sec. The interim storage lagoon was lined with 12" of compacted native soils over 6 inches of scarified and recompacted soils. Upon completion of the initial excavation, the exposed subsoils were moisture conditioned and compacted in-place to minimum 90% optimum Proctor density (ASTM D-698 A). Before liner construction was initiated, the exposed subbase soils were scarified and moisture conditioned to establish a homogeneous interface with the overlying clay liner.

After preparation of the subbase soils was completed, recompacted native clay subsoils were used to construct the clay liner. Construction of the clay liner consisted of recompacting native clays over the prepared subbase in maximum 6-inch lifts. Each lift was compacted to 90% Proctor density. The surface of each completed lift (excepting the final construction lift) was moisture conditioned and scarified to promote a homogeneous interface with the successive lift installation. Density testing to document lift construction was conducted at a frequency of one test for each 5,000 sq. ft. of lift area.

Construction of the dikes and berms around the lagoons was consistent with construction of the clay liner. Berms and dikes consisting of recompacted native clays were compacted to 90% Proctor density in maximum 6 inch lifts. Banks associated with berms and dikes were held to a maximum slope of 3 horizontal to 1 vertical to minimize erosion and provide a means of egress for animals or personnel who may accidentally enter the lagoons.

The following conditions will be identified in the Section 9 review process:

- The groundwater was at a depth of 35 feet,
- The site is underlain with 30 feet of lean clay (C and slightly sandy silt (ML) over a thick deposit of shale, and
- A 12-inch compacted clay liner was installed during the initial construction.

Leak detection monitoring consists of two monitoring well, MW03 and PW13. Well construction records are included in Appendix I. MW03 is constructed to a depth of 55 feet, approximately 25 feet into the shale. PW13 was constructed to a depth of 45 feet, approximately 29 feet into the shale. The 16 feet of surficial shale was described as a lean clay.
The interim storage lagoon will include a concrete separating unit to allow storage/treatment of sand trap waste or hydrocarbon contaminated soils and water as required. The design for the lagoon is shown in Plate C7, with a detail on Plate D1.

5.2.3 **Stormwater Retention Lagoon #5**

The work pad will only be used for composting, the lagoon will be constructed in accordance with Section 14 requirements. In that case the lagoon will be constructed with a single liner designed to provide a permeability of 1 x 10^{-6} cm/sec. The lagoon will be lined with 18" of compacted native soils over 6 inches of scarified and recompacted soils. Upon completion of the initial excavation, the exposed subsoils will be moisture conditioned and compacted in-place to minimum 90% optimum Proctor density (ASTM D-698 A). Before liner construction is initiated, the exposed subbase soils will be scarified and moisture conditioned to establish a

homogeneous interface with the overlying clay liner.

After preparation of the subbase soils is completed, recompacted native clay subsoils will be used to construct the clay liner. Construction of the clay liner will consist of recompacting native clays over the prepared subbase in maximum 6-inch lifts. Each lift will be compacted to 90% Proctor density. The surface of each completed lift (excepting the final construction lift) will be moisture conditioned and scarified to promote a homogeneous interface with the successive lift installation. Density testing to document lift construction will be conducted at a frequency of one test for each 5,000 sq. ft. of lift area.

Construction of the dikes and berms around the lagoon will be consistent with construction of the clay liner. Berms and dikes consisting of recompacted native clays will be compacted to 90% Proctor density in maximum 6 inch lifts. Banks associated with berms and dikes will be held to a maximum slope of 3 horizontal to 1 vertical to minimize erosion and provide a means of egress for animals or personnel who may accidentally enter the lagoon.

lagoon has been constructed in accordance with the Section 9 process. Section 9 requires that impoundments be lined with a composite liner, a double liner system or an alternate liner system of performance based alternative design. In addition, the facility design must include leak detection monitoring.

A survey level will be used to measure the depth of a ll lagoons. . A calibration chart was prepared for each lagoon referencing the retained volume (in gallons) and the corresponding exposed fluid surface area (in sq ft) associated with each 0.05' interval of the depth gauge (see Appendix A).

5.3 Work Pads

Existing Work Pads

All existing work pads associated with composting and landfarming activities at the site were constructed of recompacted native clays designed to provide a permeability less than 1 x 10^{-5} cm/s. As previously described in the original geotechnical investigation (Appendix G), the native soils have in-situ permeabilities ranging from 1.6 x 10^{-7} cm/sec to 2.2 x 10^{-6} cm/sec at a three foot depth. Construction of the work pads consisted of disking and scarifying the native soils underlying the work pad footprint to a minimum depth of 12 in. Upon completion of the disking and scarifying, the site soils were moisture conditioned and compacted in-place to minimum 90% optimum Proctor density (ASTM D-698 A). Density testing to document work pad construction was conducted at a frequency of one test for each 5,000 sq ft of work pad area. Construction QA/QC documenting the original 2003 pad/lagoon construction is included as Appendix O.

New Work Pads

All new work pad construction will meet or exceed 18 inches of compacted clay with permeability less than 1 x 10^{-6} cm/sec. This design is equivalent to the Stormwater Pond requirements of Section 14 and appropriate for this site, which has excellent geology and is greater than 20 feet to groundwater. The existing pads on Plates P2 and P3 will remain as constructed originally.

6.0 QUALITY ASSURANCE/QUALITY CONTROL

A project specific Construction Quality Assurance plan will be developed for any new engineered features to be constructed at the facility, and this plan will be submitted to the Division for review and approval prior to these features being constructed.

Quality assurance for new construction will be in accordance with the Solid Waste Guidance Document and Concrete Specifications according to the following matrix:

	CONCRETE RECEIVING AND TREATMENT STRUCTURE	EVAPORATION IMPOUNDMENTS	WORK PADS
LEACHATE COLLECTION SYSTEM -			
Soil Drainage Layers			
LOW PERMEABILITY LINER CONSTRUCTION			
Synthetic Liner Material			
Low Permeability Soil Liner Lift		X	X
SUB-GRADE PREPARATION			
	X	X	X
SURVEY			
		X	X
CONCRETE SPECIFICATIONS			
	X		

7.0 SITE INSPECTIONS

General inspections and written documentation of the condition of all waste receiving/separating structures, piping, drainage structures, lined lagoons or impoundments, and work pads shall be conducted on a monthly basis. The inspections shall address ground movement, cracks, erosion, leaks, burrowing rodents, vegetation, or any other conditions which may affect the integrity of the structure. A record of the inspections shall be maintained as a part of the facility operating records. A Facility General Inspection Report is included for reference as Appendix K.

8.0 WASTE DELIVERY AND WASTE CHARACTERIZATION

CHT will accept waste from the following potential sources:

- Septage
- Biosolids from municipal wastewater treatment plants
- Grease trap waste
- Food and animal related waste

8.1 Waste Generator Procedures

Before any waste generator is allowed to deliver material to the facility, the waste generator will be required to complete an application for delivery. The application will document the generator's identity, contact personnel, company location, type of waste generated, and the quantity of waste for which delivery is requested. The waste generator will be required to make a hazardous waste determination for each waste stream on each waste application for delivery. The application will state that it is the responsibility of the waste generator to determine if the generator's waste is hazardous waste pursuant to the Colorado Hazardous Waste Regulations, 6 CCR 1007-3, Part 261. An example application for delivery to the facility is included in Appendix C. CHT will maintain records of all approved applications for delivery.

8.2 CHT Waste Acceptance Procedures

CHT will require the waste generator test for hazardous waste pursuant to the Colorado Hazardous Waste Regulations 6 CCR 1007-3 Part 261 or an equivalent method approved by CDPHE under 6 CCR 1007-3, Part 260.21. CHT may also determine the method of testing based on the materials or the processes used to create the waste. Waste generator knowledge is sufficient for the acceptable wastes at this facility. Waste stream specific tests typical for waste generators are discussed in Appendices L1, L2 and M.

9.0 FACILITY OPERATIONS

Facility operations include the treatment and disposal of septage, biosolids from municipal wastewater treatment plants, food and animal related waste, and grease trap waste. A discussion of these treatment activities follows.

9.1 Composting Operations

Composting operations at the facility are discussed below.

9.1.1 Septage, Food Grease, and Animal Wastes Composting

Septage resulting from pumping operations associated with septic tank maintenance, food grease resulting from maintenance pumping of food service grease traps, and animal wastes will be accepted for composting at the facility. A discussion of this composting operation is presented in Appendix L1.

9.1.2 Biosolids Composting

Biosolids resulting from municipal wastewater treatment facilities will be composted at the facility. A discussion of the biosolids composting operation is presented in Appendix L2.

9.3 Petroleum Contaminated Soil Long-Term Waste Storage and Disposal Categories

Existing on-site treated or stored contaminated soil will be tested to characterize remaining contaminant levels. Results of the soil analytical analysis will be used to classify waste soil product into one of three categories, depending on the level of contamination. EPA Regional Screening Levels (ERSL) contamination levels will be used to determine which category the remediated soil product is classified in and the acceptable use for the remediated soil product. ERSL values are listed in Appendix N.

CHT will develop a plan for CDPHE approval with systematic detailing for determining what soil has been tested and classified on the basis of test results, and how to identify the different classes of soil remaining on site from prior operations. CHT will include a plan for the ultimate disposition of this treated soil. CHT may request variance from background metal limits if the background levels at the source of the soil excavation exceed the on-site background levels. For example, the Division approved the acceptance of the Anvil Points soil even though the Arsenic levels exceeded the on-site levels (CBIDI, April 11, 2011).

9.3.1 Use Category Level 1 – ERSL Residential Values with metal concentrations less than facility background

Level 1 concentration level shall not exceed the ERSL most restrictive values and site background levels for metals. For soil that is classified as Level 1, the material must:

- Remain within the approved Certificate of Designation (CD) boundary where onsite background metals have been established,
- Be placed into the area labeled on Plate 2 as “On-site storage area for Level 1 soils long term management” and shall not be moved to another location prior to notifying the Division.
- Be placed in 12-inch lifts and compacted with heavy equipment. The top of the fill

shall be relatively flat (to minimize stormwater run-off) and any exposed side slope shall be a maximum 3H:1V.

All soils managed as Level 1 will not be subject to financial closure requirements.

9.3.2 **Use Category Level 2 – ERSL Industrial Values with metal concentrations less than facility background**

To be classified as Level 2, the soil shall not exceed the ERSL Industrial Values. CHT will place the product in the Certificate of Designation (CD) boundary. Level 2 areas are identified on Plate P3. CHT will survey, stake and document the stockpile locations and volume of material placed. CHT will maintain records of the stockpile location and volume survey documentation. CHT will cap the fill with at least one foot of native clay to prevent the transmission of leachate within the stockpile. If the soil remains stockpiled on-site, an environmental covenant will be placed on the property at closure.

Any soils that are capped will be considered to have final cover and will not be subject to financial assurance closure requirements. Level 2 soil stockpiles that do not have final cover will be subject to financial closure requirements. The total volume of soil on site will be specified for financial assurance purposes.

9.3.3 **Use Category Level 3 – Soil Characteristics exceeding ERSL Industrial Values or as defined by CDPHE**

CHT and CDPHE will identify Level 3 soils based on analytical results and background levels at the source of the soil excavation. As previously stated, plan for management of the soil will be submitted to CDPHE for review and approval.

9.4 Beneficial Use Plan For Compost

Compost marketed to the public for unrestricted use shall meet the numerical criteria for Grade I with respect to the sample constituents defined in Table 1 (Appendix L1, Section 6.1.1). Additionally, the compost shall meet the criteria for Class A with respect to pathogen destruction and vector attraction reduction.

When compost is made available to the public for unrestricted use, a label or information sheet shall identify:

1. the name and address of the person who prepared the compost, and:
2. the typical concentration of plant nutrients on a dry weight percentage basis including, at a minimum, total nitrogen, total phosphorus, and total potassium in the compost.

All use, distribution, or disposal of compost at the facility will require a Notice of Authorization for the Use and Distribution of Biosolids from the CDPHE. A Letter of Intent has been submitted to the CDPHE to facilitate issuance of the Notice of Authorization. The facility currently has a Notice of Authorization authorizing distribution of compost produced over the past 15 years of facility operation. The Letter of Intent is shown in Appendix E. CHT will update the notice to reflect the new ownership after the transfer of the facility according to 5 CCR 1002 Regulation 64.10 (J).

10.0 SITE SECURITY MEASURES

The facility manager is present at the facility and monitors facility activities continually during business hours. Additionally, access to the facility during business hours is limited to the main access gate with alternative access structures remaining locked. Only authorized persons are allowed to deliver waste to the facility with all deliveries being monitored and recorded by the facility manager.

11.0 EMPLOYEE TRAINING

The site manager or his designee will be the training manager. The training manager will have completed the OSHA 40-hour hazwoper training course. An employee training program is administered to each employee of the facility upon initial employment. The initial employee training program requires that the employee review and become familiar with the:

- CHT Engineering Design and Operation Plan;
- Delta County Application for Specific Development document;
- Waste Characterization Plan for all wastes acceptable at the facility;
- Composting Protocol;
- Groundwater Sampling Protocol;
- Spill Prevention Protocol;
- Fire Suppression Plan;
- Emergency Notification Information for local police, fire, and EMT personnel;
- Contact information for the State Compensation Designated Medical Provider;
- First Report of Injury Forms and Procedures;
- Facility Contingency Plans; and
- Employee Safety Program.

Upon completion of the initial employee training, all employees will review the documents on a yearly basis. Each employee will complete and maintain for company records an Employee Training Summary Record included for reference as Appendix J.

12.0 CONTINGENCY PLAN

12.1 Unacceptable Waste

Before a waste is delivered to the facility, it will be characterized to determine if it is acceptable for treatment (see Section 8.0 - Waste Delivery and Waste Characterization). If a generator arrives at the facility with a waste which exhibits any debris, discoloration, odor, or any other characteristics not revealed in the initial waste characterization process, it will not be accepted for disposal without further characterization.

Any waste that appears unusual during the treatment process will be diverted to the concrete sludge drying section of the interim holding lagoon for further characterization. All waste exhibiting excessive contaminant constituents or any hazardous characteristics will be isolated and rejected by the facility and the analytical test results will be immediately reported to Delta County, the CDPHE, and, if appropriate, the EPA. The waste generator and transporter will immediately be notified to remove the waste from the facility at the direction of governing authorities.

If contamination is detected in the groundwater monitoring program, a groundwater assessment monitoring program and corrective measures plan will be developed for the site and implemented in accordance with 6 CCR 1007-2 Section 2.1.18 and Appendix I.

Nuisance conditions which become apparent during facility operations will be addressed on an as- needed basis. Mitigation will occur within 72 hours. Dust will be controlled by the addition of water or magnesium chloride, if necessary. Muddy areas will be graveled. If necessary, a mud trap consisting of a drive through and across large pit-run gravel will be utilized to prevent transfer of mud from delivery vehicles onto Doughspoon Road. Wind-blown debris, such as packing material or boxes, truck bed liners or other unanticipated sources will be gathered and contained in appropriate wind-proof containers. Flies, birds, scavenging animals, and other disease vectors will be controlled with sprays, netting, and fencing as required.

The primary onsite deterrent for vector control shall be the prompt processing of feedstock materials. All biosolids and food waste will be incorporated into active composting windrows within 48 hrs of delivery to the facility. Any stored food waste or biosolids will be covered with 8 inches of compost to act as a biofilter and limit vector attraction. Compost operations will be expanded to compost existing on-site stored biosolids stockpiles. Composting Best Management Practices (BMP's) will be implemented on site to limit nuisance conditions, including (but not limited to): Optimal Carbon:Nitrogen Ratio, Moisture levels, particle size and frequent turning to maintain aerobic conditions.

Noxious odors will be controlled as discussed in Section 12.3 - Odor Management Plan which follows.

It should be noted that during the past 15 years of operation of the facility, no problems or complaints have occurred from environmental contamination or nuisance conditions either on or off site.

12.2 Fire Protection Plan

Chemical fire extinguishers will be made available at all waste delivery locations to extinguish fires at these areas. Chemical fire extinguishers will also be kept in all office buildings, attendant sheds, storage buildings, and on-site equipment at the facility.

The static compost piles will be routinely monitored for temperature as part of the composting process. The high moisture content of the piles would ensure that any combustion would be slow and smoldering, providing sufficient time for fire suppression measures. If the composting operation does accidently result in excessive internal temperatures, the compost piles will be broken open and allowed to cool. After cooling, the compost material will be reintroduced into

the composting treatment process.

The compost bulking agent storage, treatment, and curing areas are surrounded on all sides by the interim storage pond, the evaporation ponds, access roadways, and the recompacted clay work areas. These buffer areas would prevent the spread of any fire that might occur in the bulking agent. The sparse natural vegetation in the area surrounding the facility would further mitigate the spread of fire.

CHT presently has 2 cfs surface water right and 17 acre-feet storage water right on a tributary to Negro Creek. The existing water/storage right provides a large amount of readily available clean water for fire suppression, if needed. The preferred method of fire suppression is covering with dirt to prevent release of contaminants to surface waters. Pumping equipment used in the treatment process will be located on-site and would be used to transport water to any fire at the facility. The site manager will determine when and if the local fire department will be contacted.

12.3 Odor Management Plan

Over the past 15 years of operation of the facility, no odor problems or complaints have become apparent. None-the-less, if an odor problem does become apparent, the following measures will be implemented to mitigate any noxious odors.

If odor becomes a problem with the settling basins, an aerator consisting of an air compressor providing compressed air to submerged bubble tubes will be installed in the containment basins. The aerators will promote aerobic degradation of the incoming waste. If required, off-gas from the aerator operation will be contained by a cover and filtered for odor control. Filtration of aeration off-gas will consist of filtering the vapor through the unused compost bulking agent (saw dust, wood chips, grass clippings, etc.) or filtering the off-gas through the static pile

associated with the active compost operation. Filtering the off-gas through the active compost static pile will also supply oxygen for the biodegradation of organics in the composting process and promote drying of the compost through forced evaporation of water.

It is anticipated the "two year" treatment method for biosolids (see Appendix L2) will facilitate the immediate introduction of biosolids into the treatment process and will eliminate the need to stockpile biosolids onsite. If biosolids awaiting treatment that are stockpiled onsite become an odor problem, compost activities will be expanded to incorporate the stockpiled material into the treatment process in the time frame necessary to control odor. The frequency of turning the compost may be increased to maintain aerobic conditions. Neighbors will be notified within 24 hours of any odor issues and measures taken to mitigate them. Finally, aeration and/or lime stabilization of waste in the interim storage lagoon or midwater in the evaporation lagoons will be employed for waste treatment and odor control as needed. The site manager will also consider the use of wood chips or finished compost products to filter odors.

Complaints of any nature will be followed up within 24 hours if possible by contacting the appropriate party.

13.0 CLOSURE AND POST CLOSURE CARE

CHT will notify CDPHE and Delta County in writing at least sixty (60) days in advance of the anticipated closure date. The general public will be notified at least sixty (60) days in advance of the proposed closure date by placing signs of suitable size at the entrance to the site and facility.

Closure will consist of removing or stabilizing/containing all remaining waste onsite in a controlled, environmentally safe manner. As the facility is located on private property, and facility components will continue to have economic value after closure, returning the property to a pre-construction state would not be economically reasonable. All office buildings, storage sheds, and maintenance shops, treatment system components, workpad areas, holding/settling tanks, evaporation ponds, and stormwater control structures will remain on-site or be removed at the owners' discretion as long as there are no health and safety or environmental issues or concerns. CHT will contact the County building inspector to make sure that all facilities are in compliance with local regulations and policies. If the stormwater ponds are no longer needed after closure, the bottom will be sampled and clean closed in accordance with the regulatory procedures that are applicable at that time. Liquid will be sampled and disposed of at a permitted facility.

Prior to closure, composite soil samples will be collected from the bottom of the evaporation lagoons, work pad areas, below loadouts, below liners and pipe runs. The sample rate will be at least 2 composite samples per acre. The samples will be analyzed for total petroleum hydrocarbons and ERSL parameters to determine whether the soil may be left on site without treatment. Water samples will also be collected if liquid is present in the lagoons. The samples will be analyzed for total petroleum hydrocarbons and other parameters that are likely to be present to determine whether the soil may be left on site without treatment.

Since CHT no longer plans to run the landfarm, CHT will develop a limited-scope, landfarm

specific closure plan to convert the landfarm to other uses. This will entail sampling for key constituents, for example the TENORM constituents.
Disturbed areas will be reseeded with native drought- and salt-resistant vegetation. Supplemental watering may be required during the first season to ensure adequate moisture for plant re-establishment. Water will be hauled to the site by truck for this purpose.

This closure plan, prepared in accordance with Sections 2.5 and 14.4.7 of 6 CCR 1007-2, shall be placed in the operating record for the facility.

The CDPHE and Delta County will be notified within 14 days of commencing implementation of the Closure Plan. Additionally, CDPHE and Delta County will be notified within 30 calendar days of the achievement of all the requirements and conditions associated with the Closure Plan.

Following closure of the facility, a notation will be placed on the deed notifying any potential purchaser that the property has been used as a composting facility.

Post-closure care will consist of periodic inspection and maintenance of revegetated areas for a minimum period of five (5) years to ensure that the revegetation effort is successful. Continued monitoring and sampling of ground water shall continue for a minimum period of five (5) years. At the end of the five year closure monitoring period, CHT will provide data demonstrating that the post-closure period is sufficient to protect human health and the environment and petition CDPHE to terminate closure activities. CDPHE reserves the right to make a determination on the necessary length of the post closure monitoring, considering the groundwater data that has been gathered up to the time of closure. Approval of this EDOP is not meant to prejudge a future data driven decision on the necessary length of the post closure period.

An annual report will be submitted to CDPHE and Delta County detailing post-closure activities for the preceding year. Following completion of post-closure activities, a certification signed by a Colorado registered professional engineer will be submitted to CDPHE, Delta County, and

placed in the operating record verifying that post-closure activities have been completed in accordance with this post-closure plan.

This post-closure plan, prepared in accordance with Sections 2.6 and 14.4.8 of 6 CCR 1007-2, shall be placed in the operating record for the facility.

14.0 FINANCIAL ASSURANCE

Financial assurance will be obtained by CHT Resources at closing for the transfer of the facility. Financial assurance estimates have recently been revised by CB Industries and will be provided in a separate document.

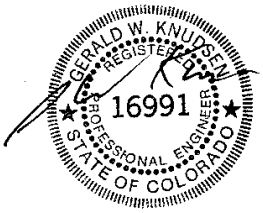
15.0 CERTIFICATION

This report is a site specific document and is applicable only for CHT - Waste Treatment Facility as discussed herein. Use of this report under other circumstances is not an appropriate application of this document. This report is a product of Knudsen Engineering, Inc. and is to be taken in its entirety. Excerpts from this report may be taken out of context and may not convey the true intent of the report. It is the owners' and owners' agent's responsibility to read this report and become familiar with the recommendations and design guidelines contained herein.

The recommendations and design guidelines outlined in this report are based on: 1) the site development and site activities associated with the proposed facility, and 2) the site conditions disclosed at the specific time of the site investigation of reference. Site conditions are subject to external environmental effects and may change over time. Use of this plan under different site conditions is inappropriate.

Knudsen Engineering, Inc. represents this report has been prepared within the limits prescribed by CHT - Waste Treatment Facility in accordance with the current accepted practice of the civil/environmental engineering profession in the area. No warranty or representation either expressed or implied is included or intended in this report or in any of our contracts.

SEAL



Gerald W. Knudsen, PE
Colorado P.E.License No. 16991

Date: 12/15/2021

16.0 REFERENCES

CDPHE Regulations Pertaining To Solid Waste Disposal Sites and Facilities, 6 CCR 1007-2.

CDPHE Biosolids Regulation No. 64.

40 CFR-Part 503.

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SM-Standard Practice for the Examination of Water and Wastewater, 18th Edition, American Public Health Association, Washington, D.C., 1992.

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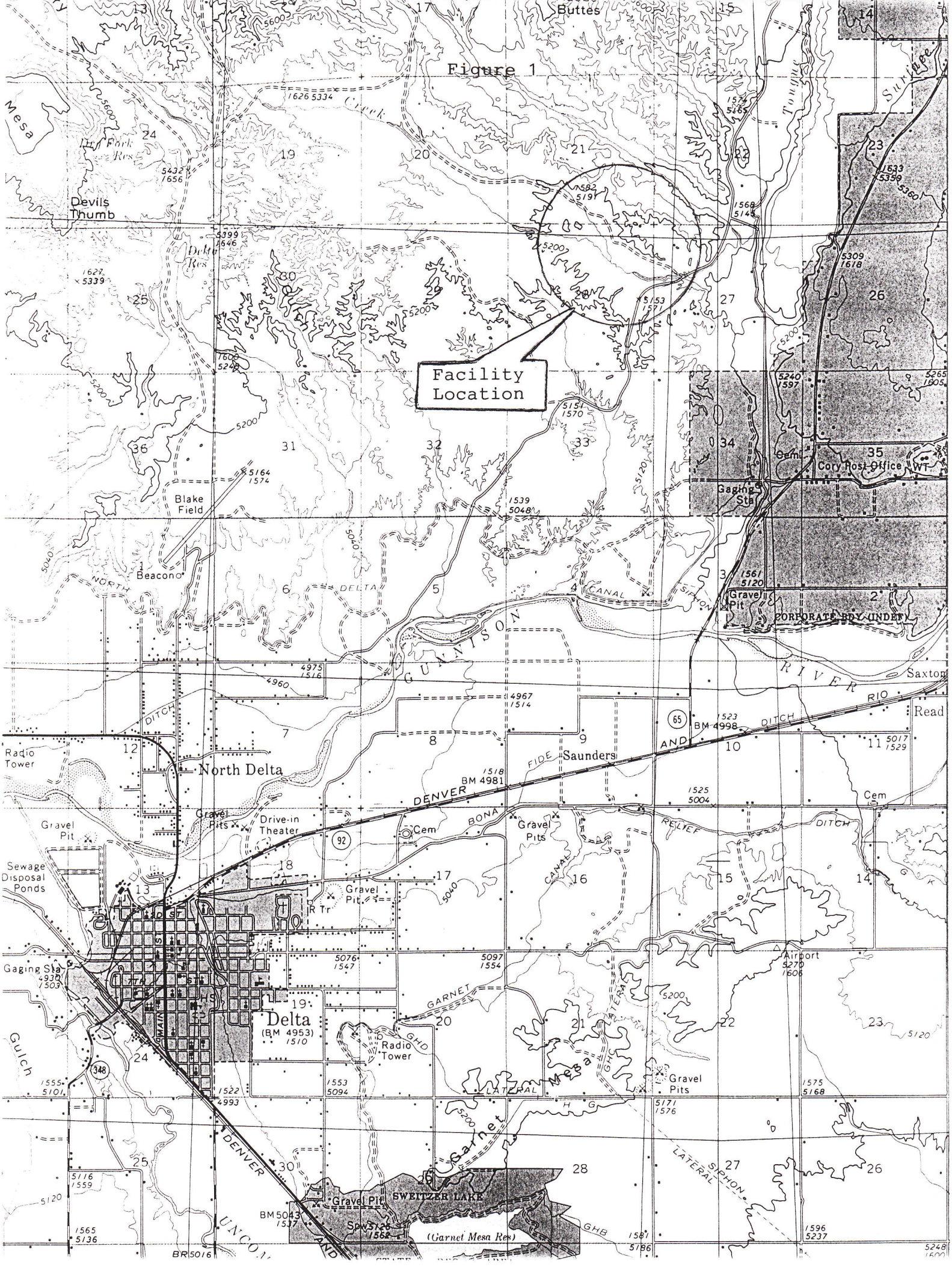
Stormwater Management Manual, Public Works Department, City of Grand Junction, CO, June, 1994.

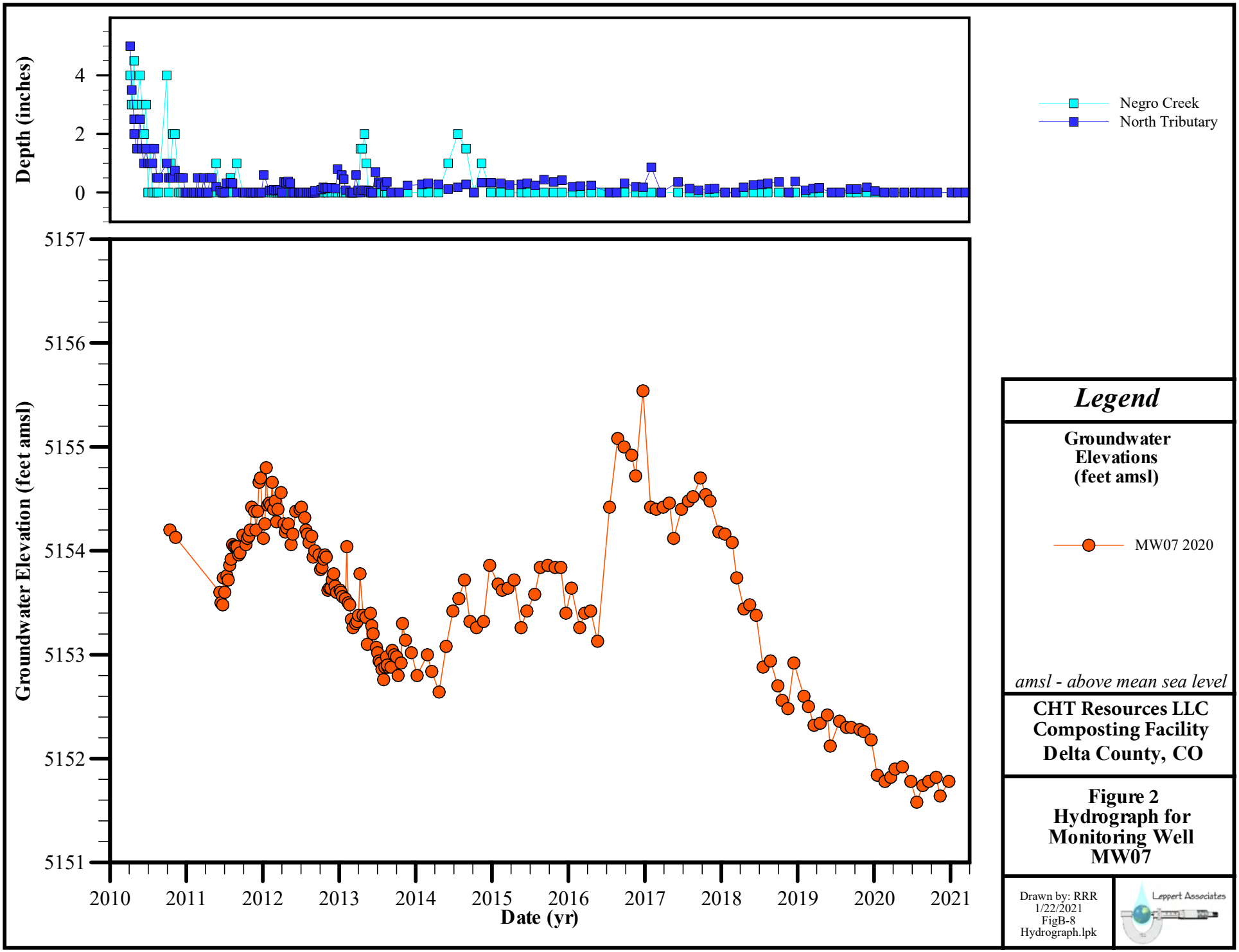
SW - Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, EPA Publication SW-846, Second Edition (1982) with Updates I and II and Third Edition (1986) with Revision I. Second Edition - PB87-120-291, National Technical Information Service, Springfield, Virginia. Third Edition - Document number 955-001-00000-1, Superintendent of Documents, Government

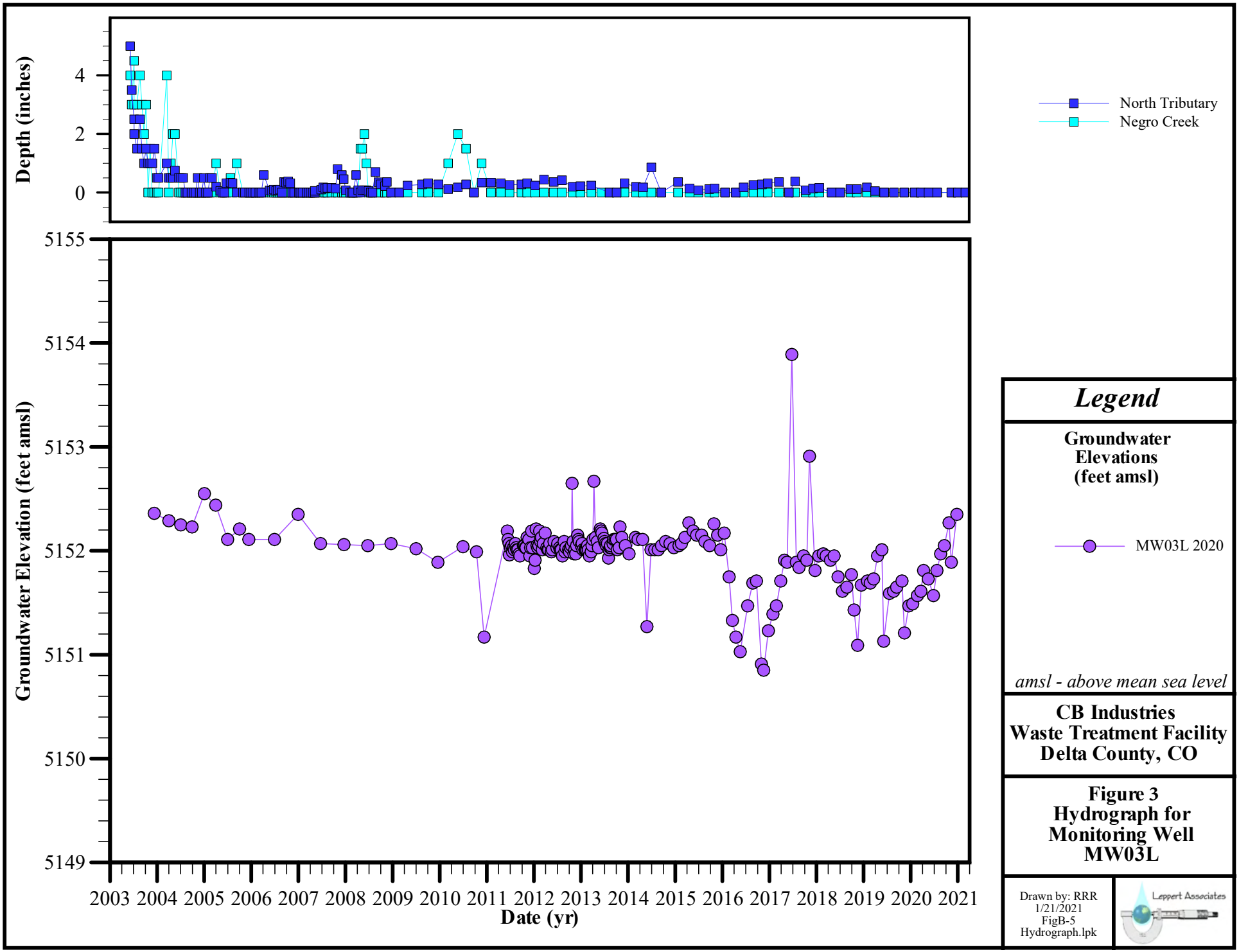
Printing Office, Washington, D.C. University of Wisconsin, *Management of Small Waste Flows*, EPA-600/2-78-173, Municipal Environmental Research Laboratory, EPA, Cincinnati, OH, 1978.

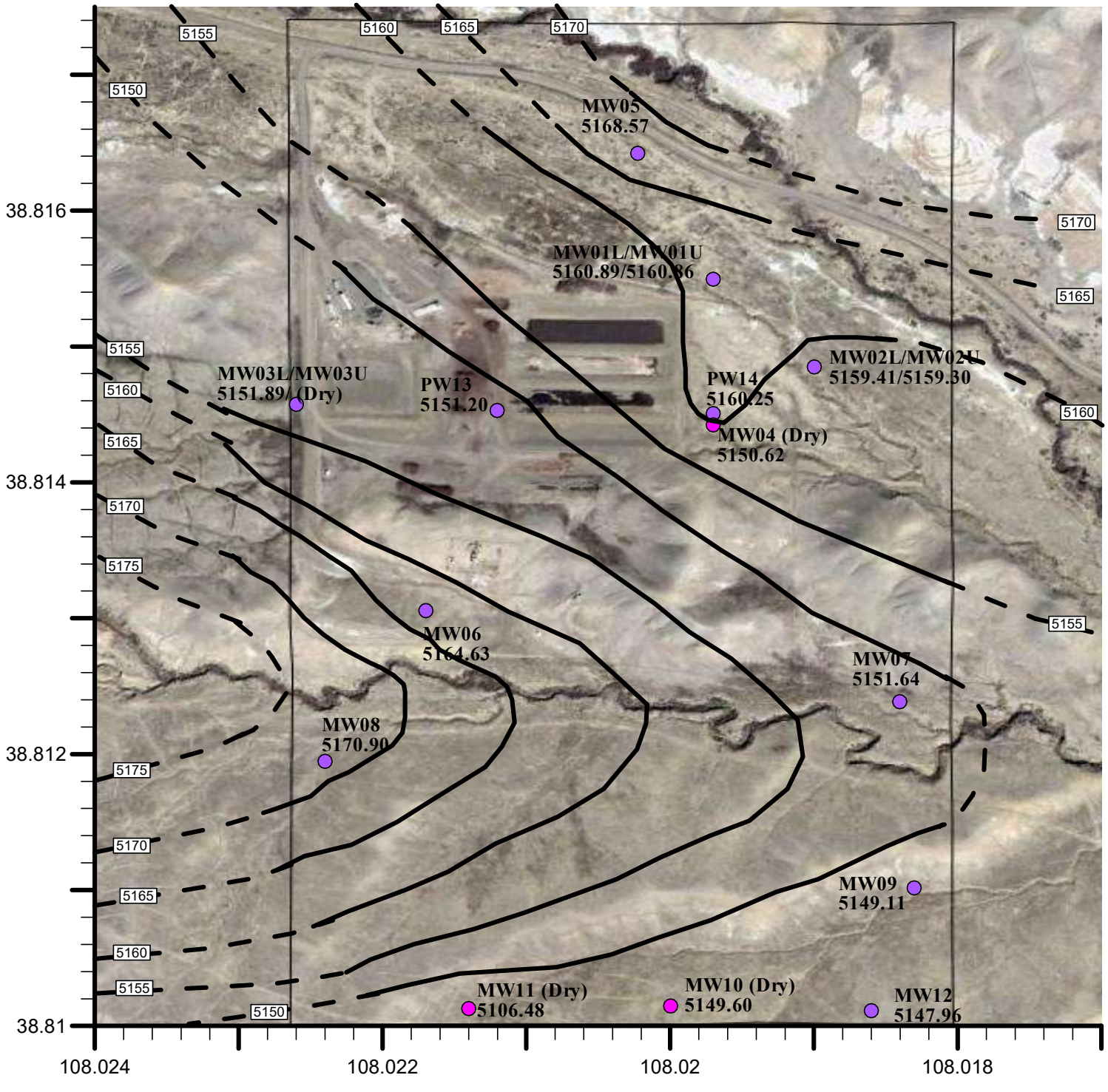
"Water Well and Pump Installation Contractors Act" (Title 37, Article 91, Part 1, CRS, as amended).

Figure 1


Facility Location
Buttes
Mesa
Devils Thumb
Dike Res
Blake Field
Beacono
North Delta
Delta
(BM 4953)
Saunders
Cory Post Office
Gaging Sta
Gravel Pit
Gravel Pits
Drive-in Theater
Sewage Disposal Ponds
Radio Tower
Airport
Cem
SWEITZER LAKE
(Garnet Mesa Res)
Garnet Mesa
Gulch
Saxton
Read
CORPORATE BDY (UNDEV)
DENVER
NORTH DELTA CANAL
GUNNISON RIVER
BONANZA CANAL
GARNET MESA LATERAL
SIPHON
RELIEF DITCH
MAIN
GHD
GHC
GHB


Depth (inches)
4
2
0
Negro Creek
North Tributary
Groundwater Elevation (feet amsl)
5157
5156
5155
5154
5153
5152
5151
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Date (yr)
Legend
Groundwater Elevations (feet amsl)
MW07 2020
amsl - above mean sea level
CHT Resources LLC
Composting Facility
Delta County, CO
Figure 2
Hydrograph for Monitoring Well MW07
Drawn by: RRR
1/22/2021
FigB-8 Hydrograph.lpk
Leppert Associates


Depth (inches)
4
2
0
North Tributary
Negro Creek
5155
5154
5153
5152
5151
5150
5149
Groundwater Elevation (feet amsl)
2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021
Date (yr)
Legend
Groundwater Elevations (feet amsl)
MW03L 2020
amsl - above mean sea level
CB Industries
Waste Treatment Facility
Delta County, CO
Figure 3
Hydrograph for Monitoring Well MW03L
Drawn by: RRR
1/21/2021
FigB-5
Hydrograph.lpk
Leppert Associates



Legend

Scale: 0 ft 265

N

Dry Groundwater Monitoring Wells and Piezometers *

Groundwater Monitoring Wells and Piezometers

* For wells and piezometers that are dry, the total depth is reported

Groundwater Elevation (feet above mean sea level)

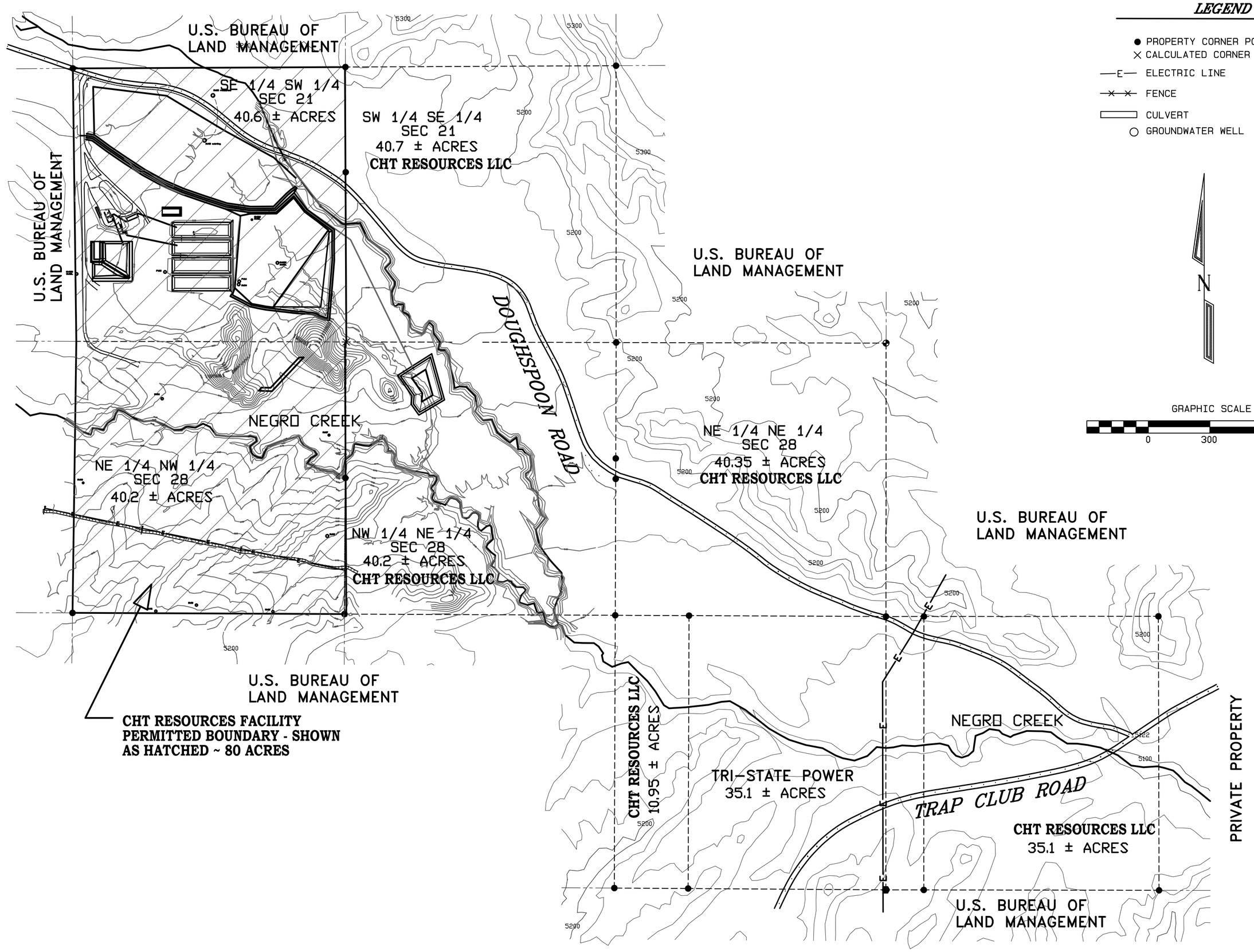
Negro Creek is dry

CHT Resources LLC
Composting Facility
Delta County, CO

Figure 4:
Potentiometric Surface Map November 2020

Drawn By: RR
03-09-2021
CBIPMap-November.lpk

Leppert Associates



Facility Location

Scale: 1" = 300'

GERALD N. KNUTSEN REGISTERED 16991 3/17/21 PROFESSIONAL ENGINEER STATE OF COLORADO

REVISIONS	REMARKS	BY
DATE 02/17/21	MONOFILL DELETION	TAC

CHT RESOURCES LLC
Facility Location Map
11289 Doughspoon Road
Austin, CO 81410

PROJECT
CB Industries facility location

SCALE
as shown

DATE DRAWN
02/07/12

LATEST REVISION
02/17/21

SHEET P1 OF __

LEGEND

- PROPERTY CORNER POSITION
- CALCULATED CORNER POSITION
- ELECTRIC LINE
- FENCE
- CULVERT
- GROUNDWATER WELL

GRAPHIC SCALE 1"=60'

CD BOUNDARY
HV05 relocated
HV05 existing
48" CMP
EXTENT OF CONDITIONED WORKPAD/EVAPORATION LAGOON/STORMWATER CONTROL AREA
WOOD CHIP AND SHREDDED CONCRETE STORAGE CAPACITY = 3,000 CU. YDS.
PROPOSED STORMWATER DIVERSION SWALE (FIELD DESIGN)
COMPOST MIXING
COMPOST PAD EXPANSION AREA AT 10' DEPTH = 1,616 CU. YDS.
DOUGHSPOON ROAD
EXISTING STORMWATER CONTROL DRAINAGE AREA
ADDITIONAL PROPOSED STORMWATER CONTROL DRAINAGE AREA
SEPTAGE MIDWATER EVAPORATION LAGOON #1
SANDTRAP RECEIVING BASIN
STORMWATER RETENTION LAGOON #2
STORMWATER RETENTION LAGOON #3
TOTAL PROPOSED DRAINAGE AREA = 794,855 SQ. FT. (18.25 ACRES)
PROPOSED CONDITIONED WORK PAD AREA TO BE USED AS NECESSARY FOR COMPOSTING - WORK PAD CAPACITY AT 10' DEPTH = 4,412 CU YDS.
COMPOST WORK PAD CAPACITY = 12,500 CU. YDS.
COMPOST WORKPAD (FORMERLY LAGOON #4)
LEVEL 2 PAD STORAGE AREA W/LINING, CAPPING
EXISTING DRAINAGE AREA = 577,619 SQ. FT. (13.26 ACRES)
STORMWATER RETENTION EVAPORATION LAGOON #5
WATER RIGHT PIPELINE
BIOSOLIDS STAGING AREA
EXTENT OF CONDITIONED WORKPAD/EVAPORATION LAGOON/STORMWATER CONTROL AREA
LIMITS OF 100 YR. FLOOD PLAIN
CREEK
HV07
HV08
HV09
HV10
HV11
HV12
DRAINAGE
TRI-STATE POWER LINE
5200
5300

Facility Site Plan (North 1/2)
Scale: 1" = 60'

Facility Site Plan (South 1/2)
Scale: 1" = 60'

REVISIONS		
DATE	REMARKS	BY
01/04/13	CDPHE COMNTS	TAC
12/16/21	CDPHE COMNTS	TAC
12/16/21	MONOFILL DELITION	TAC

CHT RESOURCES LLC
Facility Site Plan
11289 Doughspoon Road
Austin, CO 81410

Facility Site Plan (North 1/2)

PROJECT
CB Industries
folty (north1/2)

SCALE
as shown

DATE DRAWN
12/16/21

LATEST REVISION
12/17/21

SHEET P2 OF

CD BOUNDARY

MW05 relocated

MW05 existing

48" CMP

48" CMP

DRAINAGE

DRAINAGE

DOUGHSPOON ROAD

CD BOUNDARY

CD BOUNDARY

T OF CONDITIONED
AD/EVAPORATION
√/STORMWATER
JL AREA

WOOD CHIP AND FINISHED COMPOST STORAGE AREA CAPACITY = 3,100 CU. YDS.

PROPOSED STORMWATER DIVERSION SWALE (FIELD DESIGN)

COMPOST PAD EXPANSION AREA AT 12" DEPTH = 1,216 CU. YDS.

COMPOST MIXING

OFFICE

SEPTAGE RECEIVING

SEPTAGE PRETREATMENT

GREASE RECEIVING

GREASE PRETREATMENT

32'

90'

SANDTRAP RECEIVING BASIN

SEPTAGE MIDWATER EVAPORATION LAGOON #1

EVAPORATION LAGOON #1 70'x280'x2' DEEP FOR TOTAL VOLUME OF 232,718 GAL.

STORMWATER RETENTION LAGOON #2

EVAPORATION LAGOON #2 70'x280'x2' DEEP FOR TOTAL VOLUME OF 232,718 GAL.

STORMWATER RETENTION LAGOON #3

EVAPORATION LAGOON #3 70'x280'x2' DEEP FOR TOTAL VOLUME OF 232,718 GAL.

COMPOST WORKPAD (FORMERLY LAGOON #4)

COMPOST WORK PAD CAPACITY = 2,500 CU. YDS.

LEVEL 2 PCS STORAGE AREA REQUIRING CAPPING

LEVEL 2 PCS STORAGE AREA REQUIRING CAPPING

EXISTING DRAINAGE AREA = 577,619 SQ. FT. (13.26 ACRES)

EXISTING STORMWATER CONTROL DRAINAGE AREA

ADDITIONAL PROPOSED STORMWATER CONTROL DRAINAGE AREA

TOTAL PROPOSED DRAINAGE AREA = 794,855 SQ. FT. (18.25 ACRES)

PROPOSED CONDITIONED WORK PAD AREA TO BE USED AS NECESSARY FOR COMPOSTING - WORK PAD CAPACITY AT 12" DEPTH = 4,412 CU. YDS.

MW01U
MW01L

MW02U
MW02L

MW03U
MW03L

MW04

PW13

PW14

STORMWATER RETENTION EVAPORATION LAGOON #5

STORMWATER RETENTION POND #5 SIZED FOR A TOTAL RETAINED VOLUME OF 775,000 GAL.

EXTENT OF CONDITIONED WORKPAD/EVAPORATION LAGOON/STORMWATER CONTROL AREA

WATER RIGHT PIPELINE

BIOSOLIDS STAGING AREA

EXTENT OF CONDITIONED WORKPAD/EVAPORATION LAGOON/STORMWATER CONTROL AREA

LEGEND

- PROPERTY CORNER POSITION
- CALCULATED CORNER POSITION
- E — ELECTRIC LINE
- FENCE
- CULVERT
- GROUNDWATER WELL

N

GRAPHIC SCALE 1"=60'

0 30 60

REVISIONS		
DATE	REMARKS	BY
01/04/13	CDPHE COMNTS	TAC
12/16/21	CDPHE COMNTS	TAC
12/16/21	MONOFILL DELETION	TAC

CHT RESOURCES LLC
Facility Site Plan (North 1/2)
11289 Doughspoon Road
Austin, CO 81410

STATE OF COLORADO
TIMOTHY A. CRUMRINE
PE 16991
12/21/2021

Facility Site Plan (North 1/2)
Scale: 1" = 60'

PROJECT
CB Industries
fcilty (north1/2)

SCALE
as shown

DATE DRAWN
12/16/21

LATEST REVISION
12/17/21

SHEET P3 OF __

WORKPAD/EVAPORATION
LAGOON/STORMWATER
CONTROL AREA

LIMITS OF 100 YR. FLOOD PLAIN

LIMITS OF 100 YR. FLOOD PLAIN

MULDER CREEK

WATER SURFACE RIGHT
STORAGE FACILITY

MW05

MW07

MW08

MW09

MW10

MW11

MW12

TRI STATE POWER LINE

CD BOUNDARY

DRAINAGE

DRAINAGE

CD BOUNDARY

CD BOUNDARY

DRAINAGE

N

GRAPHIC SCALE 1"=60'

0 30 60

LEGEND

- PROPERTY CORNER POSITION
- CALCULATED CORNER POSITION
- ELECTRIC LINE
- FENCE
- CULVERT
- GROUNDWATER WELL

Facility Site Plan (South 1/2)
Scale: 1" = 60'

REVISIONS

DATE	REMARKS	BY
01/04/13	CDPHE COMNTS	TAC
12/16/21	CDPHE COMNTS	TAC
12/17/21	MONOFILL DELETION	TAC

CHT RESOURCES LLC
Facility Site Plan (South 1/2)
11289 Doughspoon Road
Austin, CO 81410

DONALD W. KNUDSEN
16991
12/21/2021
STATE OF COLORADO

PROJECT
CB Industries fclty (south1/2)

SCALE
as shown

DATE DRAWN
12/16/21

LATEST REVISION
12/17/21

SHEET P4 OF __

WORKPAD EVAPORATION LAGOON/STORMWATER CONTROL AREA

Level 1 PCS soils on-site storage area/long term management

WATER SURFACE RIGHT STORAGE FACILITY

LIMITS OF 100 YR. FLOOD PLAIN

NEGRO CREEK

LIMITS OF 100 YR. FLOOD PLAIN

MW06

MW07

MW08

MW09

MW10

MW11

MW12

CD BOUNDARY

DRAINAGE

DRAINAGE

CD BOUNDARY

N

GRAPHIC SCALE 1"=60'

0 30 60

CD BOUNDARY

LEGEND

- PROPERTY CORNER POSITION
- CALCULATED CORNER POSITION
- E — ELECTRIC LINE
- FENCE
- CULVERT
- GROUNDWATER WELL

Facility Site Plan (South 1/2)
Scale: 1" = 60'

REVISIONS		
DATE	REMARKS	BY
01/04/13	COPHE COMNTS	TAC
02/08/13	COPHE COMNTS	TAC
02/17/21	MONOFILL DELETION	TAC

CHT RESOURCES LLC
Facility Site Plan (South 1/2)
11289 Doughspoon Road
Austin, CO 81410

GERALD W. KNUDSEN
REGISTERED
16991
2/17/21
PROFESSIONAL ENGINEER
STATE OF COLORADO

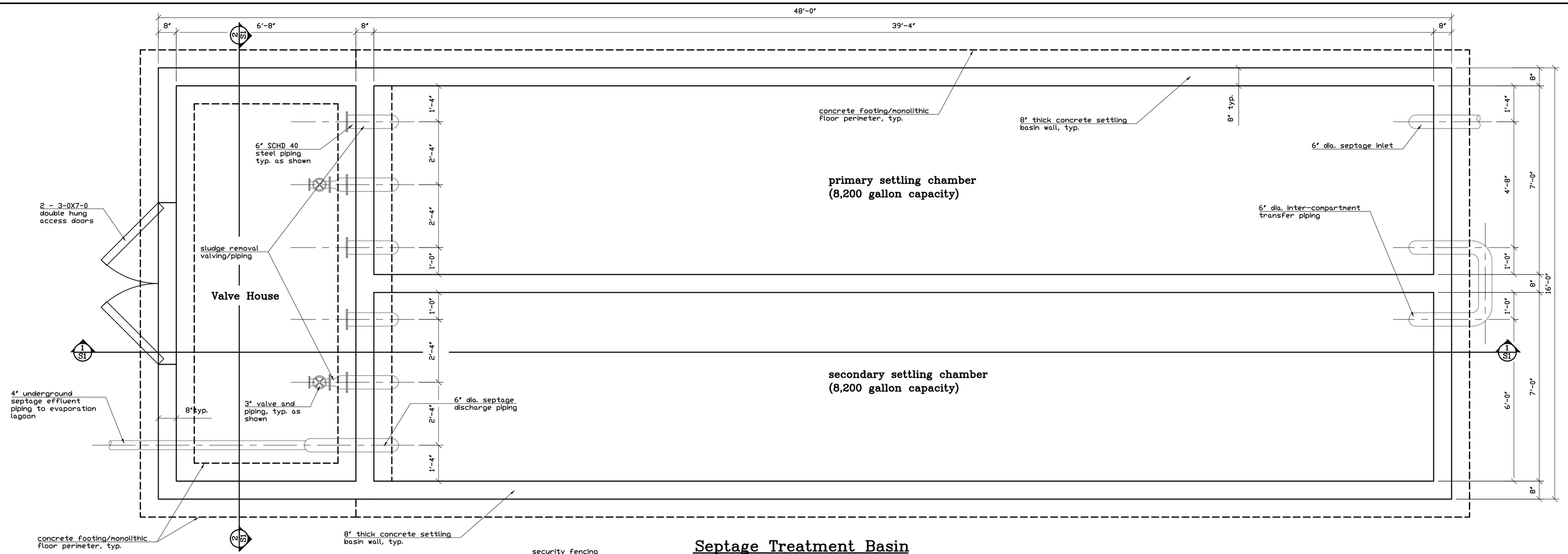
PROJECT
CB Industries fcity (south1/2)

SCALE
as shown

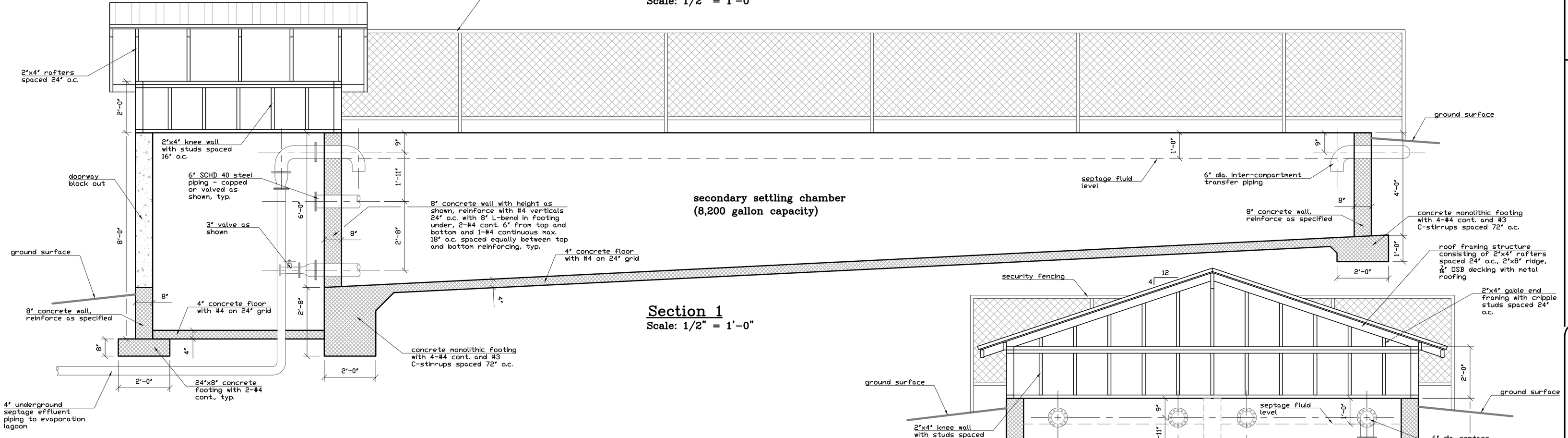
DATE DRAWN
02/07/12

LATEST REVISION
02/17/21

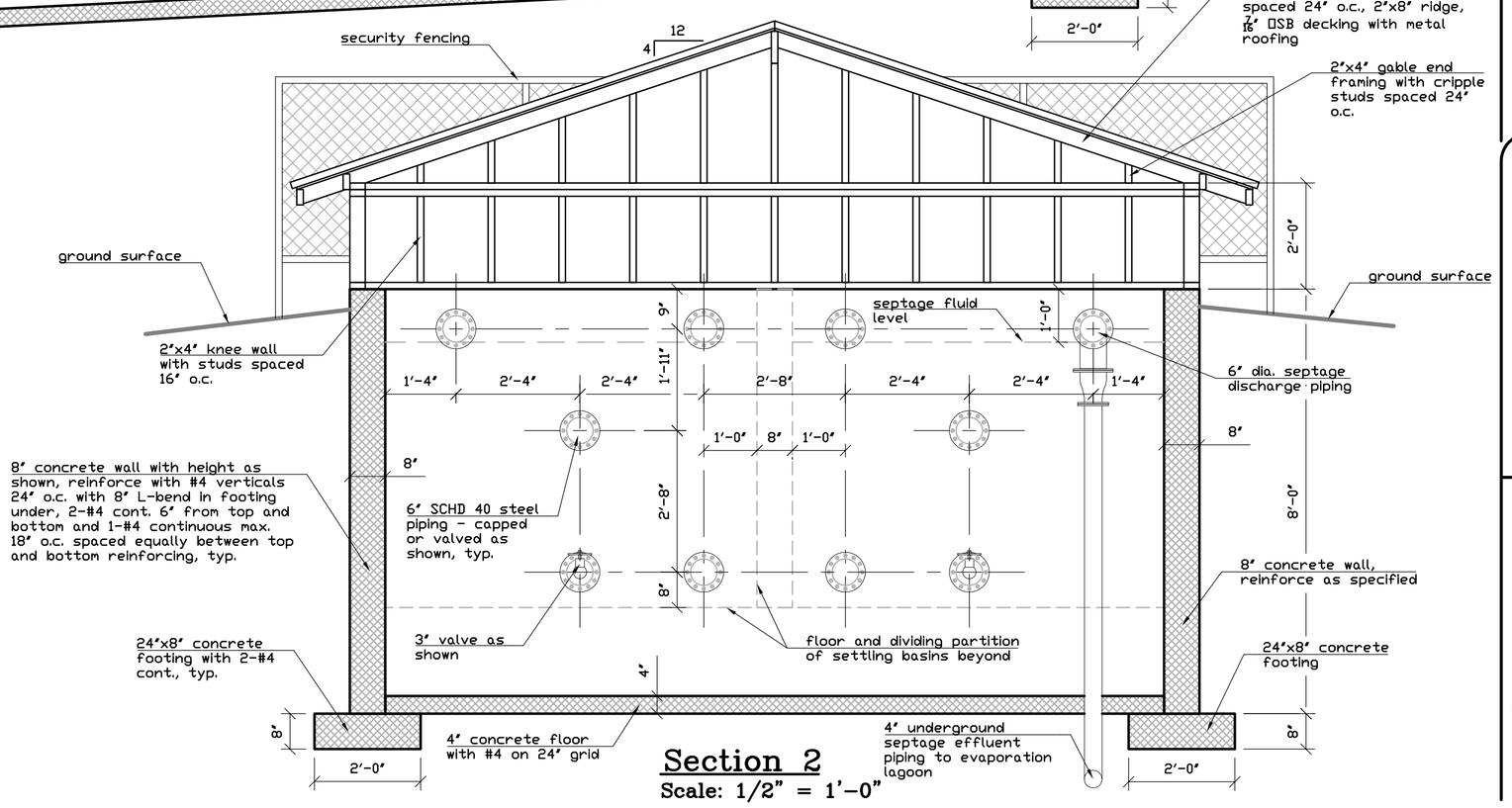
SHEET P4 OF ___



Septage Treatment Basin
Scale: 1/2" = 1'-0"



Section 1
Scale: 1/2" = 1'-0"



Section 2
Scale: 1/2" = 1'-0"

GERALD W. KNUDSEN REGISTERED PROFESSIONAL ENGINEER 16991 2/17/21 STATE OF COLORADO

REVISIONS		
DATE	REMARKS	BY

CHT RESOURCES LLC
Septage Treatment Basin
11289 Doughspoon Road
Austin, CO 81410

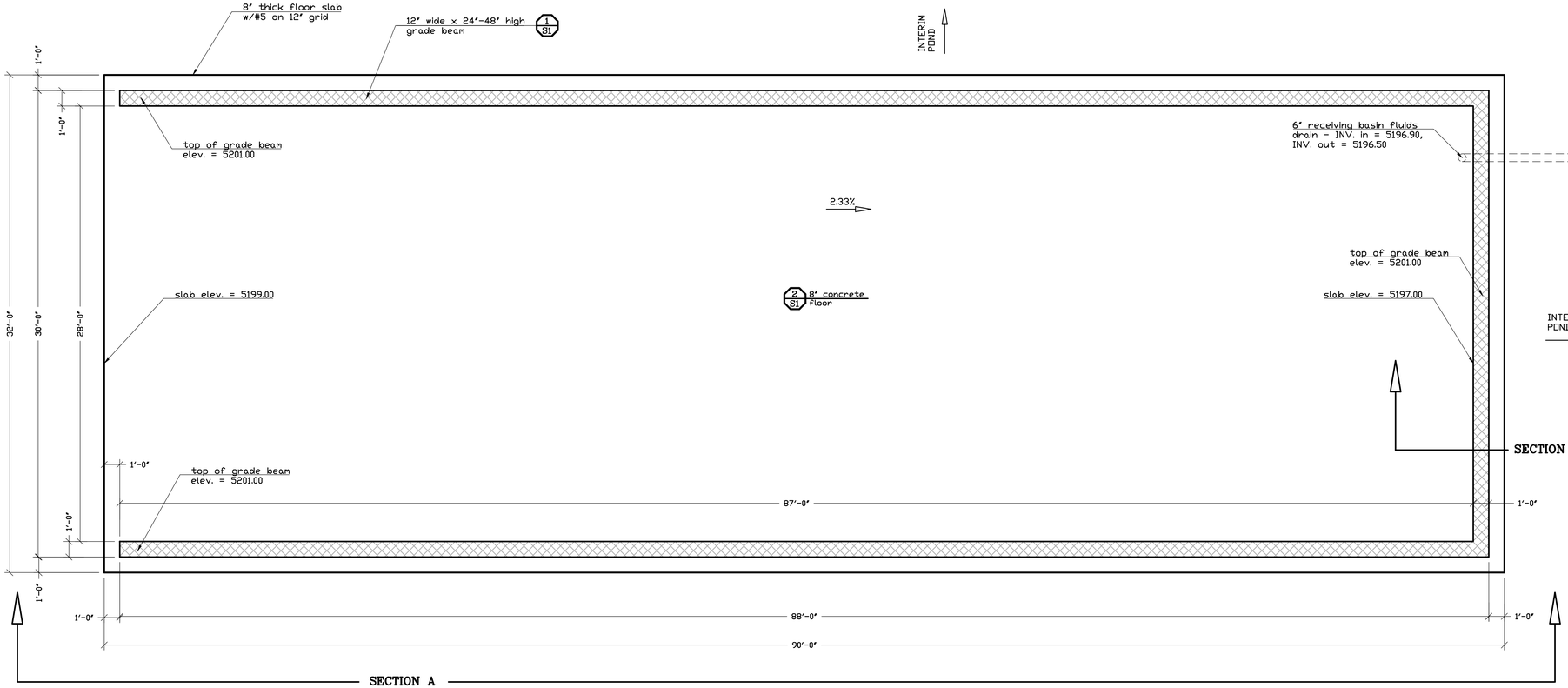
PROJECT
CBIDI
sep. treat. bas.

SCALE
as shown

DATE DRAWN
11/05/03

LATEST REVISION
NO REVISION

SHEET S2 OF ___



REINFORCING SCHEDULE

GRADE BEAM SPECIFICATIONS

1/S1 — 12" thick grade beam with height as shown on cross section detail reinforce according to height as per reinforcing schedule

CONCRETE FLOOR SPECIFICATIONS

2/S1 — 8" concrete floor with #5 rebar on 12" grid

REINFORCING SCHEDULE

Horizontal Reinforcing

24"–30" height:
Top: 2–#5 6" from top
Bottom: 2–#5 6" from bottom
Int: none

30"–42" height:
Top: 2–#5 6" from top
Bottom: 2–#5 6" from bottom
Int: 1–#5 spaced equally between top and bottom reinforcing steel

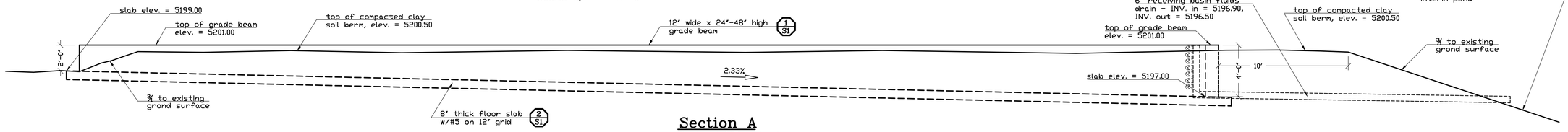
42"–48" height:
Top: 2–#5 6" from top
Bottom: 2–#5 6" from bottom
Int: 2–#5 spaced equally between top and bottom reinforcing steel

Vertical Reinforcing

24"–48" height: 1–#5 spaced 24" o.c. (all vertical steel cont. from top to bottom with 8" L–bend in slab under, typical)

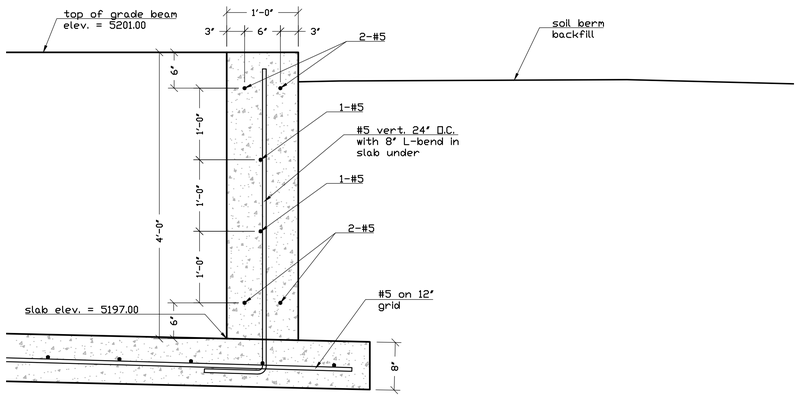
Sand Trap Receiving Basin Plan View

Scale: 1/4" = 1'–0"



Section A

Scale: 1/4" = 1'–0"



Section B

Scale: 1/4" = 1'–0"

TYPE OF DESIGN: COMMERCIAL
CONSTRUCTION: CONCRETE
LOCATION: 11289 DOUGHSPOON ROAD, AUSTIN, CO
SOIL TYPE: SILTY CLAY

NOTES

- ALL CONCRETE SHALL BE MINIMUM 3500 PSI TYPE II-V (SULFATE RESISTANT)
- ALL STEEL SHALL BE MINIMUM GRADE 60 AND PLACED IN ACCORDANCE WITH IBC STANDARDS WITH A MINIMUM OF 3 IN. OF CONCRETE COVER OVER SOIL AND 2-1/2 IN. OF CONCRETE COVER ELSEWHERE
- ALL STEEL SHALL BE SUPPORTED AT A MINIMUM OF 4 FT INTERVALS BY TYING
- MINIMUM LAP FOR CONTINUOUS REINFORCING STEEL SHALL BE 26 IN.
- ALL SLABS SHALL SHALL BE REINFORCED WITH #5 REBAR PLACED ON 12" GRID
- PROVIDE WATER TIGHT JOINT SEALING TREATMENT AT ALL COLD JOINTS, TYPICAL
- SOILS EXPOSED BY FOUNDATION EXCAVATION SHALL BE MOISTENED DURING FOUNDATION CONSTRUCTION TO PREVENT EXCESSIVE DRYING AND MAINTAIN THE NATURAL MOISTURE CONTENT AS CLOSE AS POSSIBLE
- CONCRETE SHALL NOT BE POURED ON FROZEN SOIL
- ADEQUATE DRAINAGE SHALL BE PROVIDED TO CHANNEL SURFACE WATER FLOWS AWAY FROM THE STRUCTURE FOR A MINIMUM DISTANCE OF 10 FT.
- THE FOUNDATION EXCAVATION AND FORMS SHALL BE INSPECTED BY A REPRESENTATIVE OF THE DESIGN ENGINEER PRIOR TO PLACEMENT OF CONCRETE
- PROVIDE A MINIMUM OF 24 HOURS NOTICE FOR REQUIRED INSPECTIONS



REVISIONS

DATE	REMARKS	BY

CHT RESOURCES LLC
Sand Trap Receiving Basin
11289 Doughspoon Road
Austin, CO

PROJECT
CBIDI
ST rec basin

SCALE
as shown

DATE DRAWN
10/29/10

LATEST REVISION
NO REVISION

SHEET S3 OF __



REINFORCING SCHEDULE

GRADE BEAM SPECIFICATIONS

1 S1 — 12" thick grade beam with height as shown on cross section detail reinforce according to height as per reinforcing schedule

CONCRETE FLOOR SPECIFICATIONS

2 S1 — 8" concrete floor with #5 rebar on 12" grid

REINFORCING SCHEDULE

Horizontal Reinforcing

24"–30" height:
Top: 2–#5 6" from top
Bottom: 2–#5 6" from bottom
Int: none

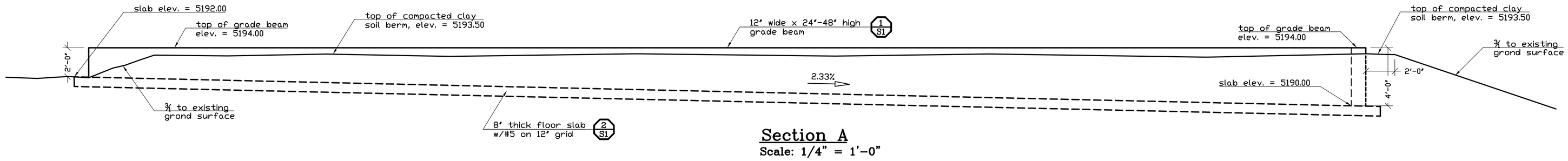
30"–42" height:
Top: 2–#5 6" from top
Bottom: 2–#5 6" from bottom
Int: 1–#5 spaced equally between top and bottom reinforcing steel

42"–48" height:
Top: 2–#5 6" from top
Bottom: 2–#5 6" from bottom
Int: 2–#5 spaced equally between top and bottom reinforcing steel

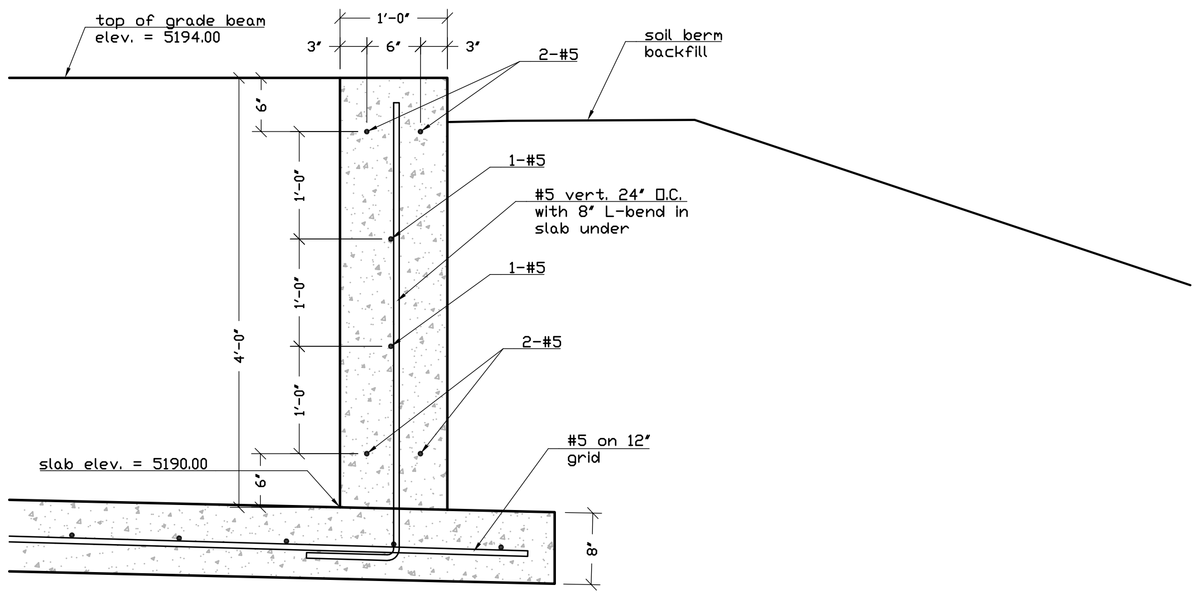
Vertical Reinforcing

24"–48" height: 1–#5 spaced 24" o.c. (all vertical steel cont. from top to bottom with 8" L–bend in slab under, typical)

Compost Mixing Basin
Plan View
Scale: 1/4" = 1'–0"



Section A
Scale: 1/4" = 1'–0"

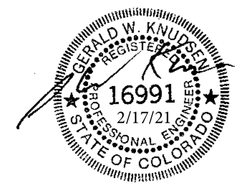


Section B
Scale: 1/4" = 1'–0"

TYPE OF DESIGN: COMMERCIAL
CONSTRUCTION: CONCRETE
LOCATION: 11289 DOUGHSPOON ROAD, AUSTIN, CO
SOIL TYPE: SILTY CLAY

NOTES

- ALL CONCRETE SHALL BE MINIMUM 3500 PSI TYPE II-V (SULFATE RESISTANT)
- ALL STEEL SHALL BE MINIMUM GRADE 60 AND PLACED IN ACCORDANCE WITH IBC STANDARDS WITH A MINIMUM OF 3 IN. OF CONCRETE COVER OVER SOIL AND 2-1/2 IN. OF CONCRETE COVER ELSEWHERE
- ALL STEEL SHALL BE SUPPORTED AT A MINIMUM OF 4 FT INTERVALS BY TYING
- MINIMUM LAP FOR CONTINUOUS REINFORCING STEEL SHALL BE 26 IN.
- ALL SLABS SHALL SHALL BE REINFORCED WITH #5 REBAR PLACED ON 12" GRID
- SOILS EXPOSED BY FOUNDATION EXCAVATION SHALL BE MOISTENED DURING FOUNDATION CONSTRUCTION TO PREVENT EXCESSIVE DRYING AND MAINTAIN THE NATURAL MOISTURE CONTENT AS CLOSE AS POSSIBLE
- CONCRETE SHALL NOT BE POURED ON FROZEN SOIL
- ADEQUATE DRAINAGE SHALL BE PROVIDED TO CHANNEL SURFACE WATER FLOWS AWAY FROM THE STRUCTURE FOR A MINIMUM DISTANCE OF 10 FT,
- THE FOUNDATION EXCAVATION AND FORMS SHALL BE INSPECTED BY A REPRESENTATIVE OF THE DESIGN ENGINEER PRIOR TO PLACEMENT OF CONCRETE
- PROVIDE A MINIMUM OF 24 HOURS NOTICE FOR REQUIRED INSPECTIONS



REVISIONS

DATE	REMARKS	BY

CHT RESOURCES LLC
Compost Mixing Basin
11289 Doughspoon Road
Austin, CO

PROJECT
CBIDI
compost mixing

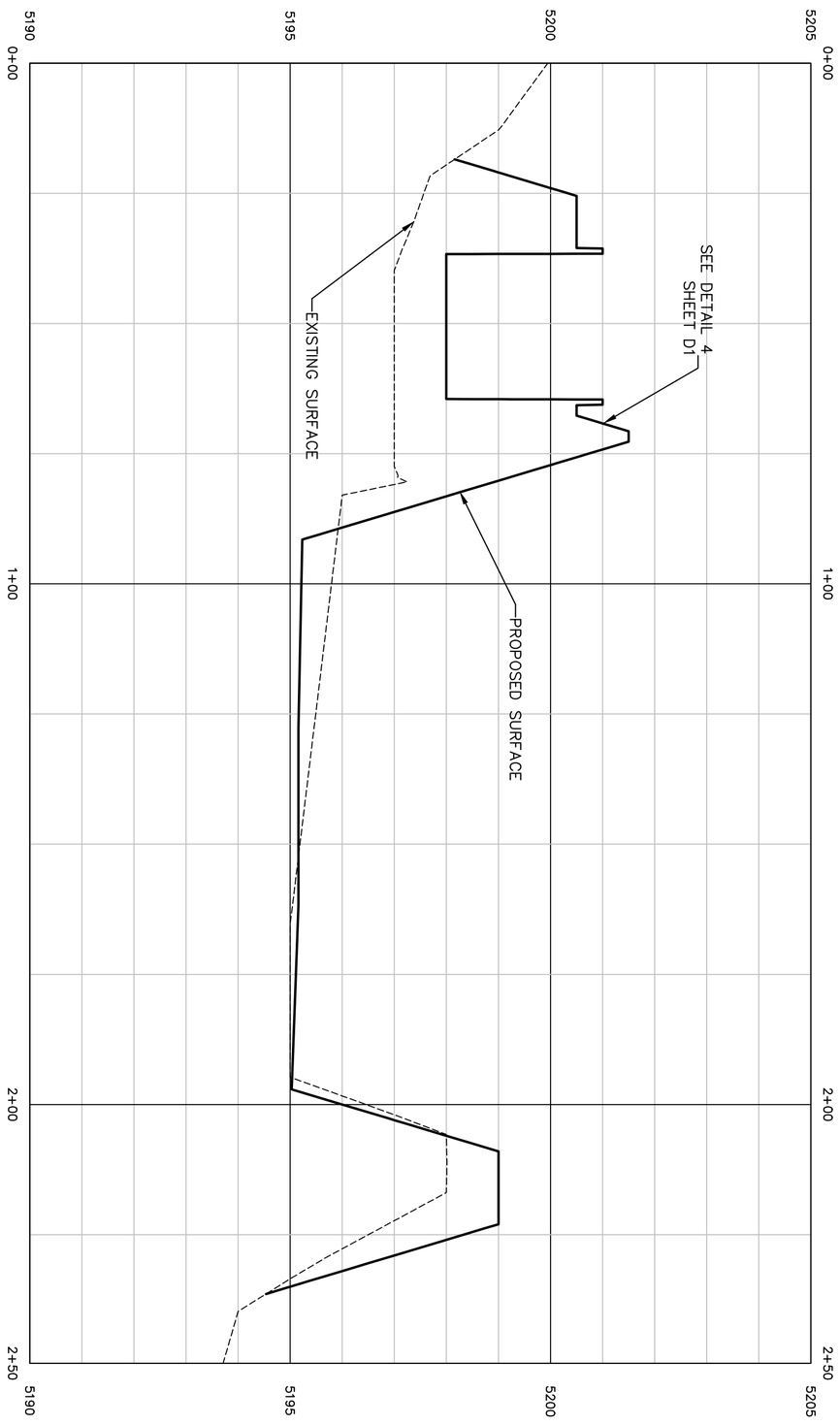
SCALE
as shown

DATE DRAWN
10/31/10

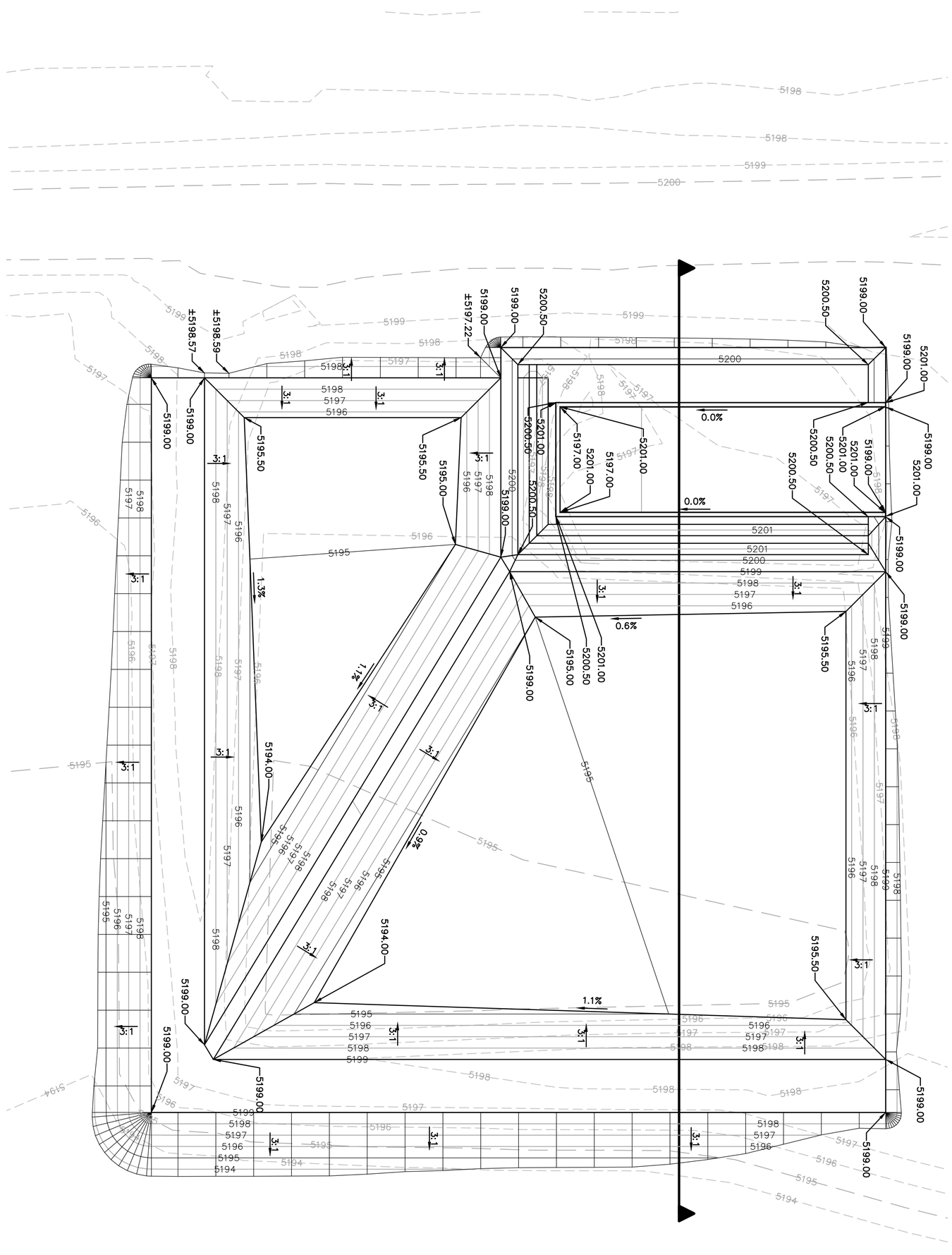
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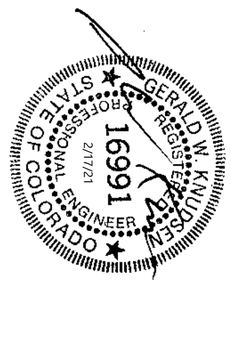
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INTERIM POND SECTION
HORIZONTAL: 1"=20', VERTICAL: 1"=2'





0' 20' 40' 60'

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PROJECT CB Industries		CHT RESOURCES LLC Interim Pond Grading 11289 Doughspoon Road Austin, CO 81410
SCALE 1:20		
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APPENDIX A
DESIGN PARAMETERS AND SIZING CALCULATIONS FOR EVAPORATION PONDS

DESIGN PARAMETERS AND SIZING CALCULATIONS
FOR EVAPORATION PONDS

Design and sizing of the evaporation lagoons is done in accordance with the Design Manual - Onsite Wastewater Treatment and Disposal Systems, U.S. Environmental Protection Agency, Office of Water Program Operations, Office of Research and Development Municipal Environmental Research Laboratory, October, 1980.

The lagoon design is based on the local evaporation and precipitation rates as follows:

annual evaporation from a free water surface
(NOAA Technical Report NWS 33) 50 in./yr.;

annual precipitation, Delta County
(WorldClimate.com, taken from NCDC TD 9641 Clim 81 1961-1990 Normals)
8.9 in./yr.

As based on these rates, the net evaporation per year is calculated as,

annual evaporation of 50 in./yr - annual precipitation of 8.9 in./yr = 41.9 in./yr.

This translates into a net evaporation loss of 3.4250 cubic feet or 25.6190 gallons per year per square foot of evaporative free water surface as,

$$\frac{41.9\ inches/year}{12\ inches/foot}\ x\ 1\ sq.ft.of\ evap.surface\ =\ 3.4250\ cu.ft.or\ 25.619\ gal.per\ yr\ -\ sq.ft.of\ evap.surf$$

The evaporation ponds are sized to evaporate 350,000 gallons of midwater effluent per year resulting in a required exposed free water surface area of,

$$\frac{350{,}000\ gal./\ year}{25.619\ gal./\ year-sq.ft.of\ evap\ surface} = 13,662\ sq.ft.of\ evap.surface$$

The evaporation ponds are thus sized as one lagoon 64 ft. x 274 ft. in size for a total evaporative free water surface area of 17,536 sq. ft. The surface area of one evaporation lagoon is thus sufficient to evaporate in excess of 350,000 gallons/year of midwater.

A water balance, addressing the monthly accumulation of midwater in the evaporation lagoon is shown in Table A-1 (Below). As indicated in Table A-1, the maximum retained volume in the evaporation lagoon is 198,739 gallons occurring in the month of March. The maximum design volume of the evaporation lagoon at a depth of 2' is 232,718 gallons. The volume of one lagoon is thus sufficient to contain the retained midwater generated during the yearly evaporation of 350,000 gallons of effluent. A correlation between the water depth and the corresponding retained liquid volume and evaporative free water surface area for each individual lagoon is given in Table A-2.

TABLE A-1, WATER BALANCE FOR EVAPORATION LAGOONS					
Month	Midwater Influent (gallons)	Precipitation (inches/sq. ft.) (gallons)	Evaporation (inches/sq. ft.) (gallons)	Monthly gain/loss (gallons)	Cumulative Volume (gallons)
October	29,167	16,259	-33,167	12,259	12,259
November	29,167	9,484	0.0	38,651	50,910
December	29,167	8,129	0.0	37,296	88,206
January	29,167	6,774	0.0	35,941	124,147
February	29,167	6,774	0.0	35,941	160,088
March	29,167	9,484	0.0	38,651	198,739
April	29,167	8,129	-56,914	-19,618	179,121
May	29,167	10,839	-77,763	-37,757	141,364
June	29,167	8,129	-90,133	-52,837	88,527
July	29,167	10,839	-89,854	-49,848	38,679
August	29,167	12,194	-74,408	-33,047	5,632
September	29,167	14,904	-54,730	-10,659	empty

TABLE A-1, WATER BALANCE FOR EVAPORATION LAGOONS

TABLE A-2, INDIVIDUAL LAGOON VOLUME AND SURFACE AREA @ GIVEN DEPTH

Basal Width = 52 Basal Length = 262 Side Slope (?:1) = 3

Depth (feet)	Volume Retained (gallons)	Surface Area (square feet)
0.05	5113.003	13718.29
0.1	10261.3	13812.76
0.15	15444.97	13907.41
0.2	20664.07	14002.24
0.25	25918.67	14097.25
0.3	31208.83	14192.44
0.35	36534.64	14287.81
0.4	41896.14	14383.36
0.45	47293.41	14479.09
0.5	52726.52	14575
0.55	58195.53	14671.09
0.6	63700.52	14767.36
0.65	69241.54	14863.81
0.7	74818.67	14960.44
0.75	80431.97	15057.25
0.8	86081.52	15154.24
0.85	91767.37	15251.41
0.9	97489.59	15348.76
0.95	103248.3	15446.29
1	109043.4	15544
1.05	114875.2	15641.89
1.1	120743.6	15739.96
1.15	126648.7	15838.21
1.2	132590.6	15936.64
1.25	138569.3	16035.25
1.3	144585	16134.04
1.35	150637.6	16233.01
1.4	156727.3	16332.16
1.45	162854.1	16431.49
1.5	169018.1	16531
1.55	175219.3	16630.69
1.6	181457.9	16730.56
1.65	187733.8	16830.61
1.7	194047.2	16930.84
1.75	200398.1	17031.25
1.8	206786.6	17131.84
1.85	213212.7	17232.61
1.9	219676.6	17333.56
1.95	226178.2	17434.69
2	232717.8	17536

APPENDIX B
STORMWATER RETENTION AND DRAINAGE CHANNELS/CULVERT SIZING CALCULATIONS

TABLE OF CONTENTS

1.0 Stormwater Retention Basin Sizing 2
2.0 Drainage Channel Analysis and Sizing 3
3.0 Drainage Culvert Analysis and Sizing 8
3.1 Northwest Drainage Culvert 8
3.2 Negro Creek Drainage Culvert 9

STORMWATER RETENTION AND DRAINAGE CHANNELS/CULVERT SIZING CALCULATIONS

1.0 Stormwater Retention Basin Sizing

The Rational Method was used to estimate the volume of on-site runoff generated during a 100-year, 24-hour storm event. The 100 year design storm data is utilized to facilitate leaving the stormwater retention facilities in place at facility closure The Rational Method was based on the equation:
V = P x A x C
where:
C = Runoff coefficient;
P = Total precipitation from the storm event in feet;
A = Area in square feet, and;
V = runoff volume resulting from a storm event in cubic feet.
(Source: *Stormwater Management Manual*, Public Works Department, City of Grand Junction, CO, June, 1994)

Precipitation for the 100-year, 24-hour storm event in the Cory area is estimated at 2.40 inches (NOAA Atlas II tables for the 100 year, 24 hour event). The soil types underlying the facility are classified as SCS Type "D" soil with a developed drainage slope of 1.5 percent. The runoff coefficient for these types of soils was 0.53 (Table 702, *Stormwater Management Manual*, Public Works Department, City of Grand Junction, CO, March, 2006). The NOAA Atlas II Rainfall Depth-Duration-Frequency map for the 100 year, 24 hour storm event in the Cory area and Table 702 are attached for reference at the end of this Appendix. The stormwater control calculations for both the existing facility and proposed expansion follow.

<u>Retention Basin Sizing for Existing Facility – Rational Method</u>
V = P x A x C, where,
V = runoff volume resulting from storm event in cubic feet
P = total precipitation from storm event in feet = 2.4 in./12 in. per ft.
A = runoff basin area in square feet = 577,619 sq. ft.
C = runoff coefficient = 0.53
V = (2.4 in./12 in. per ft.) x (577,619 sq. ft.) x 0.53 = 61,277.614 cu. ft. (457,983 gallons)

<u>Retention Basin Sizing for Proposed Facility Expansion – Rational Method</u>
V = P x A x C, where,
V = runoff volume resulting from storm event in cubic feet
P = total precipitation from storm event in feet = 2.4 in./12 in. per ft.
A = runoff basin area in square feet = 794,855 sq. ft.
C = runoff coefficient = 0.53
V = (2.4 in./12 in. per ft.) x (794,855 sq. ft.) x 0.53 = 84,254.63 cu. ft. (630,225 gallons)

2.0 Drainage Channel Analysis and Sizing

Off site storm flow enters the facility at the northwest corner and is conveyed through a 48" corrugated metal pipe (cmp) culvert and into a drainage channel between the north monofill and the composting facility for discharge into the existing Negro Creek tributary to the east (see Plate 2 and Plate 3). The culvert and facility drainage channel will be sized to contain the stormwater flow from the contributing drainage basin to the west for the 100 year, 24 hour storm event.

The Rational Formula Method will be utilized to determine the maximum design drainage flow entering the facility. The Rational Formula Method is discussed in Section 705 of the Stormwater Management Manual (SWMM), City of Grand Junction, March 27, 2006. Relevant tables and figures from the SWMM used in the following calculations are attached for reference at the end of this Appendix.

The Rational Method is based on the formula:

$$Q = CIA,$$

where;

Q = maximum rate of runoff in cubic feet per second (cfs)
C = Rational Formula Runoff Coefficient
I = average intensity of rainfall in inches per hour
A = contributing watershed area in acres.

The rainfall intensity, I, is the average rainfall rate for the design frequency storm having a duration equal to the time of concentration of the watershed. The time of concentration of a watershed is the time necessary for runoff from the furthest reach of the watershed to reach the point of discharge or, in other words, the time necessary for 100% of the watershed to be contributing to stormwater discharge flow. The maximum runoff occurs when the entire watershed area is contributing flow.

Calculation of the time of concentration for a watershed drainage basin is discussed in Section 703 of the SWMM. The time of concentration is based on the formula:

$$t_c = t_i + t_t,$$

where;

t_c = time of concentration (min.)
t_i = initial, inlet, or overland flow time (min.)
t_t = travel time in the ditch, channel, gutter, storm drain, etc. (min.).

The contributing drainage basin is shown in Fig. B-1. The drainage basin lies to the west of the site and consists of approximately 10.9 acres of native soils. The native soils are silty clay with a hydrologic soils group classification of D. As shown in Fig. B-1, the drainage area is triangular in shape with a small drainage channel eroded down the center. The average drainage slope is approximately 1.6%.

Overland flow, t_i, occurs as water flows across the drainage area to the drainage conveyance channel. The maximum distance over which overland flow can occur its 220'. The time of overland flow is calculated as (Equation 702, SWMM):

$$t_i = 1.8\ (1.1 - K)L_0^{1/2} / S^{1/3},$$

where,

t_i = initial or overland flow time (min.)
K = flow resistance coefficient
L_0 = length of overland flow (300' max.)
S = average watershed slope (percentage).

The 5-year runoff coefficient, C_5, presented in Table 702, SWMM, is recommended for use as the flow resistance coefficient, K.

$$t_i = 1.8\ (1.1 - 0.21)(220)^{1/2} / (1.6)^{1/3} = 20.32 \text{ min.},$$

where,

K = 0.21 (taken from Table 702, 5-year runoff coefficient, Type D soils, 0.1 impervious)
L_0 = 220'
S = 1.6%.

For watersheds containing channelized flow, the channel flow time, t_t, must be added to the overland flow. The channel flow velocity, V_c, is approximated by Equation 703 (SWMM) as:

$$V_c = C_v(S_w)^{1/2},$$

where,

V_c = channel flow velocity in feet per second (fps)
C_v = conveyance coefficient (Table 703, SWMM)
S_w = watercourse slope (ft./ft.)

The channel flow velocity is calculated as:

$$V_c = 10\ (0.016)^{1/2} = 1.26 \text{ fps},$$

where,

$$C_v = 10 \text{ (Table 703, SWMM)},$$
$$S_w = 0.016.$$

The channel flow time is given as:

$$t_t = L_c / V_c,$$

where,

t_t = the channel flow time (sec.)
L_c = length of channelized flow (ft.)
V_c = flow velocity in channel (feet per second, fps).

As shown in Fig. B-1, the length of channelized flow, Lc, is approximately 2,000'. The channel travel time is thus calculated as:

$$t_t = 2{,}000 / 1.26 = 1{,}587 \text{ sec.} = 26.46 \text{ min.},$$

where,

$$L_c = 2{,}000'$$
$$V_c = 1.26 \text{ fps.}$$

The time of concentration for the drainage area of concern is thus calculated as:

$$t_c = t_i + t_t = 20.32 + 26.46 = 46.78 \text{ min.},$$

where,

t_c = time of concentration (min.)
t_i = time of overland flow = 20.32 min.
t_t = time of channelized flow = 26.46 min.

Use of the Rational Method to estimate peak runoff for a storm event requires calculation of the average rainfall intensity, I, for the design storm having a duration equal to the time of concentration of the drainage basin of concern. The average rainfall intensity must thus be estimated for the drainage area shown in Fig. B-1 for the 100 yr., storm having a duration of the time of concentration for the drainage basin of approximately 47 minutes.

Estimation of the average rainfall intensity, I, for differing times of concentration for storms of a specific frequency is discussed in Section 6.0 of the SWMM. For times of concentration of less

than 1 hour, the intensity for the 100 yr., 1 hour storm must first be calculated as (Equation 602, SWMM):

$$Y_{100,\,1} = 0.494 + 0.755\,(X_3)^2 / X_4,$$

where,

$Y_{100,\,1}$ = average rainfall intensity for the 100 yr., 1 hr. storm event (in.)
X_3 = average rainfall intensity for the 100 yr., 6 hr. storm event (in.)
X_4 = average rainfall intensity for the 100 yr., 24 hr. storm event (in.).

The 100 yr., 1 hr. average rainfall intensity is calculated at:

$$Y_{100,\,1} = 0.494 + 0.755\,(1.8)^2 / 2.4 = 1.5133 \text{ in.},$$

where,

$Y_{100,\,1}$ = average rainfall intensity for the 100 7r., 1 hr. storm event (in.)
X_3 = 1.8 in. (NOAA Atlas 2, Volume III, Colorado, 1973)
X_4 = 2.4 in. (NOAA Atlas 2, Volume III, Colorado, 1973).

Average rainfall intensity for any time of concentration up to 60 minutes can be determined from the following equation (Froehlich, 1995 and Section 604 SWMM):

$$I_x = a(P_1) / (10 + t_c)^b,$$

where,

I_x = average rainfall intensity for storm of duration x
P_1 = average rainfall intensity for a storm of 1 hr. duration and frequency of concern
t_c = time of concentration of drainage basin of concern
a = constant = to 28.9 for area of concern
b = constant = to 0.786 for area of concern

The average rainfall intensity for the 100 yr. storm event of duration 47 min. is thus calculated at:

$$I_{100,\,47\text{ min.}} = 28.9(1.5133) / (10 + 47)^{0.786} = 1.8227 \text{ in./hr.},$$

where,

$I_{100,\,47\text{ min.}}$ = average rainfall intensity for 100 yr., 47 min. storm event = 1.8227 in./hr.
P_1 = average rainfall intensity for 100 yr. 1 hr. storm event = 1.5133 in./hr.
t_c = time of concentration of drainage basin of concern = 47 min.
a = 28.9
b = 0.786.

The Rational Method will be used to estimate the peak runoff for the 100 yr. storm event with a duration equal to the time of concentration of the drainage basin of concern of 47 minutes. The Rational Method is based on the equation (Equation 710, SWMM):

$$Q = CIA,$$

where;

Q = maximum rate of runoff in cubic feet per second (cfs)
C = Rational Formula Runoff Coefficient
I = average intensity of rainfall in inches per hour
A = contributing watershed area in acres.

The maximum runoff rate for the drainage basin of concern it calculated as:

$$Q = 0.53(1.8227)10.8586 = 11.8246 \text{ cubic feet per second (cfs)},$$

where,

Q = maximum rate of runoff for drainage area of concern = 11.8 cfs
C = Rational runoff coefficient = 0.53 (Table 702, SWMM, Type D soils, 0.1 imp.)
$I = I_{100,\ 47\ min.}$ = rainfall intensity for 100 yr storm of duration 47 minutes = 1.8227 in./hr.
A = acreage of contributing drainage basin = 10.8586 acres (Fig. B-1).

In conclusion, the facility drainage infrastructure must be capable conveying a flow of 11.8 cfs through the facility for discharge into the Negro Creek tributary to the east.

The constructed drainage channel intended to convey off site stormwater flow through the facility will consist of an open compacted dirt channel. The cross section of the channel approximates a trapezoid being 3' deep with a 10 wide base and with 3:1 side slopes resulting in a width of 28' at the channel top. The flow gradient of the constructed channel follows the natural topography of the area of 1.0%.

The Chezy-Manning equation discussed above will be used to calculate the maximum stormwater flow associated with the facility stormwater conveyance channel. The Manning Roughness Coefficient for the open compacted clay channel is again taken as 0.025 (Appendix A, Civil Engineering Reference Manual, 5th Edition, Professional Publications Inc., Belmont, CA, 1989, pg 5-23). Thus for the flow on site conveyance channel flowing full at a depth of 3':

n = 0.025
A = ((28 ft. + 10 ft.)/2) x 3 ft. = 57 sq. ft.
$P = ((\sqrt{3^2 + 9^2}) \times 2) + 10 \text{ ft.} = 29.4828 \text{ ft.}$

r_H = (57 sq. ft.)/(29.4828 ft.) = 1.9331 ft.
S = 0.01.

The maximum volume of stormwater conveyable by the offsite run on channel is calculated as:

$Q = \frac{1.49}{0.025}(57)(1.9331)^{\frac{2}{3}}\sqrt{0.01}$ = 527.1781 cu. ft./sec..

As based on these calculations, it is apparent the capacity of the stormwater conveyance channel across the facility (527 cu. ft./sec) is well in excess of the volume of stormwater which the offsite drainage area is capable of supplying (11.8 cu. ft./sec) to the facility.

3.0 Drainage Culvert Analysis and Sizing

3.1 Northwest Drainage Culvert

The existing cmp culvert at the facility which conveys off site stormwater flows under the access roadway and into the stormwater conveyance channel is 35' long, 48" in diameter and slopes 1 ft. in 35' from beginning to end. Under full flow conditions, the following equation will be used to calculate the volumetric flow rate through the culvert (Eq. 3.101, Civil Engineering Reference Manual, 5th Edition, Professional Publications Inc., Belmont, CA, 1989, pg 3-24).

$Q = C_d A\sqrt{2gh}$,
where,
Q = volumetric flow rate (cu. ft./sec.)
C_d = Coefficient of Discharge
A = culvert area (sq. ft.)
g = gravitational constant = 32.2 (ft./$sec.^2$)
h = head across culvert (ft.).

The coefficient of discharge for the sharp edged culvert is taken as 0.62 (Table 3.10, Civil Engineering Reference Manual, 5th Edition, Professional Publications Inc., Belmont, CA, 1989, pg 3-24). Thus for the flow through the culvert under full flow conditions:

C_d = 0.62
A = $(2\ ft.)^2\pi$ = (4 sq. ft.)(3.1416) = 12.57 sq. ft.
g = 32.2 ft./$sec.^2$
h = 1 ft.

The maximum flow through the culvert is calculated as:

Q = (0.62)(12.57 sq. ft.)$\sqrt{(2)\left(32.2\ \frac{ft.}{sec.^2}\right)(1\ ft.)}$ = 62.54 cu. ft./sec.

As based on these calculations, it is apparent the capacity of the culvert (62.54 cu. ft./sec) is in excess of the volume of stormwater which the offsite drainage area is capable of supplying (11.8 cu. ft./sec.) to the facility.

3.2 Negro Creek Drainage Culvert

As indicated in Appendix H (EDOP), Figure H-3, the flood plain for the 100 yr., 24 hr. storm event will reach beyond the banks of Negro Creek. To facilitate a reasonable culvert size for this scenario, The Negro Creek culvert will be sized to handle the maximum stormwater flow volume associated with the existing Negro Creek historic flow channel. The culvert associated with this flow will be installed as a low water crossing and contained entirely in the existing Negro Creek main erosional flow channel as discussed below. The installation will not disturb the cross sectional flow parameters associated with the Negro Creek drainage 100 yr., 24 hr. storm event. Any high flow events which exceed the culvert capacity will flow over the culvert installation as a low water crossing and be conveyed downstream in the existing 100 year flood plain.

The historic Negro Creek flow channel is an open dirt channel eroded over time through head cutting to the depth of the underlying shale. The cross section of the channel approximates a trapezoid being 5' deep with a base width of 4' and a top width of 6'. The flow gradient of the existing channel follows the natural topography of the area of 1.0%.

The Chezy-Manning equation (Eq. 5.9, Civil Engineering Reference Manual, 5th Edition, Professional Publications Inc., Belmont, CA, 1989, pg 5-4) will be used to determine the maximum volume of stormwater flow conveyed onto the site from the existing off site drainage channel. The equation is written as:

$Q = \frac{1.49}{n} A (r_H)^{\frac{2}{3}} \sqrt{S}$,

where,
Q = flow rate (cu. ft./sec.)
n = Manning Roughness Coefficient
A = channel area (sq. ft.)
P = channel wetted perimeter (ft.)
r_H = hydraulic radius (ft.) = $\frac{A}{P}$
S = slope (ft./ft.).

The Manning Roughness Coefficient for natural flow channels in good condition is taken as 0.025 (Appendix A, Civil Engineering Reference Manual, 5th Edition, Professional Publications

Inc., Belmont, CA, 1989, pg 5-23). Thus for the flow channel flowing full at a depth of 5':

n = 0.025
A = ((4 ft. + 6 ft.)/2) x 5 ft. = 25 sq. ft.
P = (($\sqrt{5^2 + 1^2}$ ft.) x 2) + 4 ft. = 14.1980 ft.
r_H = (25 sq. ft.)/(14.1980 ft.) = 1.7608 ft.
S = 0.01.

The maximum volume of stormwater conveyable by the offsite run on channel is calculated as:

$$Q = \frac{1.49}{0.025}(25)(1.7608)^{\frac{2}{3}}\sqrt{0.01} = 217.2671\ cu.ft./\text{sec.}$$

A 96" diameter CMP metal culvert is proposed for the Negro Creek Crossing. Under full flow conditions, the following equation will be used to calculate the volumetric flow rate through the culvert (Eq. 3.101, Civil Engineering Reference Manual, 5th Edition, Professional Publications Inc., Belmont, CA, 1989, pg 3-24).

$Q = C_d A\sqrt{2gh}$,
where,
Q = volumetric flow rate (cu. ft./sec.)
C_d = Coefficient of Discharge
A = culvert area (sq. ft.)
g = gravitational constant = 32.2 (ft./$sec.^2$)
h = head across culvert (ft.).

The coefficient of discharge for the sharp edged culvert is taken as 0.62 (Table 3.10, Civil Engineering Reference Manual, 5th Edition, Professional Publications Inc., Belmont, CA, 1989, pg 3-24). Thus for the flow through the culvert under full flow conditions:

C_d = 0.62
A = $(4\ ft.)^2\pi$ = (16 sq. ft.)(3.1416) = 50.2655 sq. ft.
g = 32.2 ft./$sec.^2$
h = 1 ft.

The maximum flow through the culvert is calculated as:

$$Q = (0.62)(50.2655 \text{ sq. ft.})\sqrt{(2)\left(32.2\ \frac{ft.}{sec.^2}\right)(1\ ft.)} = 250.0947 \text{ cu. ft./sec.}$$

As based on these calculations, it is apparent the capacity of the culvert (250.0947 cu. ft./sec) is in excess of the volume of stormwater conveyed by the historic Negro Creek drainage channel of 217.2671 cu. ft./sec.

The proposed culvert will be installed in the existing drainage channel. Approximately 24" of rip-rap and structural fill will be used to bed the culvert and construct an access road across Negro Creek. The existing erosion channel of Negro Creek is approximately 20' deep and the resulting road surface will be approximately 10' below the existing banks of Negro Creek. The resulting Negro Creek flow channel above the road surface will allow flow volumes in excess of the culvert capacity to remain contained in the existing Negro Creek flood plain.

The existing Delta County culvert installed approximately 1 mile down stream at the Negro Creek/Trap Club Road crossing is also 96" in diameter. The Negro Creek/Trap Club Road culvert has historically contained Negro Creek stormwater flows and the historical success is supportive of the above rational used in sizing the CHT Negro Creek culvert crossing.

RATIONAL FORMULA RUNOFF COEFFICIENTS

Equation: $C_{CD} = K_{CD} + (0.858i^3 - 0.786i^2 + 0.774i + 0.04)$

$C_A = K_A + (1.31i^3 - 1.44i^2 + 1.135i - 0.12)$

$C_B = (C_A + C_{CD})/2$

K_{CD} VALUES						
NRCS Soil	2-year	5-year	10-year	25-year	50-year	100-year
C and D	0	-0.10i+0.11	-0.18i+0.21	-0.28i+.33	-0.33i+0.40	-0.39i+0.46
A	0	-0.08i+0.09	-0.14i+0.17	0.19i+0.24	-0.22i+0.28	-0.25i+0.32

Impervious Decimal	Type A					
	2-year	5-year	10-year	25-year	50-year	100-year
0.1	0.00	0.06	0.14	0.20	0.24	0.28
0.2	0.06	0.13	0.20	0.26	0.30	0.33
0.3	0.13	0.19	0.25	0.31	0.34	0.37
0.4	0.19	0.25	0.30	0.35	0.38	0.41
0.5	0.25	0.30	0.35	0.40	0.42	0.45
0.6	0.33	0.37	0.41	0.45	0.47	0.50
0.7	0.42	0.45	0.49	0.53	0.54	0.56
0.8	0.54	0.56	0.60	0.63	0.64	0.66
0.9	0.69	0.71	0.73	0.76	0.77	0.79
1.0	0.89	0.90	0.92	0.94	0.95	0.96

Impervious Decimal	Type B					
	2-year	5-year	10-year	25-year	50-year	100-year
0.1	0.06	0.14	0.22	0.31	0.36	0.40
0.2	0.12	0.20	0.27	0.35	0.40	0.44
0.3	0.18	0.25	0.32	0.39	0.43	0.47
0.4	0.23	0.30	0.36	0.42	0.46	0.50
0.5	0.29	0.35	0.40	0.46	0.50	0.52
0.6	0.37	0.41	0.46	0.51	0.54	0.56
0.7	0.45	0.49	0.53	0.58	0.60	0.62
0.8	0.57	0.59	0.63	0.66	0.69	0.70
0.9	0.71	0.73	0.75	0.78	0.80	0.81
1	0.89	0.90	0.92	0.94	0.95	0.96

Impervious Decimal	Type C and D Soil					
	2-year	5-year	10-year	25-year	50-year	100-year
0.1	0.11	0.21	0.30	0.41	0.48	0.53
0.2	0.17	0.26	0.34	0.44	0.50	0.55
0.3	0.22	0.30	0.38	0.47	0.53	0.57
0.4	0.28	0.35	0.42	0.50	0.55	0.58
0.5	0.34	0.40	0.46	0.53	0.57	0.60
0.6	0.41	0.46	0.51	0.57	0.61	0.63
0.7	0.49	0.53	0.57	0.62	0.66	0.68
0.8	0.60	0.63	0.66	0.70	0.73	0.74
0.9	0.73	0.75	0.77	0.80	0.83	0.83
1.0	0.89	0.90	0.92	0.94	0.96	0.96

Revision	Date
ORIGINAL ISSUE	3/27/06

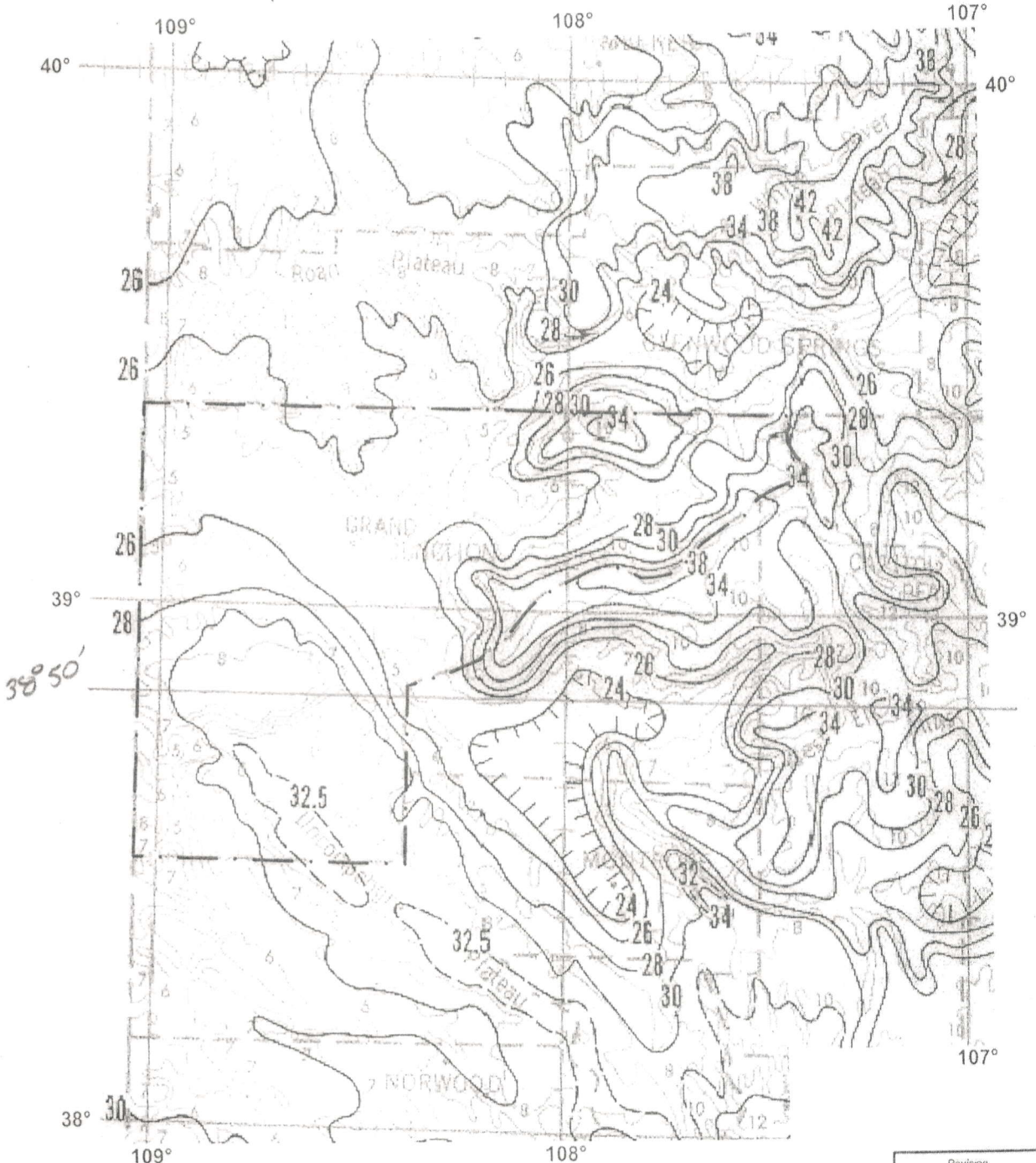
WRC ENGINEERING, INC.

REFERENCE:

UDFCD 2001. Urban Storm Drainage Criteria Manual, Volume 1

TABLE 702

RAINFALL DEPTH-DURATION-FREQUENCY
100-YEAR, 24-HOUR
(DEPTHS IN TENTHS OF INCHES)



Revision	Date
ORIGINAL ISSUE	3/27/06

WRC ENGINEERING, INC.

REFERENCE: NOAA ATLAS 2, VOLUME III COLORADO, 1973

FIGURE 613

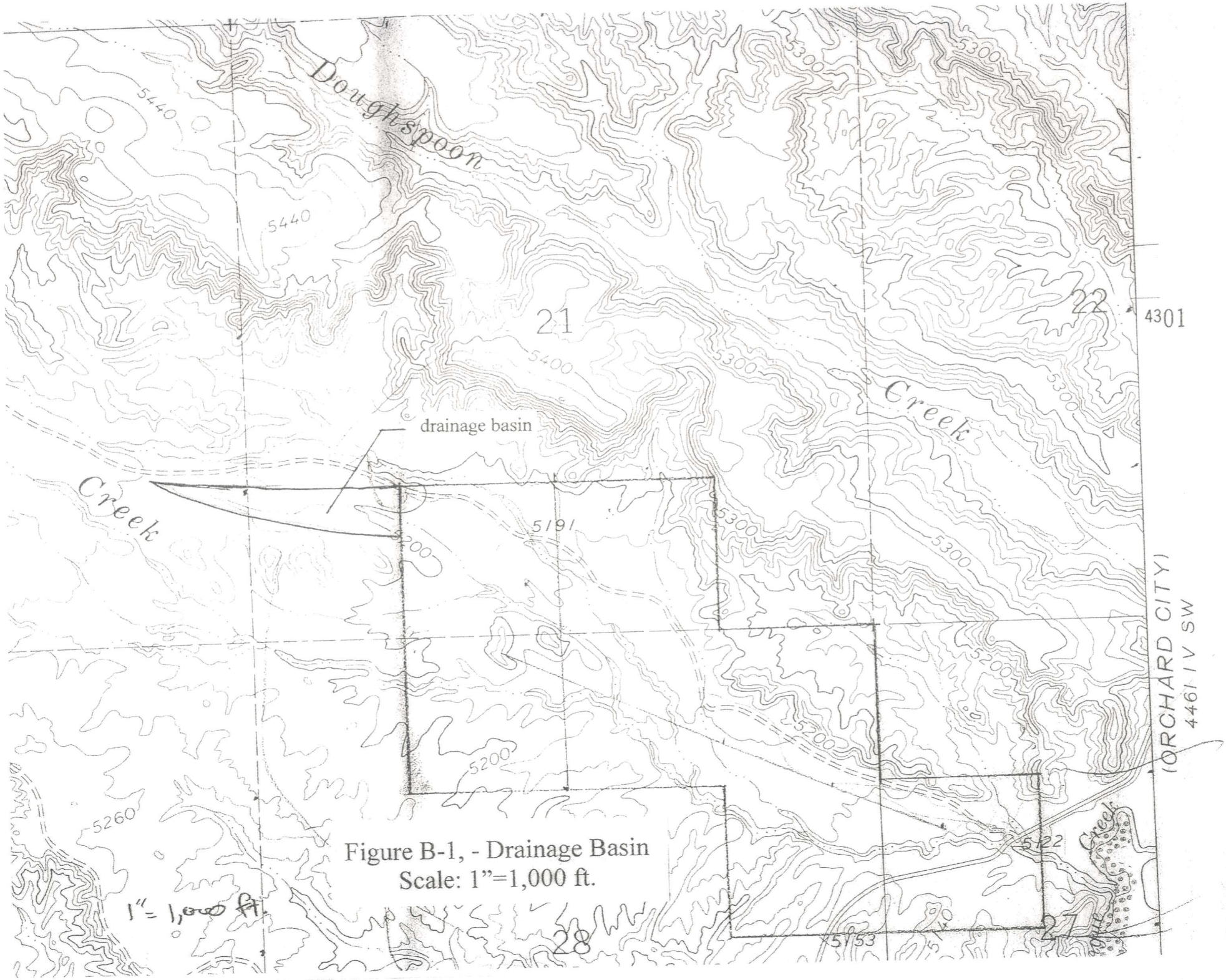


Figure B-1, - Drainage Basin
Scale: 1"=1,000 ft.

Table 703 Travel Time Conveyance Coefficients

Land Surface	Conveyance Coefficient C_v
Heavy meadow	2.5
Tillage/Field	5.0
Short pasture and lawns	7.0
Nearly bare ground	10
Grassed waterways	15
Paved areas and shallow swales	20

The time of concentration is then the sum of the initial flow time t_i and the travel time, t_t. The minimum recommended t_c for non-urban watersheds is 10 minutes.

703.2 Urbanized Watersheds

Overland flow in urbanized watersheds can occur from the back of the lot to the street, in parking lots, in greenbelt areas, or within park areas and can be calculated using the procedure described in Section 703. Travel time, t_t, to the first design point or inlet is often determined based on the conveyance coefficient for "Paved Areas and shallow swales", but can be estimated using Manning's equation.

The time of concentration for the first design point in an urbanized watershed using this procedure should not exceed the time of concentration calculated using Equation 704, which was developed using rainfall/runoff data collected in urbanized regions (USDCM,1969).

$$t_c = L / 180 + 10 \qquad (704)$$

Where:

t_c = Time of Concentration at the first design point (min)
L = Watershed Length (ft)

Equation 704 may result in a lesser time of concentration at the first design point and thus would govern in an urbanized watershed. The recommended minimum t_c to the first urban design point is 5 minutes. For subsequent design points, the time of concentration is calculated by accumulating the travel times in downstream reaches.

704 PRECIPITATION LOSSES

Two methods for calculating precipitation losses are presented below, the SCS Curve Number and the Green-Ampt methods, both which can be used for the SCS Unit Hydrograph Method.

Land surface interception, depression storage and infiltration are referred to as precipitation losses. Interception and depression storage represent the surface storage of water by trees or grass, in local depressions in the ground surface, in cracks and

APPENDIX C
SURVEY AND APPLICATION FOR WASTE DELIVERY

CHT Resources, LLC
Physical location: 11289 Doughspoon Road, Austin, CO
Mailing address: PO Box 1420, Carbondale, CO 81623
Operations: Jake DeWolfe: 970-744-6691

SURVEY AND APPLICATION FOR WASTE DELIVERY

Part I

Name of Organization: _____

Owner(s): _____

Address of Business: _____

_____

Phone Number: _____ Name of Contact: _____

Billing Information for Invoicing:

Attention (name): _____

Mailing Address: _____

Email address: _____

Preference for invoice delivery (circle one): **email** **postal mail**

Part II

What type of wastes do you generate or transport (or both)?

Waste Generator	Waste Transporter
____Domestic septage from residences ____Domestic septage from commercial/industrial ____Grease (waste grease from food production) ____Grease trap waste from restaurants ____Biosolids waste from municipal wastewater treatment facility ____Food waste from commercial ____Food waste from residential ____Animal waste/bedding/manure	____Domestic septage from residences ____Domestic septage from commercial/industrial ____Grease (waste grease from food production) ____Grease trap waste from restaurants ____Biosolids waste from municipal wastewater treatment facility ____Food waste from commercial ____Food waste from residential ____Animal waste/edding/manure

Waste transporter information:

Number of Trucks Operated by Your Business	Capacity in Gallon
_____	100-499 gallons
_____	499-1000 gallons
_____	1000-2000 gallons
_____	2000-3500 gallons
_____	3500-5000 gallons
_____	>5000 gallons

Quantity of waste per week for which disposal is required (estimated):

_____	Domestic septage (gallons)
_____	Domestic septage from commercial/industrial (gallons)
_____	Grease (waste grease from food production)
_____	Waste from restaurant grease traps (gallons)
_____	Waste from sources not listed above (gallons)
_____	Biosolids waste (yards)
_____	Food waste from commercial sources (yards)
_____	Food waste from residential (yards)
_____	Animal waste (yards)

Part III

I certify under penalty of law that this survey and application was prepared by me or under my direct supervision. The information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further certify that the wastes covered by the survey and application are not hazardous as defined at 40CFR Part 261. I further certify that all discharges made to CB Industries Composting Facility are, or will be, made in accordance and in compliance with requirements specified in the applicable ordinance or rules and any issued permit, order, statement of requirements or other authorization to discharge. I am aware that the transfer of waste to the facility does not relieve the generator or transporter from liability associated with the proper disposal of that waste.

Printed Name _____

Signature _____

Title _____

Date _____

Please complete and sign this survey/application and mail or email to:
CB Industries Composting Facility - PO Box 1420 - Carbondale CO 81623 –
erica@chtresources.com

SURVEY AND APPLICATION FOR WASTE DELIVERY
BIOSOLIDS

Part I

Name of Business: _____

Owner(s): _____

Address of Business: _____

_____

Phone Number: _____

Name of Contact: _____

Part II

Waste Characterization

Quantity of waste per week for which disposal is required (cu. yd.) _____

Metals Classification of Biosolids (check appropriate classification)

_____ Table 1, Section 64.12 (A)(1), 5 CCR 1002-64 Biosolids Reg. No. 64

_____ Table 3, Section 64.12 (A)(1), 5 CCR 1002-64 Biosolids Reg. No. 64

Pathogen Destruction Criteria (check appropriate classification)

_____ Class A, Section 64.12 (B), 5 CCR 1002-64 Biosolids Reg. No. 64

_____ Class B, Section 64.12 (B), 5 CCR 1002-64 Biosolids Reg. No. 64

Part III

I certify under penalty of law that this survey and application was prepared by me or under by direct supervision. The information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further certify that the wastes covered by the survey and application are not hazardous as defined at 40 CFR Part 261. I further certify that all discharges made to CHT Resources Composting Facility are, or will be, being made in accordance and in compliance with requirements specified in the applicable ordinance or rules and any issued permit, order, statement of requirements or other authorization to discharge. I am aware that the transfer of waste to the facility does not relieve the generator or transporter from liability associated with the proper disposal of that waste.

Printed Name _____

Signature _____

Title _____

Date _____

Please complete and sign this survey/application and deliver to:

CHT Resources Composting Facility
167 Garfield Ave,
Carbondale CO 81623
Email: jake.dewolfe01@gmail.com

APPENDIX D
WASTE TRANSPORT MANIFEST

TRUCKED AND HAULED WASTE MANIFEST

Instructions: Please print legibly. Complete all blanks in Part I. Enter all information for each generator where waste was picked up in Part II. Sign and date the manifest in Part III. Provide the completed manifest to CB Industries personnel prior to disposal of waste. Approval will be required by CHT Resources prior to mixing domestic, commercial and/or industrial waste.

Part I

Transporter/Permittee:_____ Permit No:_____
Driver Name: _____
Truck License Plate No.:_____ License No.:_____
Date of Disposal: _____

Part II - Waste Generator

Name: _____ Phone: _____
Address: _____
Date Pumped: _____ Time Pumped: _____am/pm
Size of Tank: _____ gal Gallons Pumped: _____ gal
Description of Waste: _____

Check One

___ Domestic Septage
___Grease Interceptor (food based)
___ Sand Trap
___ Industrial
___ Storm Water
___ Other

Part III

I certify under penalty of law that this manifest was prepared by me or under my direct supervision. The information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further certify that the wastes covered by the manifest are not hazardous as defined at 40 CFR Part 261. I further certify that all discharges made to CHT Resources Composting Facility are, or will be, made in accordance and in compliance with requirements specified in the applicable ordinance or rules and any issued permit, order, statement of requirements or other authorization to discharge. I am aware that the transfer of waste to the facility does not relieve the generator or transporter from liability associated with the proper disposal of that waste.

_____ _____ _____
Printed Name Signature of Transporter Date

APPENDIX E
LETTER OF INTENT - CDPHE

LETTER OF INTENT
FOR THE USE AND DISTRIBUTION OF BIOSOLIDS
FOR UNRESTRICTED (LAWN AND HOME GARDEN) OR
BAGGED OR CONTAINERIZED BIOSOLIDS FOR RESTRICTED USE

Colorado Department of Health
Water Quality Control Division
Permits and Enforcement Section
Biosolids Management Program
4300 Cherry Creek Drive
Denver, CO 80246-1530

DATE RECEIVED

CDH BMP ID # _____

PRODUCER ID # _____

DO NOT WRITE ABOVE THIS LINE

A. FACILITY INFORMATION

1. Applicant

Facility Name CB Industries-Delta, Inc.

Contact Person Thomas A. Cronk

Street 1129-24-Rd

City Grand Junction State CO Zip 81505

Phone (970) 245 - 0577

form BMP D&M 007-98-17

LETTER OF INTENT

CDH BMP ID #: _____
CDH Producer ID #: _____ Laboratory ID Code: _____

Do not write above this line

B. BIOSOLIDS ANALYSIS REPORTING FORM

Laboratory: Envirochem, Grand Junction CO

Date of sample(mm/dd/yy): 08/18/04 (if individual sample)
Dates of sample (mm/dd/yy): ___/___/___, ___/___/___, ___/___/___, ___/___/___
average of multiple samples, all samples must be collected within same calendar month)

BIOSOLIDS ANALYSES AND REPORTING UNITS					
PARAMETERS	UNITS	VALUES	PARAMETERS	UNITS	VALUES
total solids	percent	63.9	volatile solids	percent of total solids	10.6
pH	standard units	7.01	organic nitrogen as N	percent dry weight	0.028
total phosphorus	percent dry weight	0.001	total ammonia as N	percent dry weight	0.006
total potassium	percent dry weight	0.13	nitrate as N	percent dry weight	0.0005
total arsenic	mg/kg dry weight	1.345	total mercury	mg/kg dry weight	0.134
total cadmium	mg/kg dry weight	1.96	total molybdenum	mg/kg dry weight	1.124
total chromium	mg/kg dry weight	8.76	total nickel	mg/kg dry weight	17.2
total copper	mg/kg dry weight	121.04	total selenium	mg/kg dry weight	1.758
total lead	mg/kg dry weight	20.4	total zinc	mg/kg dry weight	347.6

Laboratory: EnviroChem, Grand Junction

Date of sample(mm/dd/yy): 05/20/04 (if individual sample)
Dates of sample (mm/dd/yy): ___/___/___, ___/___/___, ___/___/___, ___/___/___
(if average of multiple samples, all samples must be collected within same calendar month)

BIOSOLIDS ANALYSES AND REPORTING UNITS					
PARAMETERS	UNITS	VALUES	PARAMETERS	UNITS	VALUES
total solids	percent	71.5	volatile solids	percent of total solids	12.6
pH	standard units	7.07	organic nitrogen as N	percent dry weight	0.003
total phosphorus	percent dry weight	0.002	total ammonia as N	percent dry weight	0.003
total potassium	percent dry weight	0.12	nitrate as N	percent dry weight	0.0009
total arsenic	mg/kg dry weight	1.287	total mercury	mg/kg dry weight	0.107
total cadmium	mg/kg dry weight	1.10	total molydbenum	mg/kg dry weight	1.4
total chromium	mg/kg dry weight	7.82	total nickel	mg/kg dry weight	19.7
total copper	mg/kg dry weight	77.40	total selenium	mg/kg dry weight	1.633
total lead	mg/kg dry weight	22.2	total zinc	mg/kg dry weight	196.8

LETTER OF INTENT

CDH BMP ID #: _____
CDH Producer ID #: _____ Laboratory ID Code: _____

Do not write above this line

C. PATHOGEN DESTRUCTION CRITERIA
(Complete item 1 or 2 below)

1. Fecal Coliform Monitoring Results:

Laboratory	Sample Date	Result
Envirochem	08/18/04	130 mpn/gm
Envirochem	05/20/04	420 mpn/gm
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	

Geometric Mean _____

2. Salmonella Monitoring Results:

Laboratory	Sample Date	Result
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	
	/ /	

3. Identify the alternative demonstration(s) for Class A pathogen reduction utilized by the applicant:

1. Heat treatment (64.12.B(3)) _____
2. Alkaline Addition (64.12.B(4)) _____
3. Enteric Virus and Ascaris Ova Monitoring (64.12.B(5) or (6)) _____
4. PFRP (64.12.B(7)) ✓

LETTER OF INTENT

CDH BMP ID #: _____
CDH Producer ID #: _____ Laboratory ID Code: _____

Do not write above this line

D. VECTOR ATTRACTION REDUCTION CRITERIA
(Identify the vector attraction reduction criteria documenting compliance)

1. Volatile Solids Reduction (64.12.C(3)) _____%
2. Bench scale anaerobic digestion (64.12.C94)) _____%
3. Bench scale aerobic digestion (64.12.C(5)) _____%
4. Specific oxygen uptake rate (64.12.C(6)) _____%
5. Aerobic processing MCRT > 14 days / T > 40EC; xT > 45EC (64.12.C(7)) 100 %
6. Alkaline addition (64.12.C(8)) _____%
7. No primary solids, solids content ≥ 75% prior to mixing (64.12.C(9)) _____%
8. Primary solids, solids content ≥ 90% prior to mixing (64.12.C(10)) _____%

E. FACILITY OPERATING PLAN

Attach a process description and monitoring results as required per appropriate sections of Biosolids Regulations referenced in Section C., Pathogen Destruction Criteria and D., Vector Attraction Reduction Criteria of this application. The facility operating plan should also include copies of any labelling, information sheets, written cautions or written instructions for use required per Section 64.14.A(2) of 64.14.B(2) of the Biosolids Regulations.

STATE OF COLORADO

Bill Owens, Governor
Douglas H. Benevento, Executive Director

Dedicated to protecting and improving the health and environment of the people of Colorado

4300 Cherry Creek Dr. S.
Denver, Colorado 80246-1530
Phone (303) 692-2000
TDD Line (303) 691-7700
Located in Glendale, Colorado

http://www.cdphe.state.co.us

Laboratory and Radiation Services Division
8100 Lowry Blvd.
Denver, Colorado 80230-6928
(303) 692-3090

Colorado Department
of Public Health
and Environment

December 6, 2004

Tom A. Cronk, P.E.
CB Industries – Delta, Inc.
1129 24 Road
Grand Junction, CO 81505

RE: Notice of Authorization for the Use and Distribution of Biosolids (Unrestricted)
CB Industries Composting Facility, Austin; CDPH&E BMP #1713
The Southeast Quarter of the Southwest Quarter of Section 21 AND the
Northeast Quarter of the Northwest Quarter of Section 28,
Township 14 South, Range 95 West;
Delta County

Dear Mr. Cronk:

Enclosed, please find the Notice of Authorization for the Use and Distribution of Biosolids authorizing the **CB Industries Composting Facility** to distribute biosolids compost for **"Unrestricted Use."** The Notice of Authorization for the Use and Distribution of Biosolids contains references to a number of monitoring and reporting requirements that are contained in the Colorado Biosolids Regulation, (5 CCR 1002-64). The permittee is responsible for the identification of and compliance with all applicable criteria contained in the regulation. Additional requirements may also be specified in the Special Conditions section of the Notice of Authorization for the Use and Distribution of Biosolids. Please review the document carefully.

Fee payment, in the amount of two dollars and forty cents per dry ton of biosolids distributed, is required per the Beneficial Use of Water Treatment Sludge and Fees Applicable to the Beneficial Use of Sludges (5CCR 1003-7, 6.B.1). Fees may be calculated based upon either the weight of the biosolids added to the composting process or the weight of finished compost. Biosolids invoices will be sent to the Biosolids Generator(s). Unpaid balances will be the responsibility of **CB Industries Composting Facility.**

The generation of nuisance odors as a result of the composting operation is subject to the provisions of Regulation Two of the Air Pollution Control Commission (5CCR 1001-4, 1973). Violations of applicable air quality standards are subject to enforcement as provided pursuant to Section 25-7-115 the Air Pollution Control Act, 1970.

Please contact me at 303-692-3613 with questions, concerns or comments you may have.

Sincerely,

Wesley Carr, ~~Environmental~~ Protection Specialist
Biosolids Management Program
WATER QUALITY CONTROL DIVISION

cc: **Mike Havens, District Engineer, Grand Junction Field Office, WQCD**
Bob Brobst, P.E., Biosolids Program Coordinator, EPA Region 8
Kenneth Nordstrom, Director of Environmental Health, Delta County EH
Delta County Commissioners
Natural Resource Conservation Service
BMP File #1713

APPENDIX F
NOTICE OF INTENT - EPA REGION VIII

NOTICE OF INTENT
FOR
CB INDUSTRIES COMPOSTING FACILITY
SE1/4, SW1/4, SEC 21, & NE1/4, NW1/4, SEC 28
DELTA COUNTY COLORADO

January 8, 2009

PREPARED FOR

CB INDUSTRIES-DELTA, INC.

Prepared by

Thomas A. Cronk, PE

Cronk Construction Inc.

1129 -24- Road

Grand Junction, CO 81505

(970) 245-0577

NOTICE OF INTENT

2.2.1.1 Official or legal name of applicant.

CB Industries-Delta, Inc.

2.2.1.2 Responsible Official

Thomas A. Cronk, President
1129 -24- Road
Grand Junction, CO 81505
(970) 245-0577

2.2.1.3 Contact Person

Jeryl N. Beard, Vice-President
1129 -24- Road
Grand Junction, CO 81505
(970) 245-0577
(970) 257-7453 (fax)
(970) 640-5028 (cell)

2.2.1.4 Facility/operation Physical Address

11289 Doughspoon Road, Austin, CO 81410
SE1/4, SW1/4, Sec 21 and NE1/4, NW1/4, Sec 28, T14S, R95W, 6th PM
Delta County
Colorado
108º01'21"W Longitude 38º48'48"N Latitude

2.2.1.5 Facility/operation Mailing Address

CB Industries-Delta, Inc.
1129 -24- Road
Grand Junction, CO 81505

2.2.1.6 Status of applicant

Corporation

2.2.1.7 Indian Country

The facility is not located in Indian country.

2.2.1.8 Category or Subcategory

Category 2, Subcategory 2.a.: Land application of sewage sludge.
Facility currently has a general permit (COG650139) which expired on August 16, 2007. Facility is requesting renewal of said permit. Facility received no biosolids in calendar year 2008.

2.2.1.9 Is wastewater treatment done at this facility?

No.

2.2.1.10 Does this facility have an NPDES permit for the discharge of wastewater?

No.

2.2.1.11 Does this facility have an NPDES permit that authorizes the use/disposal of sewage sludge?

No.

2.2.1.12 Does this facility have authorization by the State for the use and/or disposal of sewage sludge?

Yes. Notice of Authorization for the Use and Distribution of Biosolids (Unrestricted), BMP#1713, issued December 6, 2004.

2.2.1.13 Amount of sewage sludge generated in dry metric tons per year (dmt/y).

The facility does not generate sewage sludge.

2.2.1.14 Is any sewage sludge brought into the facility from other sources?

Yes. Biosolids are brought into the facility from municipal wastewater treatment plants by private haulers. Anticipate 500 dmt/year in 2009 from City of Montrose Municipal WWTP.

2.2.1.15 Is any sewage sludge sent to another facility for treatment prior to final use/disposal?

No.

2.2.1.16 Applicants for coverage under Category 1.

N/A

2.2.1.17 Provide a brief description of the sewage sludge treatment provided at the facility.

Biosolids that are land applied will be subject to static pile compost treatment to assure Class A pathogen reduction requirements and vector attraction reduction requirements are met. Table NOI-1 Biosolids Treatment Provided (Number of Units) – Anticipate composting 500 dmt/year in calendar year 2009.

2.2.2 Coverage Under Category 2

2.2.2.1 Provide a brief description of the methods of final use/disposal of sewage sludge that is treated and/or received at the facility or operation.

Final use and disposal of biosolids sludge will consist of sale of treated compost to the public for unrestricted use and on-site land application of treated compost through the uniform application of compost on the surface of native range land with a manure spreader.

No biosolids were received in calendar year 2008.

TABLE NOI-2
FINAL USE/DISPOSAL FOR PREVIOUS CALENDAR YEAR
OR PREVIOUS 12 MONTHS

TOTAL ANNUAL PRODUCTION (Predigestion) in dmt N/A	
TOTAL ANNUAL PRODUCTION (Postdigestion) in dmt N/A	
LAND APPLICATION (Total): _____0_____dmt	
Bulk Sewage Biosolids (Total): __0____ dmt	Derived Material (Total): ____0_____dmt
Agricultural Land: ____0_____dmt	Agricultural Land: _____0_____dmt
Range Land: ____0___dmt	Range Land: ____0____dmt
Forest: _____0_____dmt	Forest: _____0_____dmt
Public Contact Site: _____0_____dmt	Public Contact Site: _____0_____dmt
Reclamation: ____0_____dmt	Reclamation: ____0_____dmt
Sold or Given Away: _____0_____dmt	Sold or Given Away: ____0_____dmt
Lawn or Garden: _____0_____dmt	Lawn or Garden: _____0_____dmt
SURFACE DISPOSAL (Total): __0_____dmt	

With liner and leachate collection system: ___n/a_____dmt	
Without liner and leachate collection system: ____n/a_____dmt	
LANDFILL (Total): ___0_____dmt	
Landfill Disposal: ___n/a_____dmt	Landfill Cover: ____n/a_____dmt
Landfill Name: _____n/a_____	
Does the landfill comply with 40 CFR Part 258 requirements? (Y/N) n/a	
INCINERATION: ___0_____dmt	
OTHER _____ ____0_____dmt	
STORED: ____0_____dmt	
LONG TERM TREATMENT: ____0_____dmt	

2.2.2.2 Are contract appliers and/or haulers used to land apply sewage sludge and/or haul the sewage sludge to the use/disposal site(s)?

No.

2.2.2.3 Land Application of Sewage Sludge - Subcategory 2.a.

The information specified in Table NOI-3 will be provided for each active land application site and for each site that is planned to be used during the first six (6) months of coverage under this permit.

2.2.2.3.1

TABLE NOI-3
LAND APPLICATION SITE INFORMATION

Site Name: CB INDUSTRIES COMPOSTING FACILITY	Site No.
Name of nearest stream: NEGRO CREEK	
Owner: CB INDUSTRIES-DELTA, INC.	
Operator: CB INDUSTRIES-DELTA, INC.	
Applier: CB INDUSTRIES-DELTA, INC.	
Latitude 38º48'48"N	Longitude 108º01'21'W
Street address or other locational description, or 11289 Doughspoon Rd., Austin, CO 81410	
Section: 21 & 28 Township: 14S Range: 95W	

Size (acres) 80	Size (hectares)
Crop(s) None	

2.2.2.3.2 Metals, Total Solids, Nitrogen, and Phosphorus Data for Sewage Sludge:

The following table shows results of testing of biosolids received in 2007 from Olathe WWTP, Ridgeway WWTP and Norwood WWTP. No biosolids were received in 2008.

TABLE NOI-4
METALS, TOTAL SOLIDS, NITROGEN & PHOSPHORUS DATA FOR SEWAGE SLUDGE THAT IS LAND APPLIED

Pollutants & Characteristics	Units	Average Concentration	Maximum Concentration	Number of Samples
Arsenic	mg/Kg	5.17	7.5	4
Cadmium	mg/Kg	2.07	2.8	4
Copper	mg/Kg	276.65	444.00	4
Lead	mg/Kg	53.16	71.2	4
Mercury	mg/Kg/	1.32	2.3	4
Molybdenum	mg/Kg	6.17	10.10	4
Nickel	mg/Kg	14.5	15.3	4
Selenium	mg/Kg	12.64	30.10	4
Zinc	mg/Kg	455.56	605.10	4
Total Solids	%	28.74	68.23	4
Nitrite plus Nitrate	%	1.13	1.66	4
Total Kjeldahl Nitrogen	%	1.34	1.89	4
Ammonia	%	0.21	0.31	4
Total Phosphorus	%	0.68	0.92	4

2.2.2.3.3 Describe briefly how the applicable vector attraction reduction requirements will be met.

Biosolids that are land applied will be subject to static pile compost treatment where a minimum temperature of 40 degrees centigrade and an average temperature of 45 degrees centigrade is maintained for a minimum of 14 days to assure vector attraction reduction requirements are met.

2.2.2.3.4 Describe briefly how the applicable pathogen requirements will be met.

Biosolids that are land applied will be subject to static pile compost treatment where a minimum temperature of 55 degrees centigrade is maintained for three (3) days to assure Class A pathogen requirements are met.

The following table is from testing of finished biosolids compost product tested February 21, 2007.

TABLE NOI-5
PATHOGEN AND TOTAL SOLIDS DATA FOR SEWAGE SLUDGE
THAT IS LAND APPLIED

Pollutants & Characteristics	Units	Average Concentration	Maximum Concentration	Number of Samples
Fecal Coliform	No./g b/	6	6	1
Salmonella	No./4g b/			
Helminth OVA	No./g b/			
Eneteric Virus	PFU/g b/			
Total Solids	%	75.53	75.53	1

2.2.2.3.5 Provide the data on metals, total solids, nitrates and phosphorus listed in Table NOI-6 for the soils at each land application site.

Biosolids have only been treated through composting and the treated compost is currently stockpiled on site. No land application has occurred to date.

TABLE NOI-6
METALS, TOTAL SOLIDS, NITRATES, & PHOSPHOR DATA REQUIRED
FOR SOILS AT LAND APPLICATION SITE

Name of Land Application Site: CB Industries Composting Facility				Site No.:
Pollutants & Characteristics	Units	Average Concentration	Maximum Concentration	Number of Samples
Arsenic (As) a/	mg/Kg			
Cadmium (Cd) a/	mg/Kg			
Copper (Cu) a/	mg/Kg			
Lead (Pb) a/	mg/Kg			
Mercury (Hg) a/	mg/Kg			
Molybdenum (Mo) a/	mg/Kg			
Nickel (Ni) a/	mg/Kg			
Selenium (Se) a/	mg/Kg			
Zinc (Zn) a/	mg/Kg			
Total Solids	%			
Nitrate (N)	mg/Kg			
pH	s.u.			
Available Phosphorus (P) a/	mg/Kg			

a/ Report as mg per Kg of total solids (i.e., dry weight basis).

2.2.2.3.6 Ground water information

2.2.2.3.6.1 Ground water classification

The ground water underlying the land application site has not been classified by the State.

2.2.2.3.6.2 Annual high ground water level

The drilling of a monitoring well determined the annual high ground water level under the land application site is greater than five (5) feet below ground surface.

2.2.2.3.6.3 Plan to Protect Ground Water Quality

N/A

2.2.2.4 Landfilling of Sewage Sludge

N/A

2.2.2.5 Surface Disposal of Sewage Sludge under Subcategory 2.c

N/A

2.2.3 Additional Information under Category 3

N/A

2.2.4 Certification Statement and Who Signs

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____ 01/08/2009

Thomas A. Cronk, President Date
CB Industries-Delta, Inc.

APPENDIX G
GEOTECHNICAL ENGINEERING REPORT

TABLE OF CONTENTS

1. Geotechnical Engineering Report; Grand Junction Lincoln Devore; February 13, 2003

2. Liner Evaluation; Evaporation Lagoon #3; Grand Junction Lincoln Devore; July, 2011

3. General Geotechnical & Geologic Conditions, Grand Junction Lincoln DeVore, February 13, 2012

4. CB Industries – Delta Inc. Monitoring Wells and Borings Drill Logs

GEOTECHNICAL ENGINEERING REPORT
Grand Junction Lincoln Devore
February 13, 2003

GRAND JUNCTION
LINCOLN DeVORE, Inc.
GEOTECHNICAL ENGINEERS – GEOLOGISTS

1441 Motor St.
Grand Junction, CO 81505

TEL: (970) 242-8968
FAX: (970) 242-1561

February 13, 2003

CB Industries
c/o Cronk Construction
1129 24 Rd.
Grand Junction, CO 81505

Re: Cory Composting Facility, Eagle Creek, Cory, CO

This report presents the results of our surficial geologic and limited geotechnical evaluation performed to determine the general, shallow subsurface conditions of the site applicable to construction of a composting facility. This composting facility includes a lagoon area and an evaporative retention pond. A vicinity map is included in the Appendix of this report.

The characteristics of the subsurface materials encountered were evaluated with regard to the type of construction described above. Recommendations are included herein to match the described construction to the soil characteristics found. The information contained herein may or may not be valid for other purposes. If the proposed site use is changed or types of construction proposed, other than noted herein, Grand Junction Lincoln DeVore should be contacted to determine if the information in this report can be used for the new construction without further field evaluations.

FIELD EXPLORATION AND LABORATORY TESTING

A field evaluation was performed on 11-26-02, and consisted of a site reconnaissance by our geotechnical personnel and the excavation of 3 shallow exploration pits. These shallow exploration pits were excavated in close proximity to the proposed lagoon area, compost area and evaporative retention area. The exploration pits were located to obtain a reasonably good profile of the subsurface soil conditions. All exploration pits were excavated using a small, rubber-tired backhoe to depths of approximately 8 to 10 feet.. Samples were taken with thin-wall Shelby Tubes and by bulk methods. Logs describing the subsurface conditions are presented in the attached figures. In addition, samples had been collected by the client from a deeper Observation/Monitor Well, which had been placed on the east limits of this project

The following field sampling was performed.

ASTM D-1587 Thin-Walled Shelby Tube 2-1/2" id, Shelby Tube

The following laboratory tests were performed on representative soil samples to determine their relative engineering properties.

ASTM D-2487 Soil Classification
ASTM D-2937 In-Place Soil Density
ASTM D-2216 Moisture Content of Soil

Tests were performed in accordance with test methods of the American Society for Testing and Materials or other accepted standards. The results of our laboratory tests are included in this report. The in-place soil density, moisture content and the standard penetration test values are presented on the attached drilling logs.

SITE DESCRIPTION

The project site is located in the south half of the southwest Quarter of Section 21, Township 14S, Range 95 W of the 6th Principal Meridian, Delta County, Colorado. More specifically the site is located up the Negro Creek Drainage, west of the intersection of 1825 and 1911 Roads, Delta County, CO.

The topography of the site is relatively flat, being located within a portion of the ancient alluvial/debris plain of Negro Creek. The ground surface in the vicinity of the site has an overall gradient to the east. The overall Negro Creek drainage, in this area, is over ½ mile wide and contains some small ridges and hills which are erosional remnants of the Mancos Shale Formation which is bedrock in this area. An existing gully of a branch of Negro Creek is present on the south side and another branch is present on the north side of the project.

The exact direction of surface runoff on this site will be controlled to an extent by the proposed new construction and will be variable. In general, surface runoff is expected to travel to the northeast or southeast into the existing gully features of Negro Creek, eventually entering the North Fork of the Gunnison River via Tongue Creek. Surface and subsurface drainage on this site can be described as fair to poor.

On-site erosion can be a significant problem if drainage and vegetation are not carefully controlled. The sparse vegetation will probably be maintained in the immediate area around the compost facility, but special care should be taken to maintain vegetation on the steeper slopes. We recommend that runoff from these slopes be carefully controlled to prevent erosion caused by irrigation practices, sheetwash or seepage. It may be necessary to provide culverts or drainage ways to prevent excessive erosion along steeper slopes.

GENERAL GEOLOGY AND SUBSURFACE DESCRIPTION

The geologic materials encountered under the site consist of at least 8 feet, and possibly as much as 35 feet, of unconsolidated alluvial soils which are underlain by a thick sequence of sedimentary rocks. The Mancos Shale Formation is bedrock in this area. The geologic and engineering properties of the materials found in our 3 shallow exploration pits will be discussed in the following sections.

The surface soils on this site consist of a series of lean clay, silty clay and sandy clay/silt soils which are a product of alluvial, mud flow/debris flow features which originate on the south-facing slopes of Grand Mesa. This particular alluvial/mud flow/debris flow features is the product of Negro Creek, with head waters on the slopes of Grand Mesa to the northwest. These mud flow/debris flow features are a small part of a very extensive mud flow/debris flow complex along the base of the Grand Mesa and extending to the North Fork of the Gunnison River. Utilizing recent events and standard evaluation techniques, this tract is not considered to be within with an active debris flow hazard area but, is considered to be on the margins of an semi-active debris flow hazard/alluvial flood hazard area of Negro Creek.

The surface soils are an erosional product of the upper Mancos Shale, the Mesa Verde and possible

Wasatch/Ohio Creek Formations, all of which are exposed on the upper slopes of the Grand Mesa. The soils contained within these mud flow/debris flow features normally exhibit a metastable condition which can range from very slight to severe. Metastable soil is subject to internal collapse and is very sensitive to changes in the soil moisture content. Based on the field and laboratory testing of the soils on this site, the severity of the metastable soils can be described as slight. Enclosed with this report are Soil Analysis and Summary Sheets for four samples which were subjected to classification and permeability testing.

Sample # 1 was classified as a slightly sandy silt (ML) under the Unified Classification System. These soils are rather typical of the top soil across the entire site. This particular sample was taken from the exploration pit in the evaporation/retention area. It is anticipated that these soils will be used for reclamation and landscaping purposes.

Soil Type II was classified as a lean clay (CL) under the Unified Classification System. These soils were observed in a rather blocky form in the soil profile. Laboratory testing indicated these soils have a low to medium Liquid Limit (40%). Particular attention should be given to the Skempton's Activity number of 0.2, which would indicate that these soils will probably not exhibit excessive piping after reworking and compaction. (Daniel Resendiz, 'Relevance of Atterberg Limits in Evaluating Piping and Breaching Potential', *Dispersive Clays, Related Piping, and Erosion in Geotechnical Projects*, ASTM STP 623, 1977.)

It should be noted that Soil Type II exhibits rather low concentrations of soluble sulfate salts (less than 50 ppm). The soil permeability was measured utilizing Falling Head Methods. The general apparatus is quite similar to the apparatus of ASTM D 2434, Permeability of Granular Soils (Constant Head) as modified for the Falling Head test similar to the method of Bowles, *Engineering of Soils and Their Measurement*, 1992. A specimen was selected from the Shelby tube sample which did not have any apparent piping. This sample was used for in-situ testing from the lagoon pit and another sample from the compost pit, both samples at 3 feet. Another portion of the compost pit sample at 3 feet was remolded to approximately 90% of the soils proctor density, ASTM D-698 A, at near optimum moisture content.

Soil Type III was classified as a lean clay (CL) under the Unified Classification System. These soils were observed to have a slightly blocky to occasionally laminated form in the soil profile. These soils were determined to have a low Liquid Limit (28%). Particular attention should be given to the Skempton's Activity number of 0.1, which would indicate that these soils will probably not exhibit excessive piping after reworking and compaction. (Daniel Resendiz, 'Relevance of Atterberg Limits in Evaluating Piping and Breaching Potential', *Dispersive Clays, Related Piping, and Erosion in Geotechnical Projects*, ASTM STP 623, 1997.) Soil Type II exhibits rather low concentrations of soluble sulfate salts (less than 50 ppm).

The soil permeability form the Lagoon Area was measured utilizing Falling Head Methods. The general apparatus is quite similar to the apparatus of ASTM D 2434, Permeability of Granular Soils (Constant Head) as modified for the Falling Head test similar to the method of Bowles, *Engineering of Soils and Their Measurement*, 1992. A sample from the Lagoon Area Pit was remolded to approximately 90% of the soils proctor density, ASTM D-698 A, at near optimum moisture content.

The surface soils are deposited over the dense formational material of the Mancos Shale of Cretaceous Age. The Mancos Shale is described as a thin bedded, drab, light to dark gray marine shale, with thinly interbedded fine grain sandstone and siltstone layers. Some portions of the Mancos Shale are bentonitic, and therefore, are highly expansive. The majority of the shale, however, has only a low to moderate expansion potential. The formational shale was not encountered in any of the exploration pits but was encountered in a test boring/monitor well installed near the east end of the project area, at a depth of approximately 35 feet.

The Mancos Shale Formation is often highly fractured, with fillings of soluble sulfate salts (Gypsum & Anhydrite) being very common. Sulfate Salts exhibit variable strength, depending upon surrounding moisture conditions and their chemistry as related to water. In addition, Sulfate Salts are soluble and may be physically removed from the soil by ground moisture movement. Such removal may leave significant amounts of void areas within the Mancos Shale, which may affect the load bearing capacity of the formation. Many of the fractures in the Mancos Shale Formation are open, allowing the rapid transmission of water to occur. Some sandstone and siltstone strata within the Mancos Shale Formation also exhibit elevated permeability.

GROUND WATER

No free water was encountered during excavation on the shallow exploration pits on this site. In our opinion the true free water surface is fairly deep in this area, and hence, should not affect construction. The Monitor Well, placed on the east side of the project encountered a wet zone and possibly free water at approximately 27 feet to 30 feet below the ground surface. It is not known if this is in the lower portion of the alluvial soils or the upper, weathered portion of the erosional contact of the Mancos Shale Formation.

It is possible that other areas of definitive ground water may be present either beneath this site or in near proximity. It would anticipated that if an ancient gully or deeper 'trough' is present on the buried erosional surface of the Mancos Shale that, near surface ground water would collect within any such channels. Either an extensive drilling program in conjunction with or a geophysical (seismic/resistivity) exploration program would be required to map the buried surface of the eroded Mancos Shale, in the hopes of locating any buried gullies and concentrations of shallow ground water. The upper, thin ground water located on the erosional surface of the Mancos Shale may be considered as 'perched water' but, are probably present throughout the year and while fluctuating seasonally, would probably be present throughout the year.

A true or deeper ground water in this area is normally encountered at significant depths below the ground surface. Some sandstone beds within the Mancos Shale are known to contain ground water but, under most circumstances this water is mineralized and often saline. These thin confined aquifers are usually erratic and have not been well studied.

We would anticipate that significant confined aquifers may be located in the lower sandstones of the Dakota Formation, within thin sandstone beds of the underlying Somerville and more significant aquifers possibly located in the Entrada Sandstone Formation. These confined aquifer beds are believed to be approximately 2000 to 4000 feet below the present ground surface.

Constructions similar to this composting facility normally have ground water monitoring wells installed to aid in assessing the pre-existing ground water conditions and to 'monitor' changes to these conditions, both on a

natural seasonal basis and due to the affects of the construction of this composting facility. As a minimum, we would recommend that 3 ground water monitoring wells be installed around this project. One well should be installed immediately up stream, west, of the facility and the other two should be placed down stream, immediately east of the existing facility. Of the east monitor wells, we recommend that one be placed toward the northeast corner of the facility and the other to the southeast corner.

We recommend that these monitor wells be either doubly completed or that two wells be placed in close proximity to one another, one shallow and one deeper. The shallow well or completion should be screened from approximately 6 feet to 15 feet below the present ground surface. The deeper well or completion should be screened from approximately 20 feet below the ground surface, to 5 feet below the contract with the Mancos Shale Formation. The purpose of these two levels is to monitor any existing ground water beneath the site and to determine if infiltration from the composting facility or any natural surface seepage (precipitation, etc) is present in the upper strata of these alluvial deposits.

It was observed in the exploration pits that, the majority of soils observed in the exploration pits had substantial amounts of continuous tubal pores (pipes) and that surface water may tend to deeply penetrate these soils, the stratification of the alluvial soils would also favor horizontal travel of ground water, toward the east.

ECONOMIC GEOLOGICAL DEPOSITS

No significant gravel or sand deposits were found during our field observations nor are any expected within the project. Some alluvial/debris fan deposits of sand and gravel are present north of this site and on top of several nearby mesas and buttes.

No near surface geologic deposits would could be extracted for economic use were observed on the site.

The upper, 'perched' ground water is adjacent to the Mancos Shale and such waters are notorious for large amounts of soluble sulfate salts and other minerals. This upper 'perched' water is not normally considered to be potable. It is not believed the shallow, 'perched' ground water on this site would be considered a water resource for either potable purposes or for extensive irrigation.

Radioactive ores have been mined from the lower Burro Canyon and Morrison Formations in the Uncomphagre Uplift to the west. In general, the producing mines and significant deposits are located more than 20 miles west of this site. It is believed these Formations are in excess of 3000 feet below this site and it is not believed that such deposits would be economic or that such deposits would adversely affect this project.

This site is underlain, as depth, by the Dakota, Burro Canyon and Morrison Formations. These Formations are known to contain economic deposits of natural gas and occasionally oil. Exploration for natural gas or petroleum is being accomplished on the slopes of Grand Mesa but, it is not believed that significant exploration has been accomplished within the lower margins of the North Fork Valley. It is possible that economic deposits of petroleum may be present beneath this site but, this cannot be confirmed at this time.

GEOLOGIC HAZARDS

The surface soils are an erosional product of the upper Mancos Shale and Mesa Verde Formation which are exposed on the slopes of Grand Mesa. When these soils are sampled and subjected to laboratory testing, some collapse and consolidation is often times experienced. In some instances, desiccated soils similar to those found on this site have experience slight to mild expansive properties when subjected to unsaturated moisture conditions. The alluvial soils on this site will tend to settle under some building loads or significant earth embankment loads. Standard geotechnical and structural engineering practices and construction techniques normally employed in the Delta County area should be sufficient to properly address the possibly of settlement on this site.

This tract is not considered to be within an active debris flow hazard area but, is considered to be on the margins of a semi-active debris flow hazard and flood hazard from Negro Creek. Delineation of specific flood zones or areas are not a part of our study.

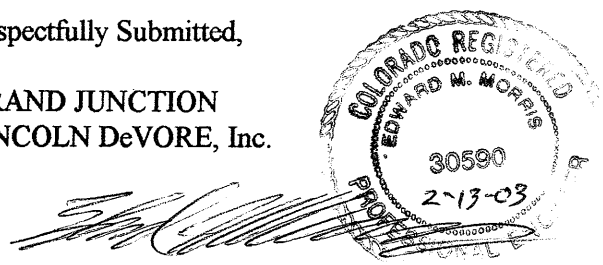
The site is in close proximity to existing gully features. Most of the slopes of these gullies are relatively steep but, are not very high. In most areas, these gully slopes are less than 8 feet high. There is evidence of some minor slopes failure along the banks of some of these gullies. These slopes should be considered as potentially unstable. It is recommended that a building set back ratio of at least 3:1 (horizontal:vertical) be implemented along the existing gully banks. It is also recommended that as part of the surface hydrology study of this site that any areas which are deemed susceptible to erosion during periods of flow in these gullies be addressed and protected, as required.

Excessive amounts of naturally occurring radon gas may occur on this site due to the proximity of the Mancos Shale Formation. The presence or absence of radon gas has not been confirmed by Grand Junction Lincoln DeVore and is not a part of this particular investigation.

No evidence of significant ground settlement, ground collapse, under mined areas, mast wasting processes or other geologic hazards, besides those already discussed, are present in the main building area of this site, which would affect the project.

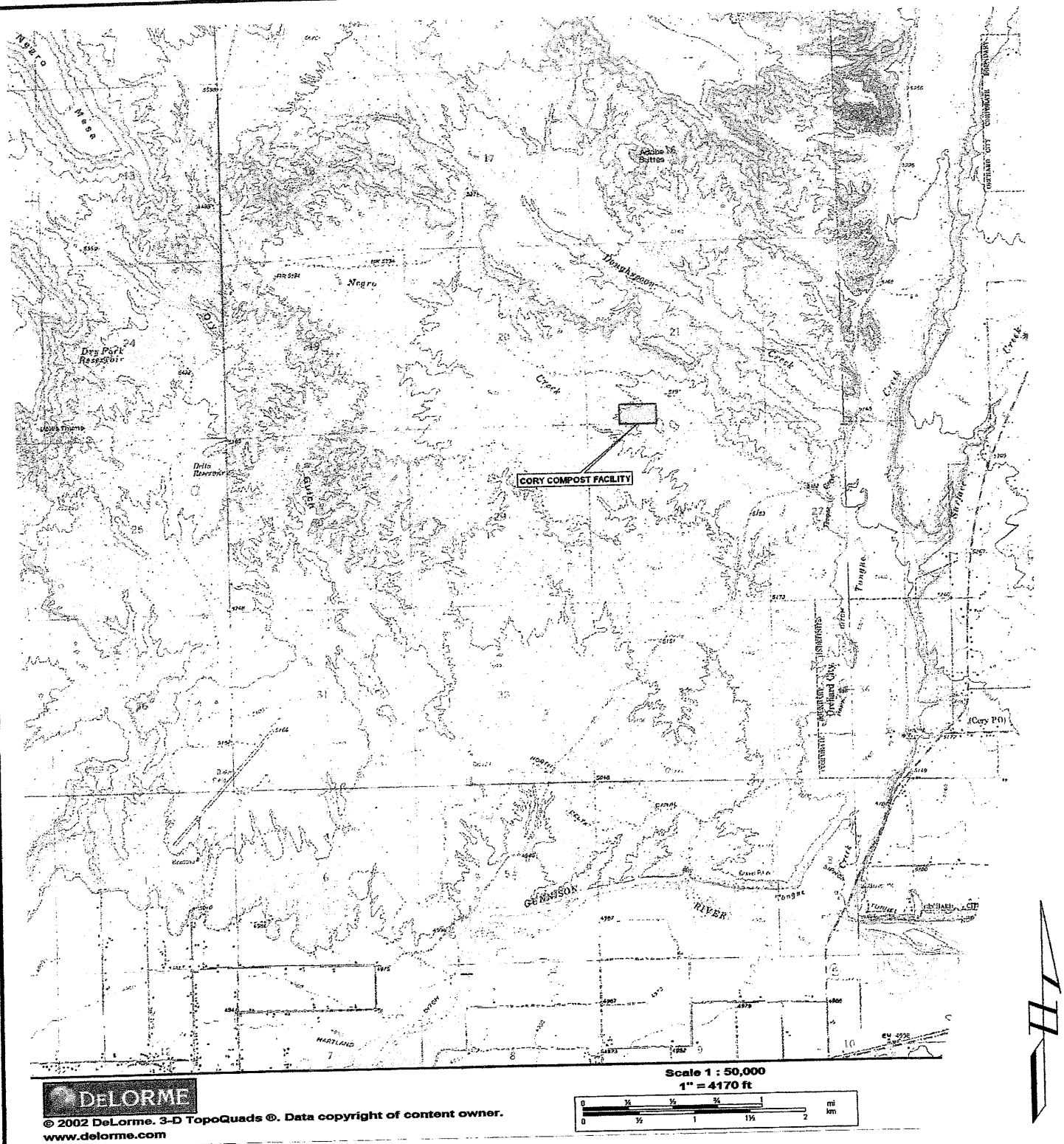
It is believed that all pertinent points have been addressed. If any further questions arise regarding this project or if we can be of any further assistance, please do not hesitate to contact this office at any time.

Respectfully Submitted,



GRAND JUNCTION
LINCOLN DeVORE, Inc.

by: Edward M. Morris PE
Principal Engineer
GJLD Job No.: 89919-GJ



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LOCATION DIAGRAM

CORY, COMPOSTING FACILITY
1825 & 1911 Roads, Cory, Colorado

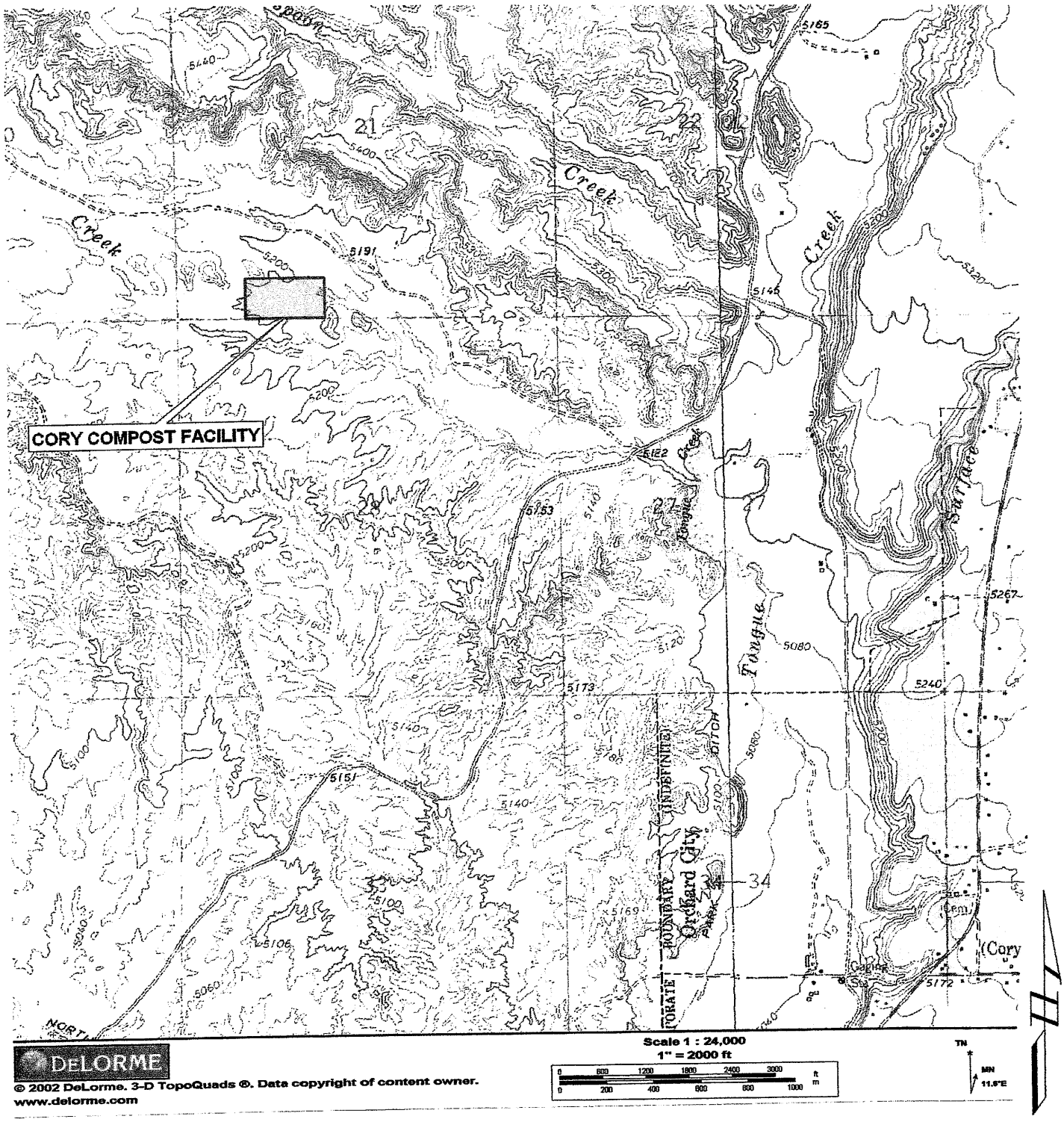
CB INDUSTRIES
Grand Junction, Colorado

Date: **1-22-2003**

Job No.: **89819-GJ**

Drawn: **EMM**

GRAND JUNCTION
LINCOLN - DeVORE, Inc.
Geotechnical Consultants
Grand Junction, Colorado



SITE LOCATION DIAGRAM

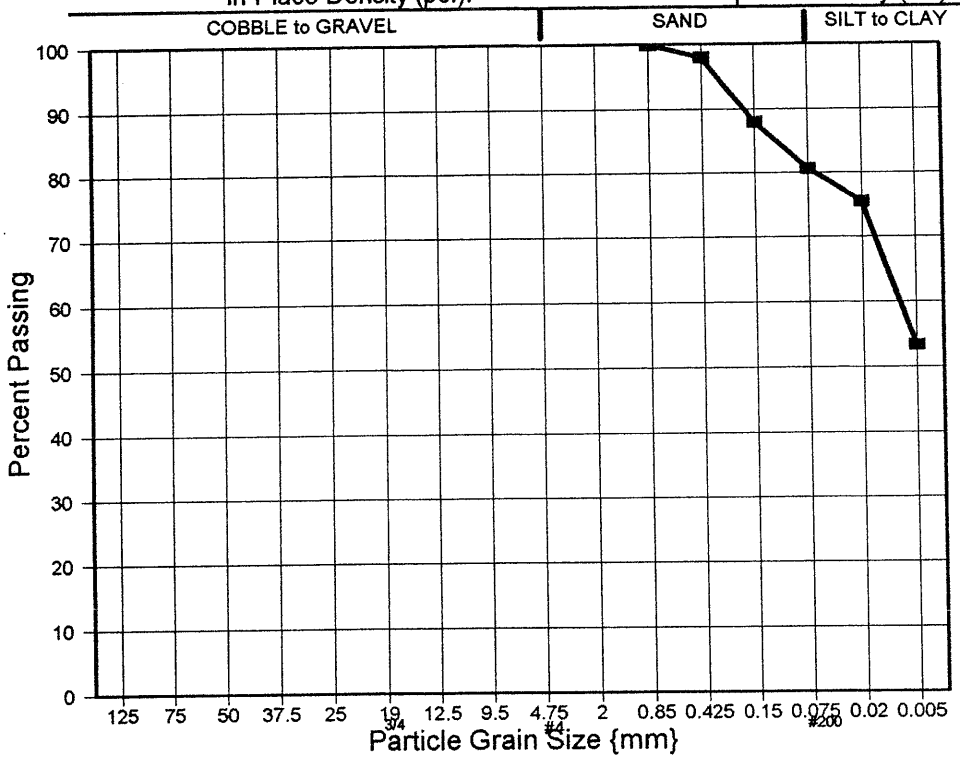
GRAND JUNCTION LINCOLN - DeVORE, Inc. Geotechnical Consultants **Grand Junction, Colorado**	**CORY, COMPOSTING FACILITY** **1825 & 1911 Roads, Cory, Colorado**	
	CB INDUSTRIES **Grand Junction, Colorado**	Date **1-22-2003**
	Job No. **89819-GJ** / Drawn **EMM**	

Soil Sample: **SI. SANDY SILT (ML)** Sample No.: **I** **(Typical)**

Geologic Origin: **ALLUVIAL/DEBRIS FAN DEPOSITS, Qa/Qdf** Test by: **DKA**

Natural Water Content (w): **15.9%** EVAPORATE Pit: Depth: **TOPSOIL'**

In-Place Density (pcf): Soil Specific Gravity (Gs):



Effective size mm

Cu

Cc

Plastic Limit (PL)	28%
Liquid Limit (LL)	40%
Plasticity Index (PI)	12%
Skempton's Activity	0.2
Shrinkage Limit (SL)	
Shrinkage Ratio	

DIRECT SHEAR: **CD**

	Ult.	Res.
Shear Angle:	deg.	
Tan Shear:		
Cohesion:	psf	

Sieve	(mm)	% Passing
5"	125	
3"	75	
2"	50	
1-1/2"	37.5	
1"	25	
3/4"	19	
1/2"	12.5	
3/8"	9.5	
# 4	4.75	
#10	2	
#20	0.85	100
#40	0.425	98
#100	0.15	88
#200	0.075	80.7
	0.02	76
	0.005	53

Maximum Size Allowed By Sampler 2-1/2"

MOISTURE / DENSITY RELATIONSHIP:

ASTM Method: D-698 A D 4718 - 0% Rock Correction

Max. Dry Density : pcf pcf

Optimum Moisture :

The materials (EvaporationPond Pit @ 0.5 feet) Consists of Very Dark Gray, Heavy Clay Loam to Light Clay. Material is Sticky and Plastic. Estimated permeability is Slow

SULFATE SALTS: <50 ppm

PERMEABILITY: Falling Head Permeameter

K (20 C): In-Situ cm/sec @ pcf

Initial Moisture: Final:

K (20 C): Remolded cm/sec @ pcf

Initial Moisture: Final:

SOIL ANALYSIS and SUMMARY

GRAND JUNCTION
LINCOLN - DeVORE, Inc.
Geotechnical Consultants
Grand Junction, Colorado

CORY, COMPOSTING FACILITY
1825 & 1911 Roads, Cory, Colorado

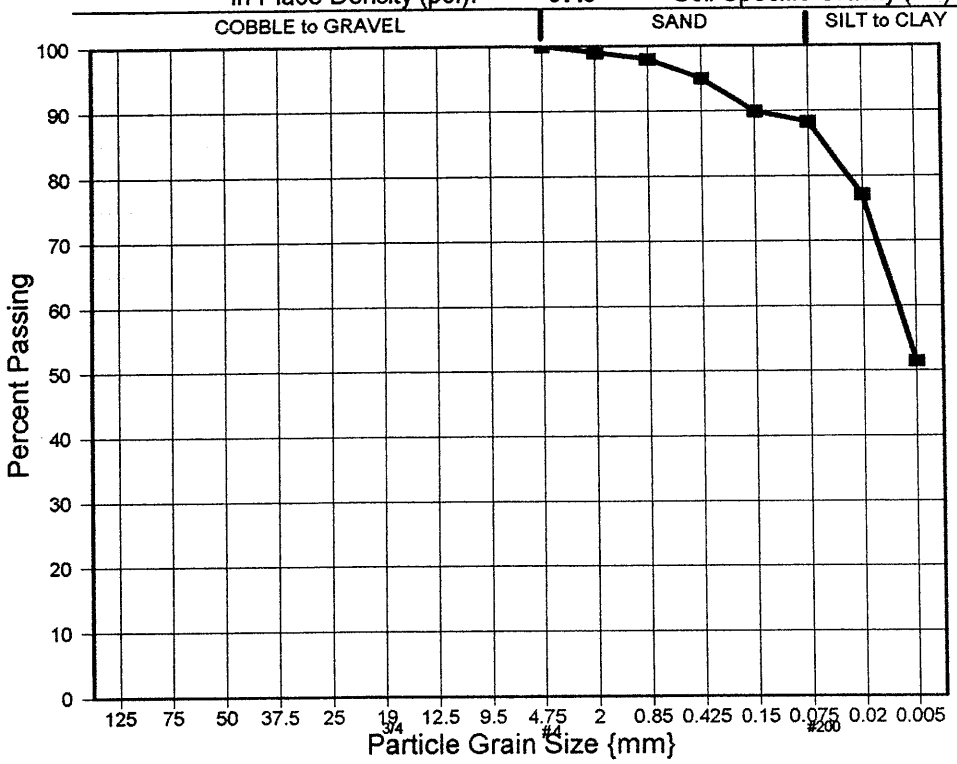
CB INDUSTRIES Grand Junction, Colorado		Date 1-22-2003
Job No. 89819-GJ	Drawn EMM	

Soil Sample: **LEAN CLAY (CL)** Sample No.: **II (Typical)**

Geologic Origin: **ALLUVIAL/DEBRIS FAN DEPOSITS, Qa/Qdf** Test by: **DKA**

Natural Water Content (w): **4.6%** LAGOON Pit: Depth: **3'**

In-Place Density (pcf): **97.0** Soil Specific Gravity (Gs):



Effective size mm

Cu

Cc

Plastic Limit (PL) **22%**

Liquid Limit (LL) **40%**

Plasticity Index (PI) **18%**

Skempton's Activity **0.2**

Shrinkage Limit (SL)

Shrinkage Ratio

DIRECT SHEAR: **CD**

	Ult.	Res.
Shear Angle:	deg.	
Tan Shear:		
Cohesion:	psf	

Sieve	(mm)	% Passing
5"	125	
3"	75	
2"	50	
1-1/2"	37.5	
1"	25	
3/4"	19	
1/2"	12.5	
3/8"	9.5	
# 4	4.75	100
#10	2	99
#20	0.85	98
#40	0.425	95
#100	0.15	90
#200	0.075	88.3
	0.02	77
	0.005	52

Maximum Size Allowed By Sampler 2-1/2"

MOISTURE / DENSITY RELATIONSHIP:

ASTM Method: **D-698 A** **D 4718 - 0% Rock Correction**

Max. Dry Density : pcf pcf

Optimum Moisture :

The Materials (Evaporation & Compost Pit) Consists of Gray Light Clay and Gray Clay with numerous Olive Yellow Mottles. Mottles are Relic Mottling. Material has many Continuous Tubular Pores.

SULFATE SALTS: <50 ppm

PERMEABILITY: Falling Head Permeameter

K (20 C): In-Situ 1.6E-07 cm/sec @ 98.9 pcf

Initial Moisture: 4.9% Final: 27.4%

K (20 C): In-Situ 2.2E-06 cm/sec 94.4

Compost @ 3' Initial Moisture: 3.8% Final: 30.7%

K (20 C): Remolded 2.3E-07 cm/sec @ 103.5 pcf

Compost @ 3' Initial Moisture: 15.0% Final: 25.9%

SOIL ANALYSIS and SUMMARY

GRAND JUNCTION
LINCOLN - DeVORE, Inc.
Geotechnical Consultants
Grand Junction, Colorado

CORY, COMPOSTING FACILITY
1825 & 1911 Roads, Cory, Colorado

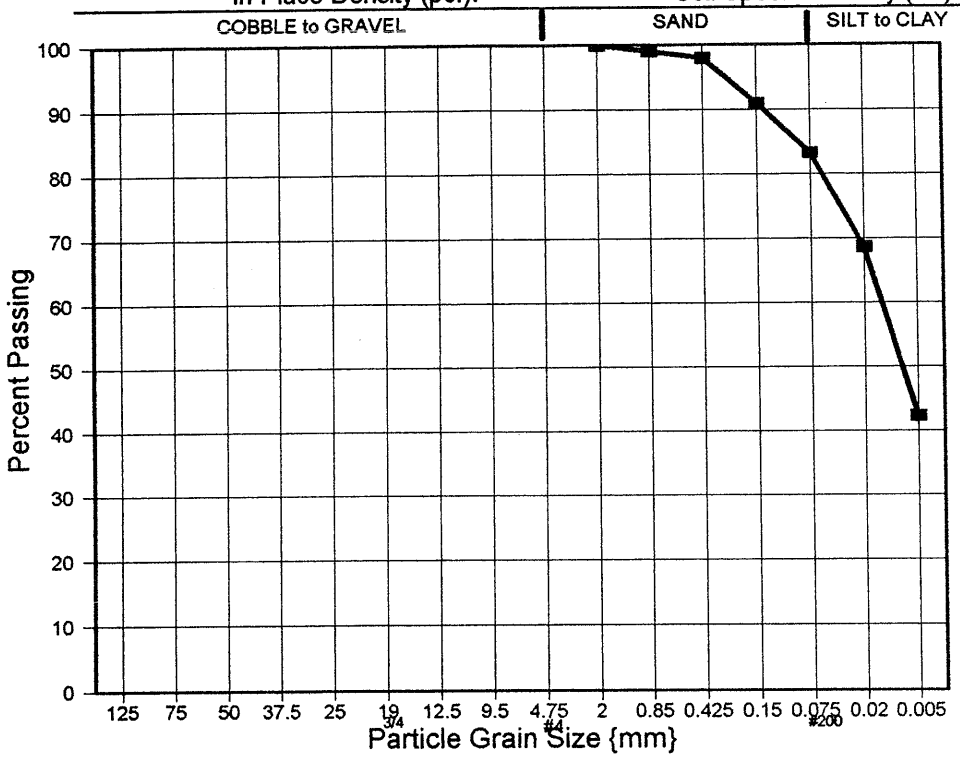
CB INDUSTRIES Grand Junction, Colorado		Date 1-22-2003
Job No. 89819-GJ	Drawn EMM	

Soil Sample: **LEAN CLAY (CL)** Sample No.: **III (Typical)**

Geologic Origin: **ALLUVIAL/DEBRIS FAN DEPOSITS, Qa/Qdf** Test by: **DKA**

Natural Water Content (w): **6.0%** LAGOON Pit: Depth: **6'-8'**

In-Place Density (pcf): Soil Specific Gravity (Gs):



Effective size mm

Cu

Cc

Plastic Limit (PL)	**20%**
Liquid Limit (LL)	**28%**
Plasticity Index (PI)	**8%**
Skempton's Activity	**0.1**
Shrinkage Limit (SL)	
Shrinkage Ratio	

DIRECT SHEAR: **CD**

	Ult.	Res.
Shear Angle:	deg.	
Tan Shear:		
Cohesion:	psf	

Sieve	(mm)	% Passing
5"	125	
3"	75	
2"	50	
1-1/2"	37.5	
1"	25	
3/4"	19	
1/2"	12.5	
3/8"	9.5	
# 4	4.75	
#10	2	100
#20	0.85	99
#40	0.425	98
#100	0.15	91
#200	0.075	83.3
	0.02	69
	0.005	42

Maximum Size Allowed By Sampler 2-1/2"

MOISTURE / DENSITY RELATIONSHIP:

ASTM Method: **D-698 A** **D 4718 - 0% Rock Correction**

Max. Dry Density : pcf pcf

Optimum Moisture :

The Materials (Laggon Pit) Consists of Light Olive Brown (moist) Heavy Silty Clay Loam or Light Clay. The Material has numerous Olive Yellow Mottles and some Gray Gleying. The Mottles are Relic Mottling. Material has many Continuous Tubular Pores.

SULFATE SALTS: **250** ppm

PERMEABILITY: Falling Head Permeameter

K (20 C): In-Situ cm/sec @ pcf

Initial Moisture: Final:

K (20 C): Remolded cm/sec @ pcf

Initial Moisture: Final:

SOIL ANALYSIS and SUMMARY

GRAND JUNCTION
LINCOLN - DeVORE, Inc.
Geotechnical Consultants
Grand Junction, Colorado

CORY, COMPOSTING FACILITY
1825 & 1911 Roads, Cory, Colorado

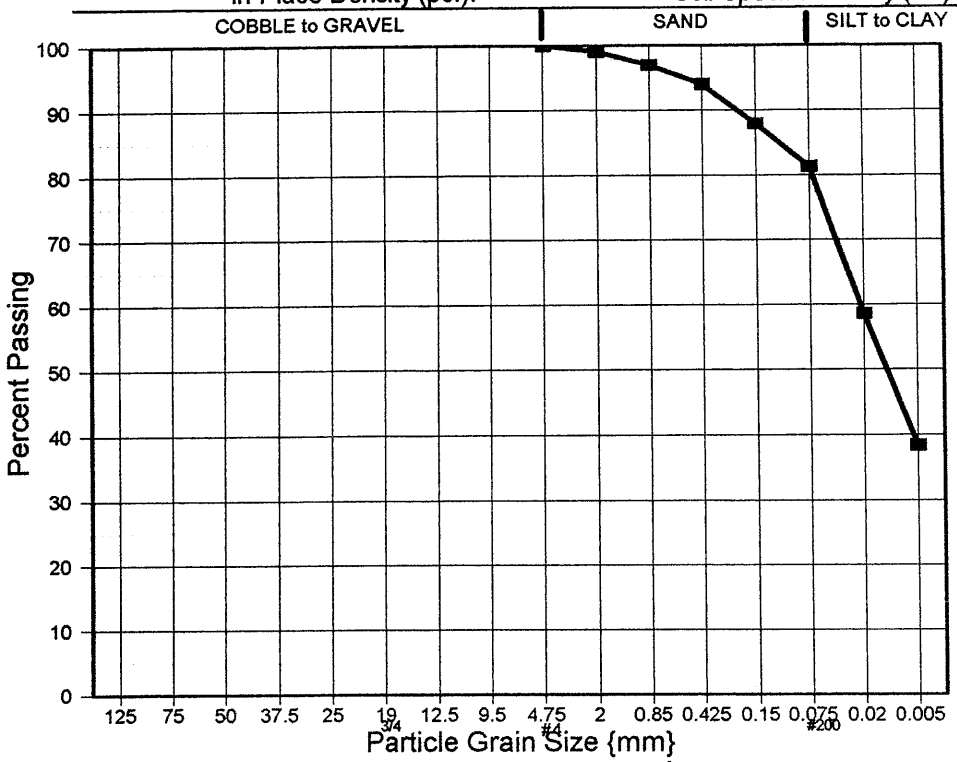
CB INDUSTRIES Grand Junction, Colorado		Date 1-22-2003
Job No. 89819-GJ	Drawn EMM	

Soil Sample: **LEAN CLAY (CL)** Sample No.: **III (Typical)**

Geologic Origin: **ALLUVIAL/DEBRIS FAN DEPOSITS, Qa/Qdf** Test by: **DKA**

Natural Water Content (w): LAGOON Area: SAMPLED by TOM CRONK

In-Place Density (pcf): Soil Specific Gravity (Gs):



Effective size mm

Cu

Cc

Plastic Limit (PL)	**23%**
Liquid Limit (LL)	**30%**
Plasticity Index (PI)	**7%**
Skempton's Activity	**0.1**
Shrinkage Limit (SL)	
Shrinkage Ratio	

DIRECT SHEAR: **CD**

	Ult.	Res.
Shear Angle:	deg.	
Tan Shear:		
Cohesion:	psf	

Sieve	(mm)	% Passing
5"	125	
3"	75	
2"	50	
1-1/2"	37.5	
1"	25	
3/4"	19	
1/2"	12.5	
3/8"	9.5	
# 4	4.75	100
#10	2	99
#20	0.85	97
#40	0.425	94
#100	0.15	88
#200	0.075	81.3
	0.02	59
	0.005	38

Maximum Size Allowed By Sampler 2-1/2"

MOISTURE / DENSITY RELATIONSHIP:

ASTM Method: D-698 A D 4718 - 0% Rock Correction

Max. Dry Density : 118.5 pcf pcf

Optimum Moisture : 15.0%

SULFATE SALTS: <50 ppm

PERMEABILITY: Falling Head Permeameter

K (20 C): In-Situ cm/sec @ pcf

Initial Moisture: Final:

K (20 C): Remolded 4.8E-08 cm/sec @ 106.3 pcf

Initial Moisture: 18.9% Final: 20.5%

SOIL ANALYSIS and SUMMARY

GRAND JUNCTION
LINCOLN - DeVORE, Inc.
Geotechnical Consultants
Grand Junction, Colorado

CORY, COMPOSTING FACILITY
1825 & 1911 Roads, Cory, Colorado

CB INDUSTRIES Grand Junction, Colorado		Date 1-22-2003
Job No. 89819-GJ	Drawn EMM	

LINER EVALUATION
Grand Junction Lincoln Devore
EVAPORATION LAGOON #3
July, 2011

Sample Origin CELL # 3 SAMPLES & Drill Cuttings Stockpile
Material Description REWORKED MANCOS SHALE (Liner)
Soil Type LEAN CLAY (Liner) & Silty Clay w/Organic (Cuttings)

Test By GS & DRS
Report Date 7-19-11
Sample # All

SAMPLE DESIG.	SAMPLE TYPE	MOISTURE %	DENSITY pcf	CLASSIFICATION UCS	PERMEABILITY cm/sec
NEC @ 4"	SHELBY (2.5")	9.2%	109.7	Lean Clay CL	.
NEC @ 8"	SHELBY (2.5")	8.3% 11.7%	112.4 117.0	Lean Clay CL Lean Clay CL	. 1.39 E-7
NW @ Surface	SHELBY (2.5")	11.3%	115.9	Lean Clay CL	.
NW @ 7"	SHELBY (2.5")	15.8% 18.2%	100.1 107.5	Lean Clay CL Lean Clay CL	. 8.17 E-8
SE @ 3"	SHELBY (2.5")	15.5%	110.6	Lean Clay CL	.
SE @ 7"	SHELBY (2.5")	14.7%	113.3	Lean Clay CL	.
SWC @ 3"	SHELBY (2.5")	14.5% 17.4%	96.3 105.6	Lean Clay CL Lean Clay CL	. 2.16 E-7
SWC @ 10"	SHELBY (2.5")	14.0% 13.9%	102.6 105.4	Lean Clay CL Lean Clay CL	. 1.79 E-6
LINER Composite	BULK	15.8%		Lean Clay CL	.
DRILL CUTTINGS	BULK	56.1%		SILTY CLAY CL-ML w/ ORGANIC	

Notes: Shelby Tube Specimens Were Tested For Density & Moisture Content For the Entire Sampled Length.
Entire Sampled Length Included Top & Bottom Surfaces Which Were Disturbed/Loosened.
Samples Selected For Flex Wall Permeability Testing Were Also Tested For Density & Moisture Content.

The Liner Composite Was Classified (USC) and Proctor Testing Standard ASTM D-698 & Modified ASTM D-1557
The Drill Cuttings Was Classified by Visual Methods and Tested For Proctor Value Standard ASTM D-698

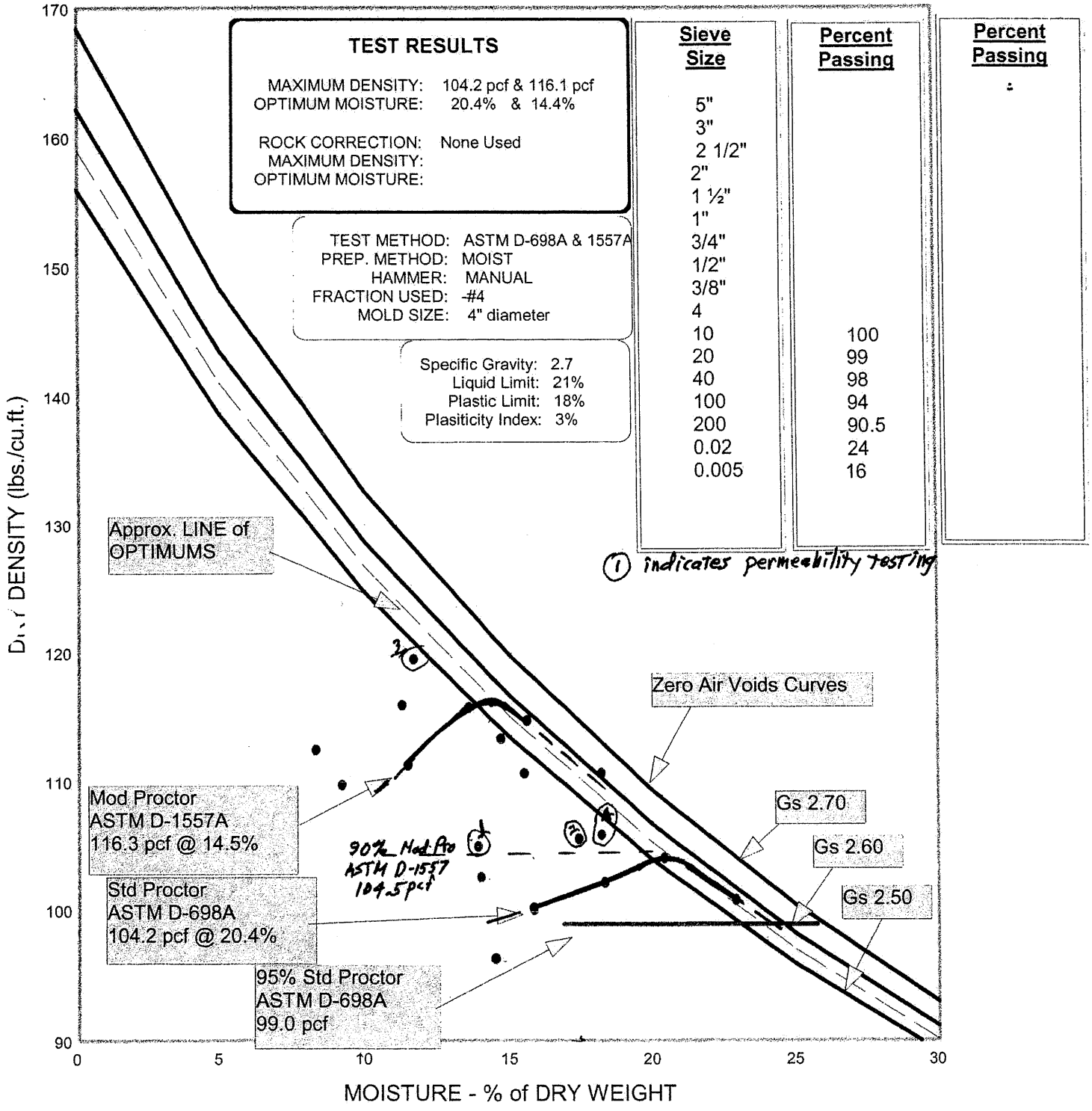
GRAND JUNCTION
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Geotechnical Consultants
Grand Junction, Colorado

LINER & DRILL CUTTINGS EVALUATION
11289 Dough Spoon Road, AUSTIN, COLO.
CB INDUSTRIES-DELTA, Inc.
GRAND JUNCTION, COLORADO

Job No.	Drawn	Date
94238-GJ	EMM	7-19-11

Sample Origin EXISTING # 3 POND - COMPOSTING FACILITY
Material Description LEAN CLAY, EXISTING LINER, Composite Sample
Soil Type CL, Reworked, From V.Wx Mancos Shale

Test By DRS RL
Test Date 5-26-2011
Sample # I



INCLUDES PLOTS of IN-PLACE DENSITY TESTING (Shelby Tubes) OBTAINED 5-23-2011,

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Geotechnical Consultants
Grand Junction, Colorado

Liner Evaluation, 11289 Dough Spoon Road
AUSTIN, COLORADO

CB INDUSTRIES-DELTA, Inc.
GRAND JUNCTION, COLORADO

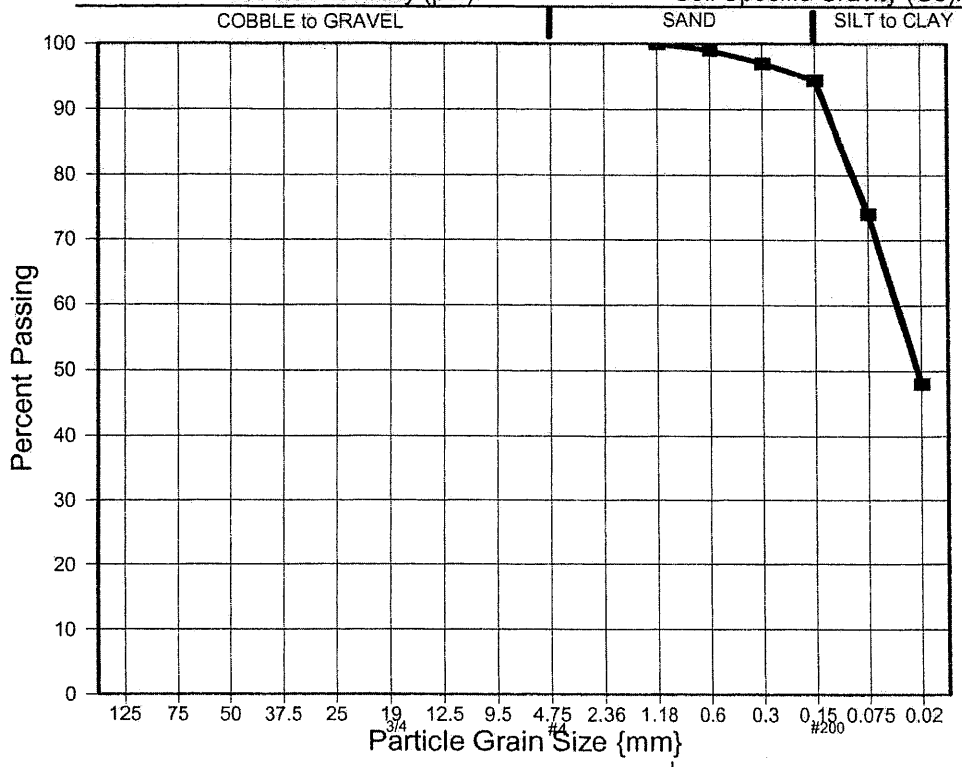
Job No.	Drawn	Date
94238-GJ	EMM	7-18-2011

Soil Sample: **LEAN CLAY (CL)** **V. Weathered MANCOS SHALE** Sample No.: **I** **(Typical)**

Geologic Origin: **EXISTING LINER MATERIAL, Composite Sample** Test by: **GS**

Natural Water Content (w): Boring No.: Depth: **3"-10"**

In-Place Density (pcf): Soil Specific Gravity (Gs):



Effective size mm

Cu

Cc

Plastic Limit (PL)	**21**
Liquid Limit (LL)	**41**
Plasticity Index (PI)	**20**
Skempton's Activity	**0.3**
Shrinkage Limit (SL)	
Shrinkage Ratio	

DIRECT SHEAR: **CD**

Peak Res.

Shear Angle: deg.

Tan Shear:

Cohesion: psf

Sieve	(mm)	% Passing
5"	125	
3"	75	
2"	50	
1-1/2"	37.5	
1"	25	
3/4"	19	
1/2"	12.5	
3/8"	9.5	
# 4	4.75	
#8	2.36	
#16	1.18	100
#30	0.6	99
#50	0.3	97
#100	0.15	94.5
#200	0.075	74
	0.02	48

MOISTURE / DENSITY RELATIONSHIP:

ASTM Method:	**D-698 A**	**D-1557 A**
Max. Dry Density :	**104.2** pcf	**116.1** pcf
Optimum Moisture :	**20.4%**	**14.4%**

HVEEM-CARMANY: **FHA Soil Swell:**

'R' Value @ 300 psi: Swell

Displacement 300 psi: psf

Expansion @ 300 psi: psf Remolded Sample

ALLOWABLE BEARING (net): psf by Consolidometer

Standard Penetration (SPT): psf by Penetrometer

Unconfined Compression (qu): psf

COLLAPSE @ Wetting: @ psf

CONSOLIDATION: @ psf

CONSOLIDATION: @ psf

SULFATE SALTS: **250** ppm

PERMEABILITY:

K (20 C) Remolded cm/sec @ pcf

SOIL ANALYSIS and SUMMARY

GRAND JUNCTION
LINCOLN - DeVORE, Inc.
Geotechnical Consultants
Grand Junction, Colorado

Liner Evaluation, 11289 Dough Spoon Road
AUSTIN, COLORADO

CB INDUSTRIES-DELTA, Inc.
GRAND JUNCTION, COLORADO

Date **7-18-2011**

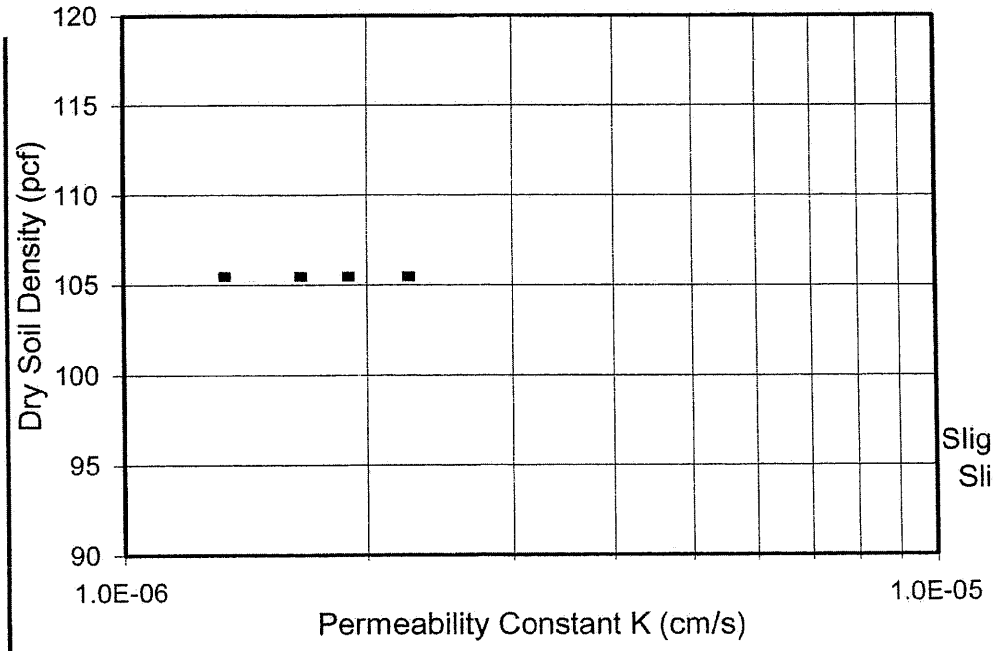
Job No. **94238-GJ**

Drawn **EMM**

PROJECT: LINER EVALUATION, 3rd CELL | PROJECT CLIENT: CB INDUSTRIES | JOB#: 94238-GJ | 1

SAMPLE LOCATION: SWC @ 10" | BORING#: | DATE: 6-21-2011

SOIL DESCRIPTION: CL, Reworked, V.Wx Mancos Shale Mottled, w/Sl. Sandy Strata | SC: CL | LAB TECH: EMM



FLEX-WALL PERMEABILITY TESTING CONDUCTED USING A **KAROL WARNER** CELL.
FALLING HEAD METHOD

AVERAGE of FOUR (4) TESTS
1.79E-06 **cm/sec**

Slight Swell when Saturating Specimen
Slight Consolidation During Perm Test

Specific Data for Test #1

Permeameter Data		cm & gm
Permeameter Diameter (cm)		6.350
Initial Sample Height (cm)		2.512
Dry Sample Weight (gm)		133.85
Standpipe Diameter (cm)		1.0778
Standpipe Area (cm2)	9	0.9124
Permeameter Area (cm2)	10	31.669

Soil Moisture Data	Initial	Final
Wet Soil Weight (gm)	295.58	305.54
Dry Soil Weight (gm)	277.02	277.02
Water Weight (gm)		
Tear Weight (gm)	143.17	143.17
Dry Soil Weight (gm)	133.85	133.85
Water Percent (%)	13.9%	21.3%

Unit Weight of Sample (pcf)		105.45	105.45	105.45	105.45
		Test #1	*Test #2*	*Test #3*	*Test #4*
Final Sample Height (cm	2	2.502	2.502	2.502	2.502
Initial Water Head (cm)	3	47.73	45.98	42.14	36.44
Final Water Head (cm)	4	45.98	42.14	36.44	32.94
Temperature (C)		26	26	26	26
Temp. Correction (Ut)					
Time Start (to sec)	6				
Time End (to sec)	7				
Test Time (sec)		1200	3300	6300	5460
Volume Water (cm3)	8				
Falling Head Permeability		2.25E-06	1.90E-06	1.66E-06	1.34E-06
Constant Head Perm.					

Constant Head Perm.

$$Kt = \frac{(QL)}{tHA} = \frac{[(8) \times (2)]}{[(7)-(6)]x(3)x(10)}$$

Falling Head Permeability

$$\frac{(9) \times (2)}{(10)x[(7)-(6)} \times \ln[(3)/(4)]$$

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Grand Junction, Colorado

Liner Evaluation, 11289 Dough Spoon Road
3rd CELL, AUSTIN, COLORADO
CB INDUSTRIES-DELTA, Inc.
GRAND JUNCTION, COLORADO

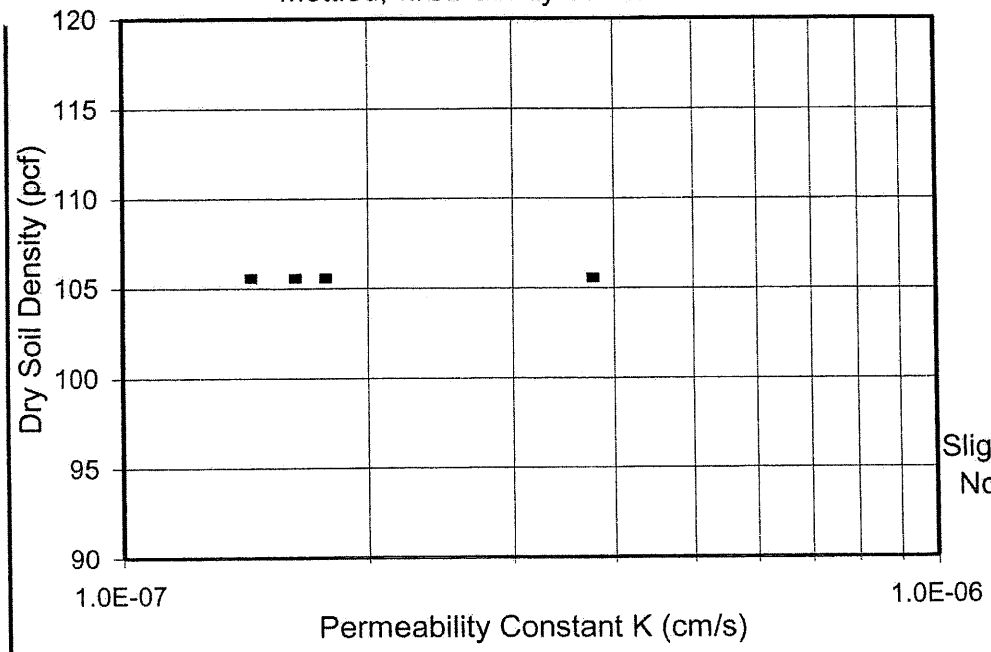
Job No.	Drawn	Date
94238-GJ	**EMM**	**6-27-2011**

PROJECT: LINER EVALUATION, 3rd CELL | PROJECT CLIENT: CB INDUSTRIES | JOB#: 94238-GJ 2

SAMPLE LOCATION: SWC @ 3" | BORING#: | DATE: 6-24-2011

SOIL DESCRIPTION: CL, Reworked, V.Wx Mancos Shale | SC: CL | LAB TECH: EMM

Mottled, w/Sl. Sandy Strata



FLEX-WALL PERMEABILITY TESTING CONDUCTED USING A **KAROL WARNER** CELL.
FALLING HEAD METHOD

AVERAGE of FOUR (4) TESTS
2.16E-07 **cm/sec**

Slight Swell when Saturating Specimen
No Consolidation During Perm. Test

Specific Data for Test #5

Permeameter Data		cm & gm
Permeameter Diameter (cm)		6.350
Initial Sample Height (cm)		2.524
Dry Sample Weight (gm)		135.17
Standpipe Diameter (cm)		1.0778
Standpipe Area (cm2)	9	0.9124
Permeameter Area (cm2)	10	31.669

Soil Moisture Data	Initial	Final
Wet Soil Weight (gm)	301.24	305.74
Dry Soil Weight (gm)	277.68	277.68
Water Weight (gm)		
Tear Weight (gm)	142.51	142.51
Dry Soil Weight (gm)	135.17	135.17
Water Percent (%)	17.4%	20.8%

Unit Weight of Sample (pcf)		105.57	105.57	105.57	105.57
		Test #5	*Test #6*	*Test #7*	*Test #8*
Final Sample Height (cm	2	2.524	2.524	2.524	2.524
Initial Water Head (cm)	3	48.17	47.84	47.07	46.42
Final Water Head (cm)	4	47.84	47.07	46.42	45.87
Temperature (C)		26	26	26	26
Temp. Correction (Ut)					
Time Start (to sec)	6				
Time End (to sec)	7				
Test Time (sec)		1320	7200	5760	6000
Volume Water (cm3)	8				
Falling Head Permeability		3.77E-07	1.63E-07	1.78E-07	1.44E-07
Constant Head Perm.					

Constant Head Perm.

$$Kt = \frac{(QL)}{tHA} = \frac{[(8) \times (2)]}{[(7)-(6)]x(3)x(10)}$$

Falling Head Permeability

$$\frac{(9) \times (2)}{(10)x[(7)-(6)]} \times \ln[(3)/(4)]$$

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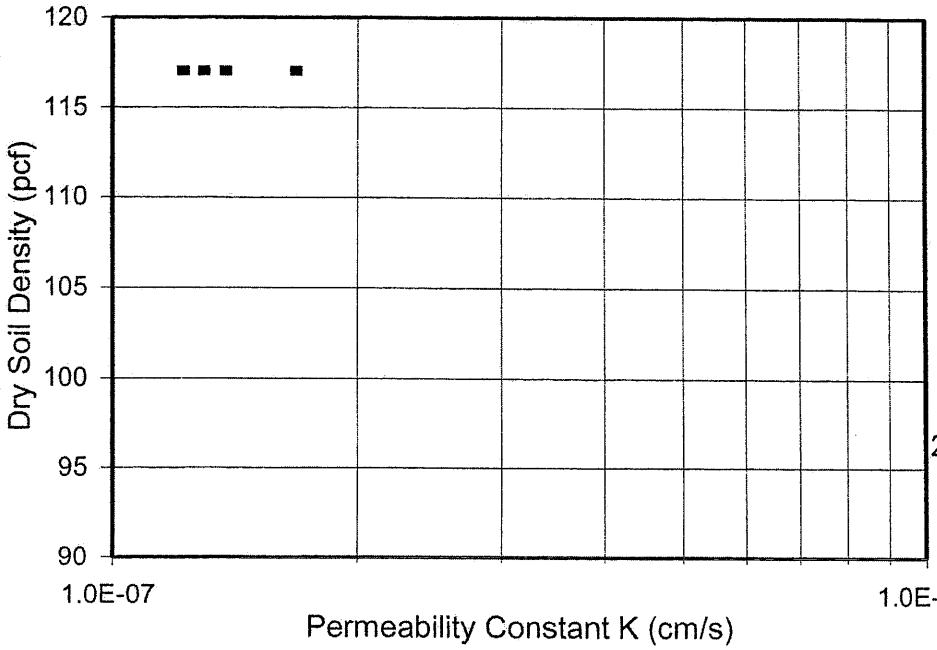
Job No.	Drawn	Date
94238-GJ	**EMM**	**6-27-2011**

PROJECT: LINER EVALUATION, 3rd CELL | PROJECT CLIENT: CB INDUSTRIES | JOB#: 94238-GJ 3

SAMPLE LOCATION: NEC @ 8" | BORING#: | DATE: 6-27-2011

SOIL DESCRIPTION: CL, Reworked, V.Wx Mancos Shale | SC: CL | LAB TECH: EMM

Very Mottled, w/Sl. Oxidized Strata



FLEX-WALL PERMEABILITY TESTING CONDUCTED USING A **KAROL WARNER** CELL.
FALLING HEAD METHOD

AVERAGE of FOUR (4) TESTS
1.39E-07 **cm/sec**

2.13% Swell when Saturating Specimen
0.25% Swell During Perm. Test

Specific Data for Test #5

Permeameter Data		cm & gm
Permeameter Diameter (cm)		6.350
Initial Sample Height (cm)		2.535
Dry Sample Weight (gm)		153.62
Standpipe Diameter (cm)		1.0778
Standpipe Area (cm2)	9	0.9124
Permeameter Area (cm2)	10	31.669

Soil Moisture Data	Initial	Final
Wet Soil Weight (gm)	311.5	318.79
Dry Soil Weight (gm)	293.52	293.52
Water Weight (gm)		
Tear Weight (gm)	139.9	139.9
Dry Soil Weight (gm)	153.62	153.62
Water Percent (%)	11.7%	16.4%

Unit Weight of Sample (pcf)		117.01	117.01	117.01	117.01
		Test #5	*Test #6*	*Test #7*	*Test #8*
Final Sample Height (cm	2	2.588	2.588	2.588	2.588
Initial Water Head (cm)	3	50.25	50.14	49.70	49.49
Final Water Head (cm)	4	50.14	49.70	49.49	49.16
Temperature (C)		26	26	26	26
Temp. Correction (Ut)					
Time Start (to sec)	6				
Time End (to sec)	7				
Test Time (sec)		1260	3900	2400	4080
Volume Water (cm3)	8				
Falling Head Permeability		1.29E-07	1.68E-07	1.37E-07	1.22E-07
Constant Head Perm.					

Constant Head Perm.

$$Kt = \frac{(QL)}{tHA} = \frac{[(8) \times (2)]}{[(7)-(6)]x(3)x(10)}$$

Falling Head Permeability

$$\frac{(9) \times (2)}{(10)x[(7)-(6)]} \times \ln[(3)/(4)]$$

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Grand Junction, Colorado

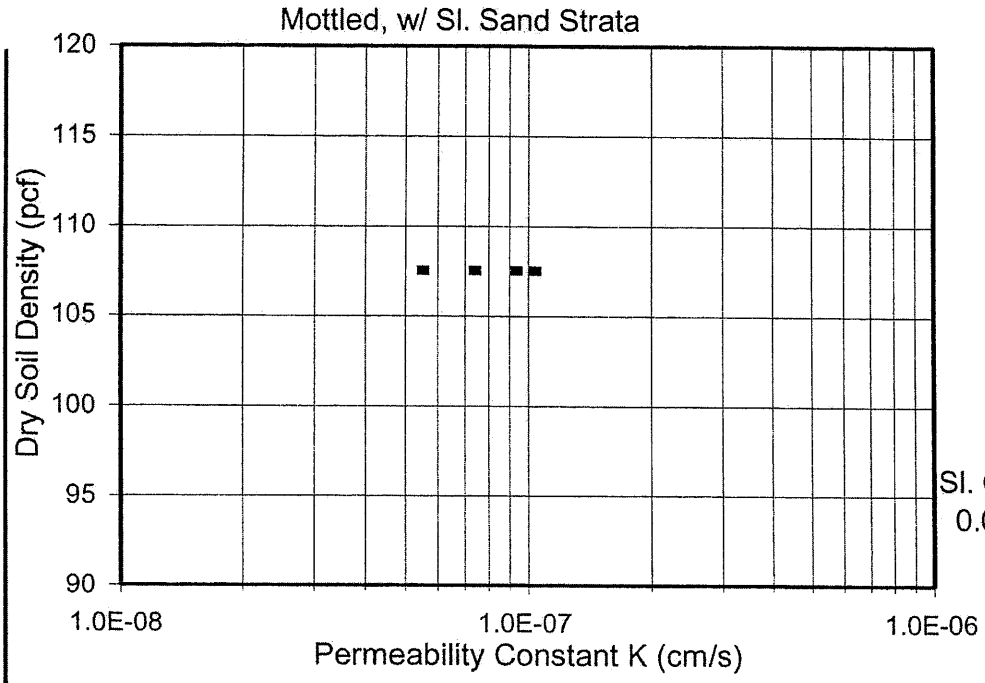
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GRAND JUNCTION, COLORADO

Job No.	Drawn	Date
94238-GJ	**EMM**	**6-27-2011**

PROJECT: LINER EVALUATION, 3rd CELL | PROJECT CLIENT: CB INDUSTRIES | JOB#: 94238-GJ 4

SAMPLE LOCATION: NW @ 7" | BORING#: | DATE: 7-7-2011

SOIL DESCRIPTION: CL, Reworked, V.Wx Mancos Shale | SC: CL | LAB TECH: EMM



FLEX-WALL PERMEABILITY TESTING CONDUCTED USING A **KAROL WARNER** CELL.
FALLING HEAD METHOD

AVERAGE of FOUR (4) TESTS
8.17E-08 **cm/sec**

Sl. Consol. when Saturating Specimen
0.04% Swell During Perm. Test

Specific Data for Test #5

Permeameter Data		cm & gm
Permeameter Diameter (cm)		6.350
Initial Sample Height (cm)		2.508
Dry Sample Weight (gm)		136.46
Standpipe Diameter (cm)		1.0778
Standpipe Area (cm2)	9	0.9124
Permeameter Area (cm2)	10	31.669

Soil Moisture Data	Initial	Final
Wet Soil Weight (gm)	304.78	308.13
Dry Soil Weight (gm)	279.91	279.91
Water Weight (gm)		
Tear Weight (gm)	143.45	143.45
Dry Soil Weight (gm)	136.46	136.46
Water Percent (%)	18.2%	20.7%

Unit Weight of Sample (pcf)		107.51 *Test #5*	107.51 *Test #6*	107.51 *Test #7*	107.51 *Test #8*
Final Sample Height (cm	2	2.502	2.502	2.502	2.502
Initial Water Head (cm)	3	64.06	63.62	59.68	59.46
Final Water Head (cm)	4	63.62	63.30	59.46	59.02
Temperature (C)		26	26	26	26
Temp. Correction (Ut)					
Time Start (to sec)	6				
Time End (to sec)	7				
Test Time (sec)		5280	3600	4800	7200
Volume Water (cm3)	8				
Falling Head Permeability		9.37E-08	1.04E-07	5.53E-08	7.41E-08
Constant Head Perm.					

Constant Head Perm.

$$Kt = \frac{(QL)}{tHA} = \frac{[(8) \times (2)]}{[(7)-(6)]x(3)x(10)}$$

Falling Head Permeability

$$\frac{(9) \times (2)}{(10)x[(7)-(6)]} \times \ln[(3)/(4)]$$

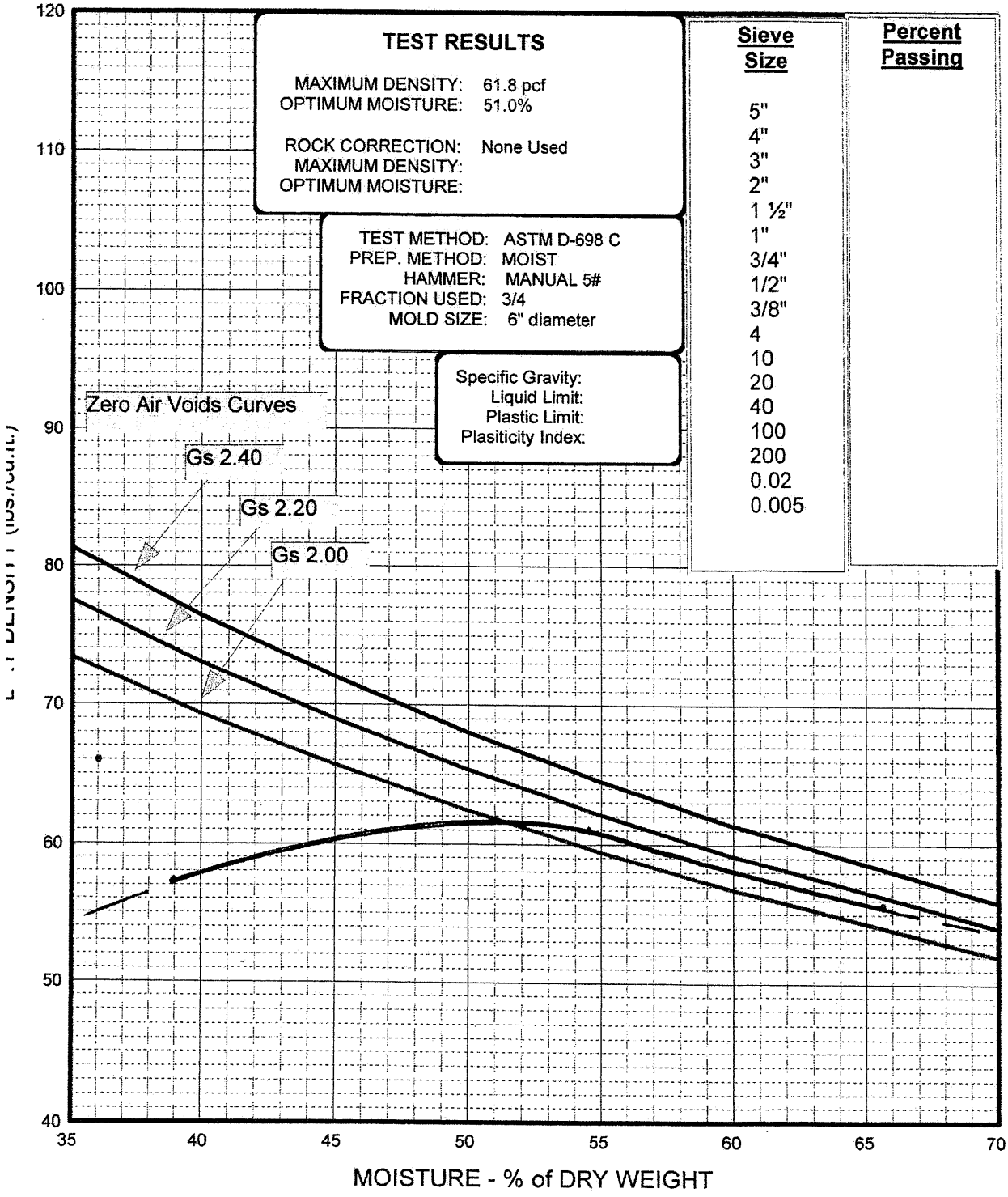
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CB INDUSTRIES-DELTA, Inc.
GRAND JUNCTION, COLORADO

Job No.	Drawn	Date
94238-GJ	EMM	6-27-2011

Sample Origin: Drill Cuttings Stockpile @ Land Farm
Material Description: Clay & Shale & Sandstone Fragments w/Wood Chips
Soil Type: Silty Clay w/Organic

Test By: GS & DRS
Test Date: 7-19-11
Sample #: 2



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Geotechnical Consultants
Grand Junction, Colorado

DRILL CUTTINGS w/CHIPS - EVALUATION
11289 Dough Spoon Road, AUSTIN, COLO.
CB INDUSTRIES-DELTA, Inc.
GRAND JUNCTION, COLORADO

Job No.	Drawn	Date
94238-GJ	EMM	7-19-11

GENERAL GEOTECHNICAL & GEOLOGIC CONDITIONS REPORT

Grand Junction Lincoln Devore

February 13, 2012

GRAND JUNCTION
LINCOLN DeVORE, Inc.
GEOTECHNICAL ENGINEERS - GEOLOGISTS

1441 Motor Street
Grand Junction, CO. 81505

Tel: (970) 242-8968
Fax: (970) 242-1561
E-mail: gjldem@earthlink.net

February 13, 2012

CB Industries-Delta, Inc.
1129 24 Road
Grand Junction, CO 81505

Re: General Geotechnical & Geologic Conditions, CB Industries Composting Facility
11289 Dough Spoon Rd.; Austen CO

Gentlemen:

This report presents the results of our ongoing Geotechnical and Geologic Evaluation at the above referenced site. The smaller, core area of the site was originally described in our Report of February 13, 2003, Job #89819-GJ. The site was originally, incorrectly identified as the Cory Composting Facility, Eagle Creek, Cory CO. The correct name and address is CB Industries Composting Facility 11289 Dough Spoon Rd.; Austen CO, along the North Fork of Negro Creek.

The February 13, 2003 Report was based upon the excavation of 3 shallow exploration pits which were excavated in close proximity to the proposed Lagoon Area, Compost Area and Evaporative Retention Area. Exploration holes have been drilled and identified ground water levels have been measured. The drill holes were constructed in five phases over the period of October 2003 to September 2011.Following is a discussion of the Shallow Drilling & Completed Monitor Wells, the Surficial Soils & the Shallow Mancos Shale Formation, Soil Moisture and the General Geology.

Shallow Drilling & Completed Monitor Wells: Grand Junction Lincoln DeVore personnel was present when three drill holes were constructed around the original Composting Facility Location on 10-21 & 10-22-2003. These 3 drill holes were completed as Monitor Wells with a deeper screened section of 15 feet long was placed below 40 feet of solid pipe, and a shallow section was completed with approximately 25-30 feet of plastic screen below 5-10 feet of solid pipe. These 3 wells were designated MW01, MW02 and MW03 with the upper screened section and lower screened section being designated with the letters L and U. These wells were logged by a Grand Junction Lincoln DeVore geologist, and samples were taken by collecting debris as it was ejected from the hole by the compressed air circulation medium. The samples were not collected in a manner which would allow relative moisture testing to be conducted. The drilling logs are presented at the end of this letter report.

A fourth exploration hole was drilled near the southeast corner of the evaporation ponds. Grand Junction Lincoln DeVore has seen only a summary of the conditions encountered, indicating the boring was 50 feet deep and no significant free water was identified during drilling. This has been designated on the maps and other records as MW04, but to our knowledge was never properly completed as a monitor well and should not be used for subsequent ground water modeling or evaluation.

Under the supervision of Huddleson-Berry personnel, additional exploration holes were drilled on 9-25 & 9-26-2010. These 6 wells, designated MW 05, MW06, MW07, MW08, MW09 & MW10, were completed as monitor wells with 9-12 feet of solid PVC casing at the ground surface and PVC perforated casing to the total depths ranging from 49-52 feet. The only drill logs which are available to Grand Junction Lincoln DeVore are the very

general descriptions of the geologic log from the State of Colorado Well Construction and Test Report form. The lack of drilling and sample description complicates the interpretation of the soil to formation profile for these wells. Well MW05 was placed north of the existing facility and south of the Dough Spoon Road and the North Fork of Negro Creek. Wells MW06 and MW07 were placed south of the existing composting facility on the north alluvial plain of Negro Creek. Wells MW08 and MW09 and MW10 were placed on the south slopes over-looking Negro Creek with Wells MW09 and MW10 placed in a small tributary gully to Negro Creek. The State of Colorado Well Construction and Test Report forms are presented at the end of this letter report.

Grand Junction Lincoln DeVore personnel supervised the construction of two exploration holes, MW11 and MW12, on 3-15-2011. These holes were drilled to a total depth of 64 & 94 feet. These two holes were completed as monitor wells even though free water was not encountered. These wells were placed along the south property line of the tract in the upper portion of the small tributary gully to Negro Creek. These wells were carefully logged during drilling and samples from the compressed air circulation media were taken and quickly bagged for later relative soil moisture determination and low-power microscopic analysis. The drilling logs are presented at the end of this letter report.

Grand Junction Lincoln DeVore logged and sampled two additional exploration holes labeled MW13 and MW14 on 9-26-2011. These holes were drilled to a total depth of 45 feet. These two exploration holes were completed as monitor wells. MW13 was placed on the west edge of the south evaporative lagoon, and MW14 was placed east of the south evaporative lagoon north of the uncompleted MW04. These wells were carefully logged during drilling and samples from the compressed air circulation media were taken and quickly bagged for later relative soil moisture determination and low-power microscopic analysis. The drilling logs are presented at the end of this letter report.

The 2011 exploration holes, completed as wells MW11 through MW14 were all carefully logged, sampled for relative moisture content, and the samples were subjected to low-power microscopic analysis. Grand Junction Lincoln DeVore personnel has re-evaluated the Grand Junction Lincoln DeVore logs of the 3 drill holes completed in 2003 and, to a limited extent, the Huddleston-Berry logs of the 5 holes drilled in 2010. The purpose of this re-evaluation was to provide a better profile of the old alluvial/debris fan deposits adjacent to and beneath the existing composting facility, and to better define the very weathered to slightly weathered zones of the Mancos Shale Formation which is the bedrock beneath this site. The Mancos Shale is prominent as small hills immediately south and east of the existing composting facility, and the extensive slopes south of Negro Creek.

Surficial Soils & Shallow Mancos Shale Formation: The description of surficial soils in the Grand Junction Lincoln DeVore Report of February 13, 2003 is still considered to be valid. These surficial soils are older alluvial/debris fan deposits which are generally outside of the primary alluvium of the North Fork of Negro Creek which contains a flow surface. The majority of these waters appear to originate in the drainage basin of the North Fork of Negro Creek, continuing up the slopes of Grand Mesa to the west, northwest.

On the hills and slopes south of Negro Creek, on the small hills to the south and east of the existing facility and on the hills immediately west of the facility, the very weathered to weathered Mancos Shale is usually covered with 1 to possibly 4 feet of in situ weathered clays and possibly colluvial soil.

These thin in situ weathered surface soils are lean clays (CL) under the Unified Classification System and can be easily reworked as a medium to high density, very low permeability fill/liner/cover-type material. These thin in situ weathered surface soils are very similar to the majority of Negro Creek and North Fork of Negro Creek

alluvial/debris fan-type soils, excluding the erratic sandy or gravelly strata. These thin in situ weathered surface soils have characteristic similar to the Soil Types II & III in the Grand Junction Lincoln DeVore Report of February 13, 2003.

The very weathered portion of the Mancos Shale Formation is a soft, generally low density lean clay and occasionally slightly sandy lean clay. This very weathered zone is usually a dark brown and gray/brown in color, may be oxidized (red/brown or slightly rusty looking). The shale lithology is obvious, but the individual chips are small, soft and easily crushed by mechanical action. These clays and shale chips of the very weathered Mancos Shale should be fairly easily compacted into a dense, low to very low permeable mass. These soils would be appropriate for a low permeability liner, cover and embankment. When this very weathered zone is found in exploration borings which encountered water, free water is usually present in this zone. In the Borings MW11 & MW 12, which did not encounter a free water zone, the very weathered zone typically had a slightly higher water content than other zones of the Mancos Shale.

The weathered Mancos Shale as identified in the Grand Junction Lincoln DeVore Borings MW11 through MW13 was also classified as a lean clay, generally a gray to black in color and was encountered in a more dense condition. The moisture contents were generally observed to be slightly lower than the very weathered zone. The shale chips were somewhat harder and larger than the chips from the drilling of the very weathered zone. It is believed that the weathered Mancos Shale is becoming sufficiently dense that water/moisture movement through this zone is hindered to the point that free water probably would not be encountered. The only exception would be if open fractures are present.

The slightly weathered Mancos Shale is also classified as a lean clay but is hard, of relatively high density and the drilling process produced large, hard chips of shale. The color is a gray to gray/black; and when first recovered from drilling, has a slight "bluish" hue. This "bluish" hue is not obvious after the fragments have been exposed to open air conditions for more than a few hours. These slightly weathered shales were generally found to have the lowest moisture content, partially due to the relatively high density condition. It is not believed these slightly weathered shales would be encountered in any of the excavation processes. These slightly weathered shales would be rather difficult to compact to a low permeable condition but could be utilized for embankment construction.

Soil Moisture: The majority of alluvial/debris fan soils and the in situ weathered/colluvial soils are presently in an unsaturated condition. Moisture which enters these soils due to precipitation or man-made applications tends to migrate as a slow vertical flow of moisture. Over the native slope and ground surfaces which are subjected to precipitation only, the year-round balance between precipitation application and natural evaporation/evapotransporation usually produces a "negative balance"in the near surface soils. The natural in situ weathered soils tends to act as a "mulch" and tends to prohibit excessive desiccation of the entire soil profile and very little water accumulation in the soil and the Very Weathered Mancos Shale.

In areas where the ground is relatively flat and low compared with surrounding areas, such as the present composting facility, the occasional precipitation events which produce surface runoff tend to collect in these flat areas. This collected surface water seeps through the soil profile in a vertical to near vertical direction and may accumulate in the very weathered zone of the Mancos Shale.

Based upon the topography and geomorphology of the Negro Creek Basin, to include the North Fork of Negro Creek, it is believed the North Fork of Negro Creek has experienced the majority of former debris flow activity, snow melt and storm water transport within this basin. As indicated in the boring logs of MW02 and MW05, the

presence of gravelly soils immediately above the identified Mancos Shale or probable very weathered Mancos Shale bedrock are typical of sandstone and basalt debris from the upper slopes of Grand Mesa. The southern channel of Negro Creek appears to be less mature than the North Fork Channel. The absence of gravels during drilling of MW06 and MW07 would support this conclusion of relative stream maturity and amount of water flow

South of Negro Creek in the area of the proposed south PCS Monofill, it is believed that significant accumulation of ground water is not occurring in the upper portions of the gully. It is believed that some accumulation is occurring in the lower portion of the gully, mostly due to the elevation of the shallow water and occasional open flow of Negro Creek. Please note that this water accumulation in this southern gully does not appear to extend very far west or south of MW09. The wells MW10, MW11 and MW12 were drilled to depths significantly below the known water levels in MW09 within this gully, and MW06, MW07 and MW08 to the north of this gully.

General Geology: The geology of the CB Industries Composting Facility is somewhat variable due to the presence of the Negro Creek and North Fork of Negro Creek erosion into the Mancos Shale Formation which is considered to be bedrock in this area. Significant amounts of alluvial/debris flow deposited soils are present in the North Fork of Negro Creek, generally north and east of the majority of the existing and proposed facility and a lesser amount of alluvial/debris fan deposits in the less mature Negro Creek feature south of the existing facility and north of the South PCS Monofill.

The structural geology in this area is relatively uncomplicated. The site is located on the east side of the very gently north-plunging Montrose Syncline. The axis of the Montrose Syncline is approximately 2 miles west and southwest of the CB Industries Composting Facility utilizing the USGS Mapping of the geology, structure and uranium deposits of the Moab Quadrangle, Colorado & Utah, Paul L. Williams, 1964, Map I360 (Sheet 2 of 2). Utilizing the structural contours provided on the USGS Mapping, the rock formations appear to have a very gentle dip of approximately 2°- 5° to the west on the CB Industries site. Surface exposures of the Mancos Shale were measured for strike and dip by Grand Junction Lincoln DeVore personnel. These field measurements indicated a nearly flat to slight dip of up to 6° to the west and northwest. The significant degree of shale weathering in the outcrops hinders accurate measurement of this slightly dipping formation.

Using our measurements and observations of the limited outcrops of the Mancos Shale on this site and an analysis of the geomorphology interpreted from the project topographic map, the major fracturing within the Mancos Shale Formation can be determined. Based upon the surface exposures, it appears the majority of fractures are near vertical, apparently ranging from vertical to about 10° from vertical.

The primary fracture set in the area apparently controls the major valley lineation of Negro Creek, the North Fork of Negro Creek, Dough Spoon Creek to the north and the upper portion of Dry Gulch to the west. The primary fracture set appears to be aligned between N40W to N65W. This near vertical fracture alignment is part of the major structural control of this area. This is the general alignment of the Redlands Fault west of Grand Junction, the Gunnison River Canyon between Grand Junction and Delta, the Uncompahgre Valley, the Black Canyon alignment and the Gunnison Fault which is south of Gunnison, disappearing beneath thick volcanic deposits. It is believed this particular fracture set is associated with much of the groundwater in Monitor Wells MW05, MW01L, MW02L, MW01U & MW02U.

The main (south) channel of Negro Creek, between the existing Composting Facility and the proposed Landfill, appears to have a perched water table partially contained within the existing soil alluvium in the creek. This small perched water table probably extends into the upper, very weathered shale fractures, probably to depths of 20-40

feet. Monitor Wells #MW6 & #MW7 have free water which is only 4 feet to 5 feet below the existing channel of Negro Creek. Monitor Wells #MW08 & #MW09 have developed water which is approximately 5-6 feet below the existing flow channel of Negro Creek, even though these wells are separated from Negro Creek by significant distances, 240 feet and 460 feet respectively. It is probable that MW08 & MW09 are also collecting surface and shallow subsurface water generating in the small drainage basins which are south and tributary to Negro Creek.

The secondary fracture set in this area appears to have an alignment of approximately N45E to N55E. This secondary fracture set is prominent south of the present composting facility and appears to define the majority of small and large gully drainage alignments on the slope south of Negro Creek.

Minor fractures in the southern portion of the tract, south of Negro Creek, range from approximately N8°W to occasionally N23°W, and another fracture set was noted in test pits excavated beneath the South PCS Monofill being approximately N84°E. This last fracture set appears to be prominent only in the gully beneath the South PCS Monofill. Our observations of excavated exploration pits (2011) at the west and east ends of the proposed Landfill Cell tend to confirm our interpretation of the surface Geomorphology. Due to the arid environment, the Mancos Shale Formation is relatively desiccated in this area, and the reduced moisture content has apparently resulted in prehistoric shrinkage of the shallow shale formation and subsequent opening of the existing fractures.

It is believed that all pertinent points have been addressed. If any further questions arise regarding this project, or if we can be of any further assistance, please do not hesitate to contact this office at any time.

Respectfully submitted,

GRAND JUNCTION
LINCOLN DeVORE, INC.



by: Edward M. Morris, P.E.
Principal Engineer

GJLD Job No. 94238-GJ

CB INDUSTRIES-DELTA, INC.
MONITORING WELLS & BORINGS DRILL LOGS

SOILS DESCRIPTIONS

SYMBOL	USCS	DESCRIPTION
		Topsoil
		Man-Made Fill
	GW	Gravel Well-Graded
	GP	Gravel Poorly-Graded
	GM	Silty Gravel
	GC	Clayey Gravel
	SW	Sand Well-Graded
	SP	Sand Poorly-Graded
	SM	Silty Sand
	SC	Clayey Sand
	ML	Silt Low-Plastic
	CL	Clayey Sand Low-Plastic
	OL	Organic Silt & Clay Low-Plastic
	MH	Elastic Silt High-Plastic
	CH	Clay High-Plastic
	OH	Organic Clay High-Plastic
	Pt	Peat
	GW/GM	Silty Gravel Well-Graded
	GW/GC	Clayey Gravel Well-Graded
	GP/GM	Silty Gravel Poorly-Graded
	GP/GC	Clayey Gravel Poorly-Graded
	GM/GC	Silty Clayey Gravel
	SW/SM	Silty Sand Well-Graded
	SW/SC	Clayey Sand Well-Graded
	SP/SM	Silty Sand Poorly-Graded
	SP/SC	Clayey Sand Poorly-Graded
	SM/SC	Silty Clayey Sand
	CL-ML	Silty Clay

ROCK DESCRIPTIONS

SYMBOL	DESCRIPTION
	Sedimentary Rocks
	CONGLOMERATE
	SANDSTONE
	SILTSTONE
	SHALE
	CLAYSTONE
	MUDSTONE
	COAL
	LIMESTONE
	DOLOMITE
	MARLSTONE
	GYPSUM
	Other Sedimentary Rocks
	Igneous Rocks
	GRANITIC ROCKS
	DIORITIC ROCKS
	GABBRO
	BASALT
	RHYOLITE
	TUFF & ASH FLOWS
	BRECCIA & Other Volcanics
	Other Igneous Rocks
	Metamorphic Rocks
	GNEISS
	SCHIST
	PHYLLITE
	HORNFELS
	METAQUARTZITE
	MARBLE
	Other Metamorphic Rocks

SYMBOLS & NOTES

SYMBOL	DESCRIPTION
SPT 9/6	Standard Penetration Drive ASTM D-1586 Disturbed Sample 1.625" I.D. - 2" O.D. Numbers indicate 9 Blows To drive the Sampler 'Spoon' 6" into ground.
CS 9/6	'California Lined Sampler' Modified Penetration Drive ASTM D-3550 Disturbed Sample 1.875" I.D. - 2.5" O.D. Numbers indicate 9 Blows To drive the Sampler 'Spoon' 6" into ground.
D&M 9/6	'Dames & Moore Lined Sampler' Modified Penetration Drive ASTM D-3550 Disturbed Sample 2.44" I.D. - 3" O.D. Numbers indicate 9 Blows To drive the Sampler 'Spoon' 6" into ground.
ST	Thin-Walled 'Shelby' Tube ASTM D-1587 2.5" I.D. Intact Sample old - 'Relatively Undisturbed Sample'
BULK	Disturbed, Bulk Sample Disturbed Sample
	Free Water Table
Wx	Weathered Rock Formation
	Test Boring Location
	Test Pit Location
	Seismic or Resistivity Station

Standard Penetration Drives are made by driving a standard 2" od, 1.625" id Split Spoon Sampler into the ground by dropping a 140 lb. weight 30", ASTM D-1586.
CME Automatic Hammer Used, unless noted.
The Drive Shoe is Blunt and the sample is Disturbed.

Modified Penetration Drives are made by driving a 2-1/2" od, 1.875" id California Spoon Sampler or a 3" od, 2-3/8" id Dames & Moore Spoon Sampler into the ground by dropping a 140 lb. weight 30", ASTM D-3550.
CME Automatic Hammer Used, unless noted.
The Drive Shoe is Blunt and the sample is Disturbed.

The Boring Logs show subsurface conditions at the dates and locations shown. It is not warrented that these Boring logs are representative of subsurface conditions at other times, or at other locations near these Borings.

GRAND JUNCTION
LINCOLN - DeVORE, Inc.
Geotechnical Consultants
Grand Junction, Colorado

EXPLANATION OF BOREHOLE LOGS AND LOCATION DIAGRAMS

Form No.	Drawn	Date
GJLDFORM-EXPL	EMM	2-12-2009

BORING NO. 1 DRILL: Harriman Drilling
Rotary Rig
BORING ELEVATION: Circulation Medium: AIR

DEPTH (FT.)	SOIL LOG	DESCRIPTION	BLOW COUNT /inch	SOIL DENSITY pcf	WATER %
		CL-ML Powdery Dessicated			
		ALLUVIAL/COLLUVIAL DEPOSITS, Qa/Qc	N/A	N/A	N/A
		Soft Tan-Lt. Brown			
		Evaporate Caliche'			
5			5		
		SM Fine Grain Sandy-Poorly Graded			
		Dry Seams of Small Gravels			
10			10		
		CL-ML Clayey, Plastic			
		WxKm Chips			
		Easy Drilling			
15			15		
		CL-ML Fine Grain CaSO4			
		Alluvial Dry			
20			20		
				N/A	N/A
		CL-ML SM Lenses WxKm Chips			N/A
		Tan-Greyish Tan			
		Selenite Pieces (Gypsum)			
25			25		
		CL-ML Easy Driiling			
		Thich seams of Selenite Fine Grain			
		Lt. Brown-Tan			
		Dry	30		
30		CL-ML			
		Siltstones, Mudstones			
35		Alluvial	35		
		CL-ML WxKm Chips			
		Siltstone lenses			
		Dry			
40			40		

LOG OF SUBSURFACE EXPLORATION

GRAND JUNCTION
LINCOLN - DeVORE, Inc.
Geotechnical Consultants
Grand Junction, Colorado

CORY COMPOSTING FACILITY
West of Cory, Colorado

C/B INDUSTRIES
Grand Junction, Colorado

Date: 10-28-03

Job No.: 89819-GJ

Drawn: BK

BORING NO. 1 Cont. DRILL: Harriman Drilling
Rotary Rig
BORING ELEVATION: Circulation Medium: AIR

DEPTH (FT.)	SOIL LOG	DESCRIPTION	BLOW COUNT /inch	SOIL DENSITY pcf	WATER %
			N/A	N/A	N/A
		CL-ML Slower Drilling Dry			
		Selenite Pieces (Gypsum)			
45			45		
		CL-ML			
		Lt. Brown-Tan			
		Alluvial			
50		WxKm Weathered MANCO SHALE	50		
		Smokey Grey Color Difficult Drilling			
		Dry CaSO4			
		Blocky			
55		Hard Km MANCOS SHALE	55		
		T.D. @ 55 Feet			
		DOUBLE COMPLETION WELLS:			
60		Well # 1 Set @ 55 Feet below current Ground Surface	60		
		Well # 2 Set @ 37 Feet below current Ground Surface			
65		Rotary Drill Rig (Usually Used for Water Wells)	65		
70			70		
		SAMPLING FROM CUTTINGS BLOWN OUT OF DRILL HOLE.			
		NO SPT OR ST SAMPLES TAKEN DURING DRILLING			
75			75		
		NO FREE WATER ENCOUNTERED			
		DURING DRILLING			
80			80		

LOG OF SUBSURFACE EXPLORATION

GRAND JUNCTION
LINCOLN - DeVORE, Inc.
Geotechnical Consultants
Grand Junction, Colorado

CORY COMPOSTING FACILITY
West of Cory, Colorado

C/B INDUSTRIES
Grand Junction, Colorado

Date 10-28-03

Job No. 89819-GJ

Drawn BK

BORING NO. 2 DRILL: Harriman Drilling
Rotary Rig
BORING ELEVATION: Circulation Medium: AIR

DEPTH (FT.)	SOIL LOG	DESCRIPTION	BLOW COUNT /inch	SOIL DENSITY pcf	WATER %
		CL-ML Powdery Dessicated			
		ALLUVIAL/COLLUVIAL DEPOSITS, Qa/Qc	N/A	N/A	N/A
		Soft Tan-Lt. Brown			
		Evaporate Caliche'			
5			5		
		CL-ML Fine Grain			
		Dry Soft			
10			10		
		CL-ML Clayey, Plastic			
		WxKm Chips			
		Easy Drilling			
15			15		
		CL-ML Fine Grain CaSO4			
		Alluvial Dry			
20			20		
			N/A	N/A	N/A
		CL-ML SM Lenses WxKm Chips			
		Tan-Greyish Tan			
		Selenite Pieces (Gypsum)			
25			25		
		CL-ML Sandy lenses (SM)			
		Poorly Graded Sands			
		Lt. Brown somewhat reddish			
30		Dry	30		
		CL-ML Clayey			
		Easy Drilling			
		Basalt Gravels -3/8", 5-15%			
		Siltstones, Mudstones			
35		Alluvial	35		
		CL-ML			
		FREE WATER 38'			
40			40		
		Saturated			

LOG OF SUBSURFACE EXPLORATION

GRAND JUNCTION
LINCOLN - DeVORE, Inc.
Geotechnical Consultants
Grand Junction, Colorado

CORY COMPOSTING FACILITY
West of Cory, Colorado
C/B INDUSTRIES
Grand Junction, Colorado
Date 10-28-03
Job No. 89819-GJ
Drawn BK

BORING NO. 2 Cont. DRILL: Harriman Drilling
Rotary Rig
BORING ELEVATION: Circulation Medium: AIR

DEPTH (FT.)	SOIL LOG	DESCRIPTION	BLOW COUNT /inch	SOIL DENSITY pcf	WATER %
			N/A	N/A	N/A
		WxKm Slower Drilling Moist			
		Smokey Grey Color			
		Stiff Difficult Drilling			
45			45		
		Hard Km MANCOS SHALE			
		Blocky Grey-Black			
50		Slow Drilling	50		
		T.D. @ 50 Feet			
55			55		
		DOUBLE COMPLETION WELLS:			
60		Well # 1 Set @ 50 Feet Below Current Ground Surface	60		
		Well # 2 Set @ 33 Feet Below Current Ground Surface			
65		Rotary Drill Rig (Usually Used for Water Wells)	65		
		Added Water to Hole to Keep Open			
70			70		
		SAMPLING FROM CUTTINGS BLOWN OUT OF DRILL HOLE.			
		NO SPT OR ST SAMPLES TAKEN DURING DRILLING			
75			75		
80			80		

LOG OF SUBSURFACE EXPLORATION

GRAND JUNCTION
LINCOLN - DeVORE, Inc.
Geotechnical Consultants
Grand Junction, Colorado

CORY COMPOSTING FACILITY
West of Cory, Colorado
C/B INDUSTRIES
Grand Junction, Colorado
Date 10-28-03
Job No. 89819-GJ
Drawn BK

BORING NO. 3 DRILL: Harriman Drilling
Rotary Rig
BORING ELEVATION: Circulation Medium: AIR

DEPTH (FT.)	SOIL LOG	DESCRIPTION	BLOW COUNT /inch	SOIL DENSITY pcf	WATER %
		CL-ML Powdery Dessicated			
		ALLUVIAL/COLLUVIAL DEPOSITS, Qa/Qc		N/A	N/A
		Soft Tan-Lt. Brown			
		Evaporate Caliche'			
5			5		
		CL-ML Fine Grain			
		Dry Soft			
10			10		
		CL-ML Clayey, Plastic			
		WxKm Chips			
		Easy Drilling			
15			15		
		CL-ML Fine Grain CaSO4			
		Alluvial Dry			
20			20		
				N/A	N/A
		CL-ML SM Lenses WxKm Chips			N/A
		Tan-Greyish Tan			
		Selenite Pieces (Gypsum)			
25			25		
		CL-ML Sandy lenses (SM)			
		Poorly Graded Sands			
		Lt. Brown somewhat reddish			
		Dry			
30			30		
		SM/SC Clayey			
		Easy Drilling			
		CaSO4			
		Siltstones, Mudstones			
35		Alluvial	35		
		FREE WATER ▽ 35'			
		CL-ML WxKm Chips			
40		Gravel Lenses Alluvial	40		
		Sandstone, Siltstone, Mudstone			

LOG OF SUBSURFACE EXPLORATION

GRAND JUNCTION
LINCOLN - DeVORE, Inc.
Geotechnical Consultants
Grand Junction, Colorado

CORY COMPOSTING FACILITY
West of Cory, Colorado
C/B INDUSTRIES
Grand Junction, Colorado
Date 10-28-03
Job No. 89819-GJ
Drawn BK

BORING NO. 3 Cont. DRILL: Harriman Drilling
Rotary Rig
BORING ELEVATION: Circulation Medium: AIR

DEPTH (FT.)	SOIL LOG	DESCRIPTION	BLOW COUNT /inch	SOIL DENSITY pcf	WATER %
			N/A	N/A	N/A
		WxKm **Weathered MANCOS SHALE, Km**			
		Smokey Grey Color			
		Stiff			
45		Difficult Drilling	45		
		Hard Km MANCOS SHALE			
		Blocky Grey-Black			
50		Slow Drilling	50		
		T.D. @ 50 Feet			
55			55		
		DOUBLE COMPLETION WELLS:			
60		**Well # 1** Set @ 50 Feet Below Current Ground Surface	60		
		Well # 2 Set @ 33 Feet Below Current Ground Surface			
65		Rotary Drill Rig (Usually Used for Water Wells)	65		
		Added Water to Hole to Keep Open			
70			70		
		SAMPLING FROM CUTTINGS BLOWN OUT OF DRILL HOLE.			
		NO SPT OR ST SAMPLES TAKEN DURING DRILLING			
75			75		
80			80		

LOG OF SUBSURFACE EXPLORATION

GRAND JUNCTION
LINCOLN - DeVORE, Inc.
Geotechnical Consultants
Grand Junction, Colorado

CORY COMPOSTING FACILITY
West of Cory, Colorado

C/B INDUSTRIES
Grand Junction, Colorado

Date: 10-28-03

Job No.: 89819-GJ

Drawn: BK

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

WELL PERMIT NUMBER: 283914

2. WELL OWNER INFORMATION

NAME OF WELL OWNER: CB INDUSTRIES - DELTA INC.

MAILING ADDRESS: 1129 -24- ROAD

CITY: GRAND JUNCTION STATE: CO ZIP CODE: 81505

TELEPHONE NUMBER: (970) 245-0577

3. WELL LOCATION AS DRILLED: SE1/4, SW1/4, Sec. 21, Twp. 14 ☐ N or ☒ S, Range 95 ☐ E or ☒ W

DISTANCES FROM SEC. LINES: 982 ft. from ☐ N or ☒ S section line and 1958 ft. from ☐ E or ☒ W section line.

SUBDIVISION: _____, LOT _____, BLOCK _____, FILING (UNIT) _____

Optional GPS Location: GPS Unit must use the following settings: Format must be **UTM**, Units must be **meters**, Datum must be **NAD83**, Unit must be set to **true N**, ☐ Zone 12 or ☒ Zone 13

Owner's Well Designation: MW05

Easting: 237754.485

STREET ADDRESS AT WELL LOCATION:

Northing: 4300732.51

4. GROUND SURFACE ELEVATION 5198 feet DRILLING METHOD Solid Flight Auger/HQ Coring

DATE COMPLETED 09/25/10 TOTAL DEPTH 55 feet DEPTH COMPLETED 55 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-28 ft	Silty Clay	Clay	brown	
28-33 ft	Gravel/Cobble	Gravel	brown	29 ft
33-55 ft	Shale	Clay	gray-brown	

6. HOLE DIAM (in.)

	From (ft)	To (ft)
4	0	55

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
4	Steel	0.125	+3.5	1.5
2	PVC	sch 40	+3.0	12.0

PERFORATED CASING: Screen Slot Size (in): 0.010

2	PVC	sch 40	12.0	52.0

8. FILTER PACK:

Material Sand
Size 10-20
Interval 10-55

9. PACKER PLACEMENT:

Type
Depth

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent.	5 bags	10 gal	1-10	poured
Cement	2 bags	10 gal	0-1	poured

Remarks: Monitoring Well

11. DISINFECTION: Type Amt. Used

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.

TESTING METHOD

Static Level _____ ft. Date/Time measured: _____, Production Rate _____ gpm.

Pumping Level _____ ft. Date/Time measured _____, Test Length (hrs) _____.

Remarks:

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of section 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name:	Phone:	License Number:
Huddleston-Berry Engineering & Testing, LLC	(970)255-8005	PE39010

Mailing Address: 640 White Avenue, Grand Junction, CO 81501

Signature:	Print Name and Title	Date
Michael A. Berry	Michael A. Berry, P.E. Vice President	11/15/2010

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1. WELL PERMIT NUMBER: 283915

2. WELL OWNER INFORMATION

NAME OF WELL OWNER: CB INDUSTRIES - DELTA INC.

MAILING ADDRESS: 1129 -24-ROAD

CITY: GRAND JUNCTION STATE: CO ZIP CODE: 81505

TELEPHONE NUMBER: (970) 245-0577

3. WELL LOCATION AS DRILLED: NE1/4, MW1/4, Sec. 28, Twp. 14 ☐ N or ☒ S, Range 95 ☐ E or ☒ W

DISTANCES FROM SEC. LINES: 279 ft. from ☒ N or ☐ S section line and 1743 ft. from ☐ E or ☒ W section line.

SUBDIVISION: _____, LOT _____, BLOCK _____, FILING (UNIT) _____

Optional GPS Location: GPS Unit must use the following settings: Format must be **UTM**, Units must be **meters**, Datum must be **NAD83**, Unit must be set to **true N**, ☐ Zone 12 or ☒ Zone 13

Owner's Well Designation: MW06

Easting: 237678.798

STREET ADDRESS AT WELL LOCATION:

Northing: 4300350.63

4. GROUND SURFACE ELEVATION 5187 feet DRILLING METHOD Solid Flight Auger/HQ Coring

DATE COMPLETED 09/25/10 TOTAL DEPTH 51 feet DEPTH COMPLETED 51 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-27 ft	Silty Clay	Clay	brown	25 ft
27-51 ft	Shale	Clay	gray-brown	

6. HOLE DIAM (in.)

	From (ft)	To (ft)
4	0	51

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
4	Steel	0.125	+3.75	1.25
2	PVC	sch 40	+3.58	10

PERFORATED CASING: Screen Slot Size (in): 0.010

2	PVC	sch 40	10.0	50.0

8. FILTER PACK:

Material Sand
Size 10-20
Interval 8-51

9. PACKER PLACEMENT:

Type
Depth

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent.	5 bags	10 gal	1-8	poured
Cement	2 bags	10 gal	0-1	poured

Remarks: Monitoring Well

11. DISINFECTION: Type Amt. Used

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.

TESTING METHOD

Static Level _____ ft. Date/Time measured: _____, Production Rate _____ gpm.

Pumping Level _____ ft. Date/Time measured _____, Test Length (hrs) _____.

Remarks:

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of section 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name:	Phone:	License Number:
Huddleston-Berry Engineering & Testing, LLC	(970)255-8005	PE39010

Mailing Address: 640 White Avenue, Grand Junction, CO 81501

Signature:	Print Name and Title	Date
Michael A. Berry	Michael A. Berry, P.E. Vice President	11/15/2010

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1. WELL PERMIT NUMBER: 283916

2. WELL OWNER INFORMATION
NAME OF WELL OWNER: CB INDUSTRIES - DELTA INC.
MAILING ADDRESS: 1129 -24- ROAD
CITY: GRAND JUNCTION STATE: CO ZIP CODE: 81505
TELEPHONE NUMBER: (970) 245-0577

3. WELL LOCATION AS DRILLED: NE1/4, MW1/4, Sec. 28, Twp. 14 ☐ N or ☒ S, Range 95 ☐ E or ☒ W
DISTANCES FROM SEC. LINES: 455 ft. from ☒ N or ☐ S section line and 2559 ft. from ☐ E or ☒ W section line.
SUBDIVISION: _____, LOT _____, BLOCK _____, FILING (UNIT) _____
Optional GPS Location: GPS Unit must use the following settings: Format must be **UTM**, Units must be **meters**, Datum must be **NAD83**, Unit must be set to true **N**, ☐ Zone 12 or ☒ Zone 13
Owner's Well Designation: MW07
Easting: 237925.048
STREET ADDRESS AT WELL LOCATION:
Northing: 4300288.29

4. GROUND SURFACE ELEVATION 5175 feet DRILLING METHOD Solid Flight Auger/HQ Coring
DATE COMPLETED 09/25/10 TOTAL DEPTH 50.5 feet DEPTH COMPLETED 50.5 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-28 ft	Silty Clay	Clay	brown	25 ft
28-50.5 ft	Shale	Clay	gray-brown	

6. HOLE DIAM (in.)

	From (ft)	To (ft)
4	0	50.5

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
4	Steel	0.125	+3.5	1.5
2	PVC	sch 40	+3.4	9.5

PERFORATED CASING: Screen Slot Size (in): 0.010

2	PVC	sch 40	9.5	49.5

8. FILTER PACK:
Material Sand
Size 10-20
Interval 7.5-50.5

9. PACKER PLACEMENT:
Type
Depth

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent.	4 bags	10 gal	1-7.5	poured
Cement	2 bags	10 gal	0-1	poured

Remarks: Monitoring Well

11. DISINFECTION: Type Amt. Used

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.
TESTING METHOD
Static Level _____ ft. Date/Time measured: _____, Production Rate _____ gpm.
Pumping Level _____ ft. Date/Time measured _____, Test Length (hrs) _____.
Remarks:

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of s 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name:	Phone:	License Number:
Huddleston-Berry Engineering & Testing, LLC	(970)255-8005	PE39010

Mailing Address: 640 White Avenue, Grand Junction, CO 81501

Signature:	Print Name and Title	Date
Michael A. Berry	Michael A. Berry, P.E. Vice President	11/15/2010

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1. WELL PERMIT NUMBER: 283917

2. WELL OWNER INFORMATION
NAME OF WELL OWNER: CB INDUSTRIES - DELTA INC.
MAILING ADDRESS: 1129 -24- ROAD
CITY: GRAND JUNCTION STATE: CO ZIP CODE: 81505
TELEPHONE NUMBER: (970) 245-0577

3. WELL LOCATION AS DRILLED: NE1/4, MW1/4, Sec. 28, Twp. 14 ☐ N or ☒ S, Range 95 ☐ E or ☒ W
DISTANCES FROM SEC. LINES: 690 ft. from ☒ N or ☐ S section line and 1363 ft. from ☐ E or ☒ W section line.
SUBDIVISION: _____, LOT _____, BLOCK _____, FILING (UNIT) _____
Optional GPS Location: GPS Unit must use the following settings: Format must be **UTM**, Units must be **meters**, Datum must be **NAD83**, Unit must be set to **true N**, ☐ Zone 12 or ☒ Zone 13
Owner's Well Designation: MW08
Easting: 237557.343
STREET ADDRESS AT WELL LOCATION:
Northing: 4300229.42

4. GROUND SURFACE ELEVATION 5197 feet DRILLING METHOD Solid Flight Augers/HQ Coring
DATE COMPLETED 09/26/10 TOTAL DEPTH 51.0 feet DEPTH COMPLETED 51.0 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-6 ft	Silty Clay	Clay	brown	
6-51 ft	Shale	Clay	gray-brown	dry

6. HOLE DIAM (in.)

	From (ft)	To (ft)
4	0.0	51.0

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
4	Steel	0.125	+3.5	1.5
2	PVC	sch 40	+3.4	9.0

PERFORATED CASING: Screen Slot Size (in): 0.010

2	PVC	sch 40	9.0	49.0

8. FILTER PACK:
Material Sand
Size 10-20
Interval 8-51

9. PACKER PLACEMENT:
Type _____
Depth _____

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent.	5 bags	10 gal	1-8	poured
Cement	2 bags	10 gal	0-1	poured

Remarks: Monitoring Well

11. DISINFECTION: Type _____ Amt. Used _____

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.
TESTING METHOD _____
Static Level _____ ft. Date/Time measured: _____, Production Rate _____ gpm.
Pumping Level _____ ft. Date/Time measured _____, Test Length (hrs) _____.
Remarks:

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of section 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name:	Phone:	License Number:
Huddleston-Berry Engineering & Testing, LLC	(970)255-8005	PE39010

Mailing Address: 640 White Avenue, Grand Junction, CO 81501

Signature:	Print Name and Title	Date
Michael A. Berry	Michael A. Berry, P.E. Vice President	11/15/2010

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1 WELL PERMIT NUMBER: 283918

2 WELL OWNER INFORMATION

NAME OF WELL OWNER: CB INDUSTRIES - DELTA INC.

MAILING ADDRESS: 1129 -24- ROAD

CITY: GRAND JUNCTION STATE: CO ZIP CODE: 81505

TELEPHONE NUMBER: (970) 245-0577

3. WELL LOCATION AS DRILLED: NE1/4, MW1/4, Sec. 28, Twp. 14 ☐ N or ☒ S, Range 95 ☐ E or ☒ W

DISTANCES FROM SEC. LINES: 947 ft. from ☒ N or ☐ S section line and 2558 ft. from ☐ E or ☒ W section line.

SUBDIVISION: _____, LOT _____, BLOCK _____, FILING (UNIT) _____

Optional GPS Location: GPS Unit must use the following settings: Format must be **UTM**, Units must be **meters**, Datum must be **NAD83**, Unit must be set to **true N**, ☐ Zone 12 or ☒ Zone 13

Owner's Well Designation: MW09

Easting: 237917.482

STREET ADDRESS AT WELL LOCATION:

Northing: 4300138.41

4. GROUND SURFACE ELEVATION 5179 feet DRILLING METHOD Solid Flight Auger/HQ Coring

DATE COMPLETED 09/26/10 TOTAL DEPTH 51.0 feet DEPTH COMPLETED 51.0 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-5 ft	Silty Clay	Clay	brown	
5-51 ft	Shale	Clay	gray-brown	30 ft

6. HOLE DIAM (in.)

	From (ft)	To (ft)
4	0.0	51.0

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
4	Steel	0.125	+4.1	0.9
2	PVC	sch 40	+4.0	10.0

PERFORATED CASING: Screen Slot Size (in): 0.010

2	PVC	sch 40	10.0	50.0

8. FILTER PACK:

Material Sand
Size 10-20
Interval 8-51

9. PACKER PLACEMENT:

Type _____
Depth _____

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent.	4 bags	10 gal	1-8	poured
Cement	2 bags	10 gal	0-1	poured

Remarks: Monitoring Well

11. DISINFECTION: Type Amt. Used

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.

TESTING METHOD

Static Level _____ ft. Date/Time measured: _____, Production Rate _____ gpm.

Pumping Level _____ ft. Date/Time measured _____, Test Length (hrs) _____.

Remarks:

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of sec. 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name:	Phone:	License Number:
Huddleston-Berry Engineering & Testing, LLC	(970)255-8005	PE39010

Mailing Address: 640 White Avenue, Grand Junction, CO 81501

Signature:	Print Name and Title	Date
Michael A. Berry	Michael A. Berry, P.E. Vice President	11/15/2010

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1. WELL PERMIT NUMBER: 283919

2. WELL OWNER INFORMATION
NAME OF WELL OWNER: CB INDUSTRIES - DELTA INC.
MAILING ADDRESS: 1129 -24- ROAD
CITY: GRAND JUNCTION STATE: CO ZIP CODE: 81505
TELEPHONE NUMBER: (970) 245-0577

3. WELL LOCATION AS DRILLED: NE1/4, MW1/4, Sec. 28, Twp. 14 ☐ N or ☒ S, Range 95 ☐ E or ☒ W
DISTANCES FROM SEC. LINES: 1285 ft. from ☒ N or ☐ S section line and 1924 ft. from ☐ E or ☒ W section line.
SUBDIVISION: _____, LOT _____, BLOCK _____, FILING (UNIT) _____
Optional GPS Location: GPS Unit must use the following settings: Format must be **UTM**, Units must be **meters**, Datum must be NAD83, Unit must be set to **true N**, ☐ Zone 12 or ☒ Zone 13
Owner's Well Designation: MW10
Easting: 237719.598
STREET ADDRESS AT WELL LOCATION:
Northing: 4300042.30

4. GROUND SURFACE ELEVATION 5202 feet DRILLING METHOD Solid Flight Auger/HQ Coring
DATE COMPLETED 09/26/10 TOTAL DEPTH 51.5 feet DEPTH COMPLETED 51.5 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-9 ft	Silty Clay	Clay	brown	
9-51.5 ft	Shale	Clay	gray-brown	dry

6. HOLE DIAM (in.)

	From (ft)	To (ft)
4	0.0	51.5

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
4	Steel	0.125	+3.5	1.5
2	PVC	sch 40	+3.3	10.0

PERFORATED CASING: Screen Slot Size (in): 0.010

2	PVC	sch 40	10.0	50.0

8. FILTER PACK:
Material Sand
Size 10-20
Interval 8-51.5

9. PACKER PLACEMENT:
Type _____
Depth _____

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent.	4 bags	10 gal	1-8	poured
Cement	2 bags	10 gal	0-1	poured

Remarks: Monitoring Well

11. DISINFECTION: Type _____ Amt. Used _____

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.
TESTING METHOD _____
Static Level _____ ft. Date/Time measured: _____, Production Rate _____ gpm.
Pumping Level _____ ft. Date/Time measured _____, Test Length (hrs) _____.
Remarks:

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of s 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name:	Phone:	License Number:
Huddleston-Berry Engineering & Testing, LLC	(970)255-8005	PE39010

Mailing Address: 640 White Avenue, Grand Junction, CO 81501

Signature:	Print Name and Title	Date
Michael A. Berry	Michael A. Berry, P.E. Vice President	11/15/2010

BORING NO. **MW-11** DRILL: **Wildcat Drilling & Pump**
Cederedge, Colorado
BORING ELEVATION: **SOUTH WEST of LANDFILL** TOOLS: **6" od, Rotary-Air Circ.**

DEPTH (FT.)	SOIL LOG	DESCRIPTION	AUTO BLOW COUNT /inch	ESTIMATE SOIL DENSITY pcf	WATER %
		SMALL SHALE CHIPS on SURFACE w/LIMONITE(?) FRAGMENTS			
	CL	LEAN CLAY In-Situ WEATHERED SHALE SULFATES		LOW	7.3%
	I	**V. Weathered MANCOS SHALE, Km** Sl. MOIST			
	CL	LEAN CLAY SMALL SOFT SHALE CHIPS			
10	II	BROWN Sl. OXIDIZED SULFATES (Selenite) 10		LOW-MED	9.0%
		THIN ARGILLACEOUS SILTSTONE STRATA Sl. MOIST			
		MANY 'Sl. TIGHT' FRACTURES			8.6%
	CL	LEAN CLAY SMALL SOFT SHALE CHIPS		MEDIUM	
	II	BROWN Sl. OXIDIZED Sl. MOIST			
20	CL	LEAN CLAY **Weathered MANCOS SHALE, Km** 20			8.6%
	III	GRAY THIN SILTSTONE & MUDSTONE STRATA DRY		MEDIUM	
		SMALL HARD SHALE CHIPS SULFATES		HIGH	5.9%
		'TIGHT' FRACTURES Occ. SULFATES (Selenite)			
	CL	LEAN CLAY Sl. CARBONACEOUS 'FLECKS' DRY			
30	III	GRAY-GRAYBLACK ('Blue Shale') Occ. V. Fine SAND 30			4.5%
		Sl. Weathered MANCOS SHALE, Km		HIGH	
		THIN ARGILLACEOUS SILTSTONE STRATA			4.1%
		SMALL HARD SHALE CHIPS DRY			
		THIN SILTSTONE & MUDS			
40		Occ. SULFATES (Selenite) 40			4.3%
	CL	LEAN CLAY Occ. WAXY FRAGMENTS DRY		HIGH	
	III	GRAY-GRAYBLACK ('Blue Shale') SULFATES			4.4%
		LARGE HARD SHALE CHIPS (Low Bit Pressure)			
		Occ. V. Fine SAND			
50		THIN ARGILLACEOUS SILTSTONE STRATA DRY 50			4.1%
		Occ. WAXY FRAGMENTS V. DRY		HIGH	
		Sl. CARBONACEOUS 'FLECKS'			3.8%
		Occ. SULFATES (Selenite)			
	CL	LEAN CLAY LARGE HARD SHALE CHIPS DRY			
60	III	GRAY-GRAYBLACK ('Blue Shale') 60		HIGH	5.4%
		SMALL HARD SHALE CHIPS (Increase Bit Pressure)			
		THIN ARGILLACEOUS SILTSTONE STRATA V. DRY			3.7%
		SULFATES			
		LARGE HARD SHALE CHIPS V. DRY			
70		'OPEN' FRACTURES' Occ. V. Fine SAND 70			3.6%
		THIN ARGILLACEOUS SILTSTONE STRATA		HIGH	
	CL	LEAN CLAY LARGE HARD SHALE CHIPS			3.9%
	III	GRAY-GRAYBLACK ('Blue Shale')			
		Occ. WAXY FRAGMENTS V. DRY			
80		'OPEN' FRACTURES' SULFATES 80			4.0%
		Sl. CARBONACEOUS 'FLECKS'		HIGH	

LOG OF SUBSURFACE EXPLORATION

GROUND WATER PIEZOMETERS
11289 DOUGHSPOON ROAD, Austin, CO.
CB INDUSTRIES, Inc
Grand Junction, Colorado
Date **3-23-2011**

GRAND JUNCTION
LINCOLN - DeVORE, Inc.
Geotechnical Consultants
Grand Junction, Colorado

Job No. **94238-GJ**
Drawn **EMM**

BORING NO. **MW-11** CONTINUED | DRILL: Wildcat Drilling & Pump, Cederedge, Colorado

BORING ELEVATION: SOUTH WEST of LANDFILL | TOOLS: 6" od, Rotary-Air Circ.

DEPTH (FT.)	SOIL LOG	DESCRIPTION	AUTO BLOW COUNT /inch	ESTIMATE SOIL DENSITY pcf	WATER %
		THIN ARGILLACEOUS SILTSTONE STRATA			
	CL	LEAN CLAY LARGE HARD SHALE CHIPS		HIGH	3.9%
	III	GRAY-GRAYBLACK ('Blue Shale') Occ. V. Fine SAND			
		Occ. WAXY FRAGMENTS V. DRY			
80		'OPEN' FRACTURES' SULFATES	80		4.0%
	CL	LEAN CLAY LARGE HARD SHALE CHIPS		HIGH	
	III	GRAY-GRAYBLACK ('Blue Shale') Occ. V. Fine SAND			3.7%
		FRACTURES NOT AS 'OPEN'			
		THIN ARGILLACEOUS SILTSTONE STRATA			
90		Occ. WAXY FRAGMENTS	90		3.5%
	CL	LEAN CLAY LARGE HARD SHALE CHIPS			
	III	GRAY-GRAYBLACK ('Blue Shale') Occ. V. Fine SAND		HIGH	3.4%
		Sl. CARBONACEOUS 'FLECKS'			
100			100		
110			110		
		T.D. @ 94'			
120			120		
130			130		

TEMPORARY PIEZOMETER (2" dia.) SET to 94'

3-15-2011 NO WATER @ 3-22-2011

NO Free Water During Drilling 3-15-2011

LOG OF SUBSURFACE EXPLORATION

GROUND WATER PIEZOMETERS

11289 DOUGHSPOON ROAD, Austin, CO.

CB INDUSTRIES, Inc

Grand Junction, Colorado

Date: 3-23-2011

Job No.: 94238-GJ

Drawn: EMM

GRAND JUNCTION
LINCOLN - DeVORE, Inc.
Geotechnical Consultants
Grand Junction, Colorado

BORING NO. **MW-12** DRILL: Wildcat Drilling & Pump, Cederedge, Colorado

BORING ELEVATION: SOUTH EAST of LANDFILL TOOLS: 6" od, Rotary-Air Circ.

DEPTH (FT.)	SOIL LOG	DESCRIPTION	AUTO BLOW COUNT /inch	ESTIMATE SOIL DENSITY pcf	WATER %
		Occ. SMALL SHALE CHIPS on SURFACE		LOW	
	CL	LEAN CLAY In-Situ WEATHERED SHALE SULFATES			9.9%
	I	**V. Weathered MANCOS SHALE, Km** Sl. MOIST			
		THIN ARGILLACEOUS SILTSTONE STRATA		LOW-MED	
10	CL	LEAN CLAY Sl. OXIDIZED SULFATES (Selenite) 10			9.1%
	II	BROWN SMALL SOFT SHALE CHIPS Sl. MOIST			
		Sl. CARBONACEOUS 'FLECKS' SULFATES		MEDIUM	9.6%
	CL	LEAN CLAY MANY 'Sl. TIGHT' FRACTURES			
	II	BROWN Sl. OXIDIZED SULFATES (Selenite)			
20		THIN ARGILLACEOUS SILTSTONE STRATA 20		MEDIUM	9.3%
	CL	LEAN CLAY **Weathered MANCOS SHALE, Km** Sl. MOIST		HIGH	
	III	GRAY THIN SILTSTONE & MUDSTONE STRATA			8.9%
		SMALL HARD SHALE CHIPS SULFATES			
	CL	LEAN CLAY Sl. CARBONACEOUS 'FLECKS'			
30	III	GRAY-GRAYBLACK ('Blue Shale') Occ. V. Fine SAND 30			8.0%
		THIN ARGILLACEOUS SILTSTONE STRATA Sl. MOIST			
		SMALL HARD SHALE CHIPS		HIGH	8.2%
		SULFATES			
		THIN SILTSTONE & MUDSTONE STRATA			
40	CL	LEAN CLAY SMALL HARD SHALE CHIPS DRY 40			6.5%
	III	GRAY-GRAYBLACK ('Blue Shale') Occ. V. Fine SAND			
		Sl. Weathered MANCOS SHALE, Km V. DRY			4.5%
		Occ. WAXY FRAGMENTS		HIGH	
		'TIGHT' FRACTURES Occ. SULFATES (Selenite)			
50		THIN ARGILLACEOUS SILTSTONE STRATA V. DRY 50			4.1%
	CL	LEAN CLAY THIN SILTSTONE & MUDSTONE STRATA			
	III	GRAY-GRAYBLACK ('Blue Shale') Occ. V. Fine SAND			4.2%
		Occ. WAXY FRAGMENTS		HIGH	
		'TIGHT' FRACTURES V. DRY			
60		Sl. CARBONACEOUS 'FLECKS' 60			3.9%
		THIN SILTSTONE & MUDSTONE STRATA			
	CL	LEAN CLAY LARGE HARD SHALE CHIPS V. DRY			3.9%
	III	GRAY-GRAYBLACK ('Blue Shale') Occ. V. Fine SAND		HIGH	4.1%
		THIN ARGILLACEOUS SILTSTONE STRATA			
70		Occ. WAXY FRAGMENTS 70			
		T.D. @ 64'			
80		80			

TEMPORARY PIEZOMETER (2" dia.) SET to 64'
3-15-2011 NO WATER @ 3-22-2011

NO Free Water During Drilling 3-15-2011

LOG OF SUBSURFACE EXPLORATION

GRAND JUNCTION
LINCOLN - DeVORE, Inc.
Geotechnical Consultants
Grand Junction, Colorado

GROUND WATER PIEZOMETERS
11289 DOUGHSPOON ROAD, Austin, CO.

CB INDUSTRIES, Inc
Grand Junction, Colorado

Date **3-23-2011**

Job No. **94238-GJ**

Drawn **EMM**

BORING NO. 13 DRILL: Wildcat Drilling & Pump
ADJACENT TO WEST SIDE of EVAPORATION POND #3 Cederedge, Colorado
BORING ELEVATION: 5191.3' 5192.4' pipe TOOLS: 6" od, Rotary-Air Circ.

DEPTH (FT.)	SOIL LOG	DESCRIPTION	AUTO BLOW COUNT /inch	ESTIMATE SOIL DENSITY pcf	WATER %
		ALLUVIAL/DEBRIS FAN DEPOSITS, Qa/Qdf			
		CL LEAN CLAY, Occ SANDY — Sl. MOIST		LOW	8.6%
		Qdf V. COMPRESSIBLE			
		SULFATES			
10			10	LOW	7.7%
		ALLUVIAL/DEBRIS FAN DEPOSITS, Qa/Qdf — Sl. MOIST			
		CL LEAN CLAY, Occ SANDY			4.8%
		Qdf V. COMPRESSIBLE		LOW	
		V. Weathered MANCOS SHALE, Km — Sl. MOIST			
20		CL LEAN CLAY Sl. OXIDIZED SULFATES (Selenite)	20	LOW	11.2%
		II BROWN SMALL SOFT SHALE CHIPS MOIST STRATA			
				LOW-MED	8.9%
		Sl. MOIST			
		CL LEAN CLAY Sl. OXIDIZED SULFATES (Selenite)			
30		II BROWN SMALL SOFT SHALE CHIPS	30	MEDIUM	9.0%
		THIN ARGILLACEOUS SILTSTONE STRATA — Sl. MOIST			
		CL LEAN CLAY Sl. OXIDIZED SULFATES (Selenite)			11.7%
		II BROWN SMALL SOFT SHALE CHIPS MOIST		MEDIUM	
		FRACTURED LARGE HARD SHALE CHIPS			
40		CL LEAN CLAY **Weathered MANCOS SHALE, Km** MOIST	40		12.1%
		III GRAY - BLACK THIN SILTSTONE & MUDSTONE STRATA		MEDIUM	
		LARGE HARD SHALE CHIPS MOIST		HIGH	14.4%
		THIN ARGILLACEOUS SILTSTONE STRATA FRACTURED			
50		REDUCTION IN RETURNS @ 40' (STICKING TO DRILL STEM?)	50		
		SOME WATER ADDED TO CIRCULATION AIR @ 43' to 45' (TD)			
60		T.D. @ 45'	60		
70			70		
80			80		

NO Free Water During Drilling 9-26-2011

TEMPORARY PIEZOMETER (2" dia. PVC) SET to 45'
Solid Pipe 35', 10' Perf. Sand 33'-45', Bentonite 1.5'
NO WATER 9-26-2011 Clay Cuttings Backfill 31.5'
NO WATER 11-1-2011

LOG OF SUBSURFACE EXPLORATION

GRAND JUNCTION
LINCOLN - DeVORE, Inc.
Geotechnical Consultants
Grand Junction, Colorado

GROUND WATER PIEZOMETERS
11289 DOUGHSPOON ROAD, Austin, CO.
CB INDUSTRIES, Inc
Grand Junction, Colorado

Date: 10-31-2011
Job No.: 94238-GJ
Drawn: EMM

BORING NO. 14 DRILL: Wildcat Drilling & Pump
BELOW DIKE, EAST SIDE of EVAPORATION POND #3 Cederedge, Colorado
BORING ELEVATION: 5187.5' 5187.8' pipe TOOLS: 6" od, Rotary-Air Circ.

DEPTH (FT.)	SOIL LOG	DESCRIPTION	AUTO BLOW COUNT /inch	ESTIMATE SOIL DENSITY pcf	WATER %
		ALLUVIAL/DEBRIS FAN DEPOSITS, Qa/Qdf			
		CL LEAN CLAY, Occ SANDY STRATIFIED Sl. MOIST		LOW	7.5%
		Qdf V. COMPRESSIBLE LOW DENSITY SULFATES			
		SCATTERED SHALE CHIPS IN ALLUVIUM			
10		BROWN-GRAY 10		LOW	6.3%
		CL LEAN CLAY, Occ SANDY Sl. MOIST			
		Qdf V. COMPRESSIBLE SULFATES			6.9%
		STRATIFIED SILTY & SANDY			
		BROWN-GRAY SHALE CHIPS IN ALLUVIUM Sl. MOIST		LOW	
20		CL LEAN CLAY, Occ SANDY LOW DENSITY 20			6.9%
		Qdf V. COMPRESSIBLE SULFATES			
		V. Weathered MANCOS SHALE, Km Sl. MOIST		MEDIUM	6.6%
		CL LEAN CLAY Sl. OXIDIZED			
		FREE WATER 11-1-2011 BROWN SMALL SHALE CHIPS MOIST			
30		CL LEAN CLAY **Weathered MANCOS SHALE, Km** WET 30		MEDIUM	11.2%
		III GRAY - BLACK THIN SILTSTONE & MUDSTONE STRATA		HIGH	
		OPEN FRACTURES Sl. MOIST			7.8%
		CL LEAN CLAY LARGE HARD SHALE CHIPS			
		III GRAY - BLACK Sl. WAXY FRAGMENTS Sl. MOIST		HIGH	
40		SILTSTONE, SANDSTONE, MUDSTONE STRATA 40			5.1%
		Sl. Weathered MANCOS SHALE, Km DRY			
		CL LEAN CLAY LARGE HARD SHALE CHIPS		HIGH	5.3%
		III GRAY-GRAYBLACK ('Blue Shale') Occ. V. Fine SAND			
		THIN ARGILLACEOUS SILTSTONE STRATA DRY			
50		Occ. WAXY FRAGMENTS 50			
		T.D. @ 45'			
60		DRILL BIT 'CHATTER FROM 40' to 44' 60			
		HIGH MOISTURE/WET ZONE FROM 25' to 33' During Drilling			
70		70			
80		NO Free Water 80			
		During Drilling 9-26-2011			

TEMPORARY PIEZOMETER (2" dia. PVC) SET to 45'
Solid Pipe 20', 25' Perf. Sand 18'-45', Bentonite 2'
NO WATER 9-26-2011 Clay Cuttings Backfill 16'
WATER @ 27'-10" 11-1-2011
WATER @ 11–2011

LOG OF SUBSURFACE EXPLORATION

GRAND JUNCTION
LINCOLN - DeVORE, Inc.
Geotechnical Consultants
Grand Junction, Colorado

GROUND WATER PIEZOMETERS
11289 DOUGHSPOON ROAD, Austin, CO.
CB INDUSTRIES, Inc
Grand Junction, Colorado

Job No.	Drawn	Date
94238-GJ	EMM	10-31-2011

APPENDIX G1
BACKGROUND ARSENIC LEVELS

Background Arsenic Levels

Sampling was conducted to determine background arsenic levels occurring naturally on the site. Sampling occurred on March 17, 2010 and April 15, 2010.

Sample locations taken on March 17, 2010 are shown on Figure G1a. The samples are labeled 1A, 1B, 1C through 5A, 5B, 5C. The sample depths are:

A - surface sample,

B – 2 ft depth, and

C – 4 ft depth, respectively for each of the five locations.

The sample taken on April 15, 2010 consisted of one composite sample made up of five grabs. The locations are shown in Figure G1a and were taken in the shale outcropping between the two hills.. All sample locations were taken at a depth of 24 inches.

Sample results are shown in Figure G1b and Figure G1c.

Averages of results were as follows:

Composite of shale outcrop (5 grabs) at 24" depth – 32.107 mg/kg

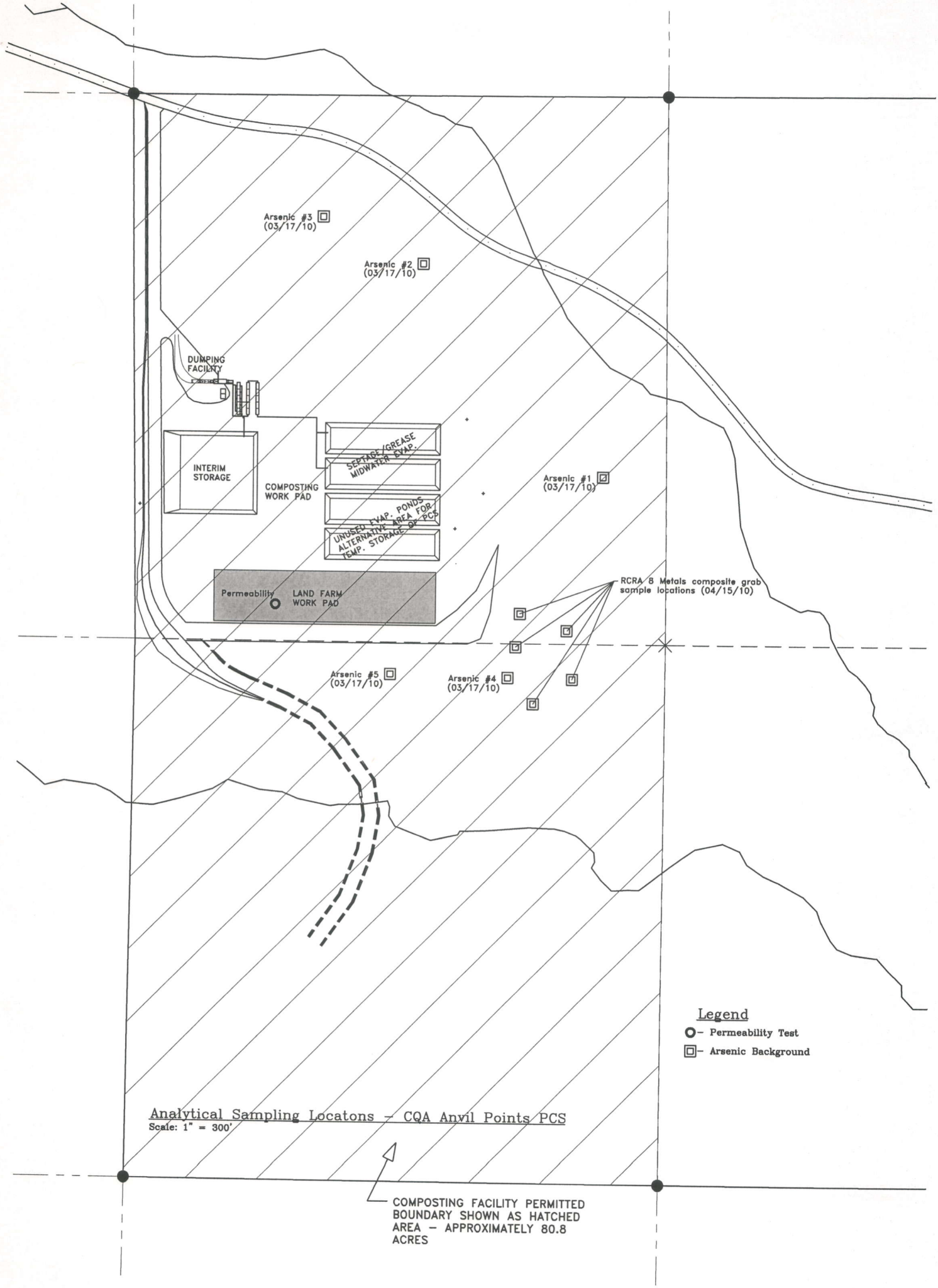
Average all samples (20 total – 5 grabs plus 15 singles) – 24.42 mg/kg

Average of all 03/17/10 samples (15) – 21.86 mg/kg

Average of all 03/17/10 surface samples (A samples, 5 total) – 19.71 mg/kg

Average of all 03/17/10 2' depth samples (B samples, 5 total) – 23.42 mg/kg

Average of all 03/17/10 4' depth samples (C samples, 5 total) – 22.47 mg/kg


Arsenic #3
(03/17/10)
Arsenic #2
(03/17/10)
DUMPING
FACILITY
INTERIM
STORAGE
COMPOSTING
WORK PAD
SEPTAGE/GREASE
MIDWATER EVAP.
UNUSED EVAP. PONDS
ALTERNATIVE AREA FOR
TEMP. STORAGE OF PCS
Arsenic #1
(03/17/10)
Permeability
LAND FARM
WORK PAD
RCRA 8 Metals composite grab
sample locations (04/15/10)
Arsenic #5
(03/17/10)
Arsenic #4
(03/17/10)
Legend
O- Permeability Test
- Arsenic Background
Analytical Sampling Locatons - CQA Anvil Points PCS
Scale: 1" = 300'
COMPOSTING FACILITY PERMITTED
BOUNDARY SHOWN AS HATCHED
AREA - APPROXIMATELY 80.8
ACRES

ENVIRO-CHEM
ANALYTICAL, INC.

ANALYTICAL TESTING LABORATORY
685 W. Gunnison, Suite #108, Grand Junction, CO 81501-7249, (970) 242-6154, FAX (970) 245-9270

To: CB Industries
1129 24 Rd
Grand Junction, CO 81505

Date: Mar. 25, 2010
No: ECA/CBI 10-05-19

SAMPLE IDENTIFICATION

Submitted by: Tom Cronk
Sample I.D.: Dirt see below
Comments: Kept 4C till tested

Date Sampled: Mar. 17, 2010
Date Received: Mar. 22, 2010
Date Tested: Mar. 23, 2010

RESULTS

Total Arsenic mg/Kg

1A	14.763
1B	17.330
1C	18.614
2A	14.442
2B	19.898
2C	21.502
3A	16.688
3B	24.712
3C	18.293
4A	24.070
4B	31.451
4C	19.577
5A	28.563
5B	23.698
5C	34.340

Results Submitted by
Enviro-Chem Analytical, Inc.
Liese K. Thompson
Liese K. Thompson
Lab Director

ENVIRO-CHEM
ANALYTICAL, INC.

ANALYTICAL TESTING LABORATORY
685 W. Gunnison, Suite #108, Grand Junction, CO 81501-7249, (970) 242-6154, FAX (970) 245-9270

To: CB Industries
1129 24 Rd
Grand Junction, CO 81505

Date: May 13, 2010
No: ECA/CBI 10-24

SAMPLE IDENTIFICATION

Submitted by: Tom Cronk
Sample I.D.: Soil, Clean
Comments: Kept 4C till tested

Date Sampled: April 15, 2010
Date Received: April 15, 2010
Date Tested: April 15-May 7, 2010

RESULTS

Metals	Total	TCLP
Arsenic	32.107 mg/Kg	0.244 mg/L
Barium	3.765 mg/Kg	0.015 mg/L
Cadmium	3.88 mg/Kg	0.052 mg/L
Chromium	15.0 mg/Kg	0.10 mg/L
Lead	32.50 mg/Kg	0.33 mg/L
Mercury	0.019 mg/Kg	0.00004 mg/L
Selenium	2.744 mg/Kg	0.019 mg/L
Silver	1.75 mg/Kg	0.037 mg/L

Results Submitted by
Enviro-Chem Analytical, Inc.

Liese K. Thompson

Liese K. Thompson
Lab Director

APPENDIX H
100 YEAR FLOOD PLAIN ANALYSIS

100 Year Storm Flood Analysis - Negro Creek Drainage Basin

An analysis of precipitation drainage from the Negro Creek drainage basin was completed to determine the high water elevation of flood waters generated by the 100 year storm event. The Negro Creek drainage basin was modeled using Version 4.0 of the Flood Hydrograph Package (HEC-1) computer software (U.S. Army Corps of Engineers, Hydrologic Engineering Center, 609 Second Street, Davis, California 95616).

As shown in Fig. H-1, the Negro Creek drainage basin was modeled as six (6) subbasins each approximately 1 square mile in area. Additional modeling parameters include:

Precipitation Data -	2.4" taken from NOAA Atlas II, 100 year/24-hour storm event map
Rainfall Distribution -	SCS 24-hour Type II Rainfall Distribution
Rainfall Loss Method -	Green and Ampt

Hydrographs generated by each subbasin were routed to the outfall of the successive subbasin using the Muskingum-Cunge Natural Channel Flow Method. After routing, the resulting hydrograph was combined with the hydrograph from the subbasin through which the routing took place. Successive subbasins were combined in the same manner to generate the flood hydrograph at the outfall of Negro Creek into Tongue Creek.

A summary of the results from the HEC-1 model are given in Table H-1. The modeling results predict a peak flow rate of 3,672 cfs would result from the 100 year storm event at the outfall of Negro Creek. The flood hydrograph is shown in Fig. H-2. The high water limits of the 100 year storm event flood are shown in Fig. H-3.

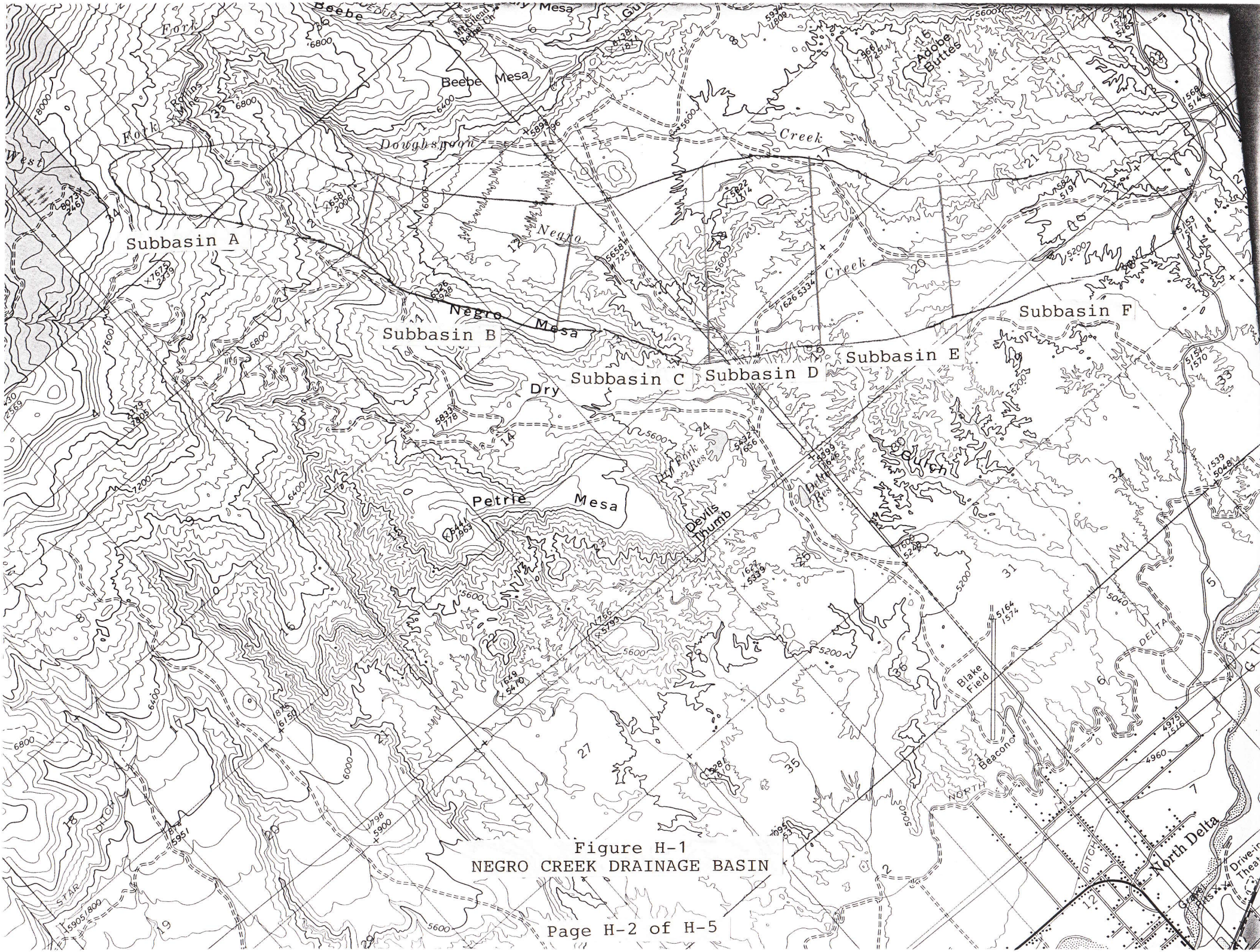
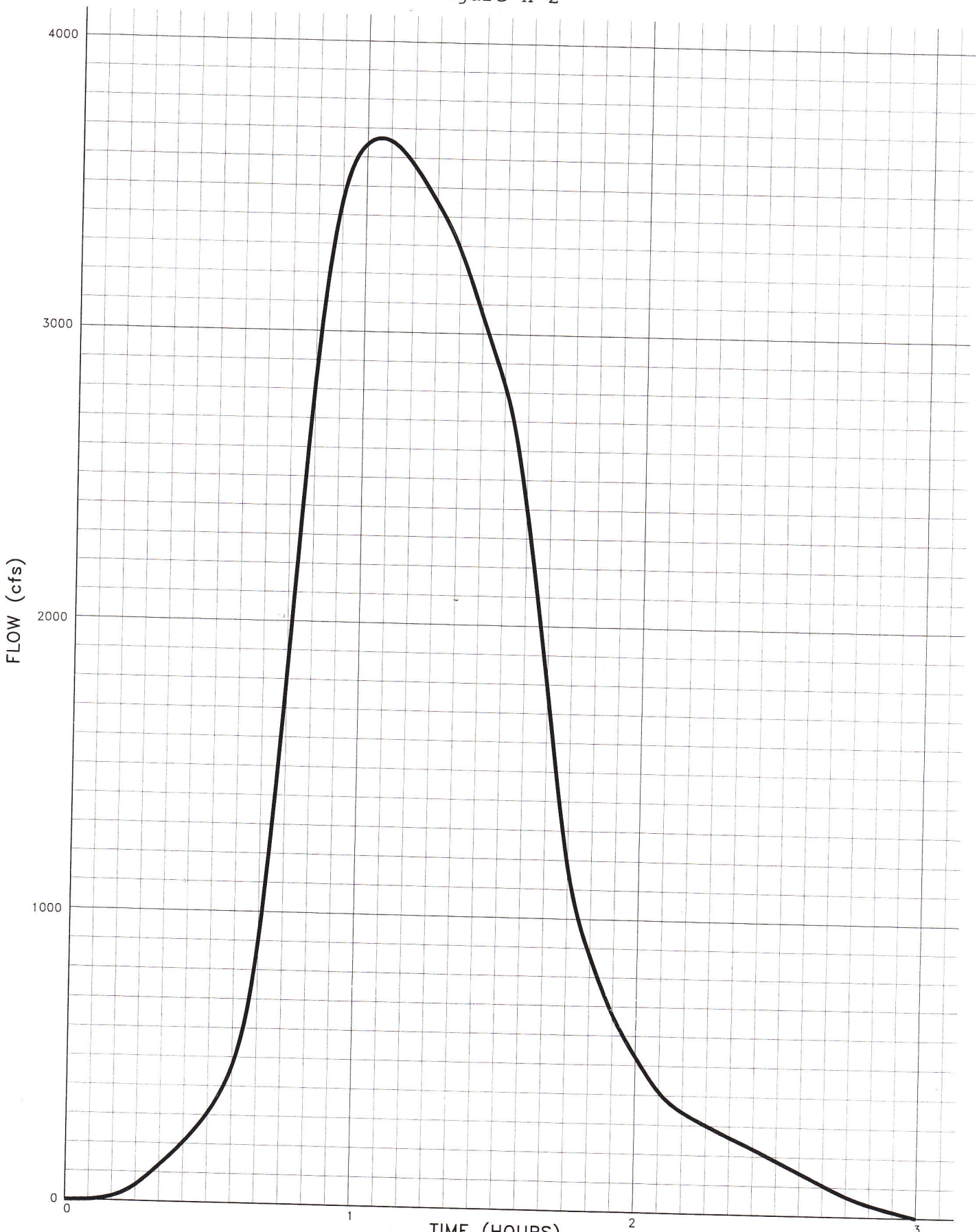


Figure H-1
NEGRO CREEK DRAINAGE BASIN

TABLE H1

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA
				6-HOUR	24-HOUR	72-HOUR	
HYDROGRAPH AT	BASIN A	923.	12.17	100.	25.	24.	1.00
ROUTED TO	RT-A	915.	12.33	100.	25.	24.	1.00
HYDROGRAPH AT	BASIN B	923.	12.17	100.	25.	24.	1.00
2 COMBINED AT	AB	1739.	12.25	200.	50.	48.	2.00
ROUTED TO	RT-AB	1692.	12.33	200.	50.	48.	2.00
HYDROGRAPH AT	BASIN C	1097.	12.08	100.	25.	24.	1.00
2 COMBINED AT	ABC	2299.	12.25	300.	75.	72.	3.00
ROUTED TO	RT-ABC	2282.	12.50	300.	75.	72.	3.00
HYDROGRAPH AT	BASIN D	1097.	12.08	100.	25.	24.	1.00
2 COMBINED AT	ABCD	2791.	12.25	399.	100.	96.	4.00
ROUTED TO	RT-ABCD	2374.	12.67	376.	94.	90.	4.00
HYDROGRAPH AT	BASIN E	1016.	12.17	100.	25.	24.	1.00
2 COMBINED AT	ABCDE	3094.	12.25	475.	119.	114.	5.00
ROUTED TO	RT-ABCDE	3033.	12.50	475.	119.	114.	5.00
HYDROGRAPH AT	BASIN F	1176.	12.17	118.	29.	28.	1.18
2 COMBINED AT	ABCDEF	3674.	12.25	592.	148.	143.	6.18



100 YEAR FLOOD HYDROGRAPH
NEGRO CREEK OUTFALL, DELTA COUNTY

Figure H-3

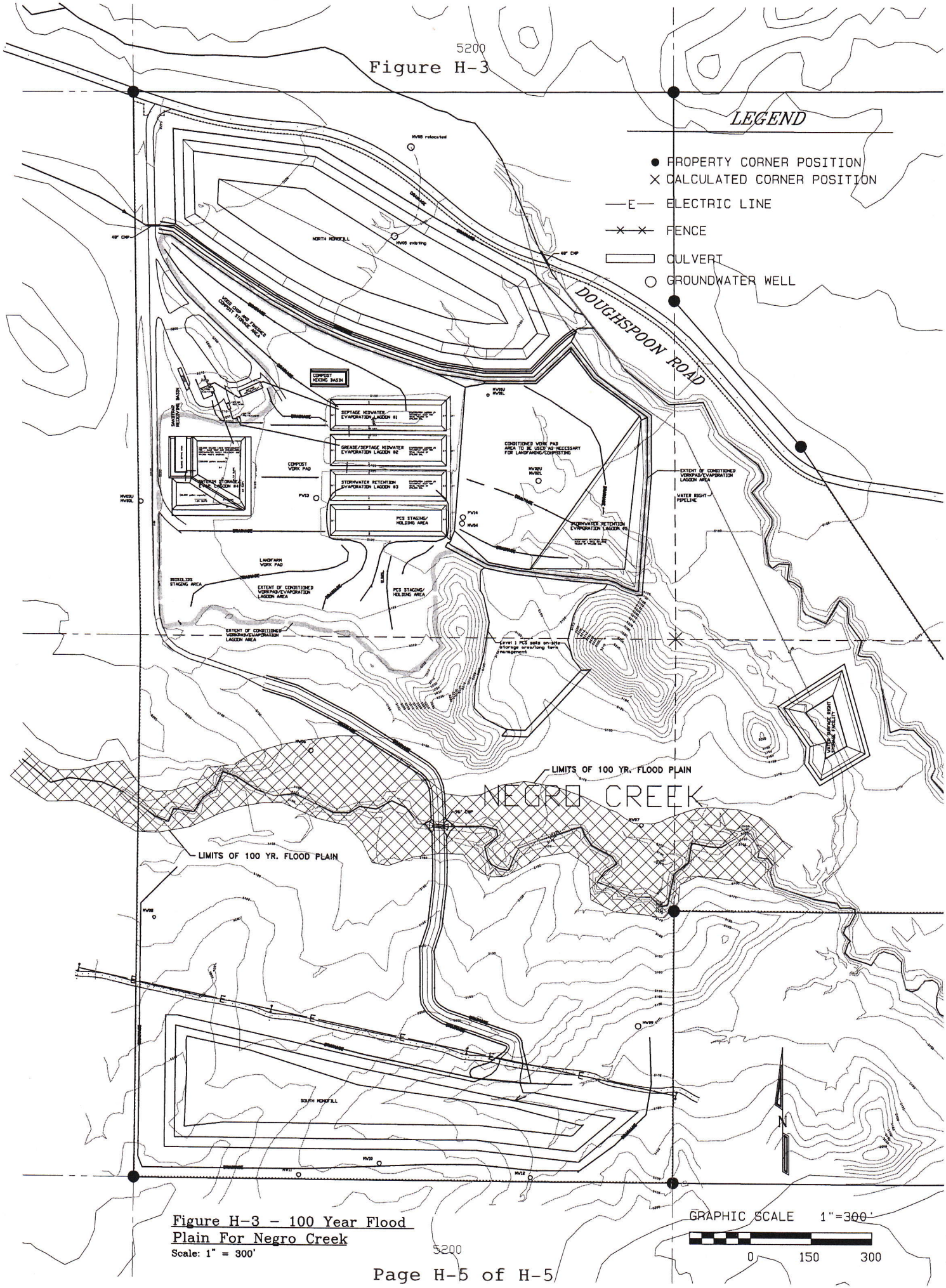


Figure H-3 – 100 Year Flood Plain For Negro Creek

Scale: 1" = 300'

APPENDIX I
GROUNDWATER MONITORING WELL INFORMATION

TABLE OF CONTENTS

1. Letter from Division of Water Resources; December 2, 2002

2. Groundwater Levels Excel Spreadsheet

3. Well Completion Logs

STATE OF COLORADO

DIVISION OF WATER RESOURCES
WATER DIVISION FOUR
Office of the State Engineer
Department of Natural Resources

1540 E. Niagara
P.O. Box 456
Montrose, Colorado 81402
Phone: (970) 249-6622
FAX: (970) 249-8728

http://water.state.co.us/default.htm

Bill Owens
Governor

Greg E. Walcher
Executive Director

Hal D. Simpson, P.E.
State Engineer

Wayne I. Schleidt
Division Engineer

December 2, 2002

CB Industries
1129 24 Road
Grand Junction, CO. 81505

Dear Jerry,

This letter is in reference to your request addressing any wells within a mile radius of your monitoring well, Designated #3. According to our well database, portions of sections 20, 22, 27, 28, and 29 all lie within this mile and we show that none of these section portions have any wells on them. However, section 21 does show a well drilled in 1967 in the NW1/4, NW1/4 to a depth of 44 feet and yielding 14 gpm. Upon receiving the attached documents in the permit file #30560, in the name of Wayne Ehert, there are two maps showing a prospective location of the well, both of which are in conflict of each other. Considering the age of this well and in looking at the topographical map, I could not say one way or the other that this well is indeed at this location. A field inspection of this area, particularly the NW1/4, NW1/4 of section 21 would confirm either the presence or lack thereof of this well at this location.

If there are any other issues of which I can be of help please don't hesitate to contact me at 249-6622.

Sincerely,

LuAnn M. Beasley
Well Commissioner
Water Division 4

MONIT NG WELL GROUNDWATER LEVELS

	MW01L P#253829		MW01U P#253829		MW02L P#253828		MW02U P#253828		MWO3L P#253827		MW03U P#253827	
	TOC ELEV=	5190.87	TOC ELEV=	5190.8	TOC ELEV=	5187.39	TOC ELEV=	5187.32	TOC ELEV=	5199.87	TOC ELEV=	5199.72
	TD=51.46 (5139.41)		TD=33.26 (5157.54)		TD=51.60 (5135.79)		TD=36.22 (5151.10)		TD=56.80 (5143.07)		TD=38.32 (5161.40)	
DATE	GW DEPTH	SEA LEVEL	GW DEPTH	SEA LEVEL	GW DEPTH	SEA LEVEL	GW DEPTH	SEA LEVEL	GW DEPTH	SEA LEVEL	GW DEPTH	SEA LEVEL
12/8/2003	37.7	5153.17		5190.8	36.41	5150.98		5187.32	47.51	5152.36		5199.72
3/31/2004	37.34	5153.53	33.08 NS	#VALUE!	36.32	5151.07	DRY	#VALUE!	47.58	5152.29	38.25 NS	#VALUE!
6/30/2004	37.57	5153.3	33.11 NS	#VALUE!	36.35	5151.04	DRY	#VALUE!	47.62	5152.25	38.24 NS	#VALUE!
9/27/2004	37.56	5153.31	33.10 NS	#VALUE!	36.33	5151.06	DRY	#VALUE!	47.64	5152.23	38.25 NS	#VALUE!
12/31/2004	37.49	5153.38	33.12 NS	#VALUE!	36.28	5151.11	DRY	#VALUE!	47.32	5152.55	38.27 NS	#VALUE!
3/29/2005	37.28	5153.59	33.14 NS	#VALUE!	36.07	5151.32	DRY	#VALUE!	47.43	5152.44	38.27 NS	#VALUE!
6/29/2005	37.28	5153.59	33.14 NS	#VALUE!	36.03	5151.36	DRY	#VALUE!	47.76	5152.11	38.99 NS	#VALUE!
9/29/2005	37.28	5153.59		5190.8	35.97	5151.42		5187.32	47.66	5152.21		5199.72
12/11/2005	37.31	5153.56		5190.8	36.1	5151.29		5187.32	47.76	5152.11		5199.72
6/28/2006	37.12	5153.75		5190.8	35.82	5151.57		5187.32	47.76	5152.11		5199.72
12/28/2006	36.92	5153.95		5190.8	35.58	5151.81		5187.32	47.52	5152.35		5199.72
6/19/2007	36.76	5154.11		5190.8	35.42	5151.97		5187.32	47.8	5152.07		5199.72
12/18/2007	36.51	5154.36		5190.8	35.6	5151.79		5187.32	47.81	5152.06		5199.72
6/20/2008	35.96	5154.91		5190.8	34.48	5152.91		5187.32	47.82	5152.05		5199.72
12/17/2008	35.74	5155.13		5190.8	34.2	5153.19		5187.32	47.8	5152.07		5199.72
6/29/2009	35.1	5155.77		5190.8	33.52	5153.87		5187.32	47.85	5152.02		5199.72
12/15/2009	35.05	5155.82		5190.8	33.47	5153.92		5187.32	47.98	5151.89		5199.72
6/28/2010	34.57	5156.3		5190.8	32.88	5154.51		5187.32	47.83	5152.04		5199.72
7/15/2010	N/S	#VALUE!	33.16	5157.64	N/S	#VALUE!	32.84	5154.48	N/S	#VALUE!	38.3	5161.42
10/12/2010	34.28	5156.59	33.16	5157.64	32.56	5154.83	32.58	5154.74	47.88	5151.99	DRY	#VALUE!
11/8/2010	N/S	#VALUE!	DRY	#VALUE!	N/S	#VALUE!	N/S	#VALUE!	N/S	#VALUE!	DRY	#VALUE!
12/9/2010	34.32	5156.55	DRY	#VALUE!	32.34	5155.05	N/S	#VALUE!	48.7	5151.17	DRY	#VALUE!
12/27/2010	N/S	#VALUE!	N/S	#VALUE!	N/S	#VALUE!	32.38	5154.94	N/S	#VALUE!	N/S	#VALUE!
6/8/2011	33.46	5157.41	DRY	#VALUE!	31.82	5155.57	31.92	5155.4	47.68	5152.19	DRY	#VALUE!
6/13/2011	33.56	5157.31	DRY	#VALUE!	31.9	5155.49	31.92	5155.4	47.76	5152.11	DRY	#VALUE!
6/21/2011	33.58	5157.29	DRY	#VALUE!	31.92	5155.47	31.94	5155.38	47.8	5152.07	DRY	#VALUE!
6/24/2011	33.92	5156.95	DRY	#VALUE!	31.77	5155.62	31.82	5155.5	47.91	5151.96	DRY	#VALUE!
7/1/2011	33.56	5157.31	DRY	#VALUE!	31.86	5155.53	31.9	5155.42	47.84	5152.03	DRY	#VALUE!
7/11/2011	33.52	5157.35	DRY	#VALUE!	31.8	5155.59	31.84	5155.48	47.82	5152.05	DRY	#VALUE!
7/18/2011	33.54	5157.33	DRY	#VALUE!	31.86	5155.53	31.88	5155.44	47.88	5151.99	DRY	#VALUE!

MONIT NG WELL GROUNDWATER LEVELS

	MW01L P#253829		MW01U P#253829		MW02L P#253828		MW02U P#253828		MWO3L P#253827		MW03U P#253827	
	TOC ELEV=	5190.87	TOC ELEV=	5190.8	TOC ELEV=	5187.39	TOC ELEV=	5187.32	TOC ELEV=	5199.87	TOC ELEV=	5199.72
	TD=51.46 (5139.41)		TD=33.26 (5157.54)		TD=51.60 (5135.79)		TD=36.22 (5151.10)		TD=56.80 (5143.07)		TD=38.32 (5161.40)	
DATE	GW DEPTH	SEA LEVEL	GW DEPTH	SEA LEVEL	GW DEPTH	SEA LEVEL	GW DEPTH	SEA LEVEL	GW DEPTH	SEA LEVEL	GW DEPTH	SEA LEVEL
7/25/2011	33.5	5157.37	DRY	#VALUE!	31.8	5155.59	31.84	5155.48	47.84	5152.03	DRY	#VALUE!
8/1/2011	33.48	5157.39	DRY	#VALUE!	31.78	5155.61	31.82	5155.5	47.86	5152.01	DRY	#VALUE!
8/8/2011	33.46	5157.41	DRY	#VALUE!	31.72	5155.67	31.76	5155.56	47.8	5152.07	DRY	#VALUE!
8/15/2011	33.5	5157.37	DRY	#VALUE!	31.76	5155.63	31.78	5155.54	47.84	5152.03	DRY	#VALUE!
8/22/2011	33.52	5157.35	DRY	#VALUE!	31.78	5155.61	31.82	5155.5	47.86	5152.01	DRY	#VALUE!
8/29/2011	33.52	5157.35	DRY	#VALUE!	31.78	5155.61	31.82	5155.5	47.86	5152.01	DRY	#VALUE!
9/6/2011	33.5	5157.37	DRY	#VALUE!	31.74	5155.65	31.8	5155.52	47.9	5151.97	DRY	#VALUE!
9/12/2011	33.54	5157.33	DRY	#VALUE!	31.8	5155.59	31.84	5155.48	47.92	5151.95	DRY	#VALUE!
9/26/2011	N/S	#VALUE!	N/S	#VALUE!	N/S	#VALUE!	N/S	#VALUE!	N/S	#VALUE!	DRY	#VALUE!
10/10/2011	33.46	5157.41	DRY	#VALUE!	31.7	5155.69	31.74	5155.58	47.82	5152.05	DRY	#VALUE!
10/17/2011	33.4	5157.47	DRY	#VALUE!	31.64	5155.75	31.66	5155.66	47.82	5152.05	DRY	#VALUE!
10/24/2011	33.38	5157.49	DRY	#VALUE!	31.62	5155.77	31.66	5155.66	47.84	5152.03	DRY	#VALUE!
10/31/2011	33.36	5157.51	DRY	#VALUE!	31.58	5155.81	31.64	5155.68	47.84	5152.03	DRY	#VALUE!
11/7/2011	33.34	5157.53	DRY	#VALUE!	31.76	5155.63	31.8	5155.52	47.74	5152.13	DRY	#VALUE!
11/21/2011	33.52	5157.35	DRY	#VALUE!	31.56	5155.83	31.6	5155.72	47.76	5152.11	DRY	#VALUE!
11/28/2011	33.38	5157.49	DRY	#VALUE!	31.6	5155.79	31.66	5155.66	47.92	5151.95	DRY	#VALUE!
12/5/2011	33.3	5157.57	DRY	#VALUE!	31.52	5155.87	31.56	5155.76	47.84	5152.03	DRY	#VALUE!
12/12/2011	33.1	5157.77	DRY	#VALUE!	31.3	5156.09	31.34	5155.98	47.68	5152.19	DRY	#VALUE!
12/19/2011	33.06	5157.81	DRY	#VALUE!	31.34	5156.05	31.28	5156.04	47.84	5152.03	DRY	#VALUE!
1/2/2012	33.34	5157.53	DRY	#VALUE!	31.58	5155.81	31.62	5155.7	48.04	5151.83	DRY	#VALUE!
1/9/2012	33.22	5157.65	DRY	#VALUE!	31.44	5155.95	31.48	5155.84	47.96	5151.91	DRY	#VALUE!
		5190.87		5190.8		5187.39		5187.32		5199.87		5199.72
		5190.87		5190.8		5187.39		5187.32		5199.87		5199.72
		5190.87		5190.8		5187.39		5187.32		5199.87		5199.72
		5190.87		5190.8		5187.39		5187.32		5199.87		5199.72
		5190.87		5190.8		5187.39		5187.32		5199.87		5199.72
		5190.87		5190.8		5187.39		5187.32		5199.87		5199.72
		5190.87		5190.8		5187.39		5187.32		5199.87		5199.72
		5190.87		5190.8		5187.39		5187.32		5199.87		5199.72
		5190.87		5190.8		5187.39		5187.32		5199.87		5199.72

MONITORING WELL GROUNDWATER LEVELS

	MW04 P#245415		MW05 P#283914		MW06 P#283915		MW07 P#283916		MW08 P#283917		MW09 P#283918	
	TOC ELEV=	5187.6	TOC ELEV=	5198.11	TOC ELEV=	5187.57	TOC ELEV=	5175.22	TOC ELEV=	5197.02	TOC ELEV=	5179.81
	TD=36.98 (5150.62)		TD=45.22 (5152.89)		TD=51.96 (5135.61)		TD=46.88 (5128.34)		TD=51.84 (5145.18)		TD=53.10 (5126.71)	
DATE	GW DEPTH	SEA LEVEL	GW DEPTH	SEA LEVEL	GW DEPTH	SEA LEVEL	GW DEPTH	SEA LEVEL	GW DEPTH	SEA LEVEL	GW DEPTH	SEA LEVEL
12/8/2003	DRY	#VALUE!		5198.11		5187.57		5175.22		5197.02		5179.81
	DRY	N/A		5198.11		5187.57		5175.22		5197.02		5179.81
	DRY	N/A		5198.11		5187.57		5175.22		5197.02		5179.81
	DRY	N/A		5198.11		5187.57		5175.22		5197.02		5179.81
	DRY	N/A		5198.11		5187.57		5175.22		5197.02		5179.81
	DRY	N/A		5198.11		5187.57		5175.22		5197.02		5179.81
	DRY	N/A		5198.11		5187.57		5175.22		5197.02		5179.81
	DRY	N/A		5198.11		5187.57		5175.22		5197.02		5179.81
	DRY	N/A		5198.11		5187.57		5175.22		5197.02		5179.81
	DRY	N/A		5198.11		5187.57		5175.22		5197.02		5179.81
	DRY	N/A		5198.11		5187.57		5175.22		5197.02		5179.81
	DRY	N/A		5198.11		5187.57		5175.22		5197.02		5179.81
	DRY	N/A		5198.11		5187.57		5175.22		5197.02		5179.81
	DRY	N/A		5198.11		5187.57		5175.22		5197.02		5179.81
	DRY	N/A		5198.11		5187.57		5175.22		5197.02		5179.81
	DRY	N/A		5198.11		5187.57		5175.22		5197.02		5179.81
	DRY	N/A		5198.11		5187.57		5175.22		5197.02		5179.81
	DRY	N/A		5198.11		5187.57		5175.22		5197.02		5179.81
	DRY	N/A		5198.11		5187.57		5175.22		5197.02		5179.81
10/12/2010	DRY	N/A	31.72	5166.39	16.1	5171.47	21.02	5154.2	23.72	5173.3	28.2	5151.61
11/8/2010	DRY	N/A	31.65	5166.46	16.65	5170.92	21.09	5154.13	23.49	5173.53	28.15	5151.66
12/9/2010	DRY	N/A	N/S	#VALUE!	N/S	#VALUE!	N/S	#VALUE!	N/S	#VALUE!	N/S	#VALUE!
12/27/2010	DRY	N/A	N/S	#VALUE!	N/S	#VALUE!	N/S	#VALUE!	N/S	#VALUE!	N/S	#VALUE!
6/8/2011	DRY	N/A	30.5	5167.61	19.16	5168.41	21.62	5153.6	24.04	5172.98	29.2	5150.61
6/13/2011	DRY	N/A	30.64	5167.47	18.92	5168.65	21.72	5153.5	24.02	5173	29.04	5150.77
6/21/2011	DRY	N/A	30.74	5167.37	18.62	5168.95	21.74	5153.48	24.06	5172.96	29.06	5150.75
6/24/2011	DRY	N/A	30.56	5167.55	18.25	5169.32	21.48	5153.74	24.03	5172.99	29.04	5150.77
7/1/2011	DRY	N/A	30.78	5167.33	18.14	5169.43	21.62	5153.6	24.04	5172.98	29.04	5150.77
7/11/2011	DRY	N/A	30.74	5167.37	17.96	5169.61	21.46	5153.76	24.04	5172.98	28.98	5150.83
7/18/2011	DRY	N/A	30.82	5167.29	17.98	5169.59	21.5	5153.72	24.06	5172.96	28.94	5150.87

MONIT NG WELL GROUNDWATER LEVELS

	MW04 P#245415		MW05 P#283914		MW06 P#283915		MW07 P#283916		MW08 P#283917		MW09 P#283918	
	TOC ELEV=	5187.6	TOC ELEV=	5198.11	TOC ELEV=	5187.57	TOC ELEV=	5175.22	TOC ELEV=	5197.02	TOC ELEV=	5179.81
	TD=36.98 (5150.62)		TD=45.22 (5152.89)		TD=51.96 (5135.61)		TD=46.88 (5128.34)		TD=51.84 (5145.18)		TD=53.10 (5126.71)	
DATE	GW DEPTH	SEA LEVEL	GW DEPTH	SEA LEVEL	GW DEPTH	SEA LEVEL	GW DEPTH	SEA LEVEL	GW DEPTH	SEA LEVEL	GW DEPTH	SEA LEVEL
7/25/2011	DRY	N/A	30.84	5167.27	17.92	5169.65	21.36	5153.86	24.04	5172.98	28.86	5150.95
8/1/2011	DRY	N/A	30.82	5167.29	17.88	5169.69	21.3	5153.92	24.04	5172.98	28.84	5150.97
8/8/2011	DRY	N/A	30.78	5167.33	17.84	5169.73	21.16	5154.06	24.02	5173	28.8	5151.01
8/15/2011	DRY	N/A	30.88	5167.23	17.98	5169.59	21.18	5154.04	24.02	5173	28.72	5151.09
8/22/2011	DRY	N/A	30.92	5167.19	18.1	5169.47	21.18	5154.04	24.02	5173	28.74	5151.07
8/29/2011	DRY	N/A	30.92	5167.19	18.1	5169.47	21.18	5154.04	24.02	5173	28.74	5151.07
9/6/2011	DRY	N/A	30.96	5167.15	18.36	5169.21	21.26	5153.96	24.04	5172.98	28.74	5151.07
9/12/2011	DRY	N/A	30.98	5167.13	18.4	5169.17	21.24	5153.98	24.04	5172.98	28.76	5151.05
9/26/2011		N/A	30.78	5167.33	18.37	5169.2	21.07	5154.15	23.99	5173.03	28.66	5151.15
10/10/2011	DRY	N/A	30.76	5167.35	18.44	5169.13	21.16	5154.06	23.92	5173.1	28.72	5151.09
10/17/2011	DRY	N/A	30.66	5167.45	18.34	5169.23	21.1	5154.12	23.9	5173.12	28.7	5151.11
10/24/2011	DRY	N/A	30.64	5167.47	18.3	5169.27	21.08	5154.14	23.9	5173.12	28.64	5151.17
10/31/2011	DRY	N/A	30.94	5167.17	18.2	5169.37	21.02	5154.2	23.9	5173.12	28.62	5151.19
11/7/2011	DRY	N/A	30.48	5167.63	18.04	5169.53	20.8	5154.42	23.88	5173.14	28.58	5151.23
11/21/2011	DRY	N/A	30.4	5167.71	17.94	5169.63	20.84	5154.38	23.88	5173.14	28.52	5151.29
11/28/2011	DRY	N/A	30.44	5167.67	18.02	5169.55	21.02	5154.2	23.96	5173.06	28.62	5151.19
12/5/2011	DRY	N/A	30.34	5167.77	17.98	5169.59	20.84	5154.38	23.88	5173.14	28.5	5151.31
12/12/2011	DRY	N/A	30.04	5168.07	17.68	5169.89	20.56	5154.66	23.82	5173.2	28.42	5151.39
12/19/2011	DRY	N/A	29.98	5168.13	17.52	5170.05	20.52	5154.7	23.82	5173.2	28.36	5151.45
1/2/2012	DRY	N/A	30.36	5167.75	18.2	5169.37	21.1	5154.12	23.96	5173.06	28.56	5151.25
1/9/2012	DRY	N/A	30.18	5167.93	18.18	5169.39	20.96	5154.26	23.94	5173.08	28.52	5151.29
	DRY	N/A		5198.11		5187.57		5175.22		5197.02		5179.81
	DRY	N/A		5198.11		5187.57		5175.22		5197.02		5179.81
	DRY	N/A		5198.11		5187.57		5175.22		5197.02		5179.81
	DRY	N/A		5198.11		5187.57		5175.22		5197.02		5179.81
	DRY	N/A		5198.11		5187.57		5175.22		5197.02		5179.81
	DRY	N/A		5198.11		5187.57		5175.22		5197.02		5179.81
	DRY	N/A		5198.11		5187.57		5175.22		5197.02		5179.81
	DRY	N/A		5198.11		5187.57		5175.22		5197.02		5179.81
	DRY	N/A		5198.11		5187.57		5175.22		5197.02		5179.81

MONITORING WELL GROUNDWATER LEVELS

	MW10 P#283919		MW11 P#285193		MW12 P#285194							
	TOC ELEV=	5202.48	TOC ELEV=	5201.48	TOC ELEV=	5188.96						
	TD=52.88 (5149.60)		TD=95.00(5106.48)		TD=64.72(5124.24)							
DATE	GW DEPTH	SEA LEVEL	GW DEPTH	SEA LEVEL	GW DEPTH	SEA LEVEL						
		5202.48		5201.48		5188.96						
		5202.48		5201.48		5188.96						
		5202.48		5201.48		5188.96						
		5202.48		5201.48		5188.96						
		5202.48		5201.48		5188.96						
		5202.48		5201.48		5188.96						
		5202.48		5201.48		5188.96						
		5202.48		5201.48		5188.96						
		5202.48		5201.48		5188.96						
		5202.48		5201.48		5188.96						
		5202.48		5201.48		5188.96						
		5202.48		5201.48		5188.96						
		5202.48		5201.48		5188.96						
		5202.48		5201.48		5188.96						
		5202.48		5201.48		5188.96						
		5202.48		5201.48		5188.96						
		5202.48		5201.48		5188.96						
		5202.48		5201.48		5188.96						
		5202.48		5201.48		5188.96						
		5202.48		5201.48		5188.96						
10/12/2010	52.34 NS	#VALUE!		5201.48		5188.96						
11/8/2010	DRY	#VALUE!		5201.48		5188.96						
12/9/2010	N/S	#VALUE!		5201.48		5188.96						
12/27/2010	N/S	#VALUE!		5201.48		5188.96						
6/8/2011	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!						
6/13/2011	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!						
6/21/2011	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!						
6/21/2011	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!						
7/1/2011	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!						
7/11/2011	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!						
7/18/2011	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!						

MONIT NG WELL GROUNDWATER LEVELS

	MW10 P#283919		MW11 P#285193		MW12 P#285194		PW13		PW14			
	TOC ELEV=	5202.48	TOC ELEV=	5201.48	TOC ELEV=	5188.96	TOC ELEV=	5192.36	TOC ELEV=	5187.85		
	TD=52.88 (5149.60)		TD=95.00(5106.48)		TD=64.72(5124.24)		TD=45.00(5147.36)		TD=45.00(5142.85			
DATE	GW DEPTH	SEA LEVEL	GW DEPTH	SEA LEVEL	GW DEPTH	SEA LEVEL	GW DEPTH	SEA LEVEL	GW DEPTH	SEA LEVEL		
7/25/2011	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	N/C	#VALUE!	N/C	#VALUE!		
8/1/2011	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	N/C	#VALUE!	N/C	#VALUE!		
8/8/2011	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	N/C	#VALUE!	N/C	#VALUE!		
8/15/2011	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	N/C	#VALUE!	N/C	#VALUE!		
8/22/2011	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	N/C	#VALUE!	N/C	#VALUE!		
8/29/2011	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	N/C	#VALUE!	N/C	#VALUE!		
9/6/2011	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	N/C	#VALUE!	N/C	#VALUE!		
9/12/2011	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	N/C	#VALUE!	N/C	#VALUE!		
9/26/2011	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	N/C	#VALUE!	N/C	#VALUE!		
10/10/2011	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	27.8	5160.05		
10/17/2011	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	27.8	5160.05		
10/24/2011	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	27.8	5160.05		
10/31/2011	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	27.76	5160.09		
11/7/2011	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	27.84	5160.01		
11/21/2011	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	27.84	5160.01		
11/28/2011	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	27.92	5159.93		
12/5/2011	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	27.84	5160.01		
12/12/2011	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	27.56	5160.29		
12/19/2011	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	27.56	5160.29		
1/2/2012	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	27.98	5159.87		
1/9/2012	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	DRY	#VALUE!	27.82	5160.03		
		5202.48		5201.48		5188.96		5192.36		5187.85		
		5202.48		5201.48		5188.96		5192.36		5187.85		
		5202.48		5201.48		5188.96		5192.36		5187.85		
		5202.48		5201.48		5188.96		5192.36		5187.85		
		5202.48		5201.48		5188.96		5192.36		5187.85		
		5202.48		5201.48		5188.96		5192.36		5187.85		
		5202.48		5201.48		5188.96		5192.36		5187.85		
		5202.48		5201.48		5188.96		5192.36		5187.85		
		5202.48		5201.48		5188.96		5192.36		5187.85		

MONIT NG WELL GROUNDWATER LEVELS

	NEGRO CREEK		NORTH TRIBUTARY	
	CHANNEL =	AS LISTED	CHANNEL=18" PIPE	
	FLOW DEPTH (IN.)		FLOW DEPTH (IN.)	
DATE				
	DRY ON		MINOR	
	5/23/2011		FLOW ON	
	& 5/31/11		5/31/2011	
6/8/2011	20 WIDE/4		5	
6/13/2011	20 WIDE/3		3.5	
6/21/2011	20 WIDE/4.5		2.5	
6/21/2011	18 WIDE/3		2	
7/1/2011	18 WIDE/3		1.5	
7/11/2011	22 WIDE/4.0		2.5	
7/18/2011	16 WIDE/3.0		1.5	

MONI NG WELL GROUNDWATER LEVELS

	NEGRO CREEK		NORTH TRIBUTARY	
	CHANNEL = AS LISTED		CHANNEL=18" PIPE	
	FLOW DEPTH (IN.)		FLOW DEPTH (IN.)	
DATE				
7/25/2011	12 WIDE/2.0		1	
8/1/2011	16 WIDE/3.0		1.5	
8/8/2011	DRY		1	
8/15/2011	16 WIDE/1.5		1	
8/22/2011	DRY		1	
8/29/2011	DRY		1.5	
9/6/2011	DRY		0.5	
9/12/2011	DRY		0.5	
9/26/2011	N/S		N/S	
10/10/2011	12 WIDE/4		1	
10/17/2011	DRY		0.5	
10/24/2011	16 WIDE/1		0.5	
10/31/2011	16 WIDE/2		0.5	
11/7/2011	12 WIDE/2.0		0.75	
11/21/2011	DRY		0.5	
11/28/2011	DRY		0.5	
12/5/2011	DRY		0.5	
12/12/2011	DRY		TRICKLE	
12/19/2011	DRY		TRICKLE	
1/2/2012	DRY		TRICKLE	
1/9/2012	DRY		TRICKLE	

FORM NO. GWS-31 10/94

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Rm 818, Denver, CO 80203

For Office Use only

1. WELL PERMIT NUMBER 253829 MW01

2. OWNER NAME(S) CB Industries
Mailing Address 1129 24 Road
City, St. Zip Grand Jct., CO 81505
Phone (970) 245-0577

3. WELL LOCATION AS DRILLED: SE 1/4 SW 1/4, Sec. 21 Twp. 14 S, Range 95 W
DISTANCES FROM SEC. LINES:
581 ft. from South (north or south) Sec. line, and 2218 ft. from West (east or west) Sec. line, OR
SUBDIVISION: _____ LOT ____ BLOCK ____ FILING(UNIT) ____
STREET ADDRESS AT WELL LOCATION:

4. GROUND SURFACE ELEVATION _____ ft. DRILLING METHOD Air Rotary
DATE COMPLETED 10/22/03 . TOTAL DEPTH 50 ft. DEPTH COMPLETED 50 ft.

5. GEOLOGIC LOG:

Depth	Description of Material (Type, Size, Color, Water Location)
0-30'	Brown clay and shale
30-36'	Brown clay, gravel & sand
36-44'	Gray shale
44-50'	Black shale

REMARKS: Monitor well was dual completion with 2" PVC side by side. I am marking them #1 & #2.

6. HOLE DIAM. (in.)

	From (ft)	To (ft)
11	0	6
6¼	6	50

7. PLAIN CASING

OD (in)	Kind	Wall Size		From(ft)	To(ft)
8 5/8	Steel	.188		+1	6
2	PVC	Sch.40	#1	0	35
2	PVC	Sch.40	#2	0	5

PERF. CASING: Screen Slot Size: .020

2	PVC	Sch.40	#1	35	50
2	PVC	Sch.40	#2	5	33

8. FILTER PACK:
Material Silica Sand
Size 10-20
Interval 4-34, 36-50

9. PACKER PLACEMENT
Type _____
Depth _____

10. GROUTING RECORD:

Material	Amount	Density	Interval	Placement
Neat cement	2 bags	5-1	0-6	Poured

11. DISINFECTION: Type _____ Amt. Used _____

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form No. GWS 39 Supplemental Well Test.
TESTING METHOD _____
Static Level _____ ft. Date/Time measured _____, Production Rate _____ gpm.
Pumping level _____ ft. Date/Time measured _____, Test length (hrs.) _____
Remarks _____

13. I have read the statements made herein and know the contents thereof, and that they are true to my knowledge. [Pursuant to Section 24-4-104 (13)(a) C.R.S., the making of false statements herein constitutes perjury in the second degree and is punishable as a class 1 misdemeanor.]

CONTRACTOR Harriman Drilling, Inc. Phone (970)856-8615 Lic. No. 1395
Mailing Address 22103 2225 Road, Cedaredge, CO 81413

Name/Title (Please type or print)	Signature	Date
Dennis Harriman- President	Dennis Harriman	12/02/03

FORM NO. GWS-31 10/94

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Rm 818, Denver, CO 80203

For Office Use only

1. WELL PERMIT NUMBER 253828 MW02

2. OWNER NAME(S) CB Industries
Mailing Address 1129 24 Road
City, St. Zip Grand Jct., CO 81505
Phone (970) 245-0577

3. WELL LOCATION AS DRILLED: SE 1/4 SW 1/4, Sec. 21 Twp. 14 S, Range 95 W
DISTANCES FROM SEC. LINES:
422 ft. from South (north or south) Sec. line, and 2323 ft. from West (east or west) Sec. line. OR
SUBDIVISION: _____ LOT ____ BLOCK ____ FILING(UNIT) ____
STREET ADDRESS AT WELL LOCATION:

4. GROUND SURFACE ELEVATION _____ ft. DRILLING METHOD Air Rotary
DATE COMPLETED 10/22/03 . TOTAL DEPTH 50 ft. DEPTH COMPLETED 50 ft.

5. GEOLOGIC LOG:

Depth	Description of Material (Type, Size, Color, Water Location)
0-30'	Brown clay and shale
30-36'	Brown clay, gravel & sand
36-44'	Gray shale
44-50'	Black shale

REMARKS: Monitor well was dual completion with 2" PVC side by side. I am marking them #1 & #2.

6. HOLE DIAM. (in.)

	From (ft)	To (ft)
11	0	6
6¼	6	50

7. PLAIN CASING

OD (in)	Kind	Wall Size		From(ft)	To(ft)
8 5/8	Steel	.188		+1	6
2	PVC	Sch.40	#1	0	35
2	PVC	Sch.40	#2	0	5

PERF. CASING: Screen Slot Size: .020

2	PVC	Sch.40	#1	35	50
2	PVC	Sch.40	#2	5	33

8. FILTER PACK:
Material Silica Sand
Size 10-20
Interval 4-34, 36-50

9. PACKER PLACEMENT:
Type _____
Depth _____

10. GROUTING RECORD:

Material	Amount	Density	Interval	Placement
Neat cement	2 bags	5-1	0-6	Poured

11. DISINFECTION: Type _____ Amt. Used _____

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form No. GWS 39 Supplemental Well Test.
TESTING METHOD _____
Static Level _____ ft. Date/Time measured _____, Production Rate _____ gpm.
Pumping level _____ ft. Date/Time measured _____, Test length (hrs.) _____
Remarks _____

13. I have read the statements made herein and know the contents thereof, and that they are true to my knowledge. [Pursuant to Section 24-4-104 (13)(a) C.R.S., the making of false statements herein constitutes perjury in the second degree and is punishable as a class 1 misdemeanor.]

CONTRACTOR Harriman Drilling, Inc. Phone (970)856-8615 Lic. No. 1395
Mailing Address 22103 2225 Road, Cedaredge, CO 81413

Name/Title (Please type or print)	Signature	Date
Dennis Harriman- President	Dennis Harriman	12/02/03

FORM NO. GWS-31 10/94

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Rm 818, Denver, CO 80203

For Office Use only

1. WELL PERMIT NUMBER 253827 MW03

2. OWNER NAME(S) CB Industries
Mailing Address 1129 24 Road
City, St. Zip Grand Jct., CO 81505
Phone (970) 245-0577

3. WELL LOCATION AS DRILLED: SE 1/4 SW 1/4, Sec. 21 Twp. 14 S, Range 95 W
DISTANCES FROM SEC. LINES:
317 ft. from South (north or south) Sec. line, and 1373 ft. from West (east or west) Sec. line, OR
SUBDIVISION: LOT BLOCK FILING(UNIT)
STREET ADDRESS AT WELL LOCATION:

4. GROUND SURFACE ELEVATION ft. DRILLING METHOD Air Rotary
DATE COMPLETED 10/21/03 TOTAL DEPTH 55 ft. DEPTH COMPLETED 55 ft.

5. GEOLOGIC LOG:

Depth	Description of Material (Type, Size, Color, Water Location)
0-40'	Brown clay & shale
40-50'	Gray shale
50-55'	Black shale

6. HOLE DIAM. (in.)

	From (ft)	To (ft)
11	0	6
6¼	6	55

7. PLAIN CASING

OD (in)	Kind	Wall Size		From(ft)	To(ft)
8 5/8	Steel	.188		+1	6
2	PVC	Sch.40	#1	0	40
2	PVC	Sch.40	#2	0	5

PERF. CASING: Screen Slot Size: .020

2	PVC	Sch.40	#1	40	55
2	PVC	Sch.40	#2	5	38

8. FILTER PACK:
Material Silica Sand
Size 10-20
Interval 3-38, 40-55'

9. PACKER PLACEMENT
Type
Depth

10. GROUTING RECORD:

Material	Amount	Density	Interval	Placement
Neat cement	2 bags	5-1	0-6	Poured

REMARKS: Monitor well was dual completion with 2" PVC side by side. I am marking them #1 & #2.

11. DISINFECTION: Type Amt. Used

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form No. GWS 39 Supplemental Well Test.
TESTING METHOD
Static Level ft. Date/Time measured, Production Rate gpm.
Pumping level ft. Date/Time measured, Test length (hrs.)
Remarks

13. I have read the statements made herein and know the contents thereof, and that they are true to my knowledge. (Pursuant to Section 24-4-104 (13)(a) C.R.S., the making of false statements herein constitutes perjury in the second degree and is punishable as a class 1 misdemeanor.)

CONTRACTOR Harriman Drilling, Inc. Phone (970) 856-8615 Lic. No. 1395
Mailing Address 22103 2225 Road, Cedaredge, CO 81413

Name/Title (Please type or print)	Signature	Date
Dennis Harriman- President	Dennis Harriman	12/02/03

FORM NO. GWS-31 10/94

WELL CONSTRUCTION AND TEST REPORT
STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Rm 818, Denver, CO 80203

For Office Use only

1. WELL PERMIT NUMBER 245415 Monitor Hole 04

2. OWNER NAME(S) CB Industries
Mailing Address 1139 24 Road
City, St. Zip Grand Junction, CO 81505
Phone (970) 245-0577

3. WELL LOCATION AS DRILLED: SE 1/4 SW 1/4, Sec. 21 Twp. 14 S, Range 95 W
DISTANCES FROM SEC. LINES:
264 ft. from South (north or south) Sec. line, and 2165 ft. from West (east or west) Sec. line. OR
SUBDIVISION: LOT BLOCK FILING(UNIT)
STREET ADDRESS AT WELL LOCATION:

4. GROUND SURFACE ELEVATION 5232 ft. DRILLING METHOD Air Rotary
DATE COMPLETED 11/19/02, TOTAL DEPTH 50 ft. DEPTH COMPLETED 27 ft.

5. GEOLOGIC LOG:

Depth	Description of Material (Type, Size, Color, Water Location)
0 - 10	Brown Shale & Clay
10 - 27	Black Shale
27 - 50	Black & Gray Shale
27 - 50	Backfilled with Black and Gray Shale

6. HOLE DIAM. (in.)

From (ft)	To (ft)
0	5
5	50

7. PLAIN CASING

OD (in)	Kind	Wall Size	From(ft)	To(ft)
8 5/8	Steel	.188	+1	5
5	PVC	.250	+1	7

PERF. CASING; Screen Slot Size: .030

5	PVC (with bottom cap)	.250	7	27

8. FILTER PACK:
Material Silica Sand
Size 8-12
Interval 7-27

9. PACKER PLACEMENT:
Type
Depth

10. GROUTING RECORD:

Material	Amount	Density	Interval	Placement
Neat cement & Bento-nite Seal	2 Bags 12 Gall	6-1	0-5 5-7	Tremie Poured

REMARKS: Did not hit water.

11. DISINFECTION: Type Liquid Bleach Amt. Used

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form No. GWS 39 Supplemental Well Test
TESTING METHOD Not Applicable
Static Level ft. Date/Time measured, Production Rate gpm
Pumping level ft. Date/Time measured, Test length (hrs.)
Remarks Not Applicable. Did not hit water. Monitor Hole.

13. I have read the statements made herein and know the contents thereof, and that they are true to my knowledge. (Pursuant to Section 24-4-104 (13)(a) C.R.S., the making of false statements herein constitutes perjury in the second degree and is punishable as a class 1 misdemeanor.)

CONTRACTOR Bill Kissner Drilling, Inc. Phone (970) 856-8888 Lic. No. 817
Mailing Address P.O. Box 1052, Cedaredge, CO 81413

Name/Title (Please type or print)	Signature	Date
Bill Kissner, President	Bill Kissner	1/07/03

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1. **WELL PERMIT NUMBER:** 283914

2. **WELL OWNER INFORMATION**
NAME OF WELL OWNER: CB INDUSTRIES - DELTA INC.
MAILING ADDRESS: 1129 -24- ROAD
CITY: GRAND JUNCTION STATE: CO ZIP CODE: 81505
TELEPHONE NUMBER: (970) 245-0577

3. WELL LOCATION AS DRILLED: SE1/4, SW1/4, Sec. 21, Twp. 14 ☐ N or ☒ S, Range 95 ☐ E or ☒ W
DISTANCES FROM SEC. LINES: 982 ft. from ☐ N or ☒ S section line and 1958 ft. from ☐ E or ☒ W section line.
SUBDIVISION: _____, LOT _____, BLOCK _____, FILING (UNIT) _____
Optional GPS Location: GPS Unit must use the following settings: Format must be **UTM**, Units must be **meters**, Datum must be **NAD83**, Unit must be set to **true N**, ☐ Zone 12 or ☒ Zone 13
Owner's Well Designation: MW05
Easting: 237754.485
STREET ADDRESS AT WELL LOCATION:
Northing: 4300732.51

4. GROUND SURFACE ELEVATION 5198 feet DRILLING METHOD Solid Flight Auger/HQ Coring
DATE COMPLETED 09/25/10 TOTAL DEPTH 55 feet DEPTH COMPLETED 55 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-28 ft	Silty Clay	Clay	brown	
28-33 ft	Gravel/Cobble	Gravel	brown	29 ft
33-55 ft	Shale	Clay	gray-brown	

6. HOLE DIAM (in.)

	From (ft)	To (ft)
4	0	55

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
4	Steel	0.125	+3.5	1.5
2	PVC	sch 40	+3.0	12.0

PERFORATED CASING: Screen Slot Size (in): 0.010

2	PVC	sch 40	12.0	52.0

8. FILTER PACK:
Material Sand
Size 10-20
Interval 10-55

9. PACKER PLACEMENT:
Type
Depth

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent.	5 bags	10 gal	1-10	poured
Cement	2 bags	10 gal	0-1	poured

Remarks: Monitoring Well

11. DISINFECTION: Type Amt. Used

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.
TESTING METHOD
Static Level _____ ft. Date/Time measured: _____, Production Rate _____ gpm.
Pumping Level _____ ft. Date/Time measured _____, Test Length (hrs) _____.
Remarks:

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of tion 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

ompany Name:	Phone:	License Number:
Huddleston-Berry Engineering & Testing, LLC	(970)255-8005	PE39010

Mailing Address: 640 White Avenue, Grand Junction, CO 81501

Signature:	Print Name and Title	Date
Michael A. Berry	Michael A. Berry, P.E. Vice President	11/15/2010

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1. **WELL PERMIT NUMBER:** 283915

2. **WELL OWNER INFORMATION**
NAME OF WELL OWNER: CB INDUSTRIES - DELTA INC.
MAILING ADDRESS: 1129 -24-ROAD
CITY: GRAND JUNCTION STATE: CO ZIP CODE: 81505
TELEPHONE NUMBER: (970) 245-0577

3. WELL LOCATION AS DRILLED: NE1/4, MW1/4, Sec. 28, Twp. 14 ☐ N or ☒ S, Range 95 ☐ E or ☒ W
DISTANCES FROM SEC. LINES: 279 ft. from ☒ N or ☐ S section line and 1743 ft. from ☐ E or ☒ W section line.
SUBDIVISION: _____, LOT _____, BLOCK _____, FILING (UNIT) _____
Optional GPS Location: GPS Unit must use the following settings: Format must be **UTM**, Units must be **meters**, Datum must be **NAD83**, Unit must be set to **true N**, ☐ Zone 12 or ☒ Zone 13
Owner's Well Designation: MW06
Easting: 237678.798
STREET ADDRESS AT WELL LOCATION:
Northing: 4300350.63

4. GROUND SURFACE ELEVATION 5187 feet DRILLING METHOD Solid Flight Auger/HQ Coring
DATE COMPLETED 09/25/10 TOTAL DEPTH 51 feet DEPTH COMPLETED 51 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-27 ft	Silty Clay	Clay	brown	25 ft
27-51 ft	Shale	Clay	gray-brown	

6. HOLE DIAM (in.)

	From (ft)	To (ft)
4	0	51

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
4	Steel	0.125	+3.75	1.25
2	PVC	sch 40	+3.58	10

PERFORATED CASING: Screen Slot Size (in): 0.010

2	PVC	sch 40	10.0	50.0

8. FILTER PACK:
Material Sand
Size 10-20
Interval 8-51

9. PACKER PLACEMENT:
Type
Depth

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent.	5 bags	10 gal	1-8	poured
Cement	2 bags	10 gal	0-1	poured

Remarks: Monitoring Well

11. DISINFECTION: Type Amt. Used

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.
TESTING METHOD
Static Level _____ ft. Date/Time measured: _____, Production Rate _____ gpm.
Pumping Level _____ ft. Date/Time measured _____, Test Length (hrs) _____.
Remarks:

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of section 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name:	Phone:	License Number:
Huddleston-Berry Engineering & Testing, LLC	(970)255-8005	PE39010

Mailing Address: 640 White Avenue, Grand Junction, CO 81501

Signature:	Print Name and Title	Date
Michael A. Berry	Michael A. Berry, P.E. Vice President	11/15/2010

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1. WELL PERMIT NUMBER: 283916

2. WELL OWNER INFORMATION
NAME OF WELL OWNER: CB INDUSTRIES - DELTA INC.
MAILING ADDRESS: 1129 -24- ROAD
CITY: GRAND JUNCTION STATE: CO ZIP CODE: 81505
TELEPHONE NUMBER: (970) 245-0577

3. WELL LOCATION AS DRILLED: NE1/4, MW1/4, Sec. 28, Twp. 14 ☐ N or ☒ S, Range 95 ☐ E or ☒ W
DISTANCES FROM SEC. LINES: 455 ft. from ☒ N or ☐ S section line and 2559 ft. from ☐ E or ☒ W section line.
SUBDIVISION: _____, LOT _____, BLOCK _____, FILING (UNIT) _____
Optional GPS Location: GPS Unit must use the following settings: Format must be **UTM**, Units must be **meters**, Datum must be **NAD83**, Unit must be set to true N, ☐ Zone 12 or ☒ Zone 13
Owner's Well Designation: MW07
Easting: 237925.048
STREET ADDRESS AT WELL LOCATION:
Northing: 4300288.29

4. GROUND SURFACE ELEVATION 5175 feet DRILLING METHOD Solid Flight Auger/HQ Coring
DATE COMPLETED 09/25/10 TOTAL DEPTH 50.5 feet DEPTH COMPLETED 50.5 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-28 ft	Silty Clay	Clay	brown	25 ft
28-50.5 ft	Shale	Clay	gray-brown	

6. HOLE DIAM (in.)

	From (ft)	To (ft)
4	0	50.5

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
4	Steel	0.125	+3.5	1.5
2	PVC	sch 40	+3.4	9.5

PERFORATED CASING: Screen Slot Size (in): 0.010

2	PVC	sch 40	9.5	49.5

8. FILTER PACK:
Material Sand
Size 10-20
Interval 7.5-50.5

9. PACKER PLACEMENT:
Type
Depth

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent.	4 bags	10 gal	1-7.5	poured
Cement	2 bags	10 gal	0-1	poured

Remarks: Monitoring Well

11. DISINFECTION: Type Amt. Used

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.
TESTING METHOD
Static Level _____ ft. Date/Time measured: _____ Production Rate _____ gpm.
Pumping Level _____ ft. Date/Time measured _____ Test Length (hrs) _____.
Remarks:

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2 [The filing of a document that contains false statements is a violation of section 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name:	Phone:	License Number:
Huddleston-Berry Engineering & Testing, LLC	(970)255-8005	PE39010

Mailing Address: 640 White Avenue, Grand Junction, CO 81501

Signature:	Print Name and Title	Date
Michael A. Berry	Michael A. Berry, P.E. Vice President	11/15/2010

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1. **WELL PERMIT NUMBER:** 283917

2. **WELL OWNER INFORMATION**
NAME OF WELL OWNER: CB INDUSTRIES - DELTA INC.
MAILING ADDRESS: 1129 -24- ROAD
CITY: GRAND JUNCTION STATE: CO ZIP CODE: 81505
TELEPHONE NUMBER: (970) 245-0577

3. WELL LOCATION AS DRILLED: NE1/4, MW1/4, Sec. 28, Twp. 14 ☐ N or ☒ S, Range 95 ☐ E or ☒ W
DISTANCES FROM SEC. LINES: 690 ft. from ☒ N or ☐ S section line and 1363 ft. from ☐ E or ☒ W section line.
SUBDIVISION: _____, LOT _____, BLOCK _____, FILING (UNIT) _____
Optional GPS Location: GPS Unit must use the following settings: Format must be **UTM**, Units must be **meters**, Datum must be **NAD83**, Unit must be set to **true N**, ☐ Zone 12 or ☒ Zone 13
Owner's Well Designation: MW08
Easting: 237557.343
STREET ADDRESS AT WELL LOCATION:
Northing: 4300229.42

4. GROUND SURFACE ELEVATION 5197 feet DRILLING METHOD Solid Flight Augers/HQ Coring
DATE COMPLETED 09/26/10 TOTAL DEPTH 51.0 feet DEPTH COMPLETED 51.0 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-6 ft	Silty Clay	Clay	brown	
6-51 ft	Shale	Clay	gray-brown	dry

6. HOLE DIAM (in.)

	From (ft)	To (ft)
4	0.0	51.0

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
4	Steel	0.125	+3.5	1.5
2	PVC	sch 40	+3.4	9.0

PERFORATED CASING: Screen Slot Size (in): 0.010

2	PVC	sch 40	9.0	49.0

8. FILTER PACK:
Material Sand
Size 10-20
Interval 8-51

9. PACKER PLACEMENT:
Type
Depth

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent.	5 bags	10 gal	1-8	poured
Cement	2 bags	10 gal	0-1	poured

Remarks: Monitoring Well

11. DISINFECTION: Type Amt. Used

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.
TESTING METHOD
Static Level _____ ft. Date/Time measured: _____, Production Rate _____ gpm.
Pumping Level _____ ft. Date/Time measured _____, Test Length (hrs) _____.
Remarks:

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of section 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name:	Phone:	License Number:
Huddleston-Berry Engineering & Testing, LLC	(970)255-8005	PE39010

Mailing Address: 640 White Avenue, Grand Junction, CO 81501

Signature:	Print Name and Title	Date
Michael A. Berry	Michael A. Berry, P.E. Vice President	11/15/2010

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818. Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1. **WELL PERMIT NUMBER:** 283918

2. **WELL OWNER INFORMATION**
NAME OF WELL OWNER: CB INDUSTRIES - DELTA INC.
MAILING ADDRESS: 1129 -24- ROAD
CITY: GRAND JUNCTION STATE: CO ZIP CODE: 81505
TELEPHONE NUMBER: (970) 245-0577

3. WELL LOCATION AS DRILLED: NE1/4, MW1/4, Sec. 28, Twp. 14 ☐ N or ☒ S, Range 95 ☐ E or ☒ W
DISTANCES FROM SEC. LINES: 947 ft. from ☒ N or ☐ S section line and 2558 ft. from ☐ E or ☒ W section line.
SUBDIVISION: _____, LOT _____, BLOCK _____, FILING (UNIT) _____
Optional GPS Location: GPS Unit must use the following settings: Format must be **UTM**, Units must be **meters**, Datum must be **NAD83**, Unit must be set to **true N**. ☐ Zone 12 or ☒ Zone 13
Owner's Well Designation: MW09
Easting: 237917.482
STREET ADDRESS AT WELL LOCATION:
Northing: 4300138.41

4. GROUND SURFACE ELEVATION 5179 feet DRILLING METHOD Solid Flight Auger/HQ Coring
DATE COMPLETED 09/26/10 TOTAL DEPTH 51.0 feet DEPTH COMPLETED 51.0 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-5 ft	Silty Clay	Clay	brown	
5-51 ft	Shale	Clay	gray-brown	30 ft

6. HOLE DIAM (in.)

	From (ft)	To (ft)
4	0.0	51.0

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
4	Steel	0.125	+4.1	0.9
2	PVC	sch 40	+4.0	10.0

PERFORATED CASING: Screen Slot Size (in): 0.010

2	PVC	sch 40	10.0	50.0

8. FILTER PACK:
Material Sand
Size 10-20
Interval 8-51

9. PACKER PLACEMENT:
Type _____
Depth _____

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent.	4 bags	10 gal	1-8	poured
Cement	2 bags	10 gal	0-1	poured

Remarks: Monitoring Well

11. DISINFECTION: Type _____ Amt. Used _____

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.
TESTING METHOD _____
Static Level _____ ft. Date/Time measured: _____, Production Rate _____ gpm.
Pumping Level _____ ft. Date/Time measured _____, Test Length (hrs) _____.
Remarks:

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of section 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name:	Phone:	License Number:
Huddleston-Berry Engineering & Testing, LLC	(970)255-8005	PE39010

Mailing Address: 640 White Avenue, Grand Junction, CO 81501

Signature:	Print Name and Title	Date
Michael A. Berry	Michael A. Berry, P.E. Vice President	11/15/2010

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

WELL PERMIT NUMBER: 283919

2. WELL OWNER INFORMATION

NAME OF WELL OWNER: CB INDUSTRIES - DELTA INC.

MAILING ADDRESS: 1129 -24- ROAD

CITY: GRAND JUNCTION STATE: CO ZIP CODE: 81505

TELEPHONE NUMBER: (970) 245-0577

3. WELL LOCATION AS DRILLED: NE1/4, MW1/4, Sec. 28, Twp. 14 ☐ N or ☒ S, Range 95 ☐ E or ☒ W

DISTANCES FROM SEC. LINES: 1285 ft. from ☒ N or ☐ S section line and 1924 ft. from ☐ E or ☒ W section line.

SUBDIVISION: _____, LOT ____, BLOCK ____, FILING (UNIT) ____

Optional GPS Location: GPS Unit must use the following settings: Format must be **UTM**, Units must be **meters**, Datum must be **NAD83**, Unit must be set to **true N**. ☐ Zone 12 or ☒ Zone 13

Owner's Well Designation: MW10

Easting: 237719.598

STREET ADDRESS AT WELL LOCATION:

Northing: 4300042.30

4. GROUND SURFACE ELEVATION 5202 feet DRILLING METHOD Solid Flight Auger/HQ Coring

DATE COMPLETED 09/26/10 TOTAL DEPTH 51.5 feet DEPTH COMPLETED 51.5 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-9 ft	Silty Clay	Clay	brown	
9-51.5 ft	Shale	Clay	gray-brown	dry

6. HOLE DIAM (in.)

	From (ft)	To (ft)
4	0.0	51.5

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
4	Steel	0.125	+3.5	1.5
2	PVC	sch 40	+3.3	10.0

PERFORATED CASING: Screen Slot Size (in): 0.010

2	PVC	sch 40	10.0	50.0

8. FILTER PACK:

Material Sand
Size 10-20
Interval 8-51.5

9. PACKER PLACEMENT:

Type
Depth

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent.	4 bags	10 gal	1-8	poured
Cement	2 bags	10 gal	0-1	poured

Remarks: Monitoring Well

11. DISINFECTION: Type Amt. Used

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.

TESTING METHOD

Static Level ____ ft. Date/Time measured: _____, Production Rate ____ gpm.

Pumping Level ____ ft. Date/Time measured _____, Test Length (hrs) ____.

Remarks:

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of section 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name:	Phone:	License Number:
Huddleston-Berry Engineering & Testing, LLC	(970)255-8005	PE39010

Mailing Address: 640 White Avenue, Grand Junction, CO 81501

Signature:	Print Name and Title	Date
Michael A. Berry	Michael A. Berry, P.E. Vice President	11/15/2010

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1. WELL PERMIT NUMBER: 285193

2. WELL OWNER INFORMATION

NAME OF WELL OWNER: CB INDUSTRIES - DELTA INC.

MAILING ADDRESS: 1129 -24- ROAD

CITY: GRAND JUNCTION STATE: CO ZIP CODE: 81505

TELEPHONE NUMBER: (970) 245-0577

3. WELL LOCATION AS DRILLED: NE1/4, MW1/4, Sec. 28, Twp. 14 ☐ N or ☒ S, Range 95 ☐ E or ☒ W

DISTANCES FROM SEC. LINES: 1309 ft. from ☒ N or ☐ S section line and 1733 ft. from ☐ E or ☒ W section line.

SUBDIVISION: _____, LOT _____, BLOCK _____, FILING (UNIT) _____

Optional GPS Location: GPS Unit must use the following settings: Format must be **UTM**, Units must be **meters**, Datum must be **NAD83**, Unit must be set to **true N**, ☐ Zone 12 or ☒ Zone 13

Owner's Well Designation: MW11

Easting: 237659.33

STREET ADDRESS AT WELL LOCATION:

Northing: 4300037.27

4. GROUND SURFACE ELEVATION 5200.66 feet DRILLING METHOD Rotary, Air circ.

DATE COMPLETED 03/15/11 TOTAL DEPTH 94' feet DEPTH COMPLETED 94' feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-2	Lean Clay	Clay	Brown	
2-19	V Wx Shale Km	Clay	Brown-Gray	
19-32	Wx Shale Km	Clay	Gray-Black	
32-94	Shale Km	Clay	Black blue	
				None

6. HOLE DIAM (in.)

	From (ft)	To (ft)
6"	0	94

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
6-5/8	Steel	0.125	+2.0	2.0
2	PVC	sch 40	+1	64

PERFORATED CASING: Screen Slot Size (in): _____

2	PVC	sch 40	64	94

8. FILTER PACK:

Material	Sand
Size	10-40
Interval	62-94

9. PACKER PLACEMENT:

Type _____

Depth _____

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent	1 buck	5 gal	57-62	poured
cutting			2-57	poured
Cement	2 bags	10 gal	0-2	

Remarks: Piezometer

Drilled by Wildcat Drilling & Pump , Inc.

Logged by Edward M. Morris, P.E.

11. DISINFECTION: Type Amt. Used

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.

TESTING METHOD _____

Static Level _____ ft. Date/Time measured: _____, Production Rate _____ gpm.

Pumping Level _____ ft. Date/Time measured _____, Test Length (hrs) _____.

Remarks:

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of section 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name:	Phone:	License Number:
Grand Junction Lincoln-DeVore, Inc.	(970)242-8968	PE 30590

Mailing Address: 1441 Motor Street, Grand Junction, CO 81505

Signature:	Print Name and Title	Date
	Edward M. Morris, P.E., President	4/13/2011

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1. WELL PERMIT NUMBER: 285194

2 WELL OWNER INFORMATION

NAME OF WELL OWNER: CB INDUSTRIES - DELTA INC.

MAILING ADDRESS: 1129 -24- ROAD

CITY: GRAND JUNCTION STATE: CO ZIP CODE: 81505

TELEPHONE NUMBER: (970) 245-0577

3. WELL LOCATION AS DRILLED: NE1/4, MW1/4, Sec. 28, Twp. 14 ☐ N or ☒ S, Range 95 ☐ E or ☒ W

DISTANCES FROM SEC. LINES: 1314 ft. from ☒ N or ☐ S section line and 2276 ft. from ☐ E or ☒ W section line.

SUBDIVISION: _____, LOT _____, BLOCK _____, FILING (UNIT) _____

Optional GPS Location: GPS Unit must use the following settings: Format must be **UTM**, Units must be **meters**, Datum must be **NAD83**, Unit must be set to **true N**, ☐ Zone 12 or ☒ Zone 13

Owner's Well Designation: MW12

Easting: 237824.80

STREET ADDRESS AT WELL LOCATION:

Northing: 4300029.85

4. GROUND SURFACE ELEVATION 5188.06 feet DRILLING METHOD Rotary, Air Circ.

DATE COMPLETED 03/15/11 TOTAL DEPTH 64' feet DEPTH COMPLETED 64' feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-2-1/2 ft	Lean Clay	Clay	Brown	
2-1/2-20 f	V Wx Shale Km	Clay	Brown-Gray	
20-42	Wx Shale Km	Clay	Gray-Black	
42-64	Shale Km	Clay	Black blue	
				None

6. HOLE DIAM (in.)

	From (ft)	To (ft)
6"	0	64

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
6-5/8	Steel	0.125	+2.0	2.0
2	PVC	sch 40	+1.4	34

PERFORATED CASING: Screen Slot Size (in): 0.010

2	PVC	sch 40	34	64

8. FILTER PACK:

Material Sand
Size 10-40
Interval 32-64

9. PACKER PLACEMENT:

Type
Depth

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent.	1 buck	5 gal	26-32	poured
cutting			2-26	poured
Cement	2 bags	10 gal	0-2	poured

Remarks: Piezometer
Drilled by Wildcat Drilling & Pump , Inc.
Logged by Edward M. Morris, P.E.

11. DISINFECTION: Type Amt. Used

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.

TESTING METHOD

Static Level _____ ft. Date/Time measured: _____, Production Rate _____ gpm.

Pumping Level _____ ft. Date/Time measured _____, Test Length (hrs) _____.

Remarks:

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of section 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name:	Phone:	License Number:
Grand Junction Lincoln-DeVore, Inc.	(970)242-8968	PE 30590

Mailing Address: 1441 Motor Street, Grand Junction, CO 81505

Signature:	Print Name and Title	Date
	Edward M. Morris, P.E., President	4/13/2011

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1. **WELL PERMIT NUMBER:** 286663

WELL OWNER INFORMATION

NAME OF WELL OWNER: CB INDUSTRIES - DELTA INC.

MAILING ADDRESS: 1129 -24- ROAD

CITY: GRAND JUNCTION STATE: CO ZIP CODE: 81505

TELEPHONE NUMBER: (970) 245-0577

3. WELL LOCATION AS DRILLED: SE1/4, SW1/4, Sec. 21, Twp. 14 ☐ N or ☒ S, Range 95 ☐ E or ☒ W

DISTANCES FROM SEC. LINES: 339 ft. from ☐ N or ☒ S section line and 3517 ft. from ☒ E or ☐ W section line.

SUBDIVISION: _____, LOT _____, BLOCK _____, FILING (UNIT) _____

Optional GPS Location: GPS Unit must use the following settings: Format must be **UTM**, Units must be **meters**, Datum must be **NAD83**, Unit must be set to **true N**, ☐ Zone 12 or ☒ Zone 13

Owner's Well Designation: PW13

Easting: 237689.377

STREET ADDRESS AT WELL LOCATION:

Northing: 4300538.79

4. GROUND SURFACE ELEVATION 5191.30 feet DRILLING METHOD Rotary, Air circ.

DATE COMPLETED 09/26/11 TOTAL DEPTH 45 feet DEPTH COMPLETED 45 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-16	Lean Clay	Clay	Brown	
16-38	V Wx Shale Km	Clay	Brown-Gray	
38-45	Wx Shale, Km	Clay	Gray-Black	
				None

6. HOLE DIAM (in.)

	From (ft)	To (ft)
6"	0	45

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
6-5/8"	Steel	0.125	+2.0	2.0
2"	PVC	sch 40	0.4'	34.6'

PERFORATED CASING: Screen Slot Size (in): 0.020

2	PVC	sch 40	34.6'	44.6'

8. FILTER PACK:

Material Sand
Size 10-40
Interval 33-45

9. PACKER PLACEMENT:

Type _____
Depth _____

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent	1 buck	4 gal	31.5-33	poured
cutting			2-31.5	poured
Cement	2 bags	10 gal	0-2	

Remarks: Observation Hole, Similar to Piezometer
Drilled by Wildcat Drilling & Pump, Inc
Logged by Edward M. Morris, P.E.

11. DISINFECTION: Type _____ Amt. Used _____

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.

TESTING METHOD _____

Static Level _____ ft. Date/Time measured: _____, Production Rate _____ gpm.

Pumping Level _____ ft. Date/Time measured _____, Test Length (hrs) _____.

Remarks:

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of section 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name:	Phone:	License Number:
Grand Junction Lincoln-DeVore, Inc.	(970)242-8968	PE 30590

Mailing Address: 1441 Motor Street, Grand Junction, CO, 81505

Signature:	Print Name and Title	Date
	Edward M. Morris, P.E., President	1/13/2012

FORM NO. GWS-31 04/2005

WELL CONSTRUCTION AND TEST REPORT

STATE OF COLORADO, OFFICE OF THE STATE ENGINEER
1313 Sherman St., Room 818, Denver, CO 80203
Phone – Info (303) 866-3587 Main (303) 866-3581
Fax (303) 866-3589 http://www.water.state.co.us

For Office Use Only

1. WELL PERMIT NUMBER: 286664

2. WELL OWNER INFORMATION

NAME OF WELL OWNER: CB INDUSTRIES - DELTA INC.

MAILING ADDRESS: 1129 -24- ROAD

CITY: GRAND JUNCTION STATE: CO ZIP CODE: 81505

TELEPHONE NUMBER: (970) 245-0577

3. WELL LOCATION AS DRILLED: SE1/4, SW1/4, Sec. 21, Twp. 14 ☐ N or ☒ S, Range 95 ☐ E or ☒ W

DISTANCES FROM SEC. LINES: 294 ft. from ☐ N or ☒ S section line and 3155 ft. from ☒ E or ☐ W section line.

SUBDIVISION: _____, LOT _____, BLOCK _____, FILING (UNIT) _____

Optional GPS Location: GPS Unit must use the following settings: Format must be **UTM**, Units must be **meters**, Datum must be **NAD83**, Unit must be set to **true N**, ☐ Zone 12 or ☒ Zone 13

Owner's Well Designation: PW14

Easting: 237798.963

STREET ADDRESS AT WELL LOCATION:

Northing: 4300521.22

4. GROUND SURFACE ELEVATION 5187.49 feet DRILLING METHOD Rotary, Air circ.

DATE COMPLETED 09/26/11 TOTAL DEPTH 45 feet DEPTH COMPLETED 45 feet

5. GEOLOGIC LOG:

Depth	Type	Grain Size	Color	Water Loc.
0-22	Lean Clay	Clay	Brown	
22-30	V Wx Shale Km	Clay	Brown-Gray	25-33 wet
30-41	Wx Shale, Km	Clay	Gray-Black	
41-45	Shale Km	Clay	Black blue	
				None

6. HOLE DIAM (in.)

	From (ft)	To (ft)
6"	0	45

7. PLAIN CASING:

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
6-5/8"	Steel	0.125	+2.0	2.0
2"	PVC	sch 40	0.'	20'

PERFORATED CASING: Screen Slot Size (in): 0.020

2	PVC	sch 40	20.'	45'

8. FILTER PACK:

Material Sand
Size 10-40
Interval 18-45

9. PACKER PLACEMENT:

Type _____
Depth _____

10. GROUTING RECORD

Material	Amount	Density	Interval	Placement
Bent	1 buck	4 gal	16-18	poured
cutting			2-16	poured
Cement	2 bags	10 gal	0-2	

Remarks: Observation Hole, Similar to Piezometer
Drilled by Wildcat Drilling & Pump, Inc
Logged by Edward M. Morris, P.E.

11. DISINFECTION: Type Amt. Used

12. WELL TEST DATA: ☐ Check box if Test Data is submitted on Form Number GWS 39 Supplemental Well Test.

TESTING METHOD _____

Static Level _____ ft. Date/Time measured: _____, Production Rate _____ gpm.

Pumping Level _____ ft. Date/Time measured _____, Test Length (hrs) _____.

Remarks:

13. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402-2. [The filing of a document that contains false statements is a violation of section 37-91-108(1)(e), C.R.S., and is punishable by fines up to $5000 and/or revocation of the contracting license.]

Company Name:	Phone:	License Number:
Grand Junction Lincoln-DeVore, Inc.	(970)242-8968	PE 30590

Mailing Address: 1441 Motor Street, Grand Junction, CO, 81505

Signature:	Print Name and Title	Date
	Edward M. Morris, P.E., President	1/13/2012

APPENDIX I-1
(RESERVED)

APPENDIX I-2
GROUNDWATER SAMPLING PROTOCOL

GROUNDWATER SAMPLING PROTOCOL

for

CHT RESOURCES COMPOST FACILITY
11289 Doughspoon Road
Austin, CO 81410
(970) 319-9786

May 2021

1.1 INTRODUCTION

This document outlines a groundwater sampling protocol for CHT Resources Compost Facility. Operations at the facility include the treatment of septage, biosolids from municipal wastewater treatment plants, animal mortalities, grease trap waste, sand trap waste, and hydrocarbon contaminated soil, water and sludge. The facility consists of approximately 100 acres of land located at 11289 Doughspoon Road, Austin, CO 81410 in Delta County. Access to the site is by private drive from Doughspoon Road.

The plan specifies sampling and analytical procedures and documentation protocol. In addition, it establishes quality control and quality assurance guidelines to ensure that all samples are representative of their original environment and that methods of collection and analyses result in scientifically valid, legally defensible data of known accuracy and precision.

This plan will be used as a working document to guide the actual fieldwork and will be updated whenever changes in monitoring strategy occur.

1.2 OBJECTIVES

The objectives of ground water monitoring will be to detect changes in water quality resulting from CHT Resources Compost Facility operations.

1.3 FIELD INVESTIGATION PROCEDURES

All field tasks will be performed according to procedures listed in Appendix A. Specific portions of these procedures are discussed in more detail and in relation to this facility in the following text.

1.3.1 WATER SAMPLING

Twelve groundwater monitoring wells and two piezometers were installed at the treatment facility. Of the fourteen borings associated with the monitoring wells and piezometers, five borings are dry and do not contain groundwater (MW04, MW10, MW11, MW12, and PW13).

As discussed in the Engineering Design and Operations Plan for the facility, groundwater flow in the area is predominantly vertical. Since there is little to no horizontal gradient it is not possible to define upgradient or downgradient wells as required for interwell testing. Therefore, intrawell testing is required. Due to the vertical hydraulic gradient at the site, the monitoring wells closest to the site operations are most representative of potential impact and will be used as compliance points. Therefore, the compliance wells are MW02 and MW 03 to monitor the central portion of the site, MW05 to monitor the northern portion of the site, and MW09 to monitor the southern portion of the site.

A detection groundwater monitoring program was implemented at the facility upon startup in 2004. The three initial monitoring wells (MW01, MW02, and MW03) were sampled on a quarterly basis for two years after the commencement of facility operations. Groundwater levels were recorded for each well immediately prior to purging for groundwater sampling. Samples were analyzed for metals (EPA Publication SW-846), ammonia (SM-4500-NH_3), nitrates (SM-4500-NO_3), phosphorous (SM-4500-P), total petroleum hydrocarbons (EPA Method 8015m), VOCs (M8260B GC/MS), specific conductivity (SW-9050A), and pH (SM-9045A). Sample results from monitoring wells MW01 and MW02 were compared with sample results from monitoring well MW03 on an individual basis to determine if facility operations were affecting groundwater quality below the facility.

Upon approval by CDPHE, the monitoring well sampling frequency was reduced from quarterly to semiannually after the first two years of operation. Additionally, the sample suite was reduced to:

Alkalinity (as CaCO3) - method A4500-CO2D
Fecal Coliform – method A9222D
Diesel Range Organics – method SW8015M
Gasoline Range Organics – method SW8015
Anions by Ion Chromatography (Cl, SO4, NO3, NO2, NO3/NO2) – method SW9056
Metals by ICP-MS (Ca, Mg, Na, K, Pb, Cr, Se) – method SW6020A
Ammonia as Nitrogen – method A4500-NH3G
Phosphorus, total – method E365.1 R2.0
Organic Carbon, total – method E415.3
Volatile Organic Compounds (BTEX) – method SW8260

Eight additional monitoring wells (MW05 – MW12) and two piezometeres (PW13 and PW14) were installed at the facility in 2010/2011. Initial background groundwater quality sampling was initiated in November, 2010 on a quarterly basis. Samples from new wells which produced groundwater (MW05, MW06, MW07, MW08, MW09) are being analyzed for:

Alkalinity (as CaCO3) - method A4500-CO2D
Fecal Coliform – method A9222D
Diesel Range Organics – method SW8015M
Gasoline Range Organics – method SW8015
Anions by Ion Chromatography (Cl, SO4, NO3, NO2, NO3/NO2) – method SW9056
Metals by ICP-MS (Appendix 1A and 1B) – method SW6020A
Ammonia as Nitrogen – method A4500-NH3G
Phosphorus, total – method E365.1 R2.0
Organic Carbon, total – method E415.3
Volatile Organic Compounds (CDPHE Appendix reference 1A and 1B) – method SW8260

TPH (GRO, DRO, O&G) is a compilation constituent and varies considerably due to a number of factors unrelated to site operations and, as such, may not be representative of actual site conditions. Additionally, no groundwater quality standards are available for TPH. As a result of these considerations, TPH will be dropped from all future groundwater constituents sample suites.

Upon completion of existing groundwater quality sampling as outlined in the Groundwater Statistical Analysis Plan of the EDOP, a detection groundwater monitoring program utilizing MW02, MW03, MW05, and MW09 will be initiated at the facility. All other wells and piezometers not utilized in the detection monitoring program will be abandoned in accordance with applicable rules and regulations pursuant to the "Water Well and Pump Installation Contractor's Act" (Title 37, Article 91, Part 1, CRS, as amended).

The analytical sample suite for the detection monitoring program will include:

Alkalinity (as CaCO3) - method A4500-CO2D
Fecal Coliform – method A9222D
Anions by Ion Chromatography (Cl, SO4, NO3, NO2, NO3/NO2) – method SW9056
Metals by ICP-MS (Appendix 1A and 1B) – method SW6020A
Ammonia as Nitrogen – method A4500-NH3G
Phosphorus, total – method E365.1 R2.0
Organic Carbon, total – method E415.3
Volatile Organic Compounds (CDPHE Appendix 1A and 1B) – method SW8260.

The compliance wells (MW02, MW03, MW05, and MW09) will be sampled semi-annually for two years using a low flow sampling protocol. If no contaminants of concern are detected during the two year, semi-annual sampling period, the sampling frequency will be reduced to once yearly.

As described in Appendix A-Procedure CB-6, Water Level Measurements, depth to water in the facility wells will be measured with an electronic sounder water level meter immediately prior to purging. Well specific values for total well depth, casing diameter, and water depth will be used to calculate the volume of water in the casing (casing volume).

Well purging will be accomplished with a bailer, low flow variable speed electrical centrifugal submersible pump, or other approved method using procedures outlined in Appendix A-Procedure CB-7, Water Sampling of Monitoring Wells. Specific purging requirements for this project are as follows. Prior to water quality sampling, wells will be purged until three-casing volumes have been removed from the monitor well. If the recharge rates for a monitor well are not sufficient to remove three-casing volumes prior to sample collection, the monitor well will be emptied and allowed to recharge with samples collected within a 24-hour time period. If the monitor well has not recharged with sufficient water to collect the full suite of samples, field

personnel will return to the monitor well daily until all samples have been collected. If bailers are used for sampling, bailers will be dedicated for each monitoring well at the facility.

Groundwater samples will be collected with a bailer, pump or other approved method as described in Appendix A-Procedure CB-7, Water Sampling of Monitoring Wells.

The analytical laboratory will filter samples as required. All sample containers, excluding volatile organics, will be filled to approximately 90 percent capacity to allow for expansion of the contents. Volatile organic sample containers will be filled to 100 percent capacity, ensuring that no air bubbles are present.

1.3.2 SAMPLE IDENTIFICATION AND HANDLING PROCEDURES

Each sample will be assigned a unique alphanumeric sample number and a site identification number corresponding to the correct monitoring well sampling location.

Samples requiring refrigeration will be placed in ice chests containing ice immediately upon collection. Ice will be maintained within the ice chests at all times. Samples with holding times of 48 hours or less will be shipped to the analytical laboratory on the same day they are collected.

Sample bottles used for water sampling will be pre-cleaned using guidelines established by the United States Environmental Protection Agency in *Specification and Guidance for Contaminant-Free Sample Containers* (US-EPA 1992).

1.3.3 DECONTAMINATION OF SAMPLING EQUIPMENT

Decontamination of non-dedicated sampling equipment will be accomplished by using the method outlined in Appendix A-Procedure CB-5, Equipment Decontamination. Specifically, decontamination will include rinsing all equipment surfaces with diluted detergent followed by deionized water. Between samplings or until further use, decontaminated equipment will be stored in protective containers or plastic bags.

1.4 ANALYTICAL PROCEDURES

An analytical laboratory will analyze all water samples. Laboratory quality control will be performed in accordance with procedures established by the analytical laboratory. Analytical methods are listed in Section 1.3.1 above.

1.5 QUALITY ASSURANCE AND QUALITY CONTROL

Quality assurance and quality control measures will be taken during sampling and analysis to provide systematic control of all tasks, thus maximizing comparability, completeness,

representativeness, and precision of data.

1.5.1 SAMPLING PROCEDURES

Sampling procedures are described in Section 1.3 and Appendix A of this document. Any deviations from these procedures will be entered in the field notebook along with an explanation and a description of its possible impact on data quality.

1.5.2 SAMPLE CONTROL

To maintain evidence of authenticity, collected samples will be labeled with the sample number, site identification, date collected, time collected, and sampler's name.

Coolers and trays used for temporary sample storage in the field will be in direct control of a field team member. To record transfers in the possession of the samples and to show that samples were in constant custody between collection and analysis, chain-of-custody records will be completed before samples are transported as specified in Appendix A-Procedure CB-4, Chain of Sample Custody.

1.5.3 DOCUMENT CONTROL

Sample number, site identification, time and date collected, sampler, type of sample, equipment used, and field measurements (if applicable) will be recorded for each sampling location on the Water Sample Data Record form (Appendix B).

A bound notebook also will be used during sampling activities to record information such as: daily activities of the sampling team, personnel present during purging and sampling, and deviations from field sampling procedures. At the end of the sampling day, a person from the sampling team will review the bound notebook for consistency and quality. Each page reviewed will be signed and dated by the reviewer.

Chain of custody forms will be completed and submitted to the analytical laboratory along with the water samples. In addition, copies of the chain of custody forms will be retained by the facility for traceability. Upon completion of laboratory analyses, analytical results and data gathered during the course of fieldwork will be reviewed by facility personnel or designated representative. This information, which includes the final analytical report, field logbook, chain of custody forms, and Water Sample Data Record forms will be stored in a permanent file at the facility.

1.5.4 FIELD QUALITY ASSURANCE

Field quality assurance procedures will include following the standard operating procedures discussed in Section 1.3 and Appendix A of this document and collecting quality control samples. Quality control samples will include one trip blank and one duplicate sample for each semi-annual or annual sampling event.

1.5.5 LABORATORY QUALITY CONTROL

The analytical laboratory will be instructed to follow all relevant laboratory methods as cited in Section 1.3.1 above. Analytical quality control will include analysis of trip blanks, duplicates, spikes, surrogate samples, check samples, and instrument calibration, as specified by the method and in accordance with the laboratory's Quality Assurance/Quality Control procedures.

1.6 DATA REVIEW

Data collected during field sampling activities and reported by the analytical laboratory will be reviewed quarterly by CHT Resources personnel or their designated representative to ensure regulatory compliance.

1.7 REFERENCES

U.S. Environmental Protection Agency, 1992. *Specification and Guidance for Contaminant-Free Sample Containers*, Directive 9240.0-05A, Office of Solid Waste and Emergency Response, Washington D.C.

1997 Annual Book of American Society of Testing and Materials Standards, Section II Water and Environmental Technology, Volume 11.04 Environmental Assessments, Hazardous Substances and Oil Spill Responses, Waste Management.

APPENDIX A

PROCEDURES

CONTENTS

Procedure CB-1, Measurement of pH of Water Samples

Procedure CB-2, Measurement of Electrical Conductivity of Water Samples

Procedure CB-3, Sample Documentation

Procedure CB-4, Chain of Sample Custody

Procedure CB-5, Equipment Decontamination

Procedure CB-6, Water Level Measurements

Procedure CB-7, Water Sampling of Monitoring Wells

MEASUREMENT OF pH OF WATER SAMPLES	Number: CB-1 Page: 1 of 3

1.0 PURPOSE

This procedure describes the activities necessary for measuring the pH of water samples.

2.0 APPLICABILITY

This procedure applies to pH measurement of all water samples.

3.0 OTHER DOCUMENTS

3.1 REFERENCES
- 3.1.1 pH meter user's manual

3.2 APPENDICES

Appendix B: Water Sample Data Record

4.0 EQUIPMENT AND MATERIALS

4.1 EQUIPMENT
- 4.1.1 pH meter
- 4.1.2 Combination pH electrode
- 4.1.3 Thermometer or temperature probe
- 4.1.4 Deionized water wash bottle
- 4.1.5 Spare electrode
- 4.1.6 Flow-through cell
- 4.1.7 Sample logbook

4.2 MATERIALS
- 4.2.1 Glass or disposable beakers
- 4.2.2 Deionized water
- 4.2.3 Standard buffer solutions, pH 4.00, 7.00, and 10.00
- 4.2.4 Litmus paper
- 4.2.5 Water Sample Data Record sheets
- 4.2.6 Electrode filling solution
- 4.2.7 Electrode storage solution
- 4.2.8 Electrode cleaning solution

5.0 RESPONSIBILITY

5.1 Field technicians are responsible for following this procedure when measuring the pH of water samples.

6.0 DEFINITIONS

6.1 pH: hydrogen ion (H^+) concentration of a solution; the greater the hydrogen ion concentration, the more acidic the solution.

6.2 Buffer solutions: solutions of essentially stable pH. These solutions contain both a weak acid and its conjugate weak base; the pH changes only slightly on addition of acid or base.

6.3 Flow-through cell: a closed container made of inert material with connections and outlets for hoses and measuring probes.

7.0 PROCEDURE

7.1 Check the pH meter before taking it into the field.

7.1.1 Visually inspect the instrument, examining all wires and probes for damage.

7.1.2 Check the glass bulb at the end of the pH electrode to ensure that it is not broken.

7.2 In the field, prepare the electrode for use.

7.2.1 Fill the electrode with the correct filling solution according to the manufacturer's operating instructions.

7.2.2 Close or cover the filling hole to keep the solution from spilling.

7.2.3 If using a liquid junction electrode, ensure that the level of the filling solution is always above the reference junction.

a. The filling hole should always be open when the electrode is in use.

7.2.4 To use, remove the electrode from storage solution and rinse well with deionized water.

a. Avoid rubbing the electrode, which may cause a static charge that will disrupt measurements.

b. Do not touch the delicate glass bulb on the bottom of the pH electrode.

7.2.5 Connect the pH electrode to the meter.

7.3 Calibrate the meter.

7.3.1 If necessary, use litmus paper to determine which buffers will bracket the pH of the sample.

a. Pour a little sample into a separate container.

b. Dip the litmus paper into the sample.

c. Compare the color of the pH paper to the color chart on the paper container.

7.3.2 If sample pH is known to be less than 7.00, use pH 4.00 and 7.00 buffer solutions to calibrate.

7.3.3 If sample pH is known to be greater than 7.00, use pH 7.00 and 10.00 buffer solutions to calibrate.

7.3.4 Refer to the manufacturer's operating instructions for calibration procedures.

a. Use at least a two-point calibration.

7.3.5 Rinse the electrode with deionized water.

7.3.6 Recalibrate the instrument each time it is turned on or at each sampling station.

7.3.7 Record the buffers used and date and time of calibration on the Water Sample Data Record (Appendix B) and, if requested, in the sample logbook.

7.4 Measure the pH and temperature of surface water or groundwater using a flow-through cell.

7.4.1 Connect the flow-through cell to the pump discharge tubing.

a. Minimize the length of tubing from the top of the well/ground level to the flow-through cell.
b. Keep the tubing out of direct sunlight to avoid heating the sample.
c. Attempt to keep water at the same temperature during sampling and pH measurement.

7.4.2 Place the probes in the flow-through cell and allow pH and temperature readings to stabilize.

7.4.3 When readings have stabilized, record the pH and temperature on the Water Sample Data Record.

7.4.4 If the pH of the sample does not fall between the calibration buffer pH values, recalibrate using buffers that bracket the sample pH and re-measure the pH and temperature using fresh sample.

7.5 Measure the pH of a water sample without the use of a flow-through cell.

7.5.1 Thoroughly rinse a beaker with sample water.

7.5.2 Place the pH and temperature probes into the beaker.

7.5.3 Pour in fresh or new sample.

7.5.4 After allowing the readings to stabilize, read the temperature and pH of the sample.

7.5.5 Record the pH, temperature, and time of sampling on the Water Sample Data Record.

7.5.6 Rinse the probes thoroughly with deionized water.

7.5.7 Recalibrate the instrument every time it is turned on or at each sampling station.

7.6 Record the following information on the Water Sample Data Record:

7.6.1 buffer solutions used (4.00 and 7.00 or 7.00 and 10.00);

7.6.2 temperature of buffers at calibration;

7.6.3 temperature of sample;

7.6.4 pH reading of sample;

7.6.5 time of sampling;

7.6.6 weather conditions (cloudy, windy, rainy, etc.);

7.6.7 time and date of the last pH calibration;

7.6.8 pH readings during calibration.

7.7 Rinse the electrodes thoroughly with deionized water and store according to manufacturer's recommendation.

MEASUREMENT OF ELECTRICAL CONDUCTIVITY OF WATER SAMPLES

1.0 PURPOSE

This procedure describes the activities necessary for measuring the electrical conductivity of water samples.

2.0 APPLICABILITY

This procedure applies to electrical conductivity measurement of all water samples.

3.0 OTHER DOCUMENTS

3.1 REFERENCES
- 3.1.1 Conductivity meter user's manual

3.2 APPENDICES

Appendix B: Water Sample Data Record

4.0 EQUIPMENT AND MATERIALS

4.1 EQUIPMENT
- 4.1.1 Conductivity meter
- 4.1.2 Thermometer or temperature probe
- 4.1.3 Flow-through cell

4.2 MATERIALS
- 4.2.1 Glass or disposable beakers
- 4.2.2 Deionized water
- 4.2.3 Wash bottle
- 4.2.4 Conductivity standards
- 4.2.5 Water Sample Data Record sheets

5.0 RESPONSIBILITY

5.1 Field technicians measuring the electrical conductivity of water samples are responsible for following this procedure.

6.0 DEFINITIONS

6.1 Electrical conductivity: the property of a substance that describes its ability to transfer electricity; the reverse of resistivity.

6.2 Flow-through cell: a closed sample container made of inert material with connections and outlets for hoses and measuring probes.

7.0 PROCEDURE

7.1 Inspect the conductivity meter before taking it into the field.

7.1.1 Several different instruments are available for measuring conductivity, each with different features. Read the user's manual to acquaint yourself with the instrument.

7.1.2 Examine all wires, cables, and probes for damage and replace if necessary.

7.2 In the field, check the instrument response against known conductivity standards.

7.2.1 Rinse the electrical conductivity and temperature probes with deionized water.

7.2.2 If possible, select two standards that will bracket the expected conductivity of the sample.

7.2.3 Measure and record the temperature and conductivity of the standards.

7.2.4 Correct the readings to 25°C, if necessary, with the following equation:

$$\text{conductivity at } 25°C = \frac{\text{conductivity at T} \times \text{cell constant}}{1 + 0.0191\ (T - 25°)}$$

where T = measured temperature, °C.

a. If the instrument has an automatic temperature compensating mode (ATC), the above calculation is not necessary.

7.2.5 When measured, conductivity standards should fall within ±10% of the given values. If not, consult the instrument user's manual for troubleshooting assistance.

7.2.6 Rinse the probes with deionized water.

7.3 Measure the conductivity of a sample using a flow-through cell.

7.3.1 Obtain groundwater samples with a non-gas-contact pump.

a. Do not filter samples before analysis.

7.3.2 Connect the flow-through cell to the pump discharge tubing.

a. Minimize the length of tubing from the top of the well/ground level to the flow-through cell.

b. Keep the tubing out of direct sunlight to avoid heating the sample.

7.3.3 Place probes in the flow-through cell and allow conductivity and temperature readings to stabilize.

7.3.4 Record the time, electrical conductivity, and temperature of the sample on the Water Sample Data Record.

7.4 Measure the conductivity of a sample without the use of a flow-through cell.

7.4.1 Thoroughly rinse a beaker with sample water.

7.4.2 Pour in fresh sample.

7.4.3 Immerse the probes in the sample and allow the readings to stabilize.

7.4.4 Record the time, electrical conductivity, and temperature of the sample on the Water Sample Data Record.

7.4.5 When measuring surface water directly, keep the probes several inches from large rocks since they can bias the reading.

7.5 Record the following information on the Water Sample Data Record:

7.5.1 standard values,

7.5.2 measured values of standards,

7.5.3 temperature of standards,

7.5.4 temperature of sample,

7.5.5 conductivity of sample,

7.5.6 time of sampling,

7.5.7 weather conditions (cloudy, windy, rainy, etc.) and,

7.5.8 time of last calibration check.

7.6 Rinse the probes with deionized water and store.

SAMPLE DOCUMENTATION	Number: CB-3

SAMPLE DOCUMENTATION

1.0 DISCUSSION

This procedure applies to all samples collected for outside laboratory analysis. Sample documentation begins with a unique description written in black, permanent ink in the project logbook. The unique alpha numeric number appears in the project logbook, sample label (Appendix 1), water sample data record (Appendix B), and chain of sample custody form (Appendix 2).

2.0 OTHER DOCUMENTS

2.1 Appendix 1: Sample Label (generic)
2.2 Appendix 2: Chain of Sample Custody (generic)

3.0 PROCEDURE

3.1 SAMPLE IDENTIFICATION SYSTEM

3.1.1 Each sample is identified according to the following description:

AA	NNN	NN NN NN	A
Site ID	Well #	(Date)	Optional

Site ID = CT (Water samples taken from CHT Resources Facility)

Well # = well sample taken from:

Date = month, day, year

Optional includes D=duplicate, B=blank

Multiple completion wells are designated according to the completion that was sampled, where U = upper, and L = lower. This designation is placed immediately after the monitoring well number.

3.1.2 Example:

1. CTMW1L120203

   CT: Site abbreviation
   MW1L: Sample is from Monitor Well 1 Lower.
   120203: Sample was taken on December 2, 2003

3.1.3 Circumstances may arise in which portions of the labeling system need to be modified to accommodate a sample. Changes must be documented in the appropriate field logbooks and brought to the laboratory manager.

3.2 WATER SAMPLE DATA RECORD

The purpose of the Water Sample Data Record (Appendix B) is to document the collection of water samples taken from the monitor wells. It is used to document calibration of pH and conductivity instruments, water levels in wells, purging records and document samples taken from the wells.

3.3 CHAIN OF SAMPLE CUSTODY FORM

3.3.1 The chain of custody procedure creates an accurate written record that can be used to trace the handling and possession of the sample from its collection through analysis and, if necessary, its introduction as evidence.

3.3.2 A sample is in "custody" if:

1. it is in one's actual possession; or
2. it is in one's view, after being in one's possession; or
3. it is in one's physical possession and then locked up so that no one can tamper with it; or
4. it is restricted and kept in a secured area.

3.4 TRANSFER OF CUSTODY AND SHIPMENT

3.4.1 When transferring the samples, the transferee must sign and date the chain of sample custody record (Appendix 2). Every person taking custody must fill in the appropriate section of the form. Although couriers are not considered custodians, a copy of the airbill must be obtained by everyone who relinquishes custody.

3.4.2 The completed form is placed in a plastic bag, sealed and taped to the underside of the cooler lid placed on top of the samples. The original accompanies the samples to the laboratory; the carbon copy is retained by the sampling team.

SAMPLE DOCUMENTATION	Number: CB-3

Appendix 1. Sample Label (generic)

EAGLE PICHER

ENVIRONMENTAL SCIENCE
& TECHNOLOGY DEPT.
200 B.J. TUNNELL BLVD., MIAMI, OK 74354
1-800-331-7425

Specially Cleaned Sample Container

Lot #:

DATE:	TIME:	COLLECTED BY:

SAMPLING SITE:

SAMPLE TYPE:
☐ Grab ☐ Composite ☐ Other _____

TESTS REQUIRED:	PRESERVATIVE

SAMPLE DOCUMENTATION	Number: CB-3

Appendix 2. Chain of Sample Custody (generic)

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name:	Address:
Company:	
E-mail:	Telephone:

Copy of Report to:

Name:	E-mail:
Company:	Telephone:

Invoice to:

Name:	Address:
Company:	
E-mail:	Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☐ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #:

Project/PO #:

Shipping Co.:

Tracking #:

Reporting State for compliance testing:

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE TIME	Matrix	# of Containers								

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

RELINQUISHED BY:	DATE TIME	RECEIVED BY:	DATE TIME	PAGE
				Of

FRMQA021.06.03.05 White - Return with sample. Yellow - Retain for your records.

CHAIN OF SAMPLE CUSTODY

1.0 PURPOSE

This procedure describes chain of sample custody procedures for all samples collected for laboratory analysis.

2.0 APPLICABILITY

This procedure applies to all samples taken at CHT Resources facility and shipped to contract laboratories

3.0 OTHER DOCUMENTS

3.1 APPENDICES

3.1.1 Appendix 1: Chain of Sample Custody Form (generic)
3.1.2 Appendix 2: Chain of Custody Seal (generic)

4.0 MATERIALS

4.1 MATERIALS

4.1.1 Chain of Sample Custody Forms
4.1.2 Chain of Custody Seal

5.0 RESPONSIBILITY

5.1 The sampler is responsible for maintaining surveillance of the sample until custody transfers to another individual, the sample is located in a secure area or placed in a sealed container, or the sampler completes the applicable chain of custody form and packages the samples for shipment to the contract laboratories.

5.2 Contract laboratory personnel are responsible for receiving samples from field personnel and maintaining sample validity throughout the analysis process. Laboratory personnel are also responsible for the care and custody of samples from the time they are received until they are relinquished to the originator, transferred to another individual, or transferred for ultimate disposal.

6.0 DEFINITIONS

6.1 Chain of Custody: procedures which create an accurate written record that can be used to trace the handling and possession of a sample from the time of its collection through analysis and, if necessary, its introduction as evidence.

6.2 Chain of custody seal: strips of partially perforated adhesive-backed paper used to indicate tampering of a container.

6.3 Secure area: a locked cupboard, room or building accessible only to authorized personnel.

7.0 PROCEDURE

7.1 An acceptable chain of custody is maintained when a sample is:
- 7.1.1 under direct surveillance by the assigned individual,
- 7.1.2 maintained in a tamper-free container, or
- 7.1.3 placed in a secure area.

7.2 Field Custody
- 7.2.1 Complete the appropriate Chain of Sample Custody Form (Appendix 1) at the time of sample collection.
  - a. All samples should be handled by a minimum of persons.
  - b. Information entered in the chain of custody form must match information on the sample labels.

7.3 Laboratory Custody Procedures
- 7.3.1 When receiving samples at the laboratory, verify that:
  - a. the samples have not been tampered with,
  - b. all samples are present, and
  - c. Information on the Chain of Sample Custody Form and the sample labels match.
- 7.3.2 Sign and date the Chain of Sample Custody Form and take possession.
- 7.3.3 Return a copy of the Chain of Sample Custody Form to CB Industries-Delta Inc. or assigned representative.
- 7.3.4 Store all samples in a secure place until analysis begins.
- 7.3.5 The laboratory will follow all protocol during analysis to follow their company chain of custody procedures.

Appendix 1. Chain of Sample Custody Form (generic)

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name:	Address:
Company:	
E-mail:	Telephone:

Copy of Report to:

Name:	E-mail:
Company:	Telephone:

Invoice to:

Name:	Address:
Company:	
E-mail:	Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☐ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #:
Project/PO #:
Shipping Co.:
Tracking #:
Reporting State for compliance testing:

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE TIME	Matrix	# of Containers								

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

RELINQUISHED BY:	DATE TIME	RECEIVED BY:	DATE TIME	PAGE
				Of

FRMQA021.06.03.05 White - Return with sample. Yellow - Retain for your records.

Appendix 2. Chain of Custody Seal (generic)

CUSTODY SEAL

DATE _____

SIGNATURE _____

CHEM (800) 443-1689 (800) 553-3696

Specialty Cleaned Containers

EQUIPMENT DECONTAMINATION

1.0 PURPOSE

This procedure provides steps for the decontamination of all equipment used during the sampling of soil, sludge, surface water, and groundwater at CHT Resources facility.

2.0 APPLICABILITY

This procedure applies to all sampling equipment used at this site for environmental samples.

3.0 OTHER DOCUMENTS

None

4.0 EQUIPMENT AND MATERIALS

4.1 EQUIPMENT

4.1.1 Teflon™ wash bottles
4.1.2 Plastic tubs or buckets
4.1.3 Scrub brushes, plastic or fiber bristles
4.1.4 Steam cleaner or high-pressure hot water washer

4.2 MATERIALS

4.2.1 Disposable wipes
4.2.2 Laboratory detergent, phosphate-free if phosphate is an analyte
4.2.3 Plastic trash-can liners/polyethylene sheeting
4.2.4 Analyte-free tap water
4.2.5 Distilled or deionized water, analyte-free
4.2.6 Aluminum foil

5.0 RESPONSIBILITY

All field personnel required to decontaminate equipment are responsible for following this procedure.

6.0 SAFETY

6.1 Follow standard health and safety principals for appropriate personal protective equipment.

6.2 Ensure that an NFPA-type ABC fire extinguisher is nearby and fully charged if a steam cleaner or high-pressure hot water washer is being used.

6.3 Ensure that all electrical lines are protected by Ground Fault Circuit Interrupters (GFCIs) if a steam cleaner or high-pressure washer is being used.

6.4 Wear safety glasses or goggles and latex or nitrile gloves when cleaning equipment with a steam cleaner or high-pressure washer.

6.5 Check the steam cleaner or high-pressure washer for damaged or frayed hoses or electrical lines and connections.

7.0 PROCEDURE

7.1 When choosing a site for decontamination, avoid fugitive dust, oils, gasoline, fuel oils, organic solvents, or any potential source of contamination. Lay down polyethylene sheeting in order to prevent surface soils from coming into contact with the equipment.

7.1.1 If decontamination is performed at a site other than the location where the equipment was used, carefully transport the equipment to the decontamination area in a manner that minimizes the spread of contaminants.

7.2 Steam clean or pressure wash all well screens and casings, backhoes, dredges, augers, and other heavy equipment before use.

7.2 Clean the exterior of the pump after use:

7.2.1 Using a hand-held pressure sprayer, wash with non-phosphate detergent and potable water. To remove visible dirt, use a bristle brush made from inert material.

7.2.2 Rinse thoroughly with potable water.

7.2.3 Rinse liberally with de-ionized/distilled water.

7.3 Clean the interior of the pump after use:

7.3.1 Power up the pump.

7.3.2 Run a solution of de-ionized water and non-phosphate detergent through the interior of the pump.

7.3.3 After the detergent mixture, run a de-ionized water rinse through the interior of the pump. Use a liberal amount of water to ensure that the pump interior is thoroughly rinsed.

7.3.4 Allow to air dry as much as possible before next use.

7.3.5 Wrap with inert material if the equipment is not being used promptly.

7.4 Steam clean sampling equipment after use.

7.3.1 Use the following sequence for equipment used with organic and inorganic target analytes when steam cleaner is not available:

a. Remove gross contamination (e.g., mud) with tap water, if needed.

b. Wash with tap water.

c. Wash with soapy water.

d. Rinse with tap water.

e. Rinse with analyte-free deionized water.

f. Dry with disposable wipes or allow to air dry.

7.3.2 Use a different scrub brush with each wash.

7.3.3 Contain all decontamination rinse fluids in an appropriate vessel for disposal.

7.4 Wrap sampling equipment for transport with aluminum foil.

7.4.1 Polyethylene sheeting or plastic bags may be used temporarily.

7.5 Document any deviations from this procedure in the log book before beginning the field work.

7.6 Document equipment decontamination in the project or sample logbook or in some location specified in the sampling plan.

WATER LEVEL MEASUREMENT

1.0 PURPOSE

This procedure describes the steps for taking water level measurements of groundwater in monitor wells.

2.0 APPLICABILITY

This procedure applies to measuring water levels in boreholes, piezometers, or monitoring wells.

3.0 OTHER DOCUMENTS

3.1 REFERENCES

3.1.1 Procedure CB-5, Equipment Decontamination

4.0 EQUIPMENT AND MATERIALS

4.1 Steel tape
4.2 Electric sounder
4.3 Reflection sounder
4.4 Transducer
4.5 Air line
4.6 Field logbook

5.0 RESPONSIBILITY

5.1 All personnel measuring water levels in a well, borehole, or piezometer are responsible for following this procedure.

6.0 DEFINITIONS

6.1 Air line: a tube inserted into a well so that the end is submerged below the present water level. The surface end can be connected to a pressure monitoring system that will record changes in air pressure in the line. As the water level fluctuates, so does air pressure in the line, allowing the fluctuations to be recorded.

6.2 Electric sounder: a probe attached to the end of a measuring tape that is attached to an electronic device at the surface. The probe, using several possible methods, completes a circuit as it touches water; the device at the surface indicates this contact with an audio or visual signal; and depth is obtained from the tape.

6.3 Reference measuring point: marked measuring point on PVC riser pipe, protective steel casing, or concrete pad surrounding well casing from which all water-level measurements for individual wells are measured, thus providing consistency in future water level measurements.

6.4 Reflection sounder: a device that transmits a signal (e.g., sound or radio) down a borehole and measures the time of arrival of the reflected signal. This time is proportional to the depth to the water.

6.5 Transducer: a pressure-measuring device that senses and measures the height of a water column above the device. The device is installed at a known depth below the water level, and the height of the water column above the device allows for determination of the water level. These systems can be connected to a data storage device for recording water level fluctuations.

7.0 SAFETY

7.1 Wear personal protective equipment appropriate for the location of the well, borehole, or piezometer.

8.0 PROCEDURE

8.1 Prior to measurement, allow water levels in piezometers and monitoring wells to stabilize for a minimum of 24 hours after well construction, development, or purging.

8.1.1 In low-yield situations, recovery may take longer.

8.2 Collect water-level measurements at a given site within a 24-hour period.

Note: This practice is adequate if the change is small over that period of time.

8.2.1 Under the following conditions, take all measurements within a shorter time interval:

a. atmospheric pressure change;
b. tidally influenced aquifers;
c. aquifers affected by river stage, impoundments, and/or unlined ditches;
d. aquifers stressed by intermittent pumping of production wells;
e. aquifers being actively recharged due to precipitation.

8.3 Establish a reference measuring point if one does not already exist.

8.3.1 Place a survey mark on the north side of the well-casing riser pipe.

8.3.2 Locate another measuring reference on the grout apron.

8.3.3 Document the measuring point in the field logbook.

8.4 Measure water level.

8.4.1 Remove locking well cap and note the location, time of day, and date in the field logbook or on the appropriate field form.

8.4.2 Remove the well casing cap.

8.4.3 If required by site-specific conditions, sniff the headspace of the well with a photoionization or flame ionization detector to determine the presence of volatile organic compounds and record the results in the field logbook.

8.4.4 Lower the water-level measuring device into the well until the water surface is reached.

8.4.5 Measure the distance from the water surface to the reference measuring point on the well casing and record the measurement in the field logbook.

8.4.6 Measure the depth to the water surface at least twice for confirmation and record the measurement in the field logbook.

8.4.7 Remove all downhole equipment, replace the well casing cap, and lock the steel caps.

8.5 To measure water levels manually, use an electric or reflection sounder accurate to 0.01 ft.

8.5.1 If using an electric sounder, check the accuracy of the tape.

NOTE: The accuracy should be checked periodically or if the tape has undergone stress from pulling, kinking, etc.

a. Unroll 20 ft of the electric sounder tape next to a steel tape.

b. Secure both tapes at the 20-ft mark; pull tight on the other ends of both tapes.

c. If the measuring point of the electric sounder tape does not fall within 0.01 ft of the 0.0 mark on the steel tape, replace the electric sounder tape.

8.5.2 Follow instructions for the specific instrument being used to measure water levels.

8.6 To measure water levels automatically, install a transducer or air line.

8.6.1 Measure depth to water using the methods described in step 8.4.

8.6.2 Insert the air line or transducer at a depth below the measured water level that will allow the device to stay submerged throughout any expected fluctuations.

a. Record the depth of the instrument to within 0.01 ft.

8.6.3 Remain within the specifications of the instruments being utilized (e.g., a transducer may not be rotated for more than 10 ft of submergence).

8.6.4 According to manufacturers' deviations, connect the transducers and/or air lines to an electronic readout, data-logger, or other recording device.

8.6.5 Follow manufacturer's instructions for measurement of water levels.

8.7 Clean up and restore the site if necessary.

8.7.1 Note any physical changes, such as erosion or cracks, in the protective concrete pad in the field logbook.

8.8 Decontaminate equipment according to Procedure CB-5.

8.9 Ensure that the field logbook contains:

8.9.1 log date: the day water levels are being measured;

8.9.2 comments: any information that field personnel deem applicable;

8.9.3 time of measurement;
8.9.4 depth to water; and
8.9.5 reference measuring point.

WATER SAMPLING OF MONITORING WELLS

1.0 PURPOSE

This procedure describes the methods and equipment used to collect valid water samples from a monitor well.

2.0 APPLICABILITY

This procedure applies to sampling groundwater at CHT Resources Facility, 11289 Doughspoon Road, Austin, CO.

3.0 OTHER DOCUMENTS

3.1 REFERENCES

3.1.1 Procedure CB-1, Measurement of pH of Water Samples
3.1.2 Procedure CB-2, Measurement of Electrical Conductivity of Water Samples
3.1.3 Procedure CB-3, Sample Documentation
3.1.4 Procedure CB-4, Chain of Sample Custody
3.1.5 Procedure CB-5, Equipment Decontamination
3.1.6 Procedure CB-6, Water Level Measurement

4.0 EQUIPMENT AND MATERIALS

4.1 EQUIPMENT

4.1.1 Dedicated or stainless steel bailer
4.1.2 Insulated coolers
4.1.3 Frozen Blue Ice™ or equivalent
4.1.4 Field logbook
4.1.5 pH and conductivity meters
4.1.6 Water level indicator
4.1.7 Variable speed, electrical centrifugal submersible pump with associated tubing and filters

4.2 MATERIALS

4.2.1 Sample Bottles
4.2.2 Deionized water
4.2.3 Padding for packaging of samples
4.2.4 Sample labels
4.2.5 Marking pens
4.2.6 Water Sample Data Record sheets
4.2.7 Chain of Sample Custody forms

5.0 RESPONSIBILITY

5.1 It is the responsibility of the sampler to supervise sample collection and ensure that all samples are collected according to the project sampling plan, collect samples, record all field data, and decontaminate equipment.

6.0 DEFINITIONS

6.1 Annulus: the space between the well casing and the borehole wall.

6.2 Aquifer: a permeable stratum or zone below ground surface through which groundwater moves.

6.3 Casing: pipe placed in a well to prevent the wall of the hole from caving in and to provide a means of extracting groundwater.

6.4 Potentiometric surface: level to which water in an aquifer will rise by hydrostatic pressure.

6.5 Well screen: perforated or slotted casing that allows water to flow into the well.

7.0 SAFETY

7.1 Wear personal protective clothing if required.

7.2 Wear latex or nitrile gloves when contact with sample water or sample preservatives is possible.

8.0 PROCEDURE

8.1 Sample groundwater wells in order of increasing contamination.

8.1.1 Begin with sources of least contamination, when possible, to reduce the risk of cross-contamination between wells.

8.2 Prepare sample containers, labels, and Water Sample Data Record.

8.2.1 Before sampling a site, assign sample numbers to the site. See Procedure CB-3.

8.2.2 Prepare sample label with the following information and permanently affix the label to the bottle:

a. sample number,
b. date and time of sample collection,
c. filter,
d. preservative,
e. type of analysis,
f. laboratory contract number, if any,
g. initials of collector.

8.2.3 Record all pertinent field information in the field logbook.

8.2.4 Fill out the Water Sample Data Record (Appendix B) in the following format:

a. Project: name of installation, facility, or locale;
b. Location: monitoring well;
c. Date;
d. Sample no.: see Procedure CB-3;
e. Sampling data: time sampling started and finished, outside temperature (°C), and a brief description of weather conditions (e.g., cloudy, breezy, light rain);
f. Number of completions for a particular monitoring well;
g. Depth to water from top of well casing (not the protective casing) to the nearest 0.01 ft; see Procedure CB-6;
h. Total well depth: measured from ground level to bottom of well screen to the nearest 0.5 ft;
i. Well volume: calculate the volume of water in the well. Calculate the well volume using one of the methods given below:

a. For 2-in. schedule-40 pipe, multiply the height of the water column by 0.174 to obtain the volume in gallons. For 2-in. schedule-80 pipe, multiply the height of the water column by 0.153 to obtain the volume in gallons.
b. For measurements in feet, use this equation:

$$WV = \left(\frac{d}{2}\right)^2 \pi(h_1 - h_2)(7.48)$$

where

WV	= well volume, gal
d	= diameter of casing, ft
h_1	= depth of well from top of casing, ft
h_2	= depth to water, ft
7.48	= constant, gal/ft^3

c. For measurements in inches, use this equation:

$$WV = \left(\frac{d}{2}\right)^2 \pi(h_1 - h_2)\left(\frac{1}{231}\right)$$

where

WV	= well volume, gal
d	= diameter of casing, in.
h_1	= depth of well from top of casing, in.
h_2	= depth to water, in.
1/231	= constant, gal/in.^{3}

d. If the sampling plan defines the well volume as the amount of water in the casing plus saturated annulus, use the following formula:

$$WV = \left[0.3\pi h\left(\frac{d_1}{2}\right)^2 - 0.3\pi h\left(\frac{d_2}{2}\right)^2 + \pi h\left(\frac{d_2}{2}\right)^2\right](7.48)$$

Where

WV	= well volume, gal
h	= height of water column, ft
d_1	= diameter of borehole, ft
d_2	= diameter of casing, ft
0.30	= approximate porosity of sand pack
7.48	= constant, gal/ft^3

e. In cases where the potentiometric surface of the aquifer is above the screened interval of the well, calculate two volumes: (1) the volume of water in the casing above the screened interval and (2) the volume of the casing plus the saturated annulus around the screen.

Note: It is convenient to calculate a volume per linear foot of (1) and (2) so that a total volume can be found simply by multiplying the height of each water column by its appropriate factor (gal/ft) and then adding the volumes together.

f. Record the amount of water in the well on the Water Sample Data Record.

8.3 Purge the well before sampling (low-flow method)

Low flow purging and sampling is a sampling technique that allows for the collection of representative groundwater samples from the adjacent formation surrounding the screened section of the monitoring well. Low-flow refers to the velocity with which the water enters the pump intake from the surrounding formation in the immediate vicinity of the well screen. The flow rate of the water, which is subsequently

discharged at the ground surface, can be controlled by flow regulators or restrictions. The objective is to minimize drawdown of the water column in the well, avoid disturbance of the stagnant water above the well screen, and draw fresh water through the screen at a rate that minimizes sample disturbance. By using this method, the sediment around the well is less disturbed and purging is kept to a minimum.

Normally, 3 to 5 volumes of water (casing plus saturated annulus) are considered sufficient to remove stagnant water from the well and to ensure that the samples represent formation water. However, this is a general guideline and may need modification according to site-specific conditions:

a. If the well is extremely slow to recharge, only one evacuation to dryness may be practical.

b. If the well is situated in permeable geological material with good recharge from the aquifer, it may be continually purged by natural groundwater flow.

8.3.1 Use a variable speed, electrical centrifugal submersible pump with an adjustable rate according to the manufacturer's methods.

8.3.2 Before well placement, attach new tubing to the pump for groundwater extraction and sampling activities. Two types of tubing will be used with the submersible pump to extract and collect groundwater from the wells. To extract the groundwater, Low Density Polyethelene (LDPE) tubing will be connected to the pump and lowered inside the well. A second, more flexible sterile silicone medical tubing will be connected to the other end of the pump and will run out of the well, where it will be used to collect the samples. Filters will also be attached to this tubing for the collection of dissolved metals. An alternate fluorocarbon of fluorocarbon polymer-lined polyethene tubing may also be used in conjunction with the pump.

8.3.3 Place pump with attached tubing at the center of the screened section of the well.

8.3.4 To begin purging, the pump should be set at the lowest speed setting and adjusted to slowly increase until water begins to discharge. Adjust the pumping rate of the submerged pump so that it does not exceed 100 milliliters per minute. Ideally, the flow rate of water from the pump will be approximately the same or less than the water entering the well from the surrounding formation. Check the water level and slowly adjust the pump rate until there is little or no draw-down, or the draw-down has stabilized. To minimize disturbance, pumping rate adjustments should be made within the first fifteen minutes of purging.

8.3.5 Document stabilization of the pumping rate. Every 3 to 5 minutes monitor the water level in the well. The water level in the well should not fall to the pump intake level. If the static water level is above the well screen, the water level should not fall below the top of the screen.

8.3.6 Record indicator parameter measurements (pH, specific conductance, temperature, and turbidity) frequently, at least 3 to 5 minutes apart. Use hand held meters with flow through cells. Indicator parameters will be considered stable when at least three consecutive readings have stabilized as summarized below:

pH +/- 0.1 Standard Units (This measurement might not always be obtainable; professional judgment must be used.);
Specific Conductance: +/-3%;
Turbidity: +/-10% (When >10 NTUS) maintained at <10 NTUS considered stable;
Temperature: +/-5 degrees Celsius

8.3.7. Use large collection vessels to measure the volume of water purged.

a.. Alternatively, use a flow meter to monitor the volume of purged water.

8.3.8 Collect and record a final temperature measurement to determine whether or not pumping activities have increased water temperature in the well.

8.3.9 Note the starting time, finish time, and the volume of water pumped on the Water Sample Data Record.

8.4 Collect samples (low-flow method)

8.4.1 After purging activities have been completed, the pumping rate of the submersible pump will continue to be maintained so that it does not exceed 100 milliliters per minute. Sample containers will be filled directly from the pump tubing. The pumping rate will be adjusted so that pre-preserved containers are not allowed to overflow during filling in order to prevent dilution of the preservative to unacceptable concentrations. The groundwater samples should be collected in the order listed below. Exceptions to this order may occur due to conditions such as low recharge of the well.

8.4.2 Samples for volatile organic compounds (VOC) analyses will be collected first. To minimize the effect of aeration of the water sample, the pumping rate must not exceed 100 milliliters per minute. After each VOC vial is filled, the vial will be inverted and checked for air bubbles to ensure zero

headspace. If a bubble appears, the vile will be discarded and a new sample will be collected.

8.4.3 Sampling will continue with the collection of semi-volatile organic compounds (SVOCs). Zero headspace is not necessary for the collection of these samples.

8.4.4 Ideally, dissolved metals are the final samples to be collected at each well. A 0.45 micron filter will be attached to the end of the sampling tubing. The sample container will be held directly under the filter to collect the sample. Zero headspace is not necessary for the collection of these samples.

8.4.5 After all samples have been obtained, a final temperature measurement will be collected and recorded to determine whether or not sampling activities have increased water temperature in the well.

8.5 Purge well before sampling (bailer method)

Use a bailer to purge wells that are too muddy, too shallow, or unable to be pumped for any other reason

Normally, 3 to 5 volumes of water (casing plus saturated annulus) are considered sufficient to remove stagnant water from the well and to ensure that the samples represent formation water. However, this is a general guideline and may need modification according to site-specific conditions:

a. If the well is extremely slow to recharge, only one evacuation to dryness may be practical.

b. If the well is situated in permeable geological material with good recharge from the aquifer, it may be continually purged by natural groundwater flow.

8.5.1 Use an all-Teflon or stainless steel bailer connected to a clean, unused rope or a clean stainless steel cable.

8.5.2 Bailers will be placed two to three feet from the bottom of the well to permit reasonable draw down while preventing cascading conditions.

8.5.3 Water will be collected into a measured bucket to record the purge volume.

8.5.4 If a well dewaters during purging by bailer method and three casing volumes are not purged, that well will be allowed to recharge up to 80% of the static water column. After water levels have recharged to 80% of static water column, or one-half hour has passed between volumes, groundwater samples will be collected.

8.5.3 Record indicator parameter measurements (pH, specific conductance, and temperature). Use hand held meters with flow through cells. Indicator parameters will be considered stable when at least three consecutive readings have stabilized as summarized below:

pH varies by no more than 0.2 pH units;
Specific conductance readings are within 10% of the average;
Temperature range is no more than +/- 1 degree Celsius

8.5.4 Measurements will be taken after each well volume is evacuated. Turbidity measurements will also be taken after each purge volume. If water quality parameters are not stable after five casing volumes have been extracted by bailer method, purging will cease and samples will be collected.

8.5.5 Collect and record a final temperature measurement to determine whether or not pumping activities have increased water temperature in the well.

8.5.6 Note the starting time, finish time, and the volume of water pumped on the Water Sample Data Record.

8.6 Collect samples (bailer method)

8.6.1 Use a bailer to collect the sample in wells that are too muddy, too shallow, or unable to be pumped for any other reason.

8.6.2 Use an all-Teflon or stainless steel bailer connected to a clean, unused rope or a clean stainless steel cable. The same bailer that was used for purging the well is also used for sample collection.

8.6.3 Lower the bailer to a depth so that the top of the bailer is at the top of the well screen if the well is screened below the top of the water column.

a. Lower the bailer to the top of the water column if the well is muddy or has a slow recharge.

8.6.4 Empty the bailer into the sample bottle by either pouring it from the top or using a bottom-emptying device. The groundwater samples should be collected in the order listed below. Exceptions to this order may occur due to conditions such as low recharge of the well.

8.6.5 Samples for volatile organic compounds (VOC) analyses will be collected first. To minimize the effect of aeration of the water sample, a disposable flow-reducing tip will be attached to the end of the bailer before the VOC samples are collected. This tip greatly reduces the water flow rate by allowing the sample to trickle out of the tip, thus minimizing aerations. After

each VOC vial is filled, the vial will be inverted and checked for air bubbles to ensure zero headspace. If a bubble appears, the vile will be discarded and a new sample will be collected.

8.6.6 Sampling will continue with the collection of semi-volatile organic compounds (SVOCs). Zero headspace is not necessary for the collection of these samples.

8.6.7 Ideally, dissolved metals are the final samples to be collected at each well. Zero headspace is not necessary for the collection of these samples. Filtering will be done at the laboratory.

8.6.8 After all samples have been obtained, a final temperature measurement will be collected and recorded to determine whether or not sampling activities have increased water temperature in the well.

8.7 Collect surface water samples using the grab sampling method or with a bailer.

8.7.1 . Avoid disturbing bottom sediments and/or agitating the sample.

8.8 Collect samples directly in containers pre-cleaned to EPA standards.

8.8.1 When transferring samples, care will be taken not to touch the pump tubing or bailer tip to the sample container.

8.8.2 All sample bottles will have preservatives added by the contract laboratory.

8.8.3 The collected sample must remain hermetically sealed until it is analyzed.

8.9 Fill out the Water Sample Data Record (Appendix B) in the following format:

j. Well diameter: inside diameter;

k. Screened intervals: to nearest 0.1 ft from ground level:

dual completion wells: U = upper interval, L = lower interval;

l. Volume purged: calculate the volume of water purged from the well;

m. Sampling equipment used: stainless steel or Teflon bailer, pump, etc.;

8.10 Fill out the chain of sample custody form (see Procedure CB-4) and send the original with the samples to the laboratory.

8.10.1 Keep a copy for the project archives.

8.10.2 Pack the samples in a hard sided cooler with blue ice to maintain 4◦C temperature for shipment to the laboratory

8.10.3 Deliver the samples or ship to the laboratory as soon as possible by overnight courier.

8.11 After all samples are collected and preserved, decontaminate the sampling equipment according to Procedure CB-5

APPENDIX B
Water Sample Data Record

Water Sample Data Record

General Well and Sampling Information					
Water Level Measurement Date and Time:		Sampling Event:			
Water Level Measurement Method:	Water Level Probe	Well ID:		Sample ID:	
Measuring Point (MP) Location:	Top of inside casing				
Total Well Depth (below MP):		Purging Date:		Time of Arrival at Well:	
Casing Diameter:	2 inches	Weather:		Duplicate Sample?:	
Depth to Groundwater (below MP):		PID Measurement:		Immiscible Layer Present?	
Method of Well Development:	Submers. Pump	Sampling Date:		Sediments:	
Primary Sample Collection Method:	Submers. Pump	VOC Collection Time:		Odor:	
Secondary Sampling Collection Method:		Sample Color:		Sample Clarity:	

Well Stabilization Information						
One Purge Volume:		Number of Well Volumes Purged?			Well Purged Dry?	
Time (Military)	pH (Units)	Specific Conductivity (ms/cm)	Temperature (Celsius)	Turbidity (NTU)	Purge Water Description	Cumulative Volume of Water Removed from Well (Gallons)

Comments:

APPENDIX J
EMPLOYEE TRAINING SUMMARY RECORD

CHT Resources LLC
11289 Doughspoon Road
Austin, CO 81410

CHT RESOURCES COMPOSTING FACILITY
EMPLOYEE TRAINING PROGRAM

EMPLOYEE NAME:_____

DATE OF TRAINING SESSION: _____ _____ _____ _____ _____ _____
_____ _____ _____ _____ _____ _____ _____ _____ _____ _____

All employees shall familiarize themselves with the Documents, Plans, and Standard Operating Procedures listed below. Attendance is mandatory at annual training sessions which shall cover the following:

-CDPHE Certificate of Designation
-Delta County 2021 Land Use Code
-Engineering Design and Operations Plan~
-Waste Characterization Plans
    Hydrocarbon Impacted Soil
    Industrial Sand Trap Waste
-Composting Protocol
-Groundwater Sampling Protocol
-Spill Prevention Control
-Fire Suppression Plan
-Contingency Plan
-Emergency Notification Information
-State Compensation Designated Medical Provider
-First Report of Injury Forms and Procedures
-Employee Safety Program
    - Incident Reporting
    - Driving Safety
    - Fall Protection
    - Job Safety
    - Personal Protective Equipment
    - Toxic Substances

APPENDIX K
FACILITY GENERAL INSPECTION REPORT

FACILITY GENERAL INSPECTION REPORT

Monthly inspection shall address ground movement, cracks, erosion, leaks, burrowing rodents, vegetation, misc. conditions affecting the integrity of the structure. Note conditions found below.

Date:_____Inspector:_____	
Structure:	**Condition:**
Receiving Basin-Septage	
Receiving Basin-Grease	
Receiving Basin-Sand	
Settling Basin - Septage	
Settling Basin - Grease	
Evaporation Lagoons	
Interim Storage Lagoon	
Valves/Piping	
Drainage Structures	
Work Pads	
Compost Mixing Basin	
Landfill Cap; Leachate Collection System; Liner	
Stormwater Retention Pond	
Berms/Swales	
Misc.	

APPENDIX L1
SEPTAGE, FOOD GREASE, AND ANIMAL WASTES COMPOSTING OPERATIONS

TABLE OF CONTENTS

1.0 WASTE PRETREATMENT 3
1.1 Septage Pretreatment 3
1.2 Grease Trap Waste Pretreatment 3
1.3 Animal Waste Pretreatment 4
1.4 Biosolids Pretreatment 4
2.0 MIDWATER TREATMENT AND DISPOSAL 4
3.0 COMPOSTING TREATMENT AND DISPOSAL 5
4.0 WASTE CHARACTERIZATION PLAN 6
5.0 WASTE GENERATOR AND TRANSPORTER MONITORING AND MANIFESTS 7
6.0 COMPOST QUALITY ASSURANCE TESTING, SAMPLING, REPORTING, LABELING, AND DISTRIBUTION 8
6.1 Compost Quality Assurance Testing 8
6.1.1 Inorganic Constituents 9
6.1.2 Pathogen Reduction 9
6.1.3 Vector Attraction Reduction (Stability) Criteria 10
6.2 Compost Sampling 10
6.2.1 Compost Sampling Frequency and Sample Constituents 10
6.2.2 Test Methods 12
6.3 Compost Recordkeeping 13
6.4 Compost Reporting 14
6.5 Compost Labeling 14
6.6 Compost Distribution 14
7.0 CONTINGENCY TREATMENT AND DISPOSAL ALTERNATIVES 14
7.1 Off-Site Disposal 15
7.2 Land Application 15
7.2.1 Operational Standards - Land Application 15
7.2.2 Application Rate - Land Application 17
7.2.3 Frequency of Monitoring - Land Application 17
7.2.4 Recordkeeping - Land Application 17
7.2.5 Reporting - Land Application 19
7.2.6 Notice of Intent - Land Application 19

TABLES

TABLE 1 - GRADE I COMPOST INORGANIC MAXIMUM CONTAMINANT LEVELS 9
TABLE 2 - COMPOST SAMPLING & ANALYSIS FREQUENCY 11
TABLE 3 - COMPOST SAMPLING PARAMETERS 12
TABLES 4, 5 & 6 - LAND APPLICATION CHEMICAL POLLUTANT LIMITATIONS 16
TABLE 7 - COMPOST SAMPLING & ANALYSIS FREQUENCY-LAND APPLICATION 17

1.0 WASTE PRETREATMENT

Septage sludge, food grease and animal fats, and animal waste will be treated at the site through composting. Additionally, biosolids from municipal wastewater treatment plants which do not meet Class B requirements with respect to pathogen reduction will also be introduced into the compost stream. A discussion of the waste pretreatment before composting operations is presented below.

1.1 Septage Pretreatment

The septage handling facility was sized to handle a total volume of 1,000,000 gallons of septage per year over a five day work week scenario. A grated concrete receiving basin is used to receive septage from off-site haulers.

Upon discharge from the receiving basin, the septage waste enters the settling basin for separation of the sludge and liquid fractions of the waste. The settling basin consists of two (2), 10,000 gallon compartments connected in series for a total retention volume of 20,000 gallons. The settling basin was designed to handle a volume of 16,000 gal/day with a retention time of 30 hours. A structural railing was placed around the perimeter of the settling basin to prevent accidental entry and facilitate ease of cleaning. Odor from the settling basin has not been a problem. Odor control measures as discussed in the Odor Management Plan portion (Section 11.3) of the facility Design and Operations Plan will be implemented if odor becomes an issue.

Septage waste will be retained in the settling basin for a minimum of 30 hours upon which time the upper fraction of the midwater effluent from the final settling basin will be discharged to the evaporation ponds for evaporation. Septage sludge and the lower midwater fraction will be removed from the settling basin as needed and composted with food grease, animal fats, and animal mortalities.

An interim storage lagoon will provide storage of excess septage volumes resulting from equipment failure, surge flow events, inclement weather conditions, or other unanticipated problems. The interim holding facility will consist of a partitioned lined pond. The pond will encompass a square area 180 ft. x 180 ft. in size and be constructed as described in Facility Engineering Design - Evaporation Impoundments portion (Section 5.4) of the facility Design and Operations Plan.

1.2 Grease Trap Waste Pretreatment

Grease trap waste will be introduced directly into the compost stream (Section 3.0) or discharged into the grease trap receiving basin as discussed following. A concrete receiving basin is used to receive grease trap waste from off-site haulers. Upon discharge from the grease receiving basin, the grease fraction of the waste is separated from the waste midwater in a two compartment

concrete settling basin. The grease settling basin has a capacity of 3,000 gallons. A structural railing was placed around the perimeter of the grease settling basin to prevent accidental entry and facilitate ease of cleaning. Over the past 15 years of facility operation, odor from the settling basin has not been a problem. Odor control measures as discussed in the Odor Management Plan portion (Section 11.3) of the facility Design and Operations Plan will be implemented if odor becomes an issue.

Midwater from the grease trap settling basin is routed to the evaporation lagoons for disposal through evaporation. Grease is skimmed from the settling basin as needed and is combined with the septage sludge and animal mortalities for composting. Alternatively, grease will be sent to an off-site grease and animal fat recycling facility such as Dar Pro Solutions in Denver, CO.

1.3 Animal Waste Pretreatment

Animal waste including mortalities, animal slaughter waste, and animal bedding will be accepted for composting at the facility. No pretreatment of the animal waste is required and the waste stream will be introduced into the compost process upon receipt at the facility to minimize any odor and provide vector attraction reduction.

1.4 Biosolids Pretreatment

Biosolids which meet Class B requirements with respect to pathogen reduction will be treated by the Two-Summer Method discussed in Appendix L2. Biosolids which do not meet Class B requirements will be introduced into the compost stream. No pretreatment of biosolids will be necessary before composting.

2.0 MIDWATER TREATMENT AND DISPOSAL

The upper fraction of midwater, resulting from waste pretreatment operations, will be disposed of through evaporation in the evaporation lagoons. Historically, the upper midwater fraction comprises 1/3 of the total septage volume. At a design acceptance volume of 1,000,000 gallons/yr. of septage, this results in a design evaporation volume of 333,000 gallons/yr.

The evaporation lagoon consists of one rectangular pond. The pond construction is discussed in the Facility Engineering Design - Evaporation Impoundments portion (Section 5.2) of the facility Design and Operations plan. The basal area of the pond is level and 52 ft. wide x 262 ft. long. Pond sidewalls are a maximum slope of 3 horizontal to 1 vertical to prevent erosion and provide emergency egress for any animals or personnel which may accidentally enter the lagoon. The maximum pond depth will be 2’ which results in a 2’ free board. Ponds are affixed with a depth rod graduated at 0.05 ft. intervals to relate liquid depth to the liquid volume and corresponding

surface area retained in each pond (see Table A-2, Appendix A).

The pond is designed to evaporate 350,000 gallons of midwater per year. Design parameters and sizing calculations are presented in Appendix A (Design Manual: *Onsite Wastewater Treatment and Disposal Systems*, US EPA, Office of Water Programs Operations, Office of Research and Development, Municipal Environmental Research Laboratory, October, 1980). As shown by the water balance table in Appendix A, the maximum pond cumulative volume is 198,739 gallons occurring in the month of March.

Assuming a BOD_5 loading for the midwater of 139 mg/l (University of Wisconsin, *Management of Small Waste Flows*, EPA-600/2-78-173, Municipal Environmental Research Laboratory, EPA, Cincinnati, OH, 1978) will result in a BOD_5 loading of 0.11 pounds/day-1000 sq. ft. under the maximum design flow of 1,350 gal./day. The anticipated BOD_5 loading of 0.11 pounds/day-1000 sq. ft. is well below the maximum loading of 0.46 pounds/day-1000 sq. ft. recommended by the CDPHE and historical operation of the evaporation lagoons indicates aeration or chemical treatment of the evaporation lagoon is unnecessary.

3.0 COMPOSTING TREATMENT AND DISPOSAL

Septage sludge, food grease and animal fats, and animal waste will be treated at the site through composting (*Septage Management*, NTIS, PB95-156337, Lombardo and Associates, Inc., Boston, MA, 1995). Biosolids from municipal wastewater treatment plants which do not meet Class B requirements with respect to pathogen reduction will also be introduced into the compost stream. The composting operation at the facility will be sized to treat approximately 25 cu. yds. of sludge per day.

Septage sludge, food grease and animal fats, animal waste, and biosolids unable to meet Class B requirements will be mixed with an organic bulking agent and composted. The organic bulking agent will consist of wood chips, saw dust , lawn clippings, and tree trimmings. A mixing ratio of 3 parts bulking agent to 1 part sludge (by volume) is maintained. It is anticipated approximately 25 cu. yds. of sludge mixed 3:1 with bulking agent will result in the generation of 100 cu. yds. of compost daily. Food waste and animal mortalities will be covered immediately to minimize odors. Care will be taken when turning the compost to prevent mortalities from being exposed.

Compost will be mixed in a concrete compost mixing basin. See Figure 9 for construction details. Bulk storage areas are shown on Plate P3. The quantity and type of bulk storage material will vary depending on available material and operator experience with the composting process.

After the compost is mixed, digestion and curing operations will take place on a low permeability work pad. The work pad consists of a minimum of 12 in. of recompacted native

clay soils providing permeability in excess of 10^{-5} cm/s (see Section 5.5). The work pad is graded to prevent ponding of storm water or compost leachate and to direct all storm flows and leachate from the compost area to the evaporation lagoons for containment and disposal.

A modified windrow composting method is employed to compost the mixed sludge and bulking agent. As discussed above, the compost sludge will be mixed mechanically with the bulking agent in a concrete mixing basin. The newly mixed compost is then placed in a pile on the low permeability work pad to compost. To attain pathogen reduction requirements, each compost pile is maintained at a temperature of 55 degrees Celsius (131 degrees Fahrenheit) (Source: Solid Wastes Engineering Principles and Waste Management, Tchobanoglous) or higher for 15 days or longer. The 15 days do not need to be consecutive. Each pile is turned a minimum of 5 times during the period when the compost is maintained at 55 degrees Celsius or higher. The piles will be approximately 20 feet wide at the base. The length will vary depending on the volumes being processed.

- Moisture: The optimal composting moisture content is between 50 and 60 percent (Source: Solid Wastes Engineering Principles and Waste Management, Tchobanoglous). Proper moisture also controls the windblown transport of dust off of the compost pile. Moisture content is measured with an agricultural moisture meter. CHT has acquired water rights and will construct a storage pond to provide water for the landfarming operation. If there is insufficient water from these rights, off-site water will be brought into the site using tanker trucks.

- Temperature: The temperature of the compost pile is monitored to determine biodegradation rates and assure pathogen reduction and vector attraction reduction requirements are satisfied. Temperature monitoring consists of placing temperature probes into the compost pile. The probes are randomly located throughout the compost pile. At least one temperature measurement is taken for each 100 sq. ft. of compost pile surface area. Temperature measurements are recorded daily during the duration of compost operations. Aeration through turning and moisture content is adjusted as necessary to maintain optimum composting conditions resulting in a final product of sufficient quality for off-site distribution to the public.

Upon completion of the composting process, the finished compost will be stored on-site for sampling and quality assurance testing pending off-site distribution to the public.

4.0 WASTE CHARACTERIZATION PLAN

Wastes received at the facility for composting treatment will consist primarily of non-hazardous domestic septage, biosolids from municipal wastewater treatment facilities, food grease and animal fats, and animal waste.

Septage waste and food grease is unique in the fact that each load of waste is generated from a different source. In light of the absence of a unique waste generation source, septage/food grease waste characterization will be accomplished by sampling the waste from one different hauler quarterly. The waste will be analyzed for:

- RCRA 8 Metals – Test Suite 1, Table 1, Appendix M,
- Volatile Organic Compounds (VOCs) – Test Suite 3, Table 1, Appendix M,
- Semi-Volatile Organic Compounds (SVOCs) – Test Suite 4, Table 1, Appendix M.

In addition, grab samples will be collected from each waste delivery and observed for abnormal appearance. Any waste delivery that appears abnormal, will be diverted to the concrete lined portion of the interim storage lagoon and sampled for:

- RCRA 8 Metals – Test Suite 1, Table 1, Appendix M,
- Volatile Organic Compounds (VOCs) – Test Suite 3, Table 1, Appendix M,
- Semi-Volatile Organic Compounds (SVOCs) – Test Suite 4, Table 1, Appendix M.

Any additional waste characterization required for unusual waste will be based on initial characterization data and specific waste generator information.

Due to the benign nature of animal fats and animal waste, no waste characterization activities for this waste stream are planned. Analytical methods, allowable concentrations, and a listing of required test suites for each waste stream are listed in Appendix M.

All waste exhibiting excessive contaminant constituents will be rejected by the facility and the analytical test results will be immediately reported to the CDPHE and the EPA. The facility will not knowingly accept any incompatible waste, hazardous waste, or waste containing PCBs. The facility operator will immediately notify the CDPHE and the EPA if any hazardous or PCB contaminated waste is discovered at the facility.

5.0 WASTE GENERATOR AND TRANSPORTER MONITORING AND MANIFESTS

Before any waste generator or waste transporter is allowed to deliver waste to the facility, the waste generator or transporter will be required to complete a survey and application for waste delivery to the facility. The survey will document the generator's or transporter's identity, contact personnel, company location, type of waste generated or transported, and the weekly quantity of waste generated or transported. The survey will also include a statement to which the waste generator or transporter must attest by signature that:

1) the wastes proposed for delivery are not hazardous;
2) the survey information provided is true, accurate, and complete, and;
3) the transfer of waste to the facility does not relieve the generator or transporter from liability associated with the proper disposal of that waste.

A sample survey and application for waste delivery to the facility is included in Appendix C.

In addition to completion of the survey and application for waste delivery, an initial interview will be conducted with each waste generator or transporter to inform them of all dumping policies, procedures, and assumed liabilities including but not limited to:

1) the waste types the facility is authorized to accept;
2) the hours of operation and the dumping procedure, and
3) acceptance of the waste by the facility does not relieve the waste generator or transporter from liability associated with the proper disposal of the waste.

Upon delivery of waste to the facility, transporters will be required to complete a transport manifest documenting the transporter's identity, date of delivery, waste generator, and type of waste. The transport manifest will also include a statement to which the waste transporter must attest by signature that:

1) the wastes delivered are not hazardous;
2) the information provided is true, accurate, and complete, and;
3) the transfer of waste to the facility does not relieve the generator or transporter from liability associated with the proper disposal of that waste.

The transport manifest will be completed in triplicate with one copy being kept by the facility and two copies (one for the transporter and one for the waste generator if desired) being retained by the transporter. Transport manifests will be retained at the site for a minimum of one year after delivery of the associated waste. A sample waste transport manifest is included in Appendix D.

General waste will be accepted at the site during hours of operation from 7:00 A.M. to 4:00 P.M. Monday through Friday. The facility will be fenced with after-hours access controlled by a locked gate. The facility will accept waste only from reputable waste generators and transporters who have completed the facility survey and application for waste delivery process. Facility personnel will inspect and supervise the delivery of all waste to the facility.

6.0 COMPOST QUALITY ASSURANCE TESTING, SAMPLING, REPORTING, LABELING, AND DISTRIBUTION

6.1 Compost Quality Assurance Testing

Compost sampling and quality assurance testing requirements for septage and grease are promulgated under CDPHE Regulations Pertaining To Solid Waste Disposal Sites and Facilities, 6 CCR 1007-2, Section 14.6.

6.1.1 Inorganic Constituents

Before the finished compost is sold or distributed to the public for unrestricted off-site use, it will be tested to assure the compost meets the numerical criteria for metals specified in CCR 1007-2, Section 14.6 (C) Table 1.

CONSTITUENTS	MAXIMUM LEVEL
INORGANICS (mg/kg)	
Arsenic	41
Cadmium	39
Copper	1500
Lead	300
Mercury	17
Nickel	420
Selenium	100
Zinc	2800

TABLE 1 - GRADE I COMPOST INORGANIC MAXIMUM CONTAMINANT LEVELS

6.1.2 Pathogen Reduction

Before the finished compost is sold or distributed to the public for unrestricted off-site use, it will be tested to ensure that the compost meets the criteria for Class A with respect to pathogen reduction as follows:

1) Either the density of fecal coliform present in the compost is less than 1000 Most Probable Number per gram of total solids (dry weight basis), or
2) The density of Salmonella sp. bacteria in the compost is less than three (3) Most Probable Number per four (4) grams of total solids (dry weight) at the time the compost is sold or otherwise distributed for use to comply with pathogen reduction requirements and;

(a) Before the finished compost is sold or distributed to the public for unrestricted off- site use, composting temperature records shall verify that the composting process has reduced pathogens by maintaining a minimum temperature in the compost pile of 55 deg C (131 deg F) or higher for 15 days or longer and during which time there are a minimum of 5 turnings of the compost to comply with pathogen reduction requirements.

6.1.3 Vector Attraction Reduction (Stability) Criteria

Before the finished compost is sold or distributed to the public for unrestricted off-site use, it will be tested to ensure that the compost meets the criteria for vector attraction reduction as follows:

1) Before the finished compost is sold or distributed to the public for unrestricted off- site use, composting temperature records shall verify that the composting process has maintained aerobic conditions and an average temperature in the compost pile of 45 deg C (113 deg F) or higher for fourteen (14) days during which time the compost temperature shall not drop below 40 deg C (104 deg F) to comply with vector attraction reduction (biosolids stability) criteria .

Compost which does not meet the above discussed quality criteria will be reintroduced to the compost process.

6.2 Compost Sampling

Compost sampling is discussed below. The location of samples will be recorded and used to track treatment times and composting efficiency.

6.2.1 Compost Sampling Frequency and Sample Constituents

Compost shall be sampled for compliance with the compost quality criteria discussed above at the frequencies specified in Table 2.

FREQUENCY OF COMPOST SAMPLING COLLECTION AND ANALYSIS	
ANNUAL COMPOST PRODUCTION (dry short tons/year)	FREQUENCY
less than 319	once per year
319 to less than 1,650	once per quarter
1,650 to less than 16,500	once per two months
16,500 and greater	Monthly

TABLE 2 - COMPOST SAMPLING AND ANALYSIS FREQUENCY

Analysis of compost samples shall include the parameters identified in Table 3.

COMPOST ANALYSES AND REPORTING UNITS			
PARAMETER	UNITS	PARAMETER	UNITS
total solids	percent	volatile solids	percent of solids
pH	standard units	organic nitrogen as N	percent dry weight
total phosphorus	percent dry weight	total ammonia as N	percent dry weight
total potassium	percent dry weight	nitrate as N	percent dry weight
total arsenic	mg/kg dry weight	total mercury	mg/kg dry weight
total cadmium	mg/kg dry weight	total molybdenum	mg/kg dry weight
total chromium	mg/kg dry weight	total nickel	mg/kg dry weight
total copper	mg/kg dry weight	total selenium	mg/kg dry weight
total lead	mg/kg dry weight	total zinc	mg/kg dry weight

TABLE 3 - COMPOST SAMPLING PARAMETERS

Samples collected to satisfy compost sampling and analysis requirements shall be composite samples. Collections shall be from the finished compost storage area and shall consist of a minimum of three grab samples of no less than 0.5 pounds each. Grab samples shall be collected to be representative of the volume of compost and shall be combined to form the composite sample volume.

In addition to the sample parameters specified in Table 3, compost shall also be sampled for such parameters as required to demonstrate compliance with the pathogen reduction and vector attraction reduction requirements discussed above. Multiple tube assays shall be used to demonstrate compliance with pathogen reduction requirements. Sampling and analysis frequencies to demonstrate pathogen reduction and vector attraction reduction requirements shall be performed at the same frequencies specified for organic and inorganic parameters specified in Table 2.

6.2.2 Test Methods

Analysis of compost samples shall be made by the following methods.

(i) Fecal Coliform
Part 9221 E. or Part 9222 D., "Standard Practice for the Examination of Water and Wastewater", 18th Edition, American Public Health Association, Washington, D.C., 1992.

(ii) Salmonella sp. bacteria

Part 9260 D., "Standard Methods for the Examination of Water and Wastewater", 18th Edition, American Public Health Association, Washington, D.C., 1992: or

Kenner, B.A. and H.P. Clark, "Detection and enumeration of Salmonella and Pseudonomas aeruginosa", J. Water Pollution Control Federation, 46(9): 2163-2171, 1974.

(iii) Inorganic pollutants (metals)
SW - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA Publication SW-846, Second Edition (1982) with Updates I and II and Third Edition (1986) with Revision I. Second Edition - PB87-120-291, National Technical Information Service, Springfield, Virginia. Third Edition - Document number 955-001-00000-1, Superintendent of Documents, Government Printing Office, Washington, D.C.

(iv) Inorganic pollutants (nitrate, phosphorous, TKN, etc.)
SM - "Standard Methods for the Examination of Water and Wastewater", 18th Edition. American Public Health Association, Washington, DC. 1992.

(v) total petroleum hydrocarbons
EPA method 8015m

6.3 Compost Recordkeeping

The facility shall maintain, at a minimum, the following applicable records:

1) type and amount of feedstock(s) and bulking material(s) received, processed and remaining on-site;
2) amount of finished compost sold or distributed off-site;
3) water quality monitoring data;
4) compost analytical data;
5) operational monitoring data including time and temperature readings;
6) compost pile aeration/turnings data;
7) financial assurance documentation;
8) design and operations plan; and
9) certificate of designation; and
10) facility personnel training records.

These records shall be maintained at the facility and shall be made available to the CDPHE upon request.

6.4 Compost Reporting

The facility shall submit an annual report by May 1st of each year to the CDPHE and Delta County Environmental Health Dept. The annual report shall provide the total cubic yards of material received at the facility during the previous calendar year, including by type:

1) the quantity of finished product used on-site, sold, or distributed off-site; and
2) the quantity and type of feedstock and bulking material received, processed, and remaining on site.

6.5 Compost Labeling

Compost marketed to the public for unrestricted use shall meet the numerical criteria for Grade I with respect to the sample constituents defined in Table 1. Additionally, the compost shall meet the criteria for Class A with respect to pathogen destruction and vector attraction reduction.

When compost is made available to the public for unrestricted use, a label or information sheet shall identify:

(i) the name and address of the person who prepared the compost, and:

(ii) the typical concentration of plant nutrients on a dry weight percentage basis including, at a minimum, total nitrogen, total phosphorus, and total potassium in the compost.

6.6 Compost Distribution

All use, distribution, or disposal of compost at the facility requires a Notice of Authorization for the Use and Distribution of Biosolids from the CDPHE. A Letter of Intent has been submitted to the CDPHE to facilitate issuance of the Notice of Authorization. The Letter of Intent is shown in Appendix E.

7.0 CONTINGENCY TREATMENT AND DISPOSAL ALTERNATIVES

Contingency treatment and disposal alternatives will include land application and off-site disposal at a permitted disposal or recycling facility. The contingency treatment and disposal alternatives are meant to address unforeseen circumstances such as break down of equipment, peak or surge loading, inclement weather, offensive odor, and contamination of groundwater or surface water. Off-site disposal and land application are discussed below.

7.1 Off-Site Disposal

Off-site disposal will consist of contracting with a permitted off-site disposal facility to dispose of the waste. The following off-site facilities are available.

Septage and Biosolids

McDonald Farms
7440 E I25 Frontage Rd
Frederick, CO 80530
(303) 772-4577

A-1 Organics
16350 WCR 76
Eaton, CO 80615
970-454-3492

South Canyon Landfill
1205 Co Hwy 134,
Glenwood Springs, CO 81601
970-945-5375

Grease and Animal Fat

Dar Pro Solutions (Denver)
5701 York St
Denver, CO 80216
888-414-2069

7.2 Land Application

Land application at this site will only be used for reclamation activities or if there is insufficient working pad area. A description of land application activities follows.

7.2.1 Operational Standards - Land Application

Septage and biosolids shall not be land applied if the concentration of any pollutants in the waste exceeds the maximum ceiling concentrations specified in Table 4 and the cumulative pollutant loading rates in Table 5; or the maximum ceiling concentrations specified in Table 4 and the monthly average pollutant concentrations specified in Table 6. If waste that is land applied exceeds the monthly average pollutant concentrations specified in Table 6, the site is thereafter subject to the cumulative pollutant loadings specified in Table 5.

Pollutant	Table 4	Table 5	Table 6
	Daily Maximum (mg/kg)	Cumulative Pollutant Loading Rate (kg/Ha)	Monthly Average Concentration (mg/kg)
Total Arsenic	75	41	41
Total Cadmium	85	39	39
Total Copper	4300	1500	1500
Total Lead	840	300	300
Total Mercury	57	17	17
Total Molybdenum	75	N/A	N/A
Total Nickel	420	420	420
Total Selenium	100	100	100
Total Zinc	7500	2800	2800

TABLES 4, 5, and 6 - LAND APPLICATION CHEMICAL POLLUTANT LIMITATIONS

Biosolids that are land applied will be subject to windrow/pile compost treatment (see Appendix L2) to assure Class A pathogen requirements are met in accordance with 40 CFR Part 503.32(a)(7). Pathogen reduction requirements for septage will be achieved by lime addition to raise the pH to 12 or higher for a minimum of 30 minutes (without further lime addition) immediately before the septage is land applied; and restricting the cultivation of any food, feed, or fiber crops on any land to which septage has been land applied [40 CFR Part 503.32(c)(2)].

Biosolids that are land applied will be subject to windrow/pile compost treatment to assure vector attraction reduction requirements are met in accordance with 40 CFR Part 503.33(b)(5). Vector attraction reduction requirements for septage will be achieved by lime addition to raise the pH to 12 or higher for a minimum of 30 minutes (without further lime addition) immediately before the septage is land applied [40 CFR Part 503.33(b)(12)].

7.2.2 Application Rate - Land Application

Septage and biosolids treated through composting shall be land applied at a rate that is less than or equal to the calculated agronomic rate with respect to the nitrogen content of the finished compost. The annual application rate for septage shall not exceed the annual application rate, AAR, in gallons per acre-year calculated as:

$$AAR = \frac{N}{0.0026} \quad ;$$

where,
AAR = Annual Application Rate (gallons/acre-year), and
N = Amount of nitrogen need by the crop or vegetation grown on the land (pounds/acre-year).

7.2.3 Frequency of Monitoring - Land Application

The inorganic pollutants listed in Tables 4, 5, and 6 and the pathogen reduction requirements in 503.32(a)(7) shall be monitored at the frequency specified in Table 7.

FREQUENCY OF COMPOST SAMPLING COLLECTION AND ANALYSIS	
ANNUAL SLUDGE PRODUCTION (metric tons/year)	FREQUENCY
less than 290	once per year
290 to less than 1,500	once per quarter
1,500 to less than 15,000	once per two months
15,000 and greater	Monthly

TABLE 7 - COMPOST SAMPLING AND ANALYSIS FREQUENCY-LAND APPLICATION

Each container of domestic septage that is land applied will be monitored for pH for a minimum of 30 minutes to document compliance with 503.329(c)(2) and 503.33(b)(12).

7.2.4 Recordkeeping - Land Application

Recordkeeping for land application of septage and biosolids shall include the following information which shall be retained for five (5) years:

i. The concentration of each inorganic pollutant listed in Table 4.
ii. The following certification statement:

> I certify, under penalty of law, that the information that will be used to determine compliance with the Class A pathogen requirements in Section

503.32(a)(7) and the vector attraction reduction requirements in Section 503.33(b)(5) 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 am aware that there are significant penalties for false certification including the possibility of fine and imprisonment.

iii. The Class A pathogen reduction requirements specified in Section 503.32(a)(7) were met through static pile composting where a minimum temperature of 55º centigrade was maintained for three (3) days. Fecal coliform and salmonella sp. bacteria concentrations were measured using method Part 9221 E. or Part 9222 D. for Fecal coliform and Part 9260 D. for salmonella sp. bacteria ("Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992, American Public Health Association, 1015 15th Street, NW., Washington, DC 20005

iv. The vector attraction reduction requirements specified in Section 503.33(b)(5) were met through static pile composting where a minimum temperature of 40º centigrade and an average temperature of 45º centigrade was maintained for a minimum of 14 days.

Recordkeeping for land application of septage shall include the following information which shall be retained for five (5) years.

i. The location, by either street address or longitude and latitude, of each site on which domestic septage is applied.
ii. The number of acres in each site on which domestic septage is applied.
iii. The date domestic septage is applied to each site.
iv. The nitrogen requirement for the crop or vegetation grown on each site during a 365 day period.
v. The rate, in gallons per acre per 365 day period, at which domestic septage is applied to each site.
vi. The following certification statement:

I certify, under penalty of law, that the information that will be used to determine compliance with the pathogen requirements of Section 503.32(c)(2) and the vector attraction reduction requirements in Section 503.33(b)(12) 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 am aware that there are significant penalties for false certification including the possibility of fine and imprisonment.

vii. The pathogen reduction requirements in Section 503.32(c)(2) were met by addition of lime to raise the pH of the septage to 12 or higher for a minimum of 30 minutes without further lime addition.
viii. The vector attraction reduction requirements in Section 503.33(b)(12) were met

by addition of lime to raise the pH of the septage to 12 or higher for a minimum of 30 minutes without further lime addition.

7.2.5 Reporting - Land Application

No reporting is required for land application, however, the above discussed records must be retained for five (5) years and made available to regulatory personnel upon request.

7.2.6 Notice of Intent - Land Application

Before commencing any land application operations at the site, a Notice of Intent for land application was submitted to:

NPDES PERMITS TEAM (8P-W-P)
U.S. EPA, REGION VIII
1595 WYNKOOP ST
DENVER, CO 80202

COLORADO DEPARTMENT OF PUBLIC HEALTH AND THE ENVIRONMENT
WATER QUALITY CONTROL DIVISION, WQCD-PE-B2
ATTENTION: BIOSOLIDS PROGRAM
4300 CHERRY CREEK DRIVE SOUTH
DENVER, COLORADO 80246-1530

The Notice of Intent supplies information necessary to obtain coverage under the General Permit for Facilities/Operations That Generate, Treat, and/or Use/Dispose of Sewage Sludge by Means of Land Application, Landfill, and Surface Discharge under the National Pollutant Discharge Elimination System as issued by EPA Region VIII. The Notice of Intent is included as Appendix F. The facility's current permit number is COG-650139. The Notice of intent will be updated to reflect CHT as the new owners after transfer of the facility.

APPENDIX L2
BIOSOLIDS COMPOSTING OPERATIONS

TABLE OF CONTENTS

1.0 BIOSOLIDS PRETREATMENT 3
2.0 BIOSOLIDS TREATMENT - TWO SUMMER METHOD 3
2.1 Metals Classification 3
2.2 Pathogen Destruction Criteria 4
2.3 Vector Attraction Reduction Criteria 5
3.0 WASTE CHARACTERIZATION PLAN 6
4.0 WASTE GENERATOR AND TRANSPORTER MONITORING AND MANIFESTS 7
5.0 BIOSOLIDS DISTRIBUTION 8
5.1 Distribution of Biosolids For Unrestricted Use 8
5.1.1 Inorganic Constituents 8
5.1.2 Pathogen Reduction 8
5.1.3 Vector Attraction Reduction (Stability) Criteria 9
5.2 Distribution of Biosolids for Restricted Use 9
5.2.1 Inorganic Constituents 10
5.2.2 Pathogen Reduction 10
5.2.3 Vector Attraction Reduction (Stability) Criteria 10
5.2.4 Biosolids Labeling For Restricted Use 11
6.0 BIOSOLIDS SAMPLING AND ANALYSIS 12
6.1 Biosolids Sampling Frequency and Sample Constituents 12
6.2 Test Methods 13
7.0 BIOSOLIDS RECORDKEEPING AND REPORTING 14
7.1 Biosolids Recordkeeping 14
7.2 Biosolids Reporting 14
8.0 CONTINGENCY TREATMENT AND DISPOSAL ALTERNATIVES 15

TABLES

TABLE 1 - CEILING CONCENTRATION LIMITS 4
TABLE 2 - CUMULATIVE POLLUTANT LOADING RATE 4
TABLE 3 - POLLUTANT CONCENTRATION LIMITS 4
TABLE 4 – BIOSOLIDS CLASS A/CLASS B PATHOGEN LIMITS 4
TABLE 5 - ANNUAL POLLUTANT LOADING RATE LIMITS 12
TABLE 6 - BIOSOLIDS SAMPLING AND ANALYSIS FREQUENCY 12
TABLE 7 - BIOSOLIDS SAMPLING PARAMETERS 13

ATTACHMENTS

ATTACHMENT 1 - TWO SUMMER METHOD 17

REGULATORY NOTE:

Since inception, CBIDI has operated its compost facility in accordance with the CDPHE Water Quality Control Division (WQCD) Regulation 64 (5 CCR 1002-64). In December 6, 2004, the WQCD issued a "Notice of Authorization for the Use and Distribution of Biosolids" authorizing the facility to distribute biosolids for "Unrestricted Use." The authorization letter is included in Appendix E. It is the intent of CHT to continue to operate the composting process in accordance with Regulation 64 and also meet the physical requirements of 6 CCR 1007-2 Section 14, Composting which is administered by the Hazardous Materials and Waste Management Division. Section 14 requirements are addressed in the Sections 1.0 through 16.0 of the EDOP text. CHT will update the notice to reflect the new ownership after the transfer of the facility according to Regulation 64.10 (J).

1.0 BIOSOLIDS PRETREATMENT

Biosolids which meet Class B requirements with respect to pathogen reduction will be treated by the procedures identified in the Regulation 64 Two-Summer Method. Biosolids which do not meet Class B requirements will be introduced into the compost stream as discussed in Appendix L1. No pretreatment of biosolids will be necessary before treatment.

2.0 BIOSOLIDS TREATMENT - TWO SUMMER METHOD

A discussion of the Two-Summer Method of biosolids treatment follows.

2.1 Metals Classification

Before acceptance of biosolids from the waste generator, the waste will be characterized with respect to metals as discussed in Section 3 below. Biosolids shall be classified as Table 1 or Table 3 with respect to metals as based on compliance with the ceiling limits specified in Tables 1 and 3 below. Biosolids classified as Table 1 are subject to the cumulative pollutant loading rates specified in Table 2 below.

Pollutant	Table 1	Table 2	Table 3
	Ceiling Concentration Limits (mg/kg)	Cumulative Pollutant Loading Rate kg/Ha (lbs/ac)	Pollutant Concentration Limits (mg/kg)
Total Arsenic	75	41 (37)	41
Total Cadmium	85	39 (35)	39
Total Copper	4300	1500 (1339)	1500
Total Lead	840	300 (286)	300
Total Mercury	57	17 (17)	17
Total Molybdenum	75	N/A	N/A
Total Nickel	420	420 (375)	420
Total Selenium	100	100 (89)	100
Total Zinc	7500	2800 (2499)	2800

Table 1 - Ceiling Concentration Limits Table 2 - Cumulative Pollutant Loading Rates
Table 3 - Pollutant Concentration Limits

2.2 Pathogen Destruction Criteria

Before acceptance of the biosolids from the waste generator, the waste will be characterized with respect to pathogen destruction criteria as discussed in Section 3 below. Biosolids shall be classified as Class A or Class B with respect to pathogens as based on compliance with the ceiling limits specified in Table 4 below.

Table 4. – Biosolids Class A/Class B Pathogen Limits		
Pathogen	Class A (based on 7 individual samples per classification event)	Class B (based on the geometric mean of seven samples per classification event)
Fecal Coliform	<1,000 MPN/g	<2,000,000 MPN/g or <2,000,000 CFU/g
Salmonella sp.	<3 MPN/4g	

Biosolids which do not meet pathogen destruction Class A or Class B requirements will be introduced into the compost stream as discussed in Appendix L1. Biosolids meeting Class A or

Class B pathogen destruction criteria will be further treated in accordance with 5 CCR 1002-64, Section 64.12 (B)(7)(b)(viii) by the Two Summer Method Process to Further Reduce Pathogens (PFRP). The Two Summer method is discussed below and attached for reference as Attachment 1 (EPA Region VIII, Part 2 - Reference Sheets to 40 CFR Part 503, Section 2.7 Pathogen and Vector Attraction Reduction Methods).

Biosolids which meet Class A or Class B criteria and have a solids content ranging from 14% to 35 % will be stored in piles for long-term treatment. The biosolids must be stored for a minimum of two summers with a minimum storage time of 15 months. The piles shall be formed into windrows ranging from 3.5' to 6' in height. During the first summer, the total solids content of the windrows must not exceed 60%. The average temperature of the piles shall exceed 20 degrees Centigrade (68 degrees Fahrenheit) for 12 months of the storage period (not necessarily consecutive months). During the two summers of storage, the piles shall be turned a minimum of 3 times at evenly spaced intervals throughout each summer.

Upon completion of the storage period, the finished biosolids must not contain more than one Viable Helminth OVA per four grams of total solids (dry weight basis). Additionally, the biosolids must meet Class A pathogen destruction criteria of Fecal Coliform limits <1,000 Most Probable Number/gram of total solids (dry weight basis) or Salmonella limits <3 Most Probable Number/4 grams of total solids (dry weight basis). The biosolids must be monitored for Helminth OVA once for each batch.

At each turning of the pile, the biosolids shall be monitored for volatile solids and total solids. The average pile temperature will be monitored monthly. Monitoring of the biosolids for Enteric Viruses is not required if all other conditions for long term treatment are followed.

Windrow storage and turning operations will take place on a low permeability work pad. The work pad will consist of a minimum of 12 in. of recompacted native clay soils providing a maximum permeability of 10^{-5} cm/s. The work pad will be graded to prevent ponding of storm water or compost leachate and to direct all storm flows and leachate from the work area to the evaporation lagoons or stormwater retention lagoon for containment and disposal.

Upon completion of the Two Summer Method treatment process, the piles will be dismantled and the finished biosolids will be stored on-site for sampling and quality assurance testing pending off-site distribution to the public.

2.3 Vector Attraction Reduction Criteria

Vector attraction reduction criteria for the biosolids shall be achieved by compliance with 5 CCR 1002-64, Section 64.12(C) during treatment with the Two Summers Method. Specific treatment will include reducing the mass of volatile solids in the biosolids by a minimum of 38% (option 3) or treating the biosolids in an aerobic process for 14 days or longer during which time the

average temperature of the biosolids shall be above 45 degrees Celsius with the minimum temperature greater than 40 degrees Celsius (option 7).

3.0 WASTE CHARACTERIZATION PLAN

Wastes received at the facility for composting treatment will consist of non-hazardous biosolids from municipal wastewater treatment facilities.

Municipal Wastewater Treatment Facilities which wish to deliver biosolids to the facility will be characterized initially and bi-annually thereafter. Biosolids will be characterized for:

- Gross alpha – Test Suite 14, Table 1, Appendix M,
- RCRA 8 Metals, Copper, and Zinc – Test Suite 1, Table 1, Appendix M,
- Pathogens – Test Suite 16, Table 1, Appendix M.

Any waste delivery that appears abnormal, will be diverted to the concrete lined portion of the interim storage lagoon and sampled for:

- Gross alpha – Test Suite 14, Table 1, Appendix M,
- RCRA 8 Metals, Copper, and Zinc – Test Suite 1, Table 1, Appendix M,
- Pathogens – Test Suite 16, Table 1, Appendix M.
- Volatile Organic Compounds (VOCs) – Test Suite 3, Table 1, Appendix M,
- Semi-Volatile Organic Compounds (SVOCs) – Test Suite 4, Table 1, Appendix M.

Any additional waste characterization required for unusual waste will be based on initial characterization data and specific waste generator information.

All waste exhibiting excessive contaminant constituents will be rejected by the facility and the analytical test results will be immediately reported to the CDPHE and the EPA. The facility will not knowingly accept any incompatible waste, hazardous waste, or waste containing PCBs. The facility operator will immediately notify the CDPHE and the EPA if any hazardous or PCB contaminated waste is discovered at the facility.

Analytical Procedures:

Analytical methods, allowable concentrations, and a listing of required test suites for each waste stream are listed in Appendix M.

4.0 WASTE GENERATOR AND TRANSPORTER MONITORING AND MANIFESTS

Before any waste generator or waste transporter is allowed to deliver waste to the facility, the waste generator or transporter will be required to complete a survey and application for waste delivery to the facility. The survey will document the generator's or transporter's identity, contact personnel, company location, type of waste generated or transported, and the weekly quantity of waste generated or transported. The survey will also include a statement to which the waste generator or transporter must attest by signature that:

1) the wastes proposed for delivery are not hazardous;
2) the survey information provided is true, accurate, and complete, and;
3) the transfer of waste to the facility does not relieve the generator or transporter from liability associated with the proper disposal of that waste.

A sample survey and application for waste delivery to the facility is included in Appendix C.

In addition to completion of the survey and application for waste delivery, an initial interview will be conducted with each waste generator or transporter to inform them of all dumping policies, procedures, and assumed liabilities including but not limited to:

1) the waste types the facility is authorized to accept;
2) the hours of operation and the dumping procedure, and;
3) acceptance of the waste by the facility does not relieve the waste generator or transporter from liability associated with the proper disposal of the waste.

Upon delivery of waste to the facility, transporters will be required to complete a transport manifest documenting the transporter's identity, date of delivery, waste generator, and type of waste. The transport manifest will also include a statement to which the waste transporter must attest by signature that:

1) the wastes delivered are not hazardous;
2) the information provided is true, accurate, and complete, and;
3) the transfer of waste to the facility does not relieve the generator or transporter from liability associated with the proper disposal of that waste.

The transport manifest will be completed in triplicate with one copy being kept by the facility and two copies (one for the transporter and one for the waste generator if desired) being retained by the transporter. Transport manifests will be retained at the site for a minimum of one year after delivery of the associated waste. A sample waste transport manifest is included in Appendix D.

General waste will be accepted at the site during hours of operation from 7:00 A.M. to 4:00 P.M. Monday through Friday. The facility will be fenced with after-hours access controlled by a

locked gate. The facility will accept waste only from reputable waste generators and transporters who have completed the facility survey and application for waste delivery process. Facility personnel will inspect and supervise the delivery of all waste to the facility. Record keeping will include the location of long-term storage, tracking of piles and time frame of treatment. There are no maximum volume limits. Long-term or short-term storage will be done on the compost pad.

5.0 BIOSOLIDS DISTRIBUTION

Biosolids distribution is discussed below.

5.1 Distribution Of Biosolids For Unrestricted Use

No person shall distribute or market biosolids to the public for unrestricted use unless a Notice of Authorization for the Use and Distribution of Biosolids has been issued by the CDPHE pursuant to 5CCR 1002-64, Section 64.10. A Letter of Intent has been submitted to the CDPHE to facilitate issuance of the Notice of Authorization. The facility currently has been issued a Notice of Authorization granted during the past 15 years of operation of biosolids handling. The Letter of Intent is shown in Appendix E. CHT will update the notice to reflect the new ownership after the transfer of the facility according to 64.10 (J).

When biosolids are distributed or marketed to the public for unrestricted use, information shall be made available to the public, in the form of labeling, information sheets, and written cautions or written instructions for use. At a minimum such information shall include the following: (a) the name and address of the person who prepared the biosolids which are sold or given away, and (b) the typical concentration of plant nutrients on a dry weight percentage basis including, at a minimum total nitrogen, total phosphorus, and total potassium in the biosolids.

5.1.1 Inorganic Constituents

Before the finished biosolids is sold or distributed to the public for unrestricted off-site use, it will be tested to assure the biosolids meets the numerical criteria for metals specified in Table 3 - Pollutant Concentration Limits. Table 3 (shown above) is consistent with CCR 1007.2 Regulation 14 (Composting) Table 1.

5.1.2 Pathogen Reduction

Before the finished biosolids is sold or distributed to the public for unrestricted off-site use, it will be tested to ensure that the biosolids meets the criteria for Class A with respect to pathogen reduction as follows:

1) Either the density of fecal coliform present in the biosolids is less than 1000 Most Probable Number per gram of total solids (dry weight basis), or

2) The density of Salmonella sp. bacteria in the biosolids is less than three (3) Most Probable Number per four (4) grams of total solids (dry weight) at the time the biosolids is sold or otherwise distributed for use to comply with pathogen reduction requirements {5CCR 1002-64, Regulation No. 64, Section 64.12 (B)(7)(a)}, and;

(b) Before the finished biosolids is sold or distributed to the public for unrestricted off- site use, verification shall be provided that the biosolids have been treated successfully by the Two Summer Method (a PFRP) as discussed in Section 2.0. {5CCR 1002-64, Regulation No. 64, Section 64.12 (B)(7)(b)(viii)}

5.1.3 Vector Attraction Reduction (Stability) Criteria

Before the finished biosolids is sold or distributed to the public for unrestricted off-site use, it will be tested to ensure that the biosolids meets the criteria for vector attraction reduction as follows:

1. Before the finished biosolids is sold or distributed to the public for unrestricted off- site use, temperature records shall verify that the treatment process has maintained aerobic conditions and an average temperature in the biosolids pile of 45 deg C (113 F) or higher for fourteen (14) days during which time the biosolids temperature shall not drop below 40 deg C (104 deg F) to comply with vector attraction reduction (biosolids stability) criteria {5 CCR 1002-64, Regulation No. 64, Section 64.12(C)(7)}; or

2. The mass of volatile solids in the biosolids has been reduced by a minimum of 38% {5 CCR 1002-64, Regulation No. 64, Section 64.12 (C)(3)}.

5.2 Distribution of Biosolids for Restricted Use

No person shall distribute or market biosolids to the public for restricted use unless a Notice of Authorization for the Use and Distribution of Biosolids has been issued by the CDPHE pursuant to 5CCR 1002-64, Section 64.10. A Letter of Intent has been submitted to the CDPHE to facilitate issuance of the Notice of Authorization. The facility currently has been issued a Notice of Authorization granted during the past 15 years of operation of biosolids handling. The Letter of Intent is shown in Appendix E. CHT will update the notice to reflect the new ownership after the transfer of the facility according to 64.10 (J).

5.2.1 Inorganic Constituents

Before the finished biosolids is sold or distributed to the public for restricted off-site use, it will be tested to assure the biosolids meets the numerical criteria for metals specified in Table 1 - Ceiling Concentration Limits (Shown in Text above).

5.2.2 Pathogen Reduction

Before the finished biosolids is sold or distributed to the public for restricted off-site use, it will be tested to ensure that the biosolids meets the criteria for Class A with respect to pathogen reduction as follows:

(a) Either the density of fecal coliform present in the biosolids is less than 1000 Most Probable Number per gram of total solids (dry weight basis), or

(b) The density of Salmonella sp. bacteria in the biosolids is less than three (3) Most Probable Number per four (4) grams of total solids (dry weight) at the time the biosolids is sold or otherwise distributed for use to comply with pathogen reduction requirements {5CCR 1002-64, Regulation No. 64, Section 64.12 (B)(7)(a)}, and;

(c) Before the finished biosolids is sold or distributed to the public for restricted off-site use, verification shall be provided that the biosolids have been treated successfully by the Two Summer Method (a PFRP) as discussed in Section 2.0. {5CCR 1002-64, Regulation No. 64, Section 64.12 (B)(7)(b)(viii)}

5.2.3 Vector Attraction Reduction (Stability) Criteria

Before the finished biosolids is sold or distributed to the public for restricted off-site use, it will be tested to ensure that the biosolids meets the criteria for vector attraction reduction as follows:

Before the finished biosolids is sold or distributed to the public for restricted off- site use, temperature records shall verify that the treatment process has maintained aerobic conditions and an average temperature in the biosolids pile of 45 deg C (113 deg F) or higher for fourteen (14) days during which time the biosolids temperature shall not drop below 40 deg C (104 deg F) to comply with vector attraction reduction (biosolids stability) criteria {5 CCR 1002-64, Regulation No. 64, Section 64.12(C)(7)}; or

The mass of volatile solids in the biosolids has been reduced by a minimum of 38% {5 CCR 1002-64, Regulation No. 64, Section 64.12 (C)(3)}.

5.2.4 Biosolids Labeling For Restricted Use

When biosolids is made available to the public for restricted use, a label or information sheet shall identify:

(a) the name and address of the person who prepared the biosolids, and:

(b) the typical concentration of plant nutrients on a dry weight percentage basis including, at a minimum, total nitrogen, total phosphorus, and total potassium in the biosolids.

(c) the maximum allowable annual biosolids application rate as calculated based upon the Table 5 Annual Pollutant Loading Rate and based upon either of the following:

(i) The maximum allowable annual biosolids application rate shall be calculated based upon the most recent twelve months analysis of the biosolids for the parameters for which numeric limitations are identified in Table 5. Labeling, information sheets, written cautions or written instructions for use shall identify the maximum allowable annual biosolids application rate for the biosolids based upon the maximum reported values for the twelve month period and such advisory information shall be updated on a monthly basis, or

(ii) the maximum allowable annual biosolids application rate shall be calculated based upon a value representing the arithmetic average of a minimum of six analyses of the biosolids for the parameters for which numeric limitations are identified in Table 5 plus on standard deviation. Labeling, information sheets, written cautions or written instructions for use which identify the maximum allowable annual application rate for the biosolids shall be updated on a semi-annual basis.

CONSTITUENTS	MAXIMUM LEVEL
INORGANICS (mg/kg)	Kg/Ha (lbs/ac)
Arsenic	2.00(1.79)
Cadmium	1.90 (1.70)
Copper	75.00 (66.94)
Lead	15.00 (13.39)
Mercury	0.85 (0.76)
Nickel	21.0 (18.74)

Selenium	5.00 (4.46)
Zinc	140.00 (124.96)

TABLE 5 -ANNUAL POLLUTANT LOADING RATE LIMITS

CHT will request beneficial use of biosolids that do not meet the maximum constituent concentrations (MCC) in Table 1 (Shown above) and therefore have restricted uses.

6.0 BIOSOLIDS SAMPLING AND ANALYSIS

Biosolids sampling and analysis are discussed below.

6.1 Biosolids Sampling Frequency and Sample Constituents

Biosolids shall be sampled for compliance with the biosolids quality criteria discussed above at the frequencies specified in Table 6 (Biosolids Sampling and Analysis Frequency - shown below).

FREQUENCY OF BIOSOLIDS SAMPLING COLLECTION AND ANALYSIS	
ANNUAL Biosolids PRODUCTION (dry short tons/year)	FREQUENCY
less than 319	once per year
319 to less than 1,650	once per quarter
1,650 to less than 16,500	once per two months
16,500 and greater	monthly

TABLE 6 - BIOSOLIDS SAMPLING AND ANALYSIS FREQUENCY

Analysis of biosolids samples shall include the parameters identified in Table 7 (Biosolids Analyses and Reporting Units - Shown below).

BIOSOLIDS ANALYSES AND REPORTING UNITS			
PARAMETER	UNITS	PARAMETER	UNITS
total solids	percent	volatile solids	percent of solids
pH	standard units	organic nitrogen as N	percent dry weight

total phosphorus	percent dry weight	total ammonia as N	percent dry weight
total potassium	percent dry weight	nitrate as N	percent dry weight
total arsenic	mg/kg dry weight	total mercury	mg/kg dry weight
total cadmium	mg/kg dry weight	total molybdenum	mg/kg dry weight
total chromium	mg/kg dry weight	total nickel	mg/kg dry weight
total copper	mg/kg dry weight	total selenium	mg/kg dry weight
total lead	mg/kg dry weight	total zinc	mg/kg dry weight

TABLE 7 - BIOSOLIDS SAMPLING PARAMETERS

Samples collected to satisfy biosolids sampling and analysis requirements shall be composite samples. Collections shall be from the finished biosolids storage area and shall consist of a minimum of three grab samples of no less than 0.5 pounds each. Grab samples shall be collected to be representative of the volume of biosolids and shall be combined to form the composite sample volume.

In addition to the sample parameters specified in Table 6 (Shown above), biosolids shall also be sampled for such parameters as required to demonstrate compliance with the pathogen reduction and vector attraction reduction requirements discussed above. Multiple tube assays shall be used to demonstrate compliance with pathogen reduction requirements. Sampling and analysis frequencies to demonstrate pathogen reduction and vector attraction reduction requirements shall be performed at the same frequencies specified for organic and inorganic parameters specified in Table 6 (Shown above).

6.2 Test Methods

Analysis of biosolids samples shall be made by the following methods.

(i) Fecal Coliform
Part 9221 E. or Part 9222 D., "Standard Practice for the Examination of Water and Wastewater", 18th Edition, American Public Health Association, Washington, D.C., 1992.

(ii) Salmonella sp. bacteria
Part 9260 D., "Standard Methods for the Examination of Water and Wastewater", 18th Edition, American Public Health Association, Washington, D.C., 1992: or

Kenner, B.A. and H.P. Clark, "Detection and enumeration of Salmonella and Pseudonomas aeruginosa", J. Water Pollution Control Federation, 46(9): 2163-2171, 1974.

(iii) Inorganic pollutants (metals)
SW - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA Publication SW-846, Second Edition (1982) with Updates I and II and Third Edition (1986) with Revision I. Second Edition - PB87-120-291, National Technical Information Service, Springfield, Virginia. Third Edition - Document number 955-001-00000-1, Superintendent of Documents, Government Printing Office, Washington, D.C.

(iv) Inorganic pollutants (nitrate, phosphorous, TKN, etc.)
SM - "Standard Methods for the Examination of Water and Wastewater", 18th Edition. American Public Health Association, Washington, DC. 1992.

(v) total petroleum hydrocarbons
EPA method 8015m

7.0 BIOSOLIDS RECORDKEEPING AND REPORTING

Biosolids recordkeeping and reporting are discussed below.

7.1 Biosolids Recordkeeping

The facility shall maintain, at a minimum, the following applicable records:

1) type and amount of feedstock(s) and bulking material(s) received, processed and remaining on-site;
2) amount of finished biosolids sold or distributed off-site;
3) water quality monitoring data;
4) biosolids analytical data;
5) operational monitoring data including time and temperature readings;
6) biosolids pile aeration/turnings data;
7) financial assurance documentation;
8) design and operations plan; and
9) certificate of designation; and
10) facility personnel training records.

These records shall be maintained at the facility for a minimum of 5 years and shall be made available to the CDPHE upon request.

7.2 Biosolids Reporting

The facility shall submit an annual report by May 1st of each year to the CDPHE and Delta

County Environmental Health Dept. The annual report shall provide the total cubic yards of material received at the facility during the previous calendar year, including by type:

1) the quantity of finished product used on-site, sold, or distributed off-site; and
2) the quantity and type of feedstock and bulking material received, processed, and remaining on site.

8.0 CONTINGENCY TREATMENT AND DISPOSAL ALTERNATIVES

Contingency treatment and disposal alternatives will include land application and off-site disposal at a permitted disposal or recycling facility. Land application may include onsite addition to soils for reclamation purposes. The contingency treatment and disposal alternatives are meant to address unforeseen circumstances such as break down of equipment, peak or surge loading, inclement weather, offensive odor, and contamination of groundwater or surface water. Off-site disposal and land application are discussed in Section 7.0 of Appendix L1. Fire procedures are identified in Section 12.0 of the EDOP summary. If there are consistent problems with meeting the regulatory requirements, the operating procedures will be reevaluated and new procedures implemented and entered into the operating record. Land application of waste and any changes to the operation will be reviewed and approved by CDPHE and Delta County.

ATTACHMENT 1
THE TWO SUMMER METHOD

4.6.1 Two Summer Method

The USEPA Region VIII Office, located in Denver, Colorado, has developed requirements for facilities implementing air drying. The process is referred to as the "Two Summer" Method. The following requirements include recommendations made by the USEPA Pathogen Equivalency Committee (PEC). These are essentially the operational controls for this method.

- Biosolids must meet Class B requirements before being placed in storage piles for long-term treatment and must be stored over two summers (a minimum of 15 months).
- Biosolids must have a total solids content of at least 14 percent, but no more than 35 percent when the piles are formed.
- Piles shall be formed into windrows at least 3.5 feet high, but no more than 6.0 feet in height.
- During the first summer, the total solids in the pile should not exceed 60 percent.
- The average temperature of the pile must exceed 20°C for 12 months of the storage period (not necessarily consecutive months).
- The pile shall be turned at least three times (at evenly spaced intervals) during each summer period.
- Finished biosolids must not contain more than one viable helminth ova per four grams of total solids (dry weight basis) and must meet the fecal coliform limits (<1000MPN/gram of total solids) or the Salmonella limits (<3MPN/4 grams of total solids).
- Biosolids must be monitored for helminth ova once for each batch.
- At each turning of the pile, biosolids shall be monitored for volatile solids and total solids. The average pile temperature must be monitored monthly.
- Biosolids are not required to be monitored for enteric viruses if all other conditions listed for long-term treatment are followed.

APPENDIX M
ANALYTICAL METHODS, WASTE ACCEPTANCE CRITERIA, AND WASTE CHARACTERIZATION SUMMARY

TABLE OF CONTENTS

1.0	WASTE CHARACTERIZATION SUMMARY – REQUIRED TEST SUITES	3
2.0	ANALYTICAL METHOD SELECTION	5
3.0	ALLOWABLE CONCENTRATIONS	7

1.0 WASTE CHARACTERIZATION SUMMARY – REQUIRED TEST SUITES

Wastes will be accepted at the facility provided they do not exhibit any characteristics of hazardous waste as defined in 6 CCR 1007-3 Part 261. Subpart C, Characteristics of Hazardous Waste, and Subpart D, Lists of Hazardous Wastes are included in this Appendix and are considered part of the EDOP. Note that regulatory requirements can change and the operator should routinely check with CDPHE for updates. A waste stream specific summary of required waste characterization testing suites follows. Test suites are found on Table 1, Analytical Methods (Shown Below).

Septage, Food, and Animal Waste Composting Operations

At a minimum, septage, food, and animal waste will be analyzed for:

- RCRA 8 Metals – Test Suite 1
- Volatile Organic Compounds (VOCs) – Test Suite 3
- Semi-Volatile Organic Compounds (SVOCs) – Test Suite 4

Biosolids Composting Operations

At a minimum, biosolids will be characterized for:

- Gross alpha
- RCRA 8 Metals, Copper, and Zinc – Test Suite 1
- Molybdenum and nickel
- Pathogens – Test Suite 16

Sand Trap Treatment Operations

Sand trap waste will be tested at a minimum for:

- RCRA 8 Metals, Copper, and Zinc – Test Suite 1 (TCLP)
- Volatile Organic Compounds (VOCs) – Test Suite 3
- N-Hexane and Methanol – Test Suite 15

Hydrocarbon Contaminated Soil Landfarm Treatment Operations

Waste known to contain only contaminants in the following categories may be initially characterized with the required test suites listed. Additional testing may be necessary if initial characterization results or knowledge of specific waste generation processes so warrant.

- Gasoline – Test Suite Numbers 1 (TCLP), 2, 5a, 11, and 15.
- Diesel, kerosene, heating oil, crude oil or jet fuel – Test Suite Numbers 1 (TCLP),2, 5a, 5b, 11, and 15.
- New or used oil, grease with no possibility of PCBs – Test Suite Numbers 1 (TCLP), 2, 5 (a,b,&c), 11, and 15.
- Known fuel but mixed with hydraulic fluid, anti-freeze, or both – add Test Suite Number 4 to the appropriate suite given above.
- Known fuel but mixed with unknown solvents, detergents, or other unknown chemicals – Test Suite Numbers 1 (TCLP), 3, 4, 5a, 5b, 9, 10, 11, and 15.
- Unknown oils and greases – Test Suite Numbers 1 (TCLP), 2, 5 (a,b,&c), 11, 12, and 15.
- Unknown mixture of hydrocarbons/other chemicals (such as herbicides or pesticides) – Test Suite Numbers 1 (TCLP), 3, 4, 6, 7, 8, 9, 10, 11, 12, and 15
- Exploration and Production (E&P) Waste – Test Suite Numbers 1 (TCLP), 3, 4, 5 (a,b,&c), 11, 14, and 15.

Hydrocarbon Contaminated Soil Landfill Operations

Waste known to contain only contaminants in the following categories may be initially characterized with the required test suites listed. Additional testing may be necessary if initial characterization results or knowledge of specific waste generation processes so warrant.

- Gasoline – Test Suite Numbers 1 (TCLP), 2, 5a, 11, and 15.
- Diesel, kerosene, heating oil, crude oil or jet fuel – Test Suite Numbers 1 (TCLP),2, 5b, 11, and 15.
- New or used oil, grease with no possibility of PCBs – Test Suite Numbers 1 (TCLP), 2, 5 (a,b,&c), 11, and 15.
- Known fuel but mixed with hydraulic fluid, anti-freeze, or both – add Test Suite Number 4 to the appropriate suite given above.
- Known fuel but mixed with unknown solvents, detergents, or other unknown chemicals – Test Suite Numbers 1 (TCLP), 3, 4, 5a, 5b, 9, 10, 11, and 15.
- Unknown oils and greases – Test Suite Numbers 1 (TCLP), 2, 5 (a,b,&c), 11, 12, and 15.
- Unknown mixture of hydrocarbons/other chemicals (such as herbicides or pesticides) – Test Suite Numbers 1 (TCLP), 3, 4, 6, 7, 8, 9, 10, 11, 12, and 15
- Exploration and Production (E&P) Waste – Test Suite Numbers 1 (TCLP), 3, 4, 5 (a,b,&c), 11, 14, and 15.

Generators of unique waste not described above should contact the facility manager and discuss the known history of the material. An analytical program will be designed specifically for that waste. If a generator arrives at the facility with waste containing debris, discoloration, odors, or any other anomalous characteristics, it may not be accepted for disposal without further characterization.

2.0 ANALYTICAL METHOD SELECTION

Section 2.0 discusses the analytical methods utilized to characterize the differing waste streams accepted at the facility. Table 1 (Shown below) lists a variety of Test Suites that will serve as a basis for a facility wide waste characterization plan. The analytical testing required to characterize a waste for disposal can vary depending on the type of waste, process history, and other generator process information known about the waste. A listing of the most likely analytical tests that will be required is provided in Table 1 (Shown below). The Test Suite Number will be referred to in the waste category plan for each specific waste stream if testing by the method is necessary.

For Test Suite Numbers 1, 3, 4, 6, 7, and 8, the Toxic Characteristic Leaching Procedure (TCLP) or "total" concentration can be used in the analyses. The TCLP extraction provides results that can be directly compared to the regulatory levels so that the waste can be classified as a hazardous waste. The results from a TCLP test are final but the costs are greater than for the total analyses. If total analyses are used, the concentrations will be divided by 20 to approximate the leachable TCLP regulatory concentration. If the regulatory level is exceeded, a TCLP test must be used on another sample to make the final determination of acceptance after dividing by 20.

Table 1 Analytical Methods			
Test Suite Number	**General Classification**	**Preferred Analytical Method (aqueous/non-aqueous)**	**General Waste Category**
1	Metals (8 RCRA metals)	EPA 6010 and 7000 series	Leaded gas, mining, wastewater treatment, electronics, waste oil
2	Benzene, Toluene, Ethyl benzene, Xylene (BTEX)	EPA 8020	Petroleum, oil field waste or by products
3	Volatile Organic Compounds	EPA 8260	Solvents, cleaners
4	Semi-volatile Organic Compounds	EPA 8270	Solvents, degreasers
5	Total Petroleum Hydrocarbons (TPHs) 5a – TPH gasoline range 5b – TPH diesel range 5c – TPH oil and grease range	 EPA 8015 modified EPA 8015 modified EPA 8015 modified, or EPA 1664/9071B	Petroleum fuels, waste oils and greases
6	Polynuclear Aromatic Hydrocarbons (PAHs)	EPA 8310 (or 8270)	Petroleum and waste oil when TPH > 5,000 mg/kg
7	Pesticide	EPA 8081A	
8	Herbicides	EPA 8150	
9	Reactivity (with water)	Various	Acids or bases, sulfides, cyanides
10	Corrosivity	EPA 9040/9045	Ranges of Ph
11	Ignitability (flash point)	EPA 1010 (Pensky-Martens or equivalent)	Petroleum, solvents
12	Polychlorinated Biphenyls (PCBs)	EPA 8082	Electronic parts, transformers, unknown oils
13	Paint Filter Test	EPA 9095	Liquids, sludge
14	 Radium 226/228 (combined) Uranium (natural) Thorium	EPA 901.1, 903.1 SW 846 6020 SW 846 6020	Mill tailings, uranium mine wastes, drill cuttings, E&P waste, water plant sludges
15	n-Hexane Methonal	EPA 8260 EPA 8015 modified	Organic contaminants
16	Pathogens (fecal coliform), Salmonella	SM9221 C/E	Biosolids
17	Detection Monitoring Parameters or Major Ions		Industrial waste liquids
NOTES: – TCLP with EPA 1311			

3.0 ALLOWABLE CONCENTRATIONS

Resource and Conservation Act (RCRA) Subtitle C exempt waste (including RCRA-exempt E&P waste) will be evaluated on a case-by-case basis as determined by contaminant level. The 6 CCR 1007-3 Part 261 Subpart C, Characteristics of Hazardous Waste Table 1 includes regulatory levels for specific parameters. **Except for RCRA-exempt E&P waste, the referenced Table 1 will be the acceptable levels for the facility.**

The following table identifies the maximum levels of radionuclides that will be accepted at the landfill. The concentrations are based on the CDPHE TENORM Policy and Guidance, Revision Part 20. The soils below these concentrations are considered exempt and can be accepted in the monofill. The levels are listed on the following table. If the waste has higher levels than shown in the table, CHT will request a one-time waiver from CDPHE. Sampling will be conducted at a rate of 1 sample per every 10,000 cubic yards of material (at a minimum).

Radioactive Species	Exempt Threshold
	(pCi/g above background)
Total Natural Uranium (U^{NAT})	30
Total Natural Thorium (Th^{NAT})	3
Radium 226/228 ($Ra^{226/228}$)	3

The radiological acceptance levels for landfarming is described as follows in Appendix L4.1, Landfarming:

The following table identifies the maximum levels of radionuclides that will be accepted (Exempt Threshold). If the waste has higher levels than shown in the table, a risk assessment approved by the CDPHE Radioactive Materials Unit will be prepared and the EDOP amended, if necessary. Background levels will be established prior to acceptance of waste. Sampling will be

conducted at a rate of 1 sample per project and 1 per 10,000 cubic yards of material (at a minimum). Background levels will be established prior to acceptance of waste.

Radioactive Species	Exempt Threshold
	pCi/g above background
Total Natural Uranium (^{NAT}U)	30
Total Natural Thorium (^{NAT}Th	3
Radium 226/228 ($Ra^{226/228}$)	3

Subpart C - Characteristics of Hazardous Waste

§ 261.20 General.

(a) A solid waste, as defined in § 261.2, which is not excluded from regulation as a hazardous waste under § 261.4(b), is a hazardous waste if it exhibits any of the characteristics identified in this Subpart.

(b) A hazardous waste which is identified by a characteristic in this Subpart is assigned every EPA Hazardous Waste Number that is applicable as set forth in this Subpart. This number must be used in complying with the notification requirements of Part 99 of these regulations and all applicable recordkeeping and reporting requirements under Parts 262 through 266, Part 268, and Part 100.

(c) For purposes of this Subpart, the Department will consider a sample obtained using any of the applicable sampling methods specified in Appendix I to be a representative sample within the meaning of Part 260.

§ 261.21 Characteristic of ignitability.

(a) A solid waste exhibits the characteristic of ignitability if a representative sample of the waste has any of the following properties:

(1) It is a liquid, other than an aqueous solution containing less than 24 percent alcohol by volume, and has a flash point less than 60°C (140°F), as determined by a Pensky Martens Closed Cup Tester, using the test method specified in ASTM Standard D 93 79 or D 93 80 (incorporated by reference, see § 260.11), or a Setaflash Closed Cup Tester, using the test method specified in ASTM standard D 3278 78 (incorporated by reference, see § 260.11).

(2) It is not a liquid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture, or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creates a hazard.

(3) It is an ignitable compressed gas.

(i) The term “compressed gas” shall designate any material or mixture having in the container an absolute pressure exceeding 40 p.s.i. at 70ºF or, regardless of the pressure at 70ºF, having an absolute pressure exceeding 104 p.s.i. at 130ºF; or any liquid flammable material having a vapor pressure exceeding 40 p.s.i. absolute at 100ºF as determined by ASTM Test D-323.

(ii) A compressed gas shall be characterized as ignitable if any one of the following occurs:

(A) Either a mixture of 13 percent or less (by volume) with air forms a flammable mixture or the flammable range with air is wider than 12 percent regardless of the lower limit. These limits shall be determined at atmospheric temperature and pressure. The method of sampling and test procedure shall be acceptable to the Bureau of Explosives and approved by the director, Pipeline and Hazardous Materials Technology, U.S. Department of Transportation (see Note 2).

(B) Using the Bureau of Explosives’ Flame Projection Apparatus (see Note 1), the flame projects more than 18 inches beyond the ignition source with valve opened fully, or, the flame flashes back and burns at the valve with any degree of valve opening.

(C) Using the Bureau of Explosives’ Open Drum Apparatus (see Note 1), there is any significant propagation of flame away from the ignition source.

(D) Using the Bureau of Explosives’ Closed Drum Apparatus (see Note 1), there is any explosion of the vapor-air mixture in the drum.

(4) It is an oxidizer. An oxidizer for the purpose of this subchapter is a substance such as a chlorate, permanganate, inorganic peroxide, or a nitrate, that yields oxygen readily to stimulate the combustion of organic matter (see Note 4).

(i) An organic compound containing the bivalent -O-O- structure and which may be considered a derivative of hydrogen peroxide where one or more of the hydrogen atoms have been replaced by organic radicals must be classed as an organic peroxide unless:

(A) The material meets the definition of a Class A explosive or a Class B explosive, as defined in § 261.23(a)(8), in which case it must be classed as an explosive,

(B) The material is forbidden to be offered for transportation according to 49 CFR 172.101 and 49 CFR 173.21,

(C) It is determined that the predominant hazard of the material containing an organic peroxide is other than that of an organic peroxide, or

(D) According to data on file with the Pipeline and Hazardous Materials Safety Administration in the U.S. Department of Transportation (see Note 3), it has been determined that the material does not present a hazard in transportation.

(b) A solid waste that exhibits the characteristic of ignitability has the EPA Hazardous Waste Number of D001.

Note 1: A description of the Bureau of Explosives' Flame Projection Apparatus, Open Drum Apparatus, Closed Drum Apparatus, and method of tests may be procured from the Bureau of Explosives.

Note 2: As part of a U.S. Department of Transportation (DOT) reorganization, the Office of Hazardous Materials Technology (OHMT), which was the office listed in the 1980 publication of 49 CFR 173.300 for the purposes of approving sampling and test procedures for a flammable gas, ceased operations on February 20, 2005. OHMT programs have moved to the Pipeline and Hazardous Materials Safety Administration (PHMSA) in the DOT.

Note 3: As part of a U.S. Department of Transportation (DOT) reorganization, the Research and Special Programs Administration (RSPA), which was the office listed in the 1980 publication of 49 CFR 173.151a for the purposes of determining that a material does not present a hazard in transport, ceased operations on February 20, 2005. RSPA programs have moved to the Pipeline and Hazardous Materials Safety Administration (PHMSA) in the DOT.

Note 4: The DOT regulatory definition of an oxidizer was contained in § 173.151 of 49 CFR, and the definition of an organic peroxide was contained in paragraph 173.151a. An organic peroxide is a type of oxidizer.

§ 261.22 Characteristic of corrosivity.

(a) A solid waste exhibits the characteristic of corrosivity if a representative sample of the waste has either of the following properties:

(1) It is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, as determined by a pH meter using Method 9040C in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, "EPA Publication SW-846, as incorporated by reference in § 260.11 of these regulations.

(2) It is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 mm (0.250 inch) per year at a test temperature of 55°C (130°F) as determined by Method 1110A in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, "EPA Publication SW-846, as incorporated by reference in § 260.11 of these regulations.

(b) A solid waste that exhibits the characteristic of corrosivity has the EPA Hazardous Waste Number of D002.

§ 261.23 Characteristic of reactivity.

(a) A solid waste exhibits the characteristic of reactivity if a representative sample of the waste has any of the following properties:

(1) It is normally unstable and readily undergoes violent change without detonating.

(2) It reacts violently with water.

(3) It forms potentially explosive mixtures with water.

(4) When mixed with water, it generates toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.

(5) It is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5 can generate toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.

(6) It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement.

(7) It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure.

(8) It is a forbidden explosive as defined in 49 CFR § 173.54, or is a Division 1.1, 1.2, or 1.3 explosive as defined in 49 CFR § 173.50 and § 173.53.

(b) A solid waste that exhibits the characteristic of reactivity, has the EPA Hazardous Waste Number of D003.

§ 261.24 Toxicity Characteristic.

(a) A solid waste (except manufactured gas plant waste) exhibits the characteristic of toxicity if, using the Toxicity Characteristic Leaching Procedure, Test Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, EPA Publication SW-846, as incorporated by reference in § 260.11 of these regulations, the extract from a representative sample of the waste contains any of the contaminants listed in Table 1 at a concentration equal to or greater than the respective value given in that Table. Where the waste contains less than 0.5 percent filterable solids, the waste itself, after filtering using the methodology outlined in Method 1311, is considered to be the extract for the purpose of this section.

(b) A solid waste that exhibits the characteristic of toxicity has the EPA Hazardous Waste Number specified in Table 1 which corresponds to the toxic contaminant causing it to be hazardous.

Table 1. - Maximum Concentration of Contaminants for the Toxicity Characteristic			
EPA – HW No.[1]	**Contaminant**	**CAS No.[2]**	**Regulatory Level (mg/L)**
D004	Arsenic	7440-38-2	5.0
D005	Barium	7440-39-3	100.0
D018	Benzene	71-43-2	0.5
D006	Cadmium	7440-43-9	1.0
D019	Carbon tetrachloride	56-23-5	0.5
D020	Chlordane	57-74-9	0.03
D021	Chlorobenzene	108-90-7	100.0
D022	Chloroform	67-66-3	6.0
D007	Chromium	7440-47-3	5.0
D023	o-Cresol	95-48-7	[4]200.0
D024	m-Cresol	108-39-4	[4]200.0
D025	p-Cresol	106-44-5	[4]200.0
D026	Cresol	-	[4]200.0
D016	2,4-D	94-75-7	10.0
D027.	1,4-Dichlorobenzene	106-46-7	7.5
D028	1,2-Dichloroethane	107-06-2	0.5
D029	1,1-Dichloroethylene	75-35-4	0.7
D030	2,4-Dinitrotoluene	121-14-2	[3]0.13
D012	Endrin	72-20-8	0.02
D031	Heptachlor (and its epoxide)	76-44-8	0.008
D032	Hexachlorobenzene	118-74-1	[3]0.13
D033	Hexachlorobutadiene	87-68-3	0.5
D034	Hexachloroethane	67-72-1	3.0
D008	Lead	7439-92-1	5.0
D013	Lindane	58-89-9	0.4
D009	Mercury	7439-97-6	0.2
D014	Methoxychlor	72-43-5	10.0
D035	Methyl ethyl ketone	78-93-3	200.0
D036	Nitrobenzene	98-95-3	2.0
D037	Pentachlorophenol	87-86-5	100.0
D038	Pyridine	110-86-1	[3]5.0
D010	Selenium	7782-49-2	1.0
D011	Silver	7440-22-4	5.0
D039	Tetrachloroethylene	127-18-4	0.7
D015	Toxaphene	8001-35-2	0.5
D040	Trichloroethylene	79-01-6	0.5
D041	2,4,5-Trichlorophenol	95-95-4	400.0
D042	2,4,6-Trichlorophenol	88-06-2	2.0
D017	2,4.5-TP (Silvex)	93-72-1	1.0
D043	Vinyl chloride	75-01-4	0.2

[1] Hazardous waste number.

[2] Chemical abstracts service number.

[3] Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level.

[4] If o-, m-, and p-Cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used.

Subpart D - Lists of Hazardous Wastes

§ 261.30 General.

(a) A solid waste is a hazardous waste if it is listed in this Subpart, unless it has been excluded from this list under § § 260.20 and 260.22.

(b) The Department will indicate its basis for listing the classes or types of wastes listed in this Subpart by employing one or more of the following Hazard Codes:

Ignitable Waste	(I)
Corrosive Waste	(C)
Reactive Waste	(R)
Toxicity Characteristic Waste	(E)
Acute Hazardous Waste	(H)
Toxic Waste	(T)

Appendix VII identifies the constituent which caused the Department to list the waste as a Toxicity Characteristic Waste (E) or Toxic Waste (T) in § § 261.31 and 261.32.

(c) Each hazardous waste listed in this Subpart is assigned an EPA Hazardous Waste Number which precedes the name of the waste. This number must be used in complying with the notification requirements of CRS 1973, 25-15-301(2)(a) and (b) and certain recordkeeping and reporting requirements under Parts 262 through 266, Part 268, and Part 100.

(d) The following hazardous wastes listed in § 261.31 or § 261.32 are subject to the exclusion limits for acutely hazardous wastes established in § 262.13: EPA Hazardous Wastes Nos. F020, F021, F022, F023, F026, F027.

§ 261.31 Hazardous wastes from non-specific sources.

(a) The following solid wastes are listed hazardous wastes from non-specific sources unless they are excluded under § § 260.20 and 260.22 and listed in Appendix IX.

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
Generic:		
F001	The following spent halogenated solvents used in degreasing: Tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; all spent solvent mixtures/blends used in degreasing containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T)
F002	The following spent halogenated solvents: Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T)
F003	The following spent non-halogenated solvents: Xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures/blends containing, before use, only the above spent non-halogenated solvents; and all spent solvent mixtures/blends containing, before use, one or more of the above non-halogenated solvents, and, a total of ten percent or more (by volume) of one or more of those solvents listed in F001, F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(I)*
F004	The following spent non-halogenated solvents: Cresols and cresylic acid, and nitrobenzene; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T)
F005	The following spent non-halogenated solvents: Toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, or F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(I,T)

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
Generic:		
F006	Wastewater treatment sludges from electroplating operations except from the following processes: (1) Sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum.	(T)
F007	Spent cyanide plating bath solutions from electroplating operations.	(R, T)
F008	Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process.	(R, T)
F009	Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.	(R, T)
F010	Quenching bath residues from oil baths from metal heat treating operations where cyanides are used in the process.	(R, T)
F011	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations.	(R, T)
F012	Quenching waste water treatment sludges from metal heat treating operations where cyanides are used in the process.	(T)
F019	Wastewater treatment sludges from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum can washing when such phosphating is an exclusive conversion coating process. **Note:** For the purposes of the F019 listing, conversion coating is intended to include but not be limited to coloring, phosphating, chromating and immersion plating when those processes are used to impart a conversion coating on aluminum.	(T)
F020	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- or tetrachlorophenol, or of intermediates used to produce their pesticide derivatives. (This listing does not include wastes from the production of Hexachlorophene from highly purified 2,4,5-trichlorophenol.).	(H)
F021	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of pentachlorophenol, or of intermediates used to produce its derivatives.	(H)
F022	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzenes under alkaline conditions.	(H)
F023	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- and tetrachlorophenols. (This listing does not include wastes from equipment used only for the production or use of Hexachlorophene from highly purified 2,4,5-trichlorophenol.).	(H)

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
Generic:		
F024	Process wastes, including but not limited to, distillation residues, heavy ends, tars, and reactor clean-out wastes, from the production of certain chlorinated aliphatic hydrocarbons by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution. (This listing does not include wastewaters, wastewater treatment sludges, spent catalysts, and wastes listed in § 261.31 or § 261.32.).	(T)
F025	Condensed light ends, spent filters and filter aids, and spent desiccant wastes from the production of certain chlorinated aliphatic hydrocarbons, by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution.	(T)
F026	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzene under alkaline conditions.	(H)
F027	Discarded unused formulations containing tri-, tetra-, or pentachlorophenol or discarded unused formulations containing compounds derived from these chlorophenols. (This listing does not include formulations containing Hexachlorophene synthesized from prepurified 2,4,5-trichlorophenol as the sole component.).	(H)
F028	Residues resulting from the incineration or thermal treatment of soil contaminated with EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, and F027.	(T)
F032	Wastewaters (except those that have not come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that currently use or have previously used chlorophenolic formulations (except potentially cross-contaminated wastes that have had the F032 waste code deleted in accordance with ' 261.35 of these regulations or potentially cross-contaminated wastes that are otherwise currently regulated as hazardous wastes (i.e., F034 or F035), and where the generator does not resume or initiate use of chlorophenolic formulations). This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol..	(T)
F034	Wastewaters (except those that have not come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use creosote formulations. This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.	(T)
F035	Wastewaters (except those that have not come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use inorganic preservatives containing arsenic or chromium. This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.	(T)

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
Generic:		
F037	Petroleum refinery primary oil/water/solids separation sludge-Any sludge generated from the gravitational separation of oil/water/solids during the storage or treatment of process wastewaters and oily cooling wastewaters from petroleum refineries. Such sludges include, but are not limited to, those generated in oil/water/solids separators; tanks and impoundments; ditches and other conveyances; sumps; and stormwater units receiving dry weather flow. Sludge generated in stormwater units that do not receive dry weather flow, sludges generated from non-contact once-through cooling waters segregated for treatment from other process or oily cooling waters, sludges generated in aggressive biological treatment units as defined in § 261.31(b)(2) (including sludges generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and K051 wastes are not included in this listing. This listing does include residuals generated from processing or recycling oil-bearing hazardous secondary materials excluded under § 261.4(a)(13)(i), if those residuals are to be disposed of.	(T)
F038	Petroleum refinery secondary (emulsified) oil/water/solids separation sludge-Any sludge and/or float generated from the physical and/or chemical separation of oil/water/solids in process wastewaters and oily cooling wastewaters from petroleum refineries. Such wastes include, but are not limited to, all sludges and floats generated in: induced air flotation (IAF) units, tanks and impoundments, and all sludges generated in DAF units. Sludges generated in stormwater units that do not receive dry weather flow, sludges generated from non-contact once-through cooling waters segregated for treatment from other process or oily cooling waters, sludges and floats generated in aggressive biological treatment units as defined in § 261.31(b)(2) (including sludges and floats generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and F037, K048, and K051 wastes are not included in this listing.	(T)
F039	Leachate (liquids that have percolated through land disposed wastes) resulting from the disposal of more than one restricted waste classified as hazardous under subpart D of this part. (Leachate resulting from the disposal of one or more of the following EPA Hazardous Wastes and no other Hazardous Wastes retains its EPA Hazardous Waste Number(s): F020, F021, F022, F026, F027, and/or F028.).	(T)

FOOTNOTE: *(I,T) should be used to specify mixtures containing ignitable and toxic constituents.

(b) Listing Specific Definitions:

(1) For the purposes of the F037 and F038 listings, oil/water/solids is defined as oil and/or water and/or solids.

(2) (i) For the purposes of the F037 and F038 listings, aggressive biological treatment units are defined as units which employ one of the following four treatment methods: activated sludge; trickling filter; rotating biological contactor for the continuous accelerated biological oxidation of wastewaters; or high-rate aeration. High-rate aeration is a system of surface impoundments or tanks, in which intense mechanical aeration is used to completely mix the wastes, enhance biological activity, and (A) the units employ a minimum of 6 hp per million gallons of treatment volume; and either (B) the hydraulic retention time of the unit is no longer than 5 days; or (C) the hydraulic retention time is no longer than 30 days and the unit does not generate a sludge that is a hazardous waste by the Toxicity Characteristic.

(ii) Generators and treatment, storage, and disposal facilities have the burden of proving that their sludges are exempt from listing as F037 and F038 wastes under this definition. Generators and treatment, storage, and disposal facilities must maintain, in their operating or other onsite records, documents and data sufficient to prove that: (A) the unit is an aggressive biological treatment unit as defined in this subsection; and (B) the sludges sought to be exempted from the definitions of F037 and/or F038 were actually generated in the aggressive biological treatment unit.

(3) (i) For the purposes of the F037 listing, sludges are considered to be generated at the moment of deposition in the unit, where deposition is defined as at least a temporary cessation of lateral particle movement.

(ii) For the purpose of the F038 listing, (A) sludges are considered to be generated at the moment of deposition in the unit, where deposition is defined as at least a temporary cessation of lateral particle movement and (B) floats are considered to be generated at the moment they are formed in the top of the unit.

APPENDIX N
EPA Regional Screening Levels

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; W = TEF applied; E = RPF applied; G = user's guide Section 5; M = mutagen; V = volatile; R = RBA applied ; c = cancer; n = noncancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; SSL values are based on DAF=1; m = ceiling limit exceeded; s = Csat exceeded.

Toxicity and Chemical-specific Information												Contaminant		Screening Levels										Protection of Ground Water SSLs		
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	vol	mutagen	GIABS	ABS_d	C_{sat} (mg/kg)	Analyte	CAS No.	Resident Soil (mg/kg)	key	Industrial Soil (mg/kg)	key	Resident Air (ug/m^3)	key	Industrial Air (ug/m^3)	key	Tapwater (ug/L)	key	MCL (ug/L)	Risk-based SSL (mg/kg)	key	MCL-based SSL (mg/kg)
				1.2E-03	O					1	0.1		Acephate	30560-19-1	7.6E+01	n	9.8E+02	n					2.4E+01	n		5.3E-03	n	
		2.2E-06	I			9.0E-03	I	V		1		1.1E+05	Acetaldehyde	75-07-0	1.1E+01	c**	4.9E+01	c**	1.3E+00	c**	5.6E+00	c**	2.6E+00	c**		5.2E-04	c**	
				2.0E-02	I					1	0.1		Acetochlor	34256-82-1	1.3E+03	n	1.6E+04	n					3.5E+02	n		2.8E-01	n	
				9.0E-01	I	3.1E+01	A	V		1		1.1E+05	Acetone	67-64-1	6.1E+04	n	6.7E+05	nms	3.2E+04	n	1.4E+05	n	1.4E+04	n		2.9E+00	n	
						2.0E-03	X			1	0.1		Acetone Cyanohydrin	75-86-5	2.8E+06	nm	1.2E+07	nm	2.1E+00	n	8.8E+00	n						
						6.0E-02	I	V		1		1.3E+05	Acetonitrile	75-05-8	8.1E+02	n	3.4E+03	n	6.3E+01	n	2.6E+02	n	1.3E+02	n		2.6E-02	n	
				1.0E-01	I			V		1		2.5E+03	Acetophenone	98-86-2	7.8E+03	ns	1.2E+05	nms					1.9E+03	n		5.8E-01	n	
3.8E+00	C	1.3E-03	C							1	0.1		Acetylaminofluorene, 2-	53-96-3	1.4E-01	c	6.0E-01	c	2.2E-03	c	9.4E-03	c	1.6E-02	c		7.5E-05	c	
				5.0E-04	I	2.0E-05	I	V		1		2.3E+04	Acrolein	107-02-8	1.4E-01	n	6.0E-01	n	2.1E-02	n	8.8E-02	n	4.2E-02	n		8.4E-06	n	
5.0E-01	I	1.0E-04	I	2.0E-03	I	6.0E-03	I		M	1	0.1		Acrylamide	79-06-1	2.4E-01	c	4.6E+00	c	1.0E-02	c	1.2E-01	c	5.0E-02	c		1.1E-05	c	
				5.0E-01	I	1.0E-03	I	V		1		1.1E+05	Acrylic Acid	79-10-7	9.9E+01	n	4.2E+02	n	1.0E+00	n	4.4E+00	n	2.1E+00	n		4.2E-04	n	
5.4E-01	I	6.8E-05	I	4.0E-02	A	2.0E-03	I	V		1		1.1E+04	Acrylonitrile	107-13-1	2.5E-01	c*	1.1E+00	c*	4.1E-02	c*	1.8E-01	c*	5.2E-02	c*		1.1E-05	c*	
						6.0E-03	P			1	0.1		Adiponitrile	111-69-3	8.5E+06	nm	3.6E+07	nm	6.3E+00	n	2.6E+01	n						
5.6E-02	C			1.0E-02	I					1	0.1		Alachlor	15972-60-8	9.7E+00	c*	4.1E+01	c					1.1E+00	c	2.0E+00	8.7E-04	c	1.6E-03
				1.0E-03	I					1	0.1		Aldicarb	116-06-3	6.3E+01	n	8.2E+02	n					2.0E+01	n	3.0E+00	4.9E-03	n	7.5E-04
				1.0E-03	I					1	0.1		Aldicarb Sulfone	1646-88-4	6.3E+01	n	8.2E+02	n					2.0E+01	n	2.0E+00	4.4E-03	n	4.4E-04
										1	0.1		Aldicarb sulfoxide	1646-87-3											4.0E+00			8.8E-04
1.7E+01	I	4.9E-03	I	3.0E-05	I			V		1			Aldrin	309-00-2	3.9E-02	c*	1.8E-01	c	5.7E-04	c	2.5E-03	c	9.2E-04	c		1.5E-04	c	
				5.0E-03	I	1.0E-04	X	V		1		1.1E+05	Allyl Alcohol	107-18-6	3.5E+00	n	1.5E+01	n	1.0E-01	n	4.4E-01	n	2.1E-01	n		4.2E-05	n	
2.1E-02	C	6.0E-06	C			1.0E-03	I	V		1		1.4E+03	Allyl Chloride	107-05-1	7.2E-01	c**	3.2E+00	c**	4.7E-01	c**	2.0E+00	c**	7.3E-01	c**		2.3E-04	c**	
				1.0E+00	P	5.0E-03	P			1			Aluminum	7429-90-5	7.7E+04	n	1.1E+06	nm	5.2E+00	n	2.2E+01	n	2.0E+04	n		3.0E+04	n	
				4.0E-04	I					1			Aluminum Phosphide	20859-73-8	3.1E+01	n	4.7E+02	n					8.0E+00	n				
				9.0E-03	I					1	0.1		Ametryn	834-12-8	5.7E+02	n	7.4E+03	n					1.5E+02	n		1.6E-01	n	
2.1E+01	C	6.0E-03	C							1	0.1		Aminobiphenyl, 4-	92-67-1	2.6E-02	c	1.1E-01	c	4.7E-04	c	2.0E-03	c	3.0E-03	c		1.5E-05	c	
				8.0E-02	P					1	0.1		Aminophenol, m-	591-27-5	5.1E+03	n	6.6E+04	n					1.6E+03	n		6.1E-01	n	
				4.0E-03	X					1	0.1		Aminophenol, o-	95-55-6	2.5E+02	n	3.3E+03	n					7.9E+01	n		3.0E-02	n	
				2.0E-02	P					1	0.1		Aminophenol, p-	123-30-8	1.3E+03	n	1.6E+04	n					4.0E+02	n		1.5E-01	n	
				2.5E-03	I					1	0.1		Amitraz	33089-61-1	1.6E+02	n	2.1E+03	n					8.2E+00	n		4.2E+00	n	
						5.0E-01	I	V		1			Ammonia	7664-41-7					5.2E+02	n	2.2E+03	n						
				2.0E-03	X					1	0.1		Ammonium Picrate	131-74-8	1.3E+02	n	1.6E+03	n					4.0E+01	n		1.9E-01	n	
				2.0E-01	I					1			Ammonium Sulfamate	7773-06-0	1.6E+04	n	2.3E+05	nm					4.0E+03	n				
						3.0E-03	X	V		1		1.4E+04	Amyl Alcohol, tert-	75-85-4	8.2E+01	n	3.4E+02	n	3.1E+00	n	1.3E+01	n	6.3E+00	n		1.3E-03	n	
5.7E-03	I	1.6E-06	C	7.0E-03	P	1.0E-03	I			1	0.1		Aniline	62-53-3	9.5E+01	c*	4.0E+02	c*	1.0E+00	n	4.4E+00	n	1.3E+01	c*		4.6E-03	c*	
4.0E-02	P			2.0E-03	X					1	0.1		Anthraquinone, 9,10-	84-65-1	1.4E+01	c**	5.7E+01	c*					1.4E+00	c*		1.4E-02	c*	
				4.0E-04	I	3.0E-04	A			0.15			Antimony (metallic)	7440-36-0	3.1E+01	n	4.7E+02	n	3.1E-01	n	1.3E+00	n	7.8E+00	n	6.0E+00	3.5E-01	n	2.7E-01
				5.0E-04	H					0.15			Antimony Pentoxide	1314-60-9	3.9E+01	n	5.8E+02	n					9.7E+00	n				
				4.0E-04	H					0.15			Antimony Tetroxide	1332-81-6	3.1E+01	n	4.7E+02	n					7.8E+00	n				
						2.0E-04	I			0.15			Antimony Trioxide	1309-64-4	2.8E+05	nm	1.2E+06	nm	2.1E-01	n	8.8E-01	n						
1.5E+00	I	4.3E-03	I	3.0E-04	I	1.5E-05	C			1	0.03		Arsenic, Inorganic	7440-38-2	6.8E-01	c*R	3.0E+00	cR	6.5E-04	c*	2.9E-03	c*	5.2E-02	c	1.0E+01	1.5E-03	c	2.9E-01
				3.5E-06	C	5.0E-05	I			1			Arsine	7784-42-1	2.7E-01	n	4.1E+00	n	5.2E-02	n	2.2E-01	n	7.0E-02	n				
										1			Asbestos (units in fibers)	1332-21-4											7.0E+06(G)			
				3.6E-02	O					1	0.1		Asulam	3337-71-1	2.3E+03	n	3.0E+04	n					7.2E+02	n		1.8E-01	n	
2.3E-01	C			3.5E-02	I					1	0.1		Atrazine	1912-24-9	2.4E+00	c	1.0E+01	c					3.0E-01	c	3.0E+00	2.0E-04	c	1.9E-03
8.8E-01	C	2.5E-04	C							1	0.1		Auramine	492-80-8	6.2E-01	c	2.6E+00	c	1.1E-02	c	4.9E-02	c	7.8E-02	c		7.1E-04	c	
				4.0E-04	I					1	0.1		Avermectin B1	65195-55-3	2.5E+01	n	3.3E+02	n					8.0E+00	n		1.4E+01	n	
				3.0E-03	A	1.0E-02	A			1	0.1		Azinphos-methyl	86-50-0	1.9E+02	n	2.5E+03	n	1.0E+01	n	4.4E+01	n	5.6E+01	n		1.7E-02	n	
1.1E-01	I	3.1E-05	I					V		1			Azobenzene	103-33-3	5.6E+00	c	2.6E+01	c	9.1E-02	c	4.0E-01	c	1.2E-01	c		9.3E-04	c	
				1.0E+00	P	7.0E-06	P			1	0.1		Azodicarbonamide	123-77-3	8.6E+03	n	4.0E+04	n	7.3E-03	n	3.1E-02	n	2.0E+04	n		6.8E+00	n	
				2.0E-01	I	5.0E-04	H			0.07			Barium	7440-39-3	1.5E+04	n	2.2E+05	nm	5.2E-01	n	2.2E+00	n	3.8E+03	n	2.0E+03	1.6E+02	n	8.2E+01
				5.0E-03	O			V		1			Benfluralin	1861-40-1	3.9E+02	n	5.8E+03	n					2.8E+01	n		9.4E-01	n	
				5.0E-02	I					1	0.1		Benomyl	17804-35-2	3.2E+03	n	4.1E+04	n					9.7E+02	n		8.5E-01	n	
				2.0E-01	I					1	0.1		Bensulfuron-methyl	83055-99-6	1.3E+04	n	1.6E+05	nm					3.9E+03	n		1.0E+00	n	
				3.0E-02	I					1	0.1		Bentazon	25057-89-0	1.9E+03	n	2.5E+04	n					5.7E+02	n		1.2E-01	n	
4.0E-03	P			1.0E-01	I			V		1		1.2E+03	Benzaldehyde	100-52-7	1.7E+02	c*	8.2E+02	c					1.9E+01	c		4.1E-03	c	
5.5E-02	I	7.8E-06	I	4.0E-03	I	3.0E-02	I	V		1		1.8E+03	Benzene	71-43-2	1.2E+00	c*	5.1E+00	c*	3.6E-01	c*	1.6E+00	c*	4.6E-01	c*	5.0E+00	2.3E-04	c*	2.6E-03
1.0E-01	X			3.0E-04	X					1	0.1		Benzenediamine-2-methyl sulfate, 1,4-	6369-59-1	5.4E+00	c**	2.3E+01	c*					7.8E-01	c**		2.2E-04	c**	
				1.0E-03	P			V		1		1.3E+03	Benzenethiol	108-98-5	7.8E+01	n	1.2E+03	n					1.7E+01	n		1.1E-02	n	
2.3E+02	I	6.7E-02	I	3.0E-03	I				M	1	0.1		Benzidine	92-87-5	5.3E-04	c	1.0E-02	c	1.5E-05	c	1.8E-04	c	1.1E-04	c		2.8E-07	c	
				4.0E+00	I					1	0.1		Benzoic Acid	65-85-0	2.5E+05	nm	3.3E+06	nm					7.5E+04	n		1.5E+01	n	
1.3E+01	I							V		1		3.2E+02	Benzotrichloride	98-07-7	5.3E-02	c	2.5E-01	c					3.0E-03	c		6.6E-06	c	
				1.0E-01	P					1	0.1		Benzyl Alcohol	100-51-6	6.3E+03	n	8.2E+04	n					2.0E+03	n		4.8E-01	n	
1.7E-01	I	4.9E-05	C	2.0E-03	P	1.0E-03	P	V		1		1.5E+03	Benzyl Chloride	100-44-7	1.1E+00	c*	4.8E+00	c*	5.7E-02	c*	2.5E-01	c*	8.9E-02	c*		9.8E-05	c*	
		2.4E-03	I	2.0E-03	I	2.0E-05	I			0.007			Beryllium and compounds	7440-41-7	1.6E+02	n	2.3E+03	n	1.2E-03	c*	5.1E-03	c*	2.5E+01	n	4.0E+00	1.9E+01	n	3.2E+00
				9.0E-03	P					1	0.1		Bifenox	42576-02-3	5.7E+02	n	7.4E+03	n					1.0E+02	n		7.6E-01	n	
				1.5E-02	I					1	0.1		Biphenthrin	82657-04-3	9.5E+02	n	1.2E+04	n					3.0E+02	n		1.4E+03	n	
8.0E-03	I			5.0E-01	I	4.0E-04	X	V		1			Biphenyl, 1,1'-	92-52-4	4.7E+01	n	2.0E+02	n	4.2E-01	n	1.8E+00	n	8.3E-01	n		8.7E-03	n	
				4.0E-02	I			V		1		1.0E+03	Bis(2-chloro-1-methylethyl) ether	108-60-1	3.1E+03	ns	4.7E+04	ns					7.1E+02	n		2.6E-01	n	
				3.0E-03	P					1	0.1		Bis(2-chloroethoxy)methane	111-91-1	1.9E+02	n	2.5E+03	n					5.9E+01	n		1.3E-02	n	
1.1E+00	I	3.3E-04	I					V		1		5.1E+03	Bis(2-chloroethyl)ether	111-44-4	2.3E-01	c	1.0E+00	c	8.5E-03	c	3.7E-02	c	1.4E-02	c		3.6E-06	c	
2.2E+02	I	6.2E-02	I					V		1		4.2E+03	Bis(chloromethyl)ether	542-88-1	8.3E-05	c	3.6E-04	c	4.5E-05	c	2.0E-04	c	7.2E-05	c		1.7E-08	c	
				5.0E-02	I					1	0.1		Bisphenol A	80-05-7	3.2E+03	n	4.1E+04	n					7.7E+02	n		5.8E+01	n	
				2.0E-01	I	2.0E-02	H			1			Boron And Borates Only	7440-42-8	1.6E+04	n	2.3E+05	nm	2.1E+01	n	8.8E+01	n	4.0E+03	n		1.3E+01	n	
				2.0E+00	P	2.0E-02	P	V		1			Boron Trichloride	10294-34-5	1.6E+05	nm	2.3E+06	nm	2.1E+01	n	8.8E+01	n	4.2E+01	n				
				4.0E-02	C	1.3E-02	C	V		1			Boron Trifluoride	7637-07-2	3.1E+03	n	4.7E+04	n	1.4E+01	n	5.7E+01	n	2.6E+01	n				
7.0E-01	I			4.0E-03	I					1			Bromate	15541-45-4	9.9E-01	c	4.7E+00	c					1.1E-01	c	1.0E+01	8.5E-04	c	7.7E-02
2.0E+00	X	6.0E-04	X					V		1		2.4E+03	Bromo-2-chloroethane, 1-	107-04-0	2.6E-02	c	1.1E-01	c	4.7E-03	c	2.0E-02	c	7.4E-03	c		2.1E-06	c	
				3.0E-04	X			V		1		9.0E+02	Bromo-3-fluorobenzene, 1-	1073-06-9	2.3E+01	n	3.5E+02	n					4.9E+00	n		4.7E-03	n	

TR=1E-06
THQ=1.0

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; W = TEF applied; E = RPF applied; G = user's guide Section 5; M = mutagen; V = volatile; R = RBA applied ; c = cancer; n = noncancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; SSL values are based on DAF=1; m = ceiling limit exceeded; s = Csat exceeded.

Toxicity and Chemical-specific Information												Contaminant		Screening Levels													Protection of Ground Water SSLs		
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	vol	mutagen	GIABS	ABS_d	C_{sat} (mg/kg)	Analyte	CAS No.	Resident Soil (mg/kg)	key	Industrial Soil (mg/kg)	key	Resident Air (ug/m^3)	key	Industrial Air (ug/m^3)	key	Tapwater (ug/L)	key	MCL (ug/L)	Risk-based SSL (mg/kg)	key	MCL-based SSL (mg/kg)
				3.0E-04	X			V		1		3.2E+02	Bromo-4-fluorobenzene, 1-	460-00-4	2.3E+01	n	3.5E+02	ns					4.6E+00	n		4.4E-03	n	
										1	0.1		Bromoacetic acid	79-08-3											6.0E+01(G)			1.2E-02
				8.0E-03	I	6.0E-02	I	V		1		6.8E+02	Bromobenzene	108-86-1	2.9E+02	n	1.8E+03	ns	6.3E+01	n	2.6E+02	n	6.2E+01	n		4.2E-02	n	
						4.0E-02	X	V		1		4.0E+03	Bromochloromethane	74-97-5	1.5E+02	n	6.3E+02	n	4.2E+01	n	1.8E+02	n	8.3E+01	n		2.1E-02	n	
6.2E-02	I	3.7E-05	C	2.0E-02	I			V		1		9.3E+02	Bromodichloromethane	75-27-4	2.9E-01	c	1.3E+00	c	7.6E-02	c	3.3E-01	c	1.3E-01	c	8.0E+01(G)	3.6E-05	c	2.2E-02
7.9E-03	I	1.1E-06	I	2.0E-02	I			V		1		9.2E+02	Bromoform	75-25-2	1.9E+01	c*	8.6E+01	c	2.6E+00	c	1.1E+01	c	3.3E+00	c	8.0E+01(G)	8.7E-04	c	2.1E-02
				1.4E-03	I	5.0E-03	I	V		1		3.6E+03	Bromomethane	74-83-9	6.8E+00	n	3.0E+01	n	5.2E+00	n	2.2E+01	n	7.5E+00	n		1.9E-03	n	
				5.0E-03	H			V		1			Bromophos	2104-96-3	3.9E+02	n	5.8E+03	n					3.5E+01	n		1.5E-01	n	
						1.0E-01	A	V		1		9.7E+02	Bromopropane, 1-	106-94-5	2.2E+02	n	9.4E+02	n	1.0E+02	n	4.4E+02	n	2.1E+02	n		6.4E-02	n	
1.0E-01	O			1.5E-02	O					1	0.1		Bromoxynil	1689-84-5	5.3E+00	c	2.2E+01	c					6.1E-01	c		5.2E-04	c	
1.0E-01	O			1.5E-02	O			V		1			Bromoxynil Octanoate	1689-99-2	6.7E+00	c	3.2E+01	c					2.4E-01	c		2.1E-03	c	
6.0E-01	C	3.0E-05	I			2.0E-03	I	V		1		6.7E+02	Butadiene, 1,3-	106-99-0	7.6E-02	c*	3.3E-01	c*	9.4E-02	c*	4.1E-01	c*	7.1E-02	c*		3.9E-05	c*	
				3.0E-02	O					1	0.1		Butanoic acid, 4-(2,4-dichlorophenoxy)-	94-82-6	1.9E+03	n	2.5E+04	n					4.5E+02	n		4.2E-01	n	
				1.0E-01	I			V		1		7.6E+03	Butanol, N-	71-36-3	7.8E+03	ns	1.2E+05	nms					2.0E+03	n		4.1E-01	n	
				2.0E+00	P	3.0E+01	P	V		1		2.1E+04	Butyl alcohol, sec-	78-92-2	1.3E+05	nms	1.5E+06	nms	3.1E+04	n	1.3E+05	n	2.4E+04	n		5.0E+00	n	
				5.0E-02	I			V		1			Butylate	2008-41-5	3.9E+03	n	5.8E+04	n					4.6E+02	n		4.5E-01	n	
2.0E-04	C	5.7E-08	C							1	0.1		Butylated hydroxyanisole	25013-16-5	2.7E+03	c	1.1E+04	c	4.9E+01	c	2.2E+02	c	1.5E+02	c		2.9E-01	c	
3.6E-03	P			3.0E-01	P					1	0.1		Butylated hydroxytoluene	128-37-0	1.5E+02	c	6.4E+02	c					3.4E+00	c		1.0E-01	c	
				5.0E-02	P			V		1		1.1E+02	Butylbenzene, n-	104-51-8	3.9E+03	ns	5.8E+04	ns					1.0E+03	n		3.2E+00	n	
				1.0E-01	X			V		1		1.5E+02	Butylbenzene, sec-	135-98-8	7.8E+03	ns	1.2E+05	nms					2.0E+03	n		5.9E+00	n	
				1.0E-01	X			V		1		1.8E+02	Butylbenzene, tert-	98-06-6	7.8E+03	ns	1.2E+05	nms					6.9E+02	n		1.6E+00	n	
				2.0E-02	A					1	0.1		Cacodylic Acid	75-60-5	1.3E+03	n	1.6E+04	n					4.0E+02	n		1.1E-01	n	
		1.8E-03	I	1.0E-03	I	1.0E-05	A			0.025	0.001		Cadmium (Diet)	7440-43-9	7.1E+01	n	9.8E+02	n										
		1.8E-03	I	5.0E-04	I	1.0E-05	A			0.05	0.001		Cadmium (Water)	7440-43-9					1.6E-03	c**	6.8E-03	c**	9.2E+00	n	5.0E+00	6.9E-01	n	3.8E-01
				5.0E-01	I	2.2E-03	C			1	0.1		Caprolactam	105-60-2	3.1E+04	n	4.0E+05	nm	2.3E+00	n	9.6E+00	n	9.9E+03	n		2.5E+00	n	
1.5E-01	C	4.3E-05	C	2.0E-03	I					1	0.1		Captafol	2425-06-1	3.6E+00	c*	1.5E+01	c	6.5E-02	c	2.9E-01	c	4.0E-01	c*		7.1E-04	c*	
2.3E-03	C	6.6E-07	C	1.3E-01	I					1	0.1		Captan	133-06-2	2.4E+02	c*	1.0E+03	c	4.3E+00	c	1.9E+01	c	3.1E+01	c*		2.2E-02	c*	
				1.0E-01	I					1	0.1		Carbaryl	63-25-2	6.3E+03	n	8.2E+04	n					1.8E+03	n		1.7E+00	n	
				5.0E-03	I					1	0.1		Carbofuran	1563-66-2	3.2E+02	n	4.1E+03	n					9.4E+01	n	4.0E+01	3.7E-02	n	1.6E-02
				1.0E-01	I	7.0E-01	I	V		1		7.4E+02	Carbon Disulfide	75-15-0	7.7E+02	ns	3.5E+03	ns	7.3E+02	n	3.1E+03	n	8.1E+02	n		2.4E-01	n	
7.0E-02	I	6.0E-06	I	4.0E-03	I	1.0E-01	I	V		1		4.6E+02	Carbon Tetrachloride	56-23-5	6.5E-01	c	2.9E+00	c	4.7E-01	c	2.0E+00	c	4.6E-01	c	5.0E+00	1.8E-04	c	1.9E-03
						1.0E-01	P	V		1		5.9E+03	Carbonyl Sulfide	463-58-1	6.7E+01	n	2.8E+02	n	1.0E+02	n	4.4E+02	n	2.1E+02	n		5.1E-01	n	
				1.0E-02	I					1	0.1		Carbosulfan	55285-14-8	6.3E+02	n	8.2E+03	n					5.1E+01	n		1.2E+00	n	
				1.0E-01	I					1	0.1		Carboxin	5234-68-4	6.3E+03	n	8.2E+04	n					1.9E+03	n		1.0E+00	n	
						9.0E-04	I			1			Ceric oxide	1306-38-3	1.3E+06	nm	5.4E+06	nm	9.4E-01	n	3.9E+00	n						
				1.0E-01	I			V		1			Chloral Hydrate	302-17-0	7.8E+03	n	1.2E+05	nm					2.0E+03	n		4.0E-01	n	
				1.5E-02	I					1	0.1		Chloramben	133-90-4	9.5E+02	n	1.2E+04	n					2.9E+02	n		7.0E-02	n	
													Chloramines, Organic	E701235											4.0E+03(G)			
4.0E-01	H									1	0.1		Chloranil	118-75-2	1.3E+00	c	5.7E+00	c					1.8E-01	c		1.5E-04	c	
3.5E-01	I	1.0E-04	I	5.0E-04	I	7.0E-04	I	V		1	0.04		Chlordane (technical mixture)	12789-03-6	1.7E+00	c*	7.7E+00	c*	2.8E-02	c*	1.2E-01	c*	2.0E-02	c*	2.0E+00	2.7E-03	c*	2.7E-01
1.0E+01	I	4.6E-03	C	3.0E-04	I					1	0.1		Chlordecone (Kepone)	143-50-0	5.4E-02	c	2.3E-01	c	6.1E-04	c	2.7E-03	c	3.5E-03	c		1.2E-04	c	
				7.0E-04	A					1	0.1		Chlorfenvinphos	470-90-6	4.4E+01	n	5.7E+02	n					1.1E+01	n		3.1E-02	n	
				9.0E-02	O					1	0.1		Chlorimuron, Ethyl-	90982-32-4	5.7E+03	n	7.4E+04	n					1.8E+03	n		6.0E-01	n	
				1.0E-01	I	1.5E-04	A	V		1		2.8E+03	Chlorine	7782-50-5	1.8E-01	n	7.8E-01	n	1.5E-01	n	6.4E-01	n	3.0E-01	n	4.0E+03(G)	1.5E-04	n	2.0E+00
				3.0E-02	I	2.0E-04	I	V		1			Chlorine Dioxide	10049-04-4	2.3E+03	n	3.4E+04	n	2.1E-01	n	8.8E-01	n	4.2E-01	n	8.0E+02(G)			
				3.0E-02	I					1			Chlorite (Sodium Salt)	7758-19-2	2.3E+03	n	3.5E+04	n					6.0E+02	n	1.0E+03			
						5.0E+01	I	V		1		1.2E+03	Chloro-1,1-difluoroethane, 1-	75-68-3	5.4E+04	ns	2.3E+05	nms	5.2E+04	n	2.2E+05	n	1.0E+05	n		5.2E+01	n	
		3.0E-04	I	2.0E-02	H	2.0E-02	I	V		1		7.9E+02	Chloro-1,3-butadiene, 2-	126-99-8	1.0E-02	c	4.4E-02	c	9.4E-03	c	4.1E-02	c	1.9E-02	c		9.8E-06	c	
4.6E-01	H									1	0.1		Chloro-2-methylaniline HCl, 4-	3165-93-3	1.2E+00	c	5.0E+00	c					1.7E-01	c		1.5E-04	c	
1.0E-01	P	7.7E-05	C	3.0E-03	X					1	0.1		Chloro-2-methylaniline, 4-	95-69-2	5.4E+00	c*	2.3E+01	c	3.6E-02	c	1.6E-01	c	7.0E-01	c*		4.0E-04	c*	
2.7E-01	X							V		1		1.2E+04	Chloroacetaldehyde, 2-	107-20-0	2.6E+00	c	1.2E+01	c					2.9E-01	c		5.8E-05	c	
										1	0.1		Chloroacetic Acid	79-11-8											6.0E+01(G)			1.2E-02
						3.0E-05	I			1	0.1		Chloroacetophenone, 2-	532-27-4	4.3E+04	n	1.8E+05	nm	3.1E-02	n	1.3E-01	n						
2.0E-01	P			4.0E-03	I					1	0.1		Chloroaniline, p-	106-47-8	2.7E+00	c*	1.1E+01	c					3.7E-01	c		1.6E-04	c	
				2.0E-02	I	5.0E-02	P	V		1		7.6E+02	Chlorobenzene	108-90-7	2.8E+02	n	1.3E+03	ns	5.2E+01	n	2.2E+02	n	7.8E+01	n	1.0E+02	5.3E-02	n	6.8E-02
				1.0E-01	X					1	0.1		Chlorobenzene sulfonic acid, p-	98-66-8	6.3E+03	n	8.2E+04	n					2.0E+03	n		4.7E-01	n	
1.1E-01	C	3.1E-05	C	2.0E-02	I					1	0.1		Chlorobenzilate	510-15-6	4.9E+00	c	2.1E+01	c	9.1E-02	c	4.0E-01	c	3.1E-01	c		1.0E-03	c	
				3.0E-02	X					1	0.1		Chlorobenzoic Acid, p-	74-11-3	1.9E+03	n	2.5E+04	n					5.1E+02	n		1.3E-01	n	
		8.6E-06	C	3.0E-03	P	3.0E-01	P	V		1		2.9E+02	Chlorobenzotrifluoride, 4-	98-56-6	2.2E+00	c*	9.6E+00	c	3.3E-01	c	1.4E+00	c	6.5E-01	c*		2.3E-03	c*	
				4.0E-02	P			V		1		7.3E+02	Chlorobutane, 1-	109-69-3	3.1E+03	ns	4.7E+04	ns					6.4E+02	n		2.6E-01	n	
						5.0E+01	I	V		1		1.7E+03	Chlorodifluoromethane	75-45-6	4.9E+04	ns	2.1E+05	nms	5.2E+04	n	2.2E+05	n	1.0E+05	n		4.3E+01	n	
				2.0E-02	P			V		1		1.1E+05	Chloroethanol, 2-	107-07-3	1.6E+03	n	2.3E+04	n					4.0E+02	n		8.1E-02	n	
3.1E-02	C	2.3E-05	I	1.0E-02	I	9.8E-02	A	V		1		2.5E+03	Chloroform	67-66-3	3.2E-01	c	1.4E+00	c	1.2E-01	c	5.3E-01	c	2.2E-01	c	8.0E+01(G)	6.1E-05	c	2.2E-02
						9.0E-02	I	V		1		1.3E+03	Chloromethane	74-87-3	1.1E+02	n	4.6E+02	n	9.4E+01	n	3.9E+02	n	1.9E+02	n		4.9E-02	n	
2.4E+00	C	6.9E-04	C					V		1		9.3E+03	Chloromethyl Methyl Ether	107-30-2	2.0E-02	c	8.9E-02	c	4.1E-03	c	1.8E-02	c	6.5E-03	c		1.4E-06	c	
3.0E-01	P			3.0E-03	P	1.0E-05	X			1	0.1		Chloronitrobenzene, o-	88-73-3	1.8E+00	c	7.7E+00	c	1.0E-02	n	4.4E-02	n	2.4E-01	c		2.2E-04	c	
6.0E-02	P			7.0E-04	P	2.0E-03	P			1	0.1		Chloronitrobenzene, p-	100-00-5	9.0E+00	c**	3.8E+01	c*	2.1E+00	n	8.8E+00	n	1.2E+00	c*		1.1E-03	c*	
				5.0E-03	I			V		1		2.7E+04	Chlorophenol, 2-	95-57-8	3.9E+02	n	5.8E+03	n					9.1E+01	n		8.9E-02	n	
						4.0E-04	C	V		1		6.2E+02	Chloropicrin	76-06-2	2.0E+00	n	8.2E+00	n	4.2E-01	n	1.8E+00	n	8.3E-01	n		2.5E-04	n	
1.7E-02	C			1.5E-02	I					1	0.1		Chlorothalonil	1897-45-6	3.2E+01	c*	1.4E+02	c*					4.0E+00	c*		9.0E-03	c*	
				2.0E-02	I			V		1		9.1E+02	Chlorotoluene, o-	95-49-8	1.6E+03	ns	2.3E+04	ns					2.4E+02	n		2.3E-01	n	
				2.0E-02	X			V		1		2.5E+02	Chlorotoluene, p-	106-43-4	1.6E+03	ns	2.3E+04	ns					2.5E+02	n		2.4E-01	n	
2.4E+02	C	6.9E-02	C							1	0.1		Chlorozotocin	54749-90-5	2.3E-03	c	9.6E-03	c	4.1E-05	c	1.8E-04	c	3.2E-04	c		7.1E-08	c	
				5.0E-02	O					1	0.1		Chlorpropham	101-21-3	3.2E+03	n	4.1E+04	n					7.1E+02	n		6.4E-01	n	
				1.0E-03	A					1	0.1		Chlorpyrifos	2921-88-2	6.3E+01	n	8.2E+02	n					8.4E+00	n		1.2E-01	n	
				1.0E-02	H					1	0.1		Chlorpyrifos Methyl	5598-13-0	6.3E+02	n	8.2E+03	n					1.2E+02	n		5.4E-01	n	
				5.0E-02	O					1	0.1		Chlorsulfuron	64902-72-3	3.2E+03	n	4.1E+04	n					9.9E+02	n		8.3E-01	n	

TR=1E-06
THQ=1.0

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; W = TEF applied; E = RPF applied; G = user's guide Section 5; M = mutagen; V = volatile; R = RBA applied ; c = cancer; n = noncancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; SSL values are based on DAF=1; m = ceiling limit exceeded; s = Csat exceeded.

Toxicity and Chemical-specific Information												Contaminant		Screening Levels												Protection of Ground Water SSLs		
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	vol	mutagen	GIABS	ABS_d	C_{sat} (mg/kg)	Analyte	CAS No.	Resident Soil (mg/kg)	key	Industrial Soil (mg/kg)	key	Resident Air (ug/m^3)	key	Industrial Air (ug/m^3)	key	Tapwater (ug/L)	key	MCL (ug/L)	Risk-based SSL (mg/kg)	key	MCL-based SSL (mg/kg)
				1.0E-02	I					1	0.1		Chlorthal-dimethyl	1861-32-1	6.3E+02	n	8.2E+03	n					1.2E+02	n		1.5E-01	n	
				8.0E-04	H					1	0.1		Chlorthiophos	60238-56-4	5.1E+01	n	6.6E+02	n					2.8E+00	n				
				1.5E+00	I					0.013			Chromium(III), Insoluble Salts	16065-83-1	1.2E+05	nm	1.8E+06	nm					2.2E+04	n		4.0E+07	n	
5.0E-01	C	8.4E-02	G	3.0E-03	I	1.0E-04	I		M	0.025			Chromium(VI)	18540-29-9	3.0E-01	c	6.3E+00	c	1.2E-05	c	1.5E-04	c	3.5E-02	c		6.7E-04	c	
										0.013			Chromium, Total	7440-47-3											1.0E+02			1.8E+05
				1.3E-02	I					1	0.1		Clofentezine	74115-24-5	8.2E+02	n	1.1E+04	n					2.3E+02	n		1.4E+01	n	
		9.0E-03	P	3.0E-04	P	6.0E-06	P			1			Cobalt	7440-48-4	2.3E+01	n	3.5E+02	n	3.1E-04	c*	1.4E-03	c*	6.0E+00	n		2.7E-01	n	
		6.2E-04	I					V	M	1			Coke Oven Emissions	E649830					1.6E-03	c	2.0E-02	c						
				4.0E-02	H					1			Copper	7440-50-8	3.1E+03	n	4.7E+04	n					8.0E+02	n	1.3E+03	2.8E+01	n	4.6E+01
				5.0E-02	I	6.0E-01	C			1	0.1		Cresol, m-	108-39-4	3.2E+03	n	4.1E+04	n	6.3E+02	n	2.6E+03	n	9.3E+02	n		7.4E-01	n	
				5.0E-02	I	6.0E-01	C			1	0.1		Cresol, o-	95-48-7	3.2E+03	n	4.1E+04	n	6.3E+02	n	2.6E+03	n	9.3E+02	n		7.5E-01	n	
				1.0E-01	A	6.0E-01	C			1	0.1		Cresol, p-	106-44-5	6.3E+03	n	8.2E+04	n	6.3E+02	n	2.6E+03	n	1.9E+03	n		1.5E+00	n	
				1.0E-01	A					1	0.1		Cresol, p-chloro-m-	59-50-7	6.3E+03	n	8.2E+04	n					1.4E+03	n		1.7E+00	n	
				1.0E-01	A	6.0E-01	C			1	0.1		Cresols	1319-77-3	6.3E+03	n	8.2E+04	n	6.3E+02	n	2.6E+03	n	1.5E+03	n		1.3E+00	n	
1.9E+00	H			1.0E-03	P			V		1		1.7E+04	Crotonaldehyde, trans-	123-73-9	3.7E-01	c	1.7E+00	c					4.0E-02	c		8.2E-06	c	
				1.0E-01	I	4.0E-01	I	V		1		2.7E+02	Cumene	98-82-8	1.9E+03	ns	9.9E+03	ns	4.2E+02	n	1.8E+03	n	4.5E+02	n		7.4E-01	n	
2.2E-01	C	6.3E-05	C							1	0.1		Cupferron	135-20-6	2.5E+00	c	1.0E+01	c	4.5E-02	c	1.9E-01	c	3.5E-01	c		6.1E-04	c	
8.4E-01	H			2.0E-03	H					1	0.1		Cyanazine	21725-46-2	6.5E-01	c	2.7E+00	c					8.8E-02	c		4.1E-05	c	
													Cyanides															
				1.0E-03	I					1			~Calcium Cyanide	592-01-8	7.8E+01	n	1.2E+03	n					2.0E+01	n				
				5.0E-03	I					1			~Copper Cyanide	544-92-3	3.9E+02	n	5.8E+03	n					1.0E+02	n				
				6.0E-04	I	8.0E-04	G	V		1		9.5E+05	~Cyanide (CN-)	57-12-5	2.3E+01	n	1.5E+02	n	8.3E-01	n	3.5E+00	n	1.5E+00	n	2.0E+02	1.5E-02	n	2.0E+00
				1.0E-03	I			V		1			~Cyanogen	460-19-5	7.8E+01	n	1.2E+03	n					2.0E+01	n				
				9.0E-02	I			V		1			~Cyanogen Bromide	506-68-3	7.0E+03	n	1.1E+05	nm					1.8E+03	n				
				5.0E-02	I			V		1			~Cyanogen Chloride	506-77-4	3.9E+03	n	5.8E+04	n					1.0E+03	n				
				6.0E-04	I	8.0E-04	I	V		1		1.0E+07	~Hydrogen Cyanide	74-90-8	2.3E+01	n	1.5E+02	n	8.3E-01	n	3.5E+00	n	1.5E+00	n		1.5E-02	n	
				2.0E-03	I					1			~Potassium Cyanide	151-50-8	1.6E+02	n	2.3E+03	n					4.0E+01	n				
				5.0E-03	I					0.04			~Potassium Silver Cyanide	506-61-6	3.9E+02	n	5.8E+03	n					8.2E+01	n				
				1.0E-01	I					0.04			~Silver Cyanide	506-64-9	7.8E+03	n	1.2E+05	nm					1.8E+03	n				
				1.0E-03	I					1			~Sodium Cyanide	143-33-9	7.8E+01	n	1.2E+03	n					2.0E+01	n	2.0E+02			
				2.0E-04	P					1			~Thiocyanates	E1790664	1.6E+01	n	2.3E+02	n					4.0E+00	n				
				2.0E-04	X			V		1			~Thiocyanic Acid	463-56-9	1.6E+01	n	2.3E+02	n					4.0E+00	n				
				5.0E-02	I					1			~Zinc Cyanide	557-21-1	3.9E+03	n	5.8E+04	n					1.0E+03	n				
						6.0E+00	I	V		1		1.2E+02	Cyclohexane	110-82-7	6.5E+03	ns	2.7E+04	ns	6.3E+03	n	2.6E+04	n	1.3E+04	n		1.3E+01	n	
2.0E-02	X			2.0E-02	X					1	0.1		Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro-	87-84-3	2.7E+01	c*	1.1E+02	c					2.8E+00	c		1.6E-02	c	
				5.0E+00	I	7.0E-01	P	V		1		5.1E+03	Cyclohexanone	108-94-1	2.8E+04	ns	1.3E+05	nms	7.3E+02	n	3.1E+03	n	1.4E+03	n		3.4E-01	n	
				5.0E-03	P	1.0E+00	X	V		1		2.8E+02	Cyclohexene	110-83-8	3.1E+02	ns	3.1E+03	ns	1.0E+03	n	4.4E+03	n	7.0E+01	n		4.6E-02	n	
				2.0E-01	I			V		1		2.9E+05	Cyclohexylamine	108-91-8	1.6E+04	n	2.3E+05	nm					3.8E+03	n		1.0E+00	n	
				2.5E-02	I					1	0.1		Cyfluthrin	68359-37-5	1.6E+03	n	2.1E+04	n					1.2E+02	n		3.1E+01	n	
				1.0E-03	O					1	0.1		Cyhalothrin	68085-85-8	6.3E+01	n	8.2E+02	n					2.0E+01	n		1.4E+01	n	
				5.0E-01	O					1	0.1		Cyromazine	66215-27-8	3.2E+04	n	4.1E+05	nm					9.9E+03	n		2.5E+00	n	
2.4E-01	I	6.9E-05	C	3.0E-05	X					1	0.1		DDD, p,p`- (DDD)	72-54-8	1.9E+00	n	9.6E+00	c**	4.1E-02	c	1.8E-01	c	3.2E-02	c**		7.5E-03	c**	
3.4E-01	I	9.7E-05	C	3.0E-04	X			V		1			DDE, p,p'-	72-55-9	2.0E+00	c*	9.3E+00	c*	2.9E-02	c	1.3E-01	c	4.6E-02	c		1.1E-02	c	
3.4E-01	I	9.7E-05	I	5.0E-04	I					1	0.03		DDT	50-29-3	1.9E+00	c*	8.5E+00	c*	2.9E-02	c	1.3E-01	c	2.3E-01	c*		7.7E-02	c*	
				3.0E-02	I					1	0.1		Dalapon	75-99-0	1.9E+03	n	2.5E+04	n					6.0E+02	n	2.0E+02	1.2E-01	n	4.1E-02
1.8E-02	C	5.1E-06	C	1.5E-01	I					1	0.1		Daminozide	1596-84-5	3.0E+01	c	1.3E+02	c	5.5E-01	c	2.4E+00	c	4.3E+00	c		9.5E-04	c	
7.0E-04	I			7.0E-03	I					1	0.1		Decabromodiphenyl ether, 2,2',3,3',4,4',5,5',6,6'- (BDE-209)	1163-19-5	4.4E+02	n	3.3E+03	c**					1.1E+02	c**		6.2E+01	c**	
				4.0E-05	I					1	0.1		Demeton	8065-48-3	2.5E+00	n	3.3E+01	n					4.2E-01	n				
1.2E-03	I			6.0E-01	I					1	0.1		Di(2-ethylhexyl)adipate	103-23-1	4.5E+02	c*	1.9E+03	c					6.5E+01	c	4.0E+02	4.7E+00	c	2.9E+01
6.1E-02	H									1	0.1		Diallate	2303-16-4	8.9E+00	c	3.8E+01	c					5.4E-01	c		8.0E-04	c	
				7.0E-04	A					1	0.1		Diazinon	333-41-5	4.4E+01	n	5.7E+02	n					1.0E+01	n		6.5E-02	n	
				1.0E-02	X			V		1			Dibenzothiophene	132-65-0	7.8E+02	n	1.2E+04	n					6.5E+01	n		1.2E+00	n	
8.0E-01	P	6.0E-03	P	2.0E-04	P	2.0E-04	I	V	M	1		9.8E+02	Dibromo-3-chloropropane, 1,2-	96-12-8	5.3E-03	c	6.4E-02	c	1.7E-04	c	2.0E-03	c	3.3E-04	c	2.0E-01	1.4E-07	c	8.6E-05
										1	0.1		Dibromoacetic acid	631-64-1											6.0E+01(G)			1.2E-02
				4.0E-04	X			V		1		1.6E+02	Dibromobenzene, 1,3-	108-36-1	3.1E+01	n	4.7E+02	ns					5.3E+00	n		5.1E-03	n	
				1.0E-02	I			V		1			Dibromobenzene, 1,4-	106-37-6	7.8E+02	n	1.2E+04	n					1.3E+02	n		1.2E-01	n	
8.4E-02	I			2.0E-02	I			V		1		8.0E+02	Dibromochloromethane	124-48-1	8.3E+00	c	3.9E+01	c					8.7E-01	c	8.0E+01(G)	2.3E-04	c	2.1E-02
2.0E+00	I	6.0E-04	I	9.0E-03	I	9.0E-03	I	V		1		1.3E+03	Dibromoethane, 1,2-	106-93-4	3.6E-02	c	1.6E-01	c	4.7E-03	c	2.0E-02	c	7.5E-03	c	5.0E-02	2.1E-06	c	1.4E-05
						4.0E-03	X	V		1		2.8E+03	Dibromomethane (Methylene Bromide)	74-95-3	2.4E+01	n	9.9E+01	n	4.2E+00	n	1.8E+01	n	8.3E+00	n		2.1E-03	n	
				3.0E-04	P					1	0.1		Dibutyltin Compounds	E1790660	1.9E+01	n	2.5E+02	n					6.0E+00	n				
				3.0E-02	I					1	0.1		Dicamba	1918-00-9	1.9E+03	n	2.5E+04	n					5.7E+02	n		1.5E-01	n	
													Dichloramine	3400-09-7											4.0E+03(G)			
		4.2E-03	P					V		1		5.5E+02	Dichloro-2-butene, 1,4-	764-41-0	2.1E-03	c	9.4E-03	c	6.7E-04	c	2.9E-03	c	1.3E-03	c		6.6E-07	c	
		4.2E-03	P					V		1		5.2E+02	Dichloro-2-butene, cis-1,4-	1476-11-5	7.4E-03	c	3.2E-02	c	6.7E-04	c	2.9E-03	c	1.3E-03	c		6.2E-07	c	
		4.2E-03	P					V		1		7.6E+02	Dichloro-2-butene, trans-1,4-	110-57-6	7.4E-03	c	3.2E-02	c	6.7E-04	c	2.9E-03	c	1.3E-03	c		6.2E-07	c	
5.0E-02	I			4.0E-03	I					1	0.1		Dichloroacetic Acid	79-43-6	1.1E+01	c*	4.6E+01	c*					1.5E+00	c*	6.0E+01(G)	3.1E-04	c*	1.2E-02
				9.0E-02	I	2.0E-01	H	V		1		3.8E+02	Dichlorobenzene, 1,2-	95-50-1	1.8E+03	ns	9.3E+03	ns	2.1E+02	n	8.8E+02	n	3.0E+02	n	6.0E+02	3.0E-01	n	5.8E-01
5.4E-03	C	1.1E-05	C	7.0E-02	A	8.0E-01	I	V		1			Dichlorobenzene, 1,4-	106-46-7	2.6E+00	c	1.1E+01	c	2.6E-01	c	1.1E+00	c	4.8E-01	c	7.5E+01	4.6E-04	c	7.2E-02
4.5E-01	I	3.4E-04	C							1	0.1		Dichlorobenzidine, 3,3'-	91-94-1	1.2E+00	c	5.1E+00	c	8.3E-03	c	3.6E-02	c	1.3E-01	c		8.2E-04	c	
				9.0E-03	X					1	0.1		Dichlorobenzophenone, 4,4'-	90-98-2	5.7E+02	n	7.4E+03	n					7.8E+01	n		4.7E-01	n	
				2.0E-01	I	1.0E-01	X	V		1		8.5E+02	Dichlorodifluoromethane	75-71-8	8.7E+01	n	3.7E+02	n	1.0E+02	n	4.4E+02	n	2.0E+02	n		3.0E-01	n	
5.7E-03	C	1.6E-06	C	2.0E-01	P			V		1		1.7E+03	Dichloroethane, 1,1-	75-34-3	3.6E+00	c	1.6E+01	c	1.8E+00	c	7.7E+00	c	2.8E+00	c		7.8E-04	c	
9.1E-02	I	2.6E-05	I	6.0E-03	X	7.0E-03	P	V		1		3.0E+03	Dichloroethane, 1,2-	107-06-2	4.6E-01	c*	2.0E+00	c*	1.1E-01	c*	4.7E-01	c*	1.7E-01	c*	5.0E+00	4.8E-05	c*	1.4E-03
				5.0E-02	I	2.0E-01	I	V		1		1.2E+03	Dichloroethylene, 1,1-	75-35-4	2.3E+02	n	1.0E+03	n	2.1E+02	n	8.8E+02	n	2.8E+02	n	7.0E+00	1.0E-01	n	2.5E-03
				2.0E-03	I			V		1		2.4E+03	Dichloroethylene, cis-1,2-	156-59-2	1.6E+02	n	2.3E+03	n					3.6E+01	n	7.0E+01	1.1E-02	n	2.1E-02
				2.0E-02	I	4.0E-02	X	V		1		1.9E+03	Dichloroethylene, trans-1,2-	156-60-5	7.0E+01	n	3.0E+02	n	4.2E+01	n	1.8E+02	n	6.8E+01	n	1.0E+02	2.1E-02	n	3.1E-02
				3.0E-03	I					1	0.1		Dichlorophenol, 2,4-	120-83-2	1.9E+02	n	2.5E+03	n					4.6E+01	n		2.3E-02	n	

TR=1E-06
THQ=1.0

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; W = TEF applied; E = RPF applied; G = user's guide Section 5; M = mutagen; V = volatile; R = RBA applied ; c = cancer; n = noncancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; SSL values are based on DAF=1; m = ceiling limit exceeded; s = Csat exceeded.

Toxicity and Chemical-specific Information												Contaminant		Screening Levels										Protection of Ground Water SSLs		
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	volatile	mutagen	GIABS	ABS_d	C_{sat} (mg/kg)	Analyte	CAS No.	Resident Soil (mg/kg)	key	Industrial Soil (mg/kg)	key	Resident Air (ug/m^3)	key	Industrial Air (ug/m^3)	key	Tapwater (ug/L)	key	MCL (ug/L)	Risk-based SSL (mg/kg)	key	MCL-based SSL (mg/kg)
				1.0E-02	I					1	0.05		Dichlorophenoxy Acetic Acid, 2,4-	94-75-7	7.0E+02	n	9.6E+03	n					1.7E+02	n	7.0E+01	4.5E-02	n	1.8E-02
3.7E-02	P	3.7E-06	P	4.0E-02	P	4.0E-03	I	V		1		1.4E+03	Dichloropropane, 1,2-	78-87-5	2.5E+00	c**	1.1E+01	c**	7.6E-01	c**	3.3E+00	c**	8.5E-01	c**	5.0E+00	2.8E-04	c**	1.7E-03
				2.0E-02	P			V		1		1.5E+03	Dichloropropane, 1,3-	142-28-9	1.6E+03	ns	2.3E+04	ns					3.7E+02	n		1.3E-01	n	
				3.0E-03	I					1	0.1		Dichloropropanol, 2,3-	616-23-9	1.9E+02	n	2.5E+03	n					5.9E+01	n		1.3E-02	n	
1.0E-01	I	4.0E-06	I	3.0E-02	I	2.0E-02	I	V		1		1.6E+03	Dichloropropene, 1,3-	542-75-6	1.8E+00	c*	8.2E+00	c*	7.0E-01	c*	3.1E+00	c*	4.7E-01	c*		1.7E-04	c*	
2.9E-01	I	8.3E-05	C	5.0E-04	I	5.0E-04	I			1	0.1		Dichlorvos	62-73-7	1.9E+00	c*	7.9E+00	c*	3.4E-02	c*	1.5E-01	c*	2.6E-01	c*		8.1E-05	c*	
				3.0E-05	O					1	0.1		Dicrotophos	141-66-2	1.9E+00	n	2.5E+01	n					6.0E-01	n		1.4E-04	n	
				8.0E-02	P	3.0E-04	X	V		1		2.6E+02	Dicyclopentadiene	77-73-6	1.3E+00	n	5.4E+00	n	3.1E-01	n	1.3E+00	n	6.3E-01	n		2.2E-03	n	
1.6E+01	I	4.6E-03	I	5.0E-05	I					1	0.1		Dieldrin	60-57-1	3.4E-02	c*	1.4E-01	c	6.1E-04	c	2.7E-03	c	1.8E-03	c		7.1E-05	c	
		3.0E-04	C			5.0E-03	I			1	0.1		Diesel Engine Exhaust	E17136615					9.4E-03	c	4.1E-02	c						
				2.0E-03	P	2.0E-04	P			1	0.1		Diethanolamine	111-42-2	1.3E+02	n	1.6E+03	n	2.1E-01	n	8.8E-01	n	4.0E+01	n		8.1E-03	n	
				3.0E-02	P	1.0E-04	P			1	0.1		Diethylene Glycol Monobutyl Ether	112-34-5	1.9E+03	n	2.4E+04	n	1.0E-01	n	4.4E-01	n	6.0E+02	n		1.3E-01	n	
				6.0E-02	P	3.0E-04	P			1	0.1		Diethylene Glycol Monoethyl Ether	111-90-0	3.8E+03	n	4.8E+04	n	3.1E-01	n	1.3E+00	n	1.2E+03	n		2.4E-01	n	
				1.0E-03	P			V		1		1.1E+05	Diethylformamide	617-84-5	7.8E+01	n	1.2E+03	n					2.0E+01	n		4.1E-03	n	
3.5E+02	C	1.0E-01	C							1	0.1		Diethylstilbestrol	56-53-1	1.6E-03	c	6.6E-03	c	2.8E-05	c	1.2E-04	c	5.1E-05	c		2.8E-05	c	
				8.3E-02	O					1	0.1		Difenzoquat	43222-48-6	5.2E+03	n	6.8E+04	n					1.7E+03	n		2.6E+02	n	
				2.0E-02	I					1	0.1		Diflubenzuron	35367-38-5	1.3E+03	n	1.6E+04	n					2.9E+02	n		3.3E-01	n	
						4.0E+01	I	V		1		1.4E+03	Difluoroethane, 1,1-	75-37-6	4.8E+04	ns	2.0E+05	nms	4.2E+04	n	1.8E+05	n	8.3E+04	n		2.8E+01	n	
						3.0E+01	X	V		1		6.9E+02	Difluoropropane, 2,2-	420-45-1	2.4E+04	ns	1.0E+05	ns	3.1E+04	n	1.3E+05	n	6.3E+04	n		1.4E+02	n	
4.4E-02	C	1.3E-05	C					V		1			Dihydrosafrole	94-58-6	9.9E+00	c	4.5E+01	c	2.2E-01	c	9.4E-01	c	3.0E-01	c		1.9E-04	c	
						7.0E-01	P	V		1		2.3E+03	Diisopropyl Ether	108-20-3	2.2E+03	n	9.4E+03	ns	7.3E+02	n	3.1E+03	n	1.5E+03	n		3.7E-01	n	
				8.0E-02	I			V		1		5.3E+02	Diisopropyl Methylphosphonate	1445-75-6	6.3E+03	ns	9.3E+04	ns					1.6E+03	n		4.5E-01	n	
				2.2E-02	O					1	0.1		Dimethipin	55290-64-7	1.4E+03	n	1.8E+04	n					4.4E+02	n		9.6E-02	n	
				2.2E-03	O					1	0.1		Dimethoate	60-51-5	1.4E+02	n	1.8E+03	n					4.4E+01	n		9.9E-03	n	
1.6E+00	P									1	0.1		Dimethoxybenzidine, 3,3'-	119-90-4	3.4E-01	c	1.4E+00	c					4.7E-02	c		5.8E-05	c	
1.7E-03	P			6.0E-02	P					1	0.1		Dimethyl methylphosphonate	756-79-6	3.2E+02	c*	1.4E+03	c*					4.6E+01	c*		9.6E-03	c*	
4.6E+00	C	1.3E-03	C							1	0.1		Dimethylamino azobenzene [p-]	60-11-7	1.2E-01	c	5.0E-01	c	2.2E-03	c	9.4E-03	c	5.0E-03	c		2.1E-05	c	
5.8E-01	H									1	0.1		Dimethylaniline HCl, 2,4-	21436-96-4	9.4E-01	c	4.0E+00	c					1.3E-01	c		1.2E-04	c	
2.0E-01	P			2.0E-03	X					1	0.1		Dimethylaniline, 2,4-	95-68-1	2.7E+00	c*	1.1E+01	c					3.7E-01	c		2.1E-04	c	
2.7E-02	P			2.0E-03	I			V		1		8.3E+02	Dimethylaniline, N,N-	121-69-7	2.6E+01	c**	1.2E+02	c*					2.5E+00	c*		9.0E-04	c*	
1.1E+01	P									1	0.1		Dimethylbenzidine, 3,3'-	119-93-7	4.9E-02	c	2.1E-01	c					6.5E-03	c		4.3E-05	c	
				1.0E-01	P	3.0E-02	I	V		1		1.1E+05	Dimethylformamide	68-12-2	2.6E+03	n	1.5E+04	n	3.1E+01	n	1.3E+02	n	6.1E+01	n		1.2E-02	n	
				1.0E-04	X	2.0E-06	X	V		1		1.7E+05	Dimethylhydrazine, 1,1-	57-14-7	5.7E-02	n	2.4E-01	n	2.1E-03	n	8.8E-03	n	4.2E-03	n		9.3E-07	n	
5.5E+02	C	1.6E-01	C					V		1		1.9E+05	Dimethylhydrazine, 1,2-	540-73-8	8.8E-04	c	4.1E-03	c	1.8E-05	c	7.7E-05	c	2.8E-05	c		6.5E-09	c	
				2.0E-02	I					1	0.1		Dimethylphenol, 2,4-	105-67-9	1.3E+03	n	1.6E+04	n					3.6E+02	n		4.2E-01	n	
				6.0E-04	I					1	0.1		Dimethylphenol, 2,6-	576-26-1	3.8E+01	n	4.9E+02	n					1.1E+01	n		1.3E-02	n	
				1.0E-03	I					1	0.1		Dimethylphenol, 3,4-	95-65-8	6.3E+01	n	8.2E+02	n					1.8E+01	n		2.1E-02	n	
4.5E-02	C	1.3E-05	C					V		1		4.7E+02	Dimethylvinylchloride	513-37-1	1.1E+00	c	4.8E+00	c	2.2E-01	c	9.4E-01	c	3.3E-01	c		1.1E-04	c	
				8.0E-05	X					1	0.1		Dinitro-o-cresol, 4,6-	534-52-1	5.1E+00	n	6.6E+01	n					1.5E+00	n		2.6E-03	n	
				2.0E-03	I					1	0.1		Dinitro-o-cyclohexyl Phenol, 4,6-	131-89-5	1.3E+02	n	1.6E+03	n					2.3E+01	n		7.7E-01	n	
				1.0E-04	P					1	0.1		Dinitrobenzene, 1,2-	528-29-0	6.3E+00	n	8.2E+01	n					1.9E+00	n		1.8E-03	n	
				1.0E-04	I					1	0.1		Dinitrobenzene, 1,3-	99-65-0	6.3E+00	n	8.2E+01	n					2.0E+00	n		1.8E-03	n	
				1.0E-04	P					1	0.1		Dinitrobenzene, 1,4-	100-25-4	6.3E+00	n	8.2E+01	n					2.0E+00	n		1.8E-03	n	
				2.0E-03	I					1	0.1		Dinitrophenol, 2,4-	51-28-5	1.3E+02	n	1.6E+03	n					3.9E+01	n		4.4E-02	n	
6.8E-01	I									1	0.1		Dinitrotoluene Mixture, 2,4/2,6-	E1615210	8.0E-01	c	3.4E+00	c					1.1E-01	c		1.5E-04	c	
3.1E-01	C	8.9E-05	C	2.0E-03	I					1	0.102		Dinitrotoluene, 2,4-	121-14-2	1.7E+00	c*	7.4E+00	c	3.2E-02	c	1.4E-01	c	2.4E-01	c		3.2E-04	c	
1.5E+00	P			3.0E-04	X					1	0.099		Dinitrotoluene, 2,6-	606-20-2	3.6E-01	c*	1.5E+00	c					4.9E-02	c		6.7E-05	c	
				1.0E-04	X					1	0.006		Dinitrotoluene, 2-Amino-4,6-	35572-78-2	7.7E+00	n	1.1E+02	n					1.9E+00	n		1.5E-03	n	
				1.0E-04	X					1	0.009		Dinitrotoluene, 4-Amino-2,6-	19406-51-0	7.7E+00	n	1.1E+02	n					1.9E+00	n		1.5E-03	n	
4.5E-01	X			9.0E-04	X					1	0.1		Dinitrotoluene, Technical grade	25321-14-6	1.2E+00	c*	5.1E+00	c					1.0E-01	c		1.4E-04	c	
				1.0E-03	I					1	0.1		Dinoseb	88-85-7	6.3E+01	n	8.2E+02	n					1.5E+01	n	7.0E+00	1.3E-01	n	6.2E-02
1.0E-01	I	5.0E-06	I	3.0E-02	I	3.0E-02	I	V		1		1.2E+05	Dioxane, 1,4-	123-91-1	5.3E+00	c	2.4E+01	c	5.6E-01	c*	2.5E+00	c*	4.6E-01	c		9.4E-05	c	
6.2E+03	I	1.3E+00	I							1	0.03		Dioxins ~Hexachlorodibenzo-p-dioxin, Mixture	34465-46-8	1.0E-04	c	4.7E-04	c	2.2E-06	c	9.4E-06	c	1.3E-05	c		1.7E-05	c	
1.3E+05	C	3.8E+01	C	7.0E-10	I	4.0E-08	C	V		1	0.03		~TCDD, 2,3,7,8-	1746-01-6	4.8E-06	c*	2.2E-05	c*	7.4E-08	c	3.2E-07	c	1.2E-07	c	3.0E-05	5.9E-08	c	1.5E-05
				3.0E-02	I					1	0.1		Diphenamid	957-51-7	1.9E+03	n	2.5E+04	n					5.3E+02	n		5.2E+00	n	
						4.0E-04	X	V		1			Diphenyl Ether	101-84-8	3.4E+01	n	1.4E+02	n	4.2E-01	n	1.8E+00	n	8.3E-01	n		3.4E-03	n	
				8.0E-04	X					1	0.1		Diphenyl Sulfone	127-63-9	5.1E+01	n	6.6E+02	n					1.5E+01	n		3.6E-02	n	
				1.0E-01	O					1	0.1		Diphenylamine	122-39-4	6.3E+03	n	8.2E+04	n					1.3E+03	n		2.3E+00	n	
8.0E-01	I	2.2E-04	I							1	0.1		Diphenylhydrazine, 1,2-	122-66-7	6.8E-01	c	2.9E+00	c	1.3E-02	c	5.6E-02	c	7.8E-02	c		2.5E-04	c	
				2.2E-03	I					1	0.1		Diquat	2764-72-9	1.4E+02	n	1.8E+03	n					4.0E+01	n	2.0E+01	3.3E-01	n	1.7E-01
7.4E+00	C	2.1E-03	C							1	0.1		Direct Black 38	1937-37-7	7.3E-02	c	3.1E-01	c	1.3E-03	c	5.8E-03	c	1.1E-02	c		5.1E+00	c	
7.4E+00	C	2.1E-03	C							1	0.1		Direct Blue 6	2602-46-2	7.3E-02	c	3.1E-01	c	1.3E-03	c	5.8E-03	c	1.1E-02	c		1.7E+01	c	
6.7E+00	C	1.9E-03	C							1	0.1		Direct Brown 95	16071-86-6	8.1E-02	c	3.4E-01	c	1.5E-03	c	6.5E-03	c	1.2E-02	c		1.6E-01	c	
				4.0E-05	I					1	0.1		Disulfoton	298-04-4	2.5E+00	n	3.3E+01	n					5.0E-01	n		9.4E-04	n	
				1.0E-02	I			V		1			Dithiane, 1,4-	505-29-3	7.8E+02	n	1.2E+04	n					2.0E+02	n		9.7E-02	n	
				2.0E-03	I					1	0.1		Diuron	330-54-1	1.3E+02	n	1.6E+03	n					3.6E+01	n		1.5E-02	n	
				2.0E-02	O					1	0.1		Dodine	2439-10-3	1.3E+03	n	1.6E+04	n					4.0E+02	n		2.1E+00	n	
				5.0E-02	O			V		1			EPTC	759-94-4	3.9E+03	n	5.8E+04	n					7.5E+02	n		4.0E-01	n	
				6.0E-03	I			V		1			Endosulfan	115-29-7	4.7E+02	n	7.0E+03	n					1.0E+02	n		1.4E+00	n	
				6.0E-03	P					1	0.1		Endosulfan Sulfate	1031-07-8	3.8E+02	n	4.9E+03	n					1.1E+02	n		2.1E+00	n	
				2.0E-02	I					1	0.1		Endothall	145-73-3	1.3E+03	n	1.6E+04	n					3.8E+02	n	1.0E+02	9.1E-02	n	2.4E-02
				3.0E-04	I					1	0.1		Endrin	72-20-8	1.9E+01	n	2.5E+02	n					2.3E+00	n	2.0E+00	9.2E-02	n	8.1E-02
9.9E-03	I	1.2E-06	I	6.0E-03	P	1.0E-03	I	V		1		1.1E+04	Epichlorohydrin	106-89-8	1.9E+01	n	8.2E+01	n	1.0E+00	n	4.4E+00	n	2.0E+00	n		4.5E-04	n	
						2.0E-02	I	V		1		1.5E+04	Epoxybutane, 1,2-	106-88-7	1.6E+02	n	6.7E+02	n	2.1E+01	n	8.8E+01	n	4.2E+01	n		9.2E-03	n	
				4.0E-02	P					1	0.1		Ethanol, 2-(2-methoxyethoxy)-	111-77-3	2.5E+03	n	3.3E+04	n					8.0E+02	n		1.6E-01	n	
				5.0E-03	I					1	0.1		Ethephon	16672-87-0	3.2E+02	n	4.1E+03	n					1.0E+02	n		2.1E-02	n	

TR=1E-06
THQ=1.0

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; W = TEF applied; E = RPF applied; G = user's guide Section 5; M = mutagen; V = volatile; R = RBA applied ; c = cancer; n = noncancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; SSL values are based on DAF=1; m = ceiling limit exceeded; s = Csat exceeded.

Toxicity and Chemical-specific Information												Contaminant		Screening Levels												Protection of Ground Water SSLs		
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	volatile	mutagen	GIABS	ABS_d	C_{sat} (mg/kg)	Analyte	CAS No.	Resident Soil (mg/kg)	key	Industrial Soil (mg/kg)	key	Resident Air (ug/m^3)	key	Industrial Air (ug/m^3)	key	Tapwater (ug/L)	key	MCL (ug/L)	Risk-based SSL (mg/kg)	key	MCL-based SSL (mg/kg)
				5.0E-04	I					1	0.1		Ethion	563-12-2	3.2E+01	n	4.1E+02	n					4.3E+00	n		8.5E-03	n	
				1.0E-01	P	6.0E-02	P	V		1		2.4E+04	Ethoxyethanol Acetate, 2-	111-15-9	2.6E+03	n	1.4E+04	n	6.3E+01	n	2.6E+02	n	1.2E+02	n		2.5E-02	n	
				9.0E-02	P	2.0E-01	I	V		1		1.1E+05	Ethoxyethanol, 2-	110-80-5	5.2E+03	n	4.7E+04	n	2.1E+02	n	8.8E+02	n	3.4E+02	n		6.8E-02	n	
				9.0E-01	I	7.0E-02	P	V		1		1.1E+04	Ethyl Acetate	141-78-6	6.2E+02	n	2.6E+03	n	7.3E+01	n	3.1E+02	n	1.4E+02	n		3.1E-02	n	
				5.0E-03	P	8.0E-03	P	V		1		2.5E+03	Ethyl Acrylate	140-88-5	4.7E+01	n	2.1E+02	n	8.3E+00	n	3.5E+01	n	1.4E+01	n		3.2E-03	n	
						1.0E+01	I	V		1		2.1E+03	Ethyl Chloride (Chloroethane)	75-00-3	1.4E+04	ns	5.7E+04	ns	1.0E+04	n	4.4E+04	n	2.1E+04	n		5.9E+00	n	
				2.0E-01	I			V		1		1.0E+04	Ethyl Ether	60-29-7	1.6E+04	ns	2.3E+05	nms					3.9E+03	n		8.8E-01	n	
						3.0E-01	P	V		1		1.1E+03	Ethyl Methacrylate	97-63-2	1.8E+03	ns	7.6E+03	ns	3.1E+02	n	1.3E+03	n	6.3E+02	n		1.5E-01	n	
				1.0E-05	I					1	0.1		Ethyl-p-nitrophenyl Phosphonate	2104-64-5	6.3E-01	n	8.2E+00	n					8.9E-02	n		2.8E-03	n	
1.1E-02	C	2.5E-06	C	1.0E-01	I	1.0E+00	I	V		1		4.8E+02	Ethylbenzene	100-41-4	5.8E+00	c	2.5E+01	c	1.1E+00	c	4.9E+00	c	1.5E+00	c	7.0E+02	1.7E-03	c	7.8E-01
				7.0E-02	P					1	0.1		Ethylene Cyanohydrin	109-78-4	4.4E+03	n	5.7E+04	n					1.4E+03	n		2.8E-01	n	
				9.0E-02	P			V		1		1.9E+05	Ethylene Diamine	107-15-3	7.0E+03	n	1.1E+05	nm					1.8E+03	n		4.1E-01	n	
				2.0E+00	I	4.0E-01	C			1	0.1		Ethylene Glycol	107-21-1	1.3E+05	nm	1.6E+06	nm	4.2E+02	n	1.8E+03	n	4.0E+04	n		8.1E+00	n	
				1.0E-01	I	1.6E+00	I			1	0.1		Ethylene Glycol Monobutyl Ether	111-76-2	6.3E+03	n	8.2E+04	n	1.7E+03	n	7.0E+03	n	2.0E+03	n		4.1E-01	n	
3.1E-01	C	3.0E-03	I			3.0E-02	C	V	M	1		1.2E+05	Ethylene Oxide	75-21-8	2.0E-03	c	2.5E-02	c	3.4E-04	c	4.1E-03	c	6.7E-04	c		1.4E-07	c	
4.5E-02	C	1.3E-05	C	8.0E-05	I					1	0.1		Ethylene Thiourea	96-45-7	5.1E+00	n	5.1E+01	c**	2.2E-01	c	9.4E-01	c	1.6E+00	n		3.6E-04	n	
6.5E+01	C	1.9E-02	C					V		1		1.5E+05	Ethyleneimine	151-56-4	2.7E-03	c	1.2E-02	c	1.5E-04	c	6.5E-04	c	2.4E-04	c		5.2E-08	c	
				3.0E+00	I					1	0.1		Ethylphthalyl Ethyl Glycolate	84-72-0	1.9E+05	nm	2.5E+06	nm					5.8E+04	n		1.3E+02	n	
				2.5E-04	I					1	0.1		Fenamiphos	22224-92-6	1.6E+01	n	2.1E+02	n					4.4E+00	n		4.3E-03	n	
				2.5E-02	I					1	0.1		Fenpropathrin	39515-41-8	1.6E+03	n	2.1E+04	n					6.4E+01	n		2.9E+00	n	
				2.5E-02	I					1	0.1		Fenvalerate	51630-58-1	1.6E+03	n	2.1E+04	n					5.0E+02	n		3.2E+02	n	
				1.3E-02	I					1	0.1		Fluometuron	2164-17-2	8.2E+02	n	1.1E+04	n					2.4E+02	n		1.9E-01	n	
				4.0E-02	C	1.3E-02	C			1			Fluoride	16984-48-8	3.1E+03	n	4.7E+04	n	1.4E+01	n	5.7E+01	n	8.0E+02	n	4.0E+03	1.2E+02	n	6.0E+02
				6.0E-02	I	1.3E-02	C			1			Fluorine (Soluble Fluoride)	7782-41-4	4.7E+03	n	7.0E+04	n	1.4E+01	n	5.7E+01	n	1.2E+03	n	4.0E+03	1.8E+02	n	6.0E+02
				8.0E-02	I					1	0.1		Fluridone	59756-60-4	5.1E+03	n	6.6E+04	n					1.4E+03	n		1.6E+02	n	
				4.0E-02	O					1	0.1		Flurprimidol	56425-91-3	2.5E+03	n	3.3E+04	n					6.9E+02	n		3.1E+00	n	
				2.0E-03	O					1	0.1		Flusilazole	85509-19-9	1.3E+02	n	1.6E+03	n					3.1E+01	n		5.1E+00	n	
				5.0E-01	O					1	0.1		Flutolanil	66332-96-5	3.2E+04	n	4.1E+05	nm					7.9E+03	n		4.2E+01	n	
				1.0E-02	I					1	0.1		Fluvalinate	69409-94-5	6.3E+02	n	8.2E+03	n					2.0E+02	n		2.9E+02	n	
				9.0E-02	O					1	0.1		Folpet	133-07-3	5.7E+03	n	7.4E+04	n					1.6E+03	n		3.9E-01	n	
				2.5E-03	O					1	0.1		Fomesafen	72178-02-0	1.6E+02	n	2.1E+03	n					4.8E+01	n		1.6E-01	n	
				2.0E-03	I					1	0.1		Fonofos	944-22-9	1.3E+02	n	1.6E+03	n					2.4E+01	n		4.7E-02	n	
2.1E-02	C	1.3E-05	I	2.0E-01	I	9.8E-03	A	V		1		4.2E+04	Formaldehyde	50-00-0	1.1E+01	c*	5.0E+01	c*	2.2E-01	c*	9.4E-01	c*	3.9E-01	c*		7.8E-05	c*	
				9.0E-01	P	3.0E-04	X	V		1		1.1E+05	Formic Acid	64-18-6	2.9E+01	n	1.2E+02	n	3.1E-01	n	1.3E+00	n	6.3E-01	n		1.3E-04	n	
				2.5E+00	O					1	0.1		Fosetyl-AL	39148-24-8	1.6E+05	nm	2.1E+06	nm					5.0E+04	n		6.6E+02	n	
													Furans																
				1.0E-03	X			V		1			~Dibenzofuran	132-64-9	7.8E+01	n	1.2E+03	n					7.9E+00	n		1.5E-01	n	
				1.0E-03	I			V		1		6.2E+03	~Furan	110-00-9	7.8E+01	n	1.2E+03	n					1.9E+01	n		7.3E-03	n	
				9.0E-01	I	2.0E+00	I	V		1		1.7E+05	~Tetrahydrofuran	109-99-9	1.8E+04	n	9.5E+04	n	2.1E+03	n	8.8E+03	n	3.4E+03	n		7.5E-01	n	
3.8E+00	H									1	0.1		Furazolidone	67-45-8	1.4E-01	c	6.0E-01	c					2.0E-02	c		3.9E-05	c	
				3.0E-03	I	5.0E-02	H	V		1		1.0E+04	Furfural	98-01-1	2.1E+02	n	2.6E+03	n	5.2E+01	n	2.2E+02	n	3.8E+01	n		8.1E-03	n	
1.5E+00	C	4.3E-04	C							1	0.1		Furium	531-82-8	3.6E-01	c	1.5E+00	c	6.5E-03	c	2.9E-02	c	5.1E-02	c		6.8E-05	c	
3.0E-02	I	8.6E-06	C							1	0.1		Furmecyclox	60568-05-0	1.8E+01	c	7.7E+01	c	3.3E-01	c	1.4E+00	c	1.1E+00	c		1.2E-03	c	
				6.0E-03	O					1	0.1		Glufosinate, Ammonium	77182-82-2	3.8E+02	n	4.9E+03	n					1.2E+02	n		2.6E-02	n	
				1.0E-01	A	8.0E-05	C			1	0.1		Glutaraldehyde	111-30-8	6.0E+03	n	7.0E+04	n	8.3E-02	n	3.5E-01	n	2.0E+03	n		4.0E-01	n	
				4.0E-04	I	1.0E-03	X	V		1		1.1E+05	Glycidaldehyde	765-34-4	2.3E+01	n	2.1E+02	n	1.0E+00	n	4.4E+00	n	1.7E+00	n		3.3E-04	n	
				1.0E-01	I					1	0.1		Glyphosate	1071-83-6	6.3E+03	n	8.2E+04	n					2.0E+03	n	7.0E+02	8.8E+00	n	3.1E+00
				1.0E-02	X			V		1			Guanidine	113-00-8	7.8E+02	n	1.2E+04	n					2.0E+02	n		4.5E-02	n	
				2.0E-02	P					1	0.1		Guanidine Chloride	50-01-1	1.3E+03	n	1.6E+04	n					4.0E+02	n				
				3.0E-02	X					1	0.1		Guanidine Nitrate	506-93-4	1.9E+03	n	2.5E+04	n					6.0E+02	n		1.5E-01	n	
				5.0E-05	I					1	0.1		Haloxyfop, Methyl	69806-40-2	3.2E+00	n	4.1E+01	n					7.6E-01	n		8.4E-03	n	
4.5E+00	I	1.3E-03	I	5.0E-04	I			V		1			Heptachlor	76-44-8	1.3E-01	c	6.3E-01	c	2.2E-03	c	9.4E-03	c	1.4E-03	c	4.0E-01	1.2E-04	c	3.3E-02
9.1E+00	I	2.6E-03	I	1.3E-05	I			V		1			Heptachlor Epoxide	1024-57-3	7.0E-02	c*	3.3E-01	c*	1.1E-03	c	4.7E-03	c	1.4E-03	c*	2.0E-01	2.8E-05	c*	4.1E-03
						3.0E-03	X	V		1		2.1E+02	Heptanal, n-	111-71-7	2.4E+01	n	1.0E+02	n	3.1E+00	n	1.3E+01	n	6.3E+00	n		1.4E-03	n	
				3.0E-04	X	4.0E-01	P	V		1		5.8E+01	Heptane, N-	142-82-5	2.2E+01	n	2.9E+02	ns	4.2E+02	n	1.8E+03	n	6.0E+00	n		4.8E-02	n	
				2.0E-03	I			V		1			Hexabromobenzene	87-82-1	1.6E+02	n	2.3E+03	n					4.0E+01	n		2.3E-01	n	
				2.0E-04	I					1	0.1		Hexabromodiphenyl ether, 2,2',4,4',5,5'- (BDE-153)	68631-49-2	1.3E+01	n	1.6E+02	n					4.0E+00	n				
1.6E+00	I	4.6E-04	I	8.0E-04	I			V		1			Hexachlorobenzene	118-74-1	2.1E-01	c	9.6E-01	c	6.1E-03	c	2.7E-02	c	9.8E-03	c	1.0E+00	1.2E-04	c	1.3E-02
7.8E-02	I	2.2E-05	I	1.0E-03	P			V		1		1.7E+01	Hexachlorobutadiene	87-68-3	1.2E+00	c*	5.3E+00	c	1.3E-01	c	5.6E-01	c	1.4E-01	c*		2.7E-04	c*	
6.3E+00	I	1.8E-03	I	8.0E-03	A					1	0.1		Hexachlorocyclohexane, Alpha-	319-84-6	8.6E-02	c	3.6E-01	c	1.6E-03	c	6.8E-03	c	7.2E-03	c		4.2E-05	c	
1.8E+00	I	5.3E-04	I							1	0.1		Hexachlorocyclohexane, Beta-	319-85-7	3.0E-01	c	1.3E+00	c	5.3E-03	c	2.3E-02	c	2.5E-02	c		1.5E-04	c	
1.1E+00	C	3.1E-04	C	3.0E-04	I					1	0.04		Hexachlorocyclohexane, Gamma- (Lindane)	58-89-9	5.7E-01	c*	2.5E+00	c	9.1E-03	c	4.0E-02	c	4.2E-02	c*	2.0E-01	2.4E-04	c*	1.2E-03
1.8E+00	I	5.1E-04	I							1	0.1		Hexachlorocyclohexane, Technical	608-73-1	3.0E-01	c	1.3E+00	c	5.5E-03	c	2.4E-02	c	2.5E-02	c		1.5E-04	c	
				6.0E-03	I	2.0E-04	I	V		1		1.6E+01	Hexachlorocyclopentadiene	77-47-4	1.8E+00	n	7.5E+00	n	2.1E-01	n	8.8E-01	n	4.1E-01	n	5.0E+01	1.3E-03	n	1.6E-01
4.0E-02	I	1.1E-05	C	7.0E-04	I	3.0E-02	I	V		1			Hexachloroethane	67-72-1	1.8E+00	c*	8.0E+00	c*	2.6E-01	c	1.1E+00	c	3.3E-01	c*		2.0E-04	c*	
				3.0E-04	I					1	0.1		Hexachlorophene	70-30-4	1.9E+01	n	2.5E+02	n					6.0E+00	n		8.0E+00	n	
8.0E-02	I			4.0E-03	I					1	0.015		Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	8.3E+00	c*	3.8E+01	c					9.7E-01	c*		3.7E-04	c*	
						1.0E-05	I	V		1		3.4E+03	Hexamethylene Diisocyanate, 1,6-	822-06-0	3.1E+00	n	1.3E+01	n	1.0E-02	n	4.4E-02	n	2.1E-02	n		2.1E-04	n	
						4.0E-04	C			1	0.1		Hexamethylene diisocyanate biuret	4035-89-6	5.7E+05	nm	2.4E+06	nm	4.2E-01	n	1.8E+00	n						
						4.0E-04	C			1	0.1		Hexamethylene diisocyanate isocyanurate	3779-63-3	5.7E+05	nm	2.4E+06	nm	4.2E-01	n	1.8E+00	n						
				4.0E-04	P					1	0.1		Hexamethylphosphoramide	680-31-9	2.5E+01	n	3.3E+02	n					8.0E+00	n		1.8E-03	n	
		2.0E-07	X			6.0E-01	P	V		1		1.4E+02	Hexane, Commercial	E5241997	1.2E+01	c*	5.1E+01	c*	1.4E+01	c*	6.1E+01	c*	2.8E+01	c*		2.0E-01	c*	
						7.0E-01	I	V		1		1.4E+02	Hexane, N-	110-54-3	6.1E+02	ns	2.5E+03	ns	7.3E+02	n	3.1E+03	n	1.5E+03	n		1.0E+01	n	
				2.0E+00	P					1	0.1		Hexanedioic Acid	124-04-9	1.3E+05	nm	1.6E+06	nm					4.0E+04	n		9.9E+00	n	
9.5E-03	P			7.0E-02	P	4.0E-04	P	V		1		2.7E+02	Hexanol, 1-,2-ethyl- (2-Ethyl-1-hexanol)	104-76-7	1.5E+01	n	6.3E+01	n	4.2E-01	n	1.8E+00	n	8.3E-01	n		2.3E-04	n	
				5.0E-03	I	3.0E-02	I	V		1		3.3E+03	Hexanone, 2-	591-78-6	2.0E+02	n	1.3E+03	n	3.1E+01	n	1.3E+02	n	3.8E+01	n		8.8E-03	n	
				3.3E-02	I					1	0.1		Hexazinone	51235-04-2	2.1E+03	n	2.7E+04	n					6.4E+02	n		3.0E-01	n	

TR=1E-06
THQ=1.0

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; W = TEF applied; E = RPF applied; G = user's guide Section 5; M = mutagen; V = volatile; R = RBA applied ; c = cancer; n = noncancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; SSL values are based on DAF=1; m = ceiling limit exceeded; s = Csat exceeded.

Toxicity and Chemical-specific Information												Contaminant		Screening Levels										Protection of Ground Water SSLs		
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	vol	mutagen	GIABS	ABS_d	C_{sat} (mg/kg)	Analyte	CAS No.	Resident Soil (mg/kg)	key	Industrial Soil (mg/kg)	key	Resident Air (ug/m^3)	key	Industrial Air (ug/m^3)	key	Tapwater (ug/L)	key	MCL (ug/L)	Risk-based SSL (mg/kg)	key	MCL-based SSL (mg/kg)
				2.5E-02	I					1	0.1		Hexythiazox	78587-05-0	1.6E+03	n	2.1E+04	n					1.1E+02	n		5.0E-01	n	
				1.7E-02	O					1	0.1		Hydramethylnon	67485-29-4	1.1E+03	n	1.4E+04	n					3.4E+02	n		1.2E+05	n	
3.0E+00	I	4.9E-03	I			3.0E-05	P	V		1		1.1E+05	Hydrazine	302-01-2	3.2E-02	c*	1.4E-01	c*	5.7E-04	c*	2.5E-03	c*	1.1E-03	c*		2.2E-07	c*	
3.0E+00	I	4.9E-03	I							1			Hydrazine Sulfate	10034-93-2	2.3E-01	c	1.1E+00	c	5.7E-04	c	2.5E-03	c	2.6E-02	c				
						2.0E-02	I	V		1			Hydrogen Chloride	7647-01-0	2.8E+07	nm	1.2E+08	nm	2.1E+01	n	8.8E+01	n	4.2E+01	n				
				4.0E-02	C	1.4E-02	C	V		1			Hydrogen Fluoride	7664-39-3	3.1E+03	n	4.7E+04	n	1.5E+01	n	6.1E+01	n	2.8E+01	n				
						2.0E-03	I	V		1			Hydrogen Sulfide	7783-06-4	2.8E+06	nm	1.2E+07	nm	2.1E+00	n	8.8E+00	n	4.2E+00	n				
6.0E-02	P			4.0E-02	P					1	0.1		Hydroquinone	123-31-9	9.0E+00	c	3.8E+01	c					1.3E+00	c		8.7E-04	c	
6.1E-02	O			2.5E-03	O					1	0.1		Imazalil	35554-44-0	8.9E+00	c*	3.8E+01	c*					9.0E-01	c*		1.5E-02	c*	
				2.5E-01	I					1	0.1		Imazaquin	81335-37-7	1.6E+04	n	2.1E+05	nm					4.9E+03	n		2.4E+01	n	
				2.5E+00	O					1	0.1		Imazethapyr	81335-77-5	1.6E+05	nm	2.1E+06	nm					4.7E+04	n		4.1E+01	n	
				1.0E-02	A					1			Iodine	7553-56-2	7.8E+02	n	1.2E+04	n					2.0E+02	n		1.2E+01	n	
				4.0E-02	I					1	0.1		Iprodione	36734-19-7	2.5E+03	n	3.3E+04	n					7.4E+02	n		2.2E-01	n	
				7.0E-01	P					1			Iron	7439-89-6	5.5E+04	n	8.2E+05	nm					1.4E+04	n		3.5E+02	n	
				3.0E-01	I			V		1		1.0E+04	Isobutyl Alcohol	78-83-1	2.3E+04	ns	3.5E+05	nms					5.9E+03	n		1.2E+00	n	
9.5E-04	I			2.0E-01	I	2.0E+00	C			1	0.1		Isophorone	78-59-1	5.7E+02	c*	2.4E+03	c*	2.1E+03	n	8.8E+03	n	7.8E+01	c*		2.6E-02	c*	
				1.5E-02	I			V		1			Isopropalin	33820-53-0	1.2E+03	n	1.8E+04	n					4.0E+01	n		9.2E-01	n	
				2.0E+00	P	2.0E-01	P	V		1		1.1E+05	Isopropanol	67-63-0	5.6E+03	n	2.4E+04	n	2.1E+02	n	8.8E+02	n	4.1E+02	n		8.4E-02	n	
				1.0E-01	I					1	0.1		Isopropyl Methyl Phosphonic Acid	1832-54-8	6.3E+03	n	8.2E+04	n					2.0E+03	n		4.3E-01	n	
				5.0E-02	I					1	0.1		Isoxaben	82558-50-7	3.2E+03	n	4.1E+04	n					7.3E+02	n		2.0E+00	n	
						3.0E-01	A	V		1			JP-7	E1737665	4.3E+08	nm	1.8E+09	nm	3.1E+02	n	1.3E+03	n	6.3E+02	n				
				8.0E-03	O					1	0.1		Lactofen	77501-63-4	5.1E+02	n	6.6E+03	n					1.0E+02	n		4.6E+00	n	
				2.0E-04	X					1	0.1		Lactonitrile	78-97-7	1.3E+01	n	1.6E+02	n					4.0E+00	n		8.1E-04	n	
				5.0E-05	P					1			Lanthanum	7439-91-0	3.9E+00	n	5.8E+01	n					1.0E+00	n				
				2.1E-05	P					1	0.1		Lanthanum Acetate Hydrate	100587-90-4	1.3E+00	n	1.7E+01	n					4.2E-01	n				
				1.9E-05	P					1			Lanthanum Chloride Heptahydrate	10025-84-0	1.5E+00	n	2.2E+01	n					3.7E-01	n				
				2.8E-05	P					1			Lanthanum Chloride, Anhydrous	10099-58-8	2.2E+00	n	3.3E+01	n					5.7E-01	n				
				1.6E-05	P					1			Lanthanum Nitrate Hexahydrate	10277-43-7	1.3E+00	n	1.9E+01	n					3.2E-01	n				
													Lead Compounds															
8.5E-03	C	1.2E-05	C							1			~Lead Phosphate	7446-27-7	8.2E+01	c	3.8E+02	c	2.3E-01	c	1.0E+00	c	9.1E+00	c				
2.1E-01	C	8.0E-05	C							1	0.1		~Lead acetate	301-04-2	2.6E+00	c	1.1E+01	c	3.5E-02	c	1.5E-01	c	3.7E-01	c		7.5E-05	c	
										1			~Lead and Compounds	7439-92-1	4.0E+02	G	8.0E+02	G	1.5E-01	G			1.5E+01	G	1.5E+01			1.4E+01
3.8E-02	C	1.1E-05	C							1	0.1		~Lead subacetate	1335-32-6	1.4E+01	c	6.0E+01	c	2.6E-01	c	1.1E+00	c	2.1E+00	c		4.5E-04	c	
				1.0E-07	I			V		1		2.4E+00	~Tetraethyl Lead	78-00-2	7.8E-03	n	1.2E-01	n					1.3E-03	n		4.7E-06	n	
				5.0E-06	P			V		1		3.8E+02	Lewisite	541-25-3	3.9E-01	n	5.8E+00	n					9.0E-02	n		3.8E-05	n	
				7.7E-03	O					1	0.1		Linuron	330-55-2	4.9E+02	n	6.3E+03	n					1.3E+02	n		1.1E-01	n	
				2.0E-03	P					1			Lithium	7439-93-2	1.6E+02	n	2.3E+03	n					4.0E+01	n		1.2E+01	n	
				5.0E-04	I					1	0.1		MCPA	94-74-6	3.2E+01	n	4.1E+02	n					7.5E+00	n		2.0E-03	n	
				4.4E-03	O					1	0.1		MCPB	94-81-5	2.8E+02	n	3.6E+03	n					6.5E+01	n		2.6E-02	n	
				1.0E-03	I					1	0.1		MCPP	93-65-2	6.3E+01	n	8.2E+02	n					1.6E+01	n		4.7E-03	n	
				2.0E-02	I					1	0.1		Malathion	121-75-5	1.3E+03	n	1.6E+04	n					3.9E+02	n		1.0E-01	n	
				1.0E-01	I	7.0E-04	C			1	0.1		Maleic Anhydride	108-31-6	6.3E+03	n	8.0E+04	n	7.3E-01	n	3.1E+00	n	1.9E+03	n		3.8E-01	n	
				5.0E-01	I					1	0.1		Maleic Hydrazide	123-33-1	3.2E+04	n	4.1E+05	nm					1.0E+04	n		2.1E+00	n	
				1.0E-04	P					1	0.1		Malononitrile	109-77-3	6.3E+00	n	8.2E+01	n					2.0E+00	n		4.1E-04	n	
				3.0E-02	H					1	0.1		Mancozeb	8018-01-7	1.9E+03	n	2.5E+04	n					5.4E+02	n		7.6E-01	n	
				5.0E-03	I					1	0.1		Maneb	12427-38-2	3.2E+02	n	4.1E+03	n					9.8E+01	n		1.4E-01	n	
				1.4E-01	I	5.0E-05	I			1			Manganese (Diet)	7439-96-5														
				2.4E-02	G	5.0E-05	I			0.04			Manganese (Non-diet)	7439-96-5	1.8E+03	n	2.6E+04	n	5.2E-02	n	2.2E-01	n	4.3E+02	n		2.8E+01	n	
				9.0E-05	H					1	0.1		Mephosfolan	950-10-7	5.7E+00	n	7.4E+01	n					1.8E+00	n		2.6E-03	n	
				3.0E-02	I					1	0.1		Mepiquat Chloride	24307-26-4	1.9E+03	n	2.5E+04	n					6.0E+02	n		2.0E-01	n	
1.1E-02	P			4.0E-03	P					1	0.1		Mercaptobenzothiazole, 2-	149-30-4	4.9E+01	c**	2.1E+02	c*					6.3E+00	c*		1.8E-02	c*	
													Mercury Compounds															
				3.0E-04	I	3.0E-04	G			0.07			~Mercuric Chloride (and other Mercury salts)	7487-94-7	2.3E+01	n	3.5E+02	n	3.1E-01	n	1.3E+00	n	5.7E+00	n	2.0E+00			
						3.0E-04	I	V		1		3.1E+00	~Mercury (elemental)	7439-97-6	1.1E+01	ns	4.6E+01	ns	3.1E-01	n	1.3E+00	n	6.3E-01	n	2.0E+00	3.3E-02	n	1.0E-01
				1.0E-04	I					1			~Methyl Mercury	22967-92-6	7.8E+00	n	1.2E+02	n					2.0E+00	n		1.4E+01	n	
				8.0E-05	I					1	0.1		~Phenylmercuric Acetate	62-38-4	5.1E+00	n	6.6E+01	n					1.6E+00	n		5.0E-04	n	
				3.0E-05	I			V		1			Merphos	150-50-5	2.3E+00	n	3.5E+01	n					6.0E-01	n		5.9E-02	n	
				6.0E-02	I					1	0.1		Metalaxyl	57837-19-1	3.8E+03	n	4.9E+04	n					1.2E+03	n		3.3E-01	n	
				1.0E-04	I	3.0E-02	P	V		1		4.6E+03	Methacrylonitrile	126-98-7	7.5E+00	n	1.0E+02	n	3.1E+01	n	1.3E+02	n	1.9E+00	n		4.3E-04	n	
				5.0E-05	I					1	0.1		Methamidophos	10265-92-6	3.2E+00	n	4.1E+01	n					1.0E+00	n		2.1E-04	n	
				2.0E+00	I	2.0E+01	I	V		1		1.1E+05	Methanol	67-56-1	1.2E+05	nms	1.2E+06	nms	2.1E+04	n	8.8E+04	n	2.0E+04	n		4.1E+00	n	
				1.5E-03	O					1	0.1		Methidathion	950-37-8	9.5E+01	n	1.2E+03	n					2.9E+01	n		7.1E-03	n	
				2.5E-02	I					1	0.1		Methomyl	16752-77-5	1.6E+03	n	2.1E+04	n					5.0E+02	n		1.1E-01	n	
4.9E-02	C									1	0.1		Methoxy-5-nitroaniline, 2-	99-59-2	1.1E+01	c	4.7E+01	c					1.5E+00	c		5.3E-04	c	
				5.0E-03	I					1	0.1		Methoxychlor	72-43-5	3.2E+02	n	4.1E+03	n					3.7E+01	n	4.0E+01	2.0E+00	n	2.2E+00
				8.0E-03	P	1.0E-03	P	V		1		1.2E+05	Methoxyethanol Acetate, 2-	110-49-6	1.1E+02	n	5.1E+02	n	1.0E+00	n	4.4E+00	n	2.1E+00	n		4.2E-04	n	
				5.0E-03	P	2.0E-02	I	V		1		1.1E+05	Methoxyethanol, 2-	109-86-4	3.3E+02	n	3.5E+03	n	2.1E+01	n	8.8E+01	n	2.9E+01	n		5.9E-03	n	
				1.0E+00	X			V		1		2.9E+04	Methyl Acetate	79-20-9	7.8E+04	ns	1.2E+06	nms					2.0E+04	n		4.1E+00	n	
						2.0E-02	P	V		1		6.8E+03	Methyl Acrylate	96-33-3	1.5E+02	n	6.1E+02	n	2.1E+01	n	8.8E+01	n	4.2E+01	n		8.9E-03	n	
				6.0E-01	I	5.0E+00	I	V		1		2.8E+04	Methyl Ethyl Ketone (2-Butanone)	78-93-3	2.7E+04	n	1.9E+05	nms	5.2E+03	n	2.2E+04	n	5.6E+03	n		1.2E+00	n	
		1.0E-03	X	1.0E-03	P	2.0E-05	X	V		1		1.8E+05	Methyl Hydrazine	60-34-4	1.4E-01	c**	6.2E-01	c**	2.8E-03	c**	1.2E-02	c**	5.6E-03	c**		1.3E-06	c**	
						3.0E+00	I	V		1		3.4E+03	Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	3.3E+04	ns	1.4E+05	nms	3.1E+03	n	1.3E+04	n	6.3E+03	n		1.4E+00	n	
						1.0E-03	C	V		1		1.0E+04	Methyl Isocyanate	624-83-9	4.6E+00	n	1.9E+01	n	1.0E+00	n	4.4E+00	n	2.1E+00	n		5.9E-04	n	
				1.4E+00	I	7.0E-01	I	V		1		2.4E+03	Methyl Methacrylate	80-62-6	4.4E+03	ns	1.9E+04	ns	7.3E+02	n	3.1E+03	n	1.4E+03	n		3.0E-01	n	
				2.5E-04	I					1	0.1		Methyl Parathion	298-00-0	1.6E+01	n	2.1E+02	n					4.5E+00	n		7.4E-03	n	
				6.0E-02	X					1	0.1		Methyl Phosphonic Acid	993-13-5	3.8E+03	n	4.9E+04	n					1.2E+03	n		2.4E-01	n	
				6.0E-03	H	4.0E-02	H	V		1		3.9E+02	Methyl Styrene (Mixed Isomers)	25013-15-4	3.2E+02	n	2.6E+03	ns	4.2E+01	n	1.8E+02	n	2.3E+01	n		3.8E-02	n	

TR=1E-06
THQ=1.0

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; W = TEF applied; E = RPF applied; G = user's guide Section 5; M = mutagen; V = volatile; R = RBA applied ; c = cancer; n = noncancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; SSL values are based on DAF=1; m = ceiling limit exceeded; s = Csat exceeded.

Toxicity and Chemical-specific Information												Contaminant		Screening Levels										Protection of Ground Water SSLs		
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD$_o$ (mg/kg-day)	key	RfC$_i$ (mg/m^3)	key	vol	mutagen	GIABS	ABS$_d$	C$_{sat}$ (mg/kg)	Analyte	CAS No.	Resident Soil (mg/kg)	key	Industrial Soil (mg/kg)	key	Resident Air (ug/m^3)	key	Industrial Air (ug/m^3)	key	Tapwater (ug/L)	key	MCL (ug/L)	Risk-based SSL (mg/kg)	key	MCL-based SSL (mg/kg)
9.9E-02	C	2.8E-05	C							1	0.1		Methyl methanesulfonate	66-27-3	5.5E+00	c	2.3E+01	c	1.0E-01	c	4.4E-01	c	7.9E-01	c		1.6E-04	c	
1.8E-03	C	2.6E-07	C			3.0E+00	I	V		1		8.9E+03	Methyl tert-Butyl Ether (MTBE)	1634-04-4	4.7E+01	c	2.1E+02	c	1.1E+01	c	4.7E+01	c	1.4E+01	c		3.2E-03	c	
				3.0E-04	X					1	0.1		Methyl-1,4-benzenediamine dihydrochloride, 2-	615-45-2	1.9E+01	n	2.5E+02	n					6.0E+00	n		3.6E-03	n	
						3.0E+00	X	V		1		2.5E+03	Methyl-2-Pentanol, 4-	108-11-2	5.4E+04	ns	2.3E+05	nms	3.1E+03	n	1.3E+04	n	6.3E+03	n		1.4E+00	n	
9.0E-03	P			2.0E-02	X					1	0.1		Methyl-5-Nitroaniline, 2-	99-55-8	6.0E+01	c*	2.6E+02	c*					8.2E+00	c*		4.6E-03	c*	
8.3E+00	C	2.4E-03	C							1	0.1		Methyl-N-nitro-N-nitrosoguanidine, N-	70-25-7	6.5E-02	c	2.8E-01	c	1.2E-03	c	5.1E-03	c	9.4E-03	c		3.2E-06	c	
1.3E-01	C	3.7E-05	C							1	0.1		Methylaniline Hydrochloride, 2-	636-21-5	4.2E+00	c	1.8E+01	c	7.6E-02	c	3.3E-01	c	6.0E-01	c		2.6E-04	c	
				1.0E-02	A					1	0.1		Methylarsonic acid	124-58-3	6.3E+02	n	8.2E+03	n					2.0E+02	n		5.8E-02	n	
				2.0E-04	X					1	0.1		Methylbenzene,1-4-diamine monohydrochloride, 2-	74612-12-7	1.3E+01	n	1.6E+02	n					4.0E+00	n				
1.0E-01	X			3.0E-04	X					1	0.1		Methylbenzene-1,4-diamine sulfate, 2-	615-50-9	5.4E+00	c**	2.3E+01	c*					7.8E-01	c**				
2.2E+01	C	6.3E-03	C						M	1	0.1		Methylcholanthrene, 3-	56-49-5	5.5E-03	c	1.0E-01	c	1.6E-04	c	1.9E-03	c	1.1E-03	c		2.2E-03	c	
2.0E-03	I	1.0E-08	I	6.0E-03	I	6.0E-01	I	V	M	1		3.3E+03	Methylene Chloride	75-09-2	5.7E+01	c**	1.0E+03	c**	1.0E+03	c**	1.2E+03	c**	1.1E+01	c**	5.0E+00	2.9E-03	c**	1.3E-03
1.0E-01	P	4.3E-04	C	2.0E-03	P				M	1	0.1		Methylene-bis(2-chloroaniline), 4,4'-	101-14-4	1.2E+00	c	2.3E+01	c*	2.4E-03	c	2.9E-02	c	1.6E-01	c		1.8E-03	c	
4.6E-02	I	1.3E-05	C							1	0.1		Methylene-bis(N,N-dimethyl) Aniline, 4,4'-	101-61-1	1.2E+01	c	5.0E+01	c	2.2E-01	c	9.4E-01	c	7.0E-01	c		3.9E-03	c	
1.6E+00	C	4.6E-04	C			2.0E-02	C			1	0.1		Methylenebisbenzenamine, 4,4'-	101-77-9	3.4E-01	c	1.4E+00	c	6.1E-03	c	2.7E-02	c	4.7E-02	c		2.1E-04	c	
						6.0E-04	I			1	0.1		Methylenediphenyl Diisocyanate	101-68-8	8.5E+05	nm	3.6E+06	nm	6.3E-01	n	2.6E+00	n						
				7.0E-02	H			V		1		5.0E+02	Methylstyrene, Alpha-	98-83-9	5.5E+03	ns	8.2E+04	ns					7.8E+02	n		1.2E+00	n	
				1.5E-01	I					1	0.1		Metolachlor	51218-45-2	9.5E+03	n	1.2E+05	nm					2.7E+03	n		3.2E+00	n	
				2.5E-02	I					1	0.1		Metribuzin	21087-64-9	1.6E+03	n	2.1E+04	n					4.9E+02	n		1.5E-01	n	
				2.5E-01	I					1	0.1		Metsulfuron-methyl	74223-64-6	1.6E+04	n	2.1E+05	nm					4.9E+03	n		1.9E+00	n	
		4.5E-06	X	1.0E-02	X	1.0E-01	P	V		1		6.9E+00	Midrange Aliphatic Hydrocarbon Streams	E1790669	6.5E-01	c	2.8E+00	c	6.2E-01	c	2.7E+00	c	1.2E+00	c*		1.8E-02	c*	
				3.0E+00	P			V		1		3.4E-01	Mineral oils	8012-95-1	2.3E+05	nms	3.5E+06	nms					6.0E+04	n		2.4E+03	n	
1.8E+01	C	5.1E-03	C	2.0E-04	I			V		1			Mirex	2385-85-5	3.6E-02	c	1.7E-01	c	5.5E-04	c	2.4E-03	c	8.8E-04	c		6.3E-04	c	
				2.0E-03	I					1	0.1		Molinate	2212-67-1	1.3E+02	n	1.6E+03	n					3.0E+01	n		1.7E-02	n	
				5.0E-03	I	2.0E-03	A			1			Molybdenum	7439-98-7	3.9E+02	n	5.8E+03	n	2.1E+00	n	8.8E+00	n	1.0E+02	n		2.0E+00	n	
				1.0E-01	I					1			Monochloramine	10599-90-3	7.8E+03	n	1.2E+05	nm					2.0E+03	n	4.0E+03(G)			
				2.0E-03	P					1	0.1		Monomethylaniline	100-61-8	1.3E+02	n	1.6E+03	n					3.8E+01	n		1.4E-02	n	
				2.5E-02	I					1	0.1		Myclobutanil	88671-89-0	1.6E+03	n	2.1E+04	n					4.5E+02	n		5.6E+00	n	
				3.0E-04	X					1	0.1		N,N'-Diphenyl-1,4-benzenediamine	74-31-7	1.9E+01	n	2.5E+02	n					3.6E+00	n		3.7E-01	n	
				2.0E-03	I			V		1			Naled	300-76-5	1.6E+02	n	2.3E+03	n					4.0E+01	n		1.8E-02	n	
				3.0E-02	X	1.0E-01	P	V		1			Naphtha, High Flash Aromatic (HFAN)	64742-95-6	2.3E+03	n	3.5E+04	n	1.0E+02	n	4.4E+02	n	1.5E+02	n				
1.8E+00	C	0.0E+00	C							1	0.1		Naphthylamine, 2-	91-59-8	3.0E-01	c	1.3E+00	c					3.9E-02	c		2.0E-04	c	
				1.2E-01	O					1	0.1		Napropamide	15299-99-7	7.6E+03	n	9.8E+04	n					2.0E+03	n		1.3E+01	n	
9.1E-01	C	2.6E-04	C	1.1E-02	C	1.4E-05	C			1	0.1		Nickel Acetate	373-02-4	6.0E-01	c	2.5E+00	c	1.1E-02	c**	4.7E-02	c**	8.6E-02	c		1.7E-05	c	
9.1E-01	C	2.6E-04	C	1.1E-02	C	1.4E-05	C			1	0.1		Nickel Carbonate	3333-67-3	6.0E-01	c	2.5E+00	c	1.1E-02	c**	4.7E-02	c**	8.6E-02	c				
9.1E-01	C	2.6E-04	C	1.1E-02	C	1.4E-05	C	V		1			Nickel Carbonyl	13463-39-3	7.6E-01	c	3.6E+00	c	1.1E-02	c**	4.7E-02	c**	1.7E-02	c**				
9.1E-01	C	2.6E-04	C	1.1E-02	C	1.4E-05	C			0.04			Nickel Hydroxide	12054-48-7	7.6E-01	c	3.6E+00	c	1.1E-02	c**	4.7E-02	c**	7.6E-02	c				
9.1E-01	C	2.6E-04	C	1.1E-02	C	2.0E-05	C			0.04			Nickel Oxide	1313-99-1	7.6E-01	c	3.6E+00	c	1.1E-02	c**	4.7E-02	c**	7.6E-02	c				
9.1E-01	C	2.4E-04	I	1.1E-02	C	1.4E-05	C			0.04			Nickel Refinery Dust	E715532	7.6E-01	c	3.6E+00	c	1.2E-02	c**	5.1E-02	c**	8.3E-02	c		1.3E-02	c	
		2.6E-04	C	2.0E-02	I	9.0E-05	A			0.04			Nickel Soluble Salts	7440-02-0	1.5E+03	n	2.2E+04	n	1.1E-02	c**	4.7E-02	c**	3.9E+02	n		2.6E+01	n	
1.7E+00	C	4.8E-04	I	1.1E-02	C	1.4E-05	C			0.04			Nickel Subsulfide	12035-72-2	4.1E-01	c	1.9E+00	c	5.8E-03	c**	2.6E-02	c**	4.5E-02	c				
9.1E-01	C	2.6E-04	C	1.1E-02	C	1.4E-05	C			1	0.1		Nickelocene	1271-28-9	6.0E-01	c	2.5E+00	c	1.1E-02	c**	4.7E-02	c**	8.6E-02	c				
				1.6E+00	I					1			Nitrate (measured as nitrogen)	14797-55-8	1.3E+05	nm	1.9E+06	nm					3.2E+04	n	1.0E+04			
										1			Nitrate + Nitrite (measured as nitrogen)	E701177											1.0E+04			
				1.0E-01	I					1			Nitrite (measured as nitrogen)	14797-65-0	7.8E+03	n	1.2E+05	nm					2.0E+03	n	1.0E+03			
				1.0E-02	X	5.0E-05	X			1	0.1		Nitroaniline, 2-	88-74-4	6.3E+02	n	8.0E+03	n	5.2E-02	n	2.2E-01	n	1.9E+02	n		8.0E-02	n	
2.0E-02	P			4.0E-03	P	6.0E-03	P			1	0.1		Nitroaniline, 4-	100-01-6	2.7E+01	c*	1.1E+02	c*	6.3E+00	n	2.6E+01	n	3.8E+00	c*		1.6E-03	c*	
		4.0E-05	I	2.0E-03	I	9.0E-03	I	V		1		3.1E+03	Nitrobenzene	98-95-3	5.1E+00	c*	2.2E+01	c*	7.0E-02	c	3.1E-01	c	1.4E-01	c*		9.2E-05	c*	
				3.0E+03	P					1	0.1		Nitrocellulose	9004-70-0	1.9E+08	nm	2.5E+09	nm					6.0E+07	n		1.3E+04	n	
				7.0E-02	H					1	0.1		Nitrofurantoin	67-20-9	4.4E+03	n	5.7E+04	n					1.4E+03	n		6.1E-01	n	
1.3E+00	C	3.7E-04	C							1	0.1		Nitrofurazone	59-87-0	4.2E-01	c	1.8E+00	c	7.6E-03	c	3.3E-02	c	6.0E-02	c		5.4E-05	c	
1.7E-02	P			1.0E-04	P					1	0.1		Nitroglycerin	55-63-0	6.3E+00	n	8.2E+01	n					2.0E+00	n		8.5E-04	n	
				1.0E-01	I					1	0.1		Nitroguanidine	556-88-7	6.3E+03	n	8.2E+04	n					2.0E+03	n		4.8E-01	n	
		8.8E-06	P			5.0E-03	P	V		1		1.8E+04	Nitromethane	75-52-5	5.4E+00	c*	2.4E+01	c*	3.2E-01	c*	1.4E+00	c*	6.4E-01	c*		1.4E-04	c*	
		5.8E-04	X			2.0E-02	I	V		1		4.9E+03	Nitropropane, 2-	79-46-9	6.4E-02	c	2.8E-01	c	4.8E-03	c	2.1E-02	c	9.7E-03	c		2.5E-06	c	
2.7E+01	C	7.7E-03	C						M	1	0.1		Nitroso-N-ethylurea, N-	759-73-9	4.5E-03	c	8.5E-02	c	1.3E-04	c	1.6E-03	c	9.2E-04	c		2.2E-07	c	
1.2E+02	C	3.4E-02	C						M	1	0.1		Nitroso-N-methylurea, N-	684-93-5	1.0E-03	c	1.9E-02	c	3.0E-05	c	3.6E-04	c	2.1E-04	c		4.6E-08	c	
5.4E+00	I	1.6E-03	I					V		1			Nitroso-di-N-butylamine, N-	924-16-3	9.9E-02	c	4.6E-01	c	1.8E-03	c	7.7E-03	c	2.7E-03	c		5.5E-06	c	
7.0E+00	I	2.0E-03	C							1	0.1		Nitroso-di-N-propylamine, N-	621-64-7	7.8E-02	c	3.3E-01	c	1.4E-03	c	6.1E-03	c	1.1E-02	c		8.1E-06	c	
2.8E+00	I	8.0E-04	C							1	0.1		Nitrosodiethanolamine, N-	1116-54-7	1.9E-01	c	8.2E-01	c	3.5E-03	c	1.5E-02	c	2.8E-02	c		5.6E-06	c	
1.5E+02	I	4.3E-02	I						M	1	0.1		Nitrosodiethylamine, N-	55-18-5	8.1E-04	c	1.5E-02	c	2.4E-05	c	2.9E-04	c	1.7E-04	c		6.1E-08	c	
5.1E+01	I	1.4E-02	I	8.0E-06	P	4.0E-05	X	V	M	1		2.4E+05	Nitrosodimethylamine, N-	62-75-9	2.0E-03	c	3.4E-02	c	7.2E-05	c	8.8E-04	c	1.1E-04	c		2.7E-08	c	
4.9E-03	I	2.6E-06	C							1	0.1		Nitrosodiphenylamine, N-	86-30-6	1.1E+02	c	4.7E+02	c	1.1E+00	c	4.7E+00	c	1.2E+01	c		6.7E-02	c	
2.2E+01	I	6.3E-03	C					V		1		1.1E+05	Nitrosomethylethylamine, N-	10595-95-6	2.0E-02	c	9.1E-02	c	4.5E-04	c	1.9E-03	c	7.1E-04	c		2.0E-07	c	
6.7E+00	C	1.9E-03	C							1	0.1		Nitrosomorpholine [N-]	59-89-2	8.1E-02	c	3.4E-01	c	1.5E-03	c	6.5E-03	c	1.2E-02	c		2.8E-06	c	
9.4E+00	C	2.7E-03	C							1	0.1		Nitrosopiperidine [N-]	100-75-4	5.8E-02	c	2.4E-01	c	1.0E-03	c	4.5E-03	c	8.2E-03	c		4.4E-06	c	
2.1E+00	I	6.1E-04	I							1	0.1		Nitrosopyrrolidine, N-	930-55-2	2.6E-01	c	1.1E+00	c	4.6E-03	c	2.0E-02	c	3.7E-02	c		1.4E-05	c	
				1.0E-04	X					1	0.1		Nitrotoluene, m-	99-08-1	6.3E+00	n	8.2E+01	n					1.7E+00	n		1.6E-03	n	
2.2E-01	P			9.0E-04	P			V		1		1.5E+03	Nitrotoluene, o-	88-72-2	3.2E+00	c*	1.5E+01	c*					3.1E-01	c*		3.0E-04	c*	
1.6E-02	P			4.0E-03	P					1	0.1		Nitrotoluene, p-	99-99-0	3.4E+01	c**	1.4E+02	c*					4.3E+00	c*		4.0E-03	c*	
				3.0E-04	X	2.0E-02	P	V		1		6.9E+00	Nonane, n-	111-84-2	1.1E+01	ns	7.2E+01	ns	2.1E+01	n	8.8E+01	n	5.3E+00	n		7.5E-02	n	
				1.5E-02	O					1	0.1		Norflurazon	27314-13-2	9.5E+02	n	1.2E+04	n					2.9E+02	n		1.9E+00	n	
				3.0E-03	I					1	0.1		Octabromodiphenyl Ether	32536-52-0	1.9E+02	n	2.5E+03	n					6.0E+01	n		1.2E+01	n	
				5.0E-02	I					1	0.006		Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2691-41-0	3.9E+03	n	5.7E+04	n					1.0E+03	n		1.3E+00	n	
				2.0E-03	H					1	0.1		Octamethylpyrophosphoramide	152-16-9	1.3E+02	n	1.6E+03	n					4.0E+01	n		9.6E-03	n	
7.8E-03	O			1.4E-01	O					1	0.1		Oryzalin	19044-88-3	7.0E+01	c	2.9E+02	c					7.9E+00	c		1.5E-02	c	
				5.0E-03	I					1	0.1		Oxadiazon	19666-30-9	3.2E+02	n	4.1E+03	n					4.7E+01	n		4.8E-01	n	

TR=1E-6
THQ=1.0

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; W = TEF applied; E = RPF applied; G = user's guide Section 5; M = mutagen; V = volatile; R = RBA applied ; c = cancer; n = noncancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; SSL values are based on DAF=1; m = ceiling limit exceeded; s = Csat exceeded.

Toxicity and Chemical-specific Information												Contaminant		Screening Levels													Protection of Ground Water SSLs		
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	vol	mutagen	GIABS	ABS_d	C_{sat} (mg/kg)	Analyte	CAS No.	Resident Soil (mg/kg)	key	Industrial Soil (mg/kg)	key	Resident Air (ug/m^3)	key	Industrial Air (ug/m^3)	key	Tapwater (ug/L)	key	MCL (ug/L)	Risk-based SSL (mg/kg)	key	MCL-based SSL (mg/kg)
				2.5E-02	I					1	0.1		Oxamyl	23135-22-0	1.6E+03	n	2.1E+04	n					5.0E+02	n	2.0E+02	1.1E-01	n	4.4E-02
7.3E-02	O			3.0E-02	O					1	0.1		Oxyfluorfen	42874-03-3	7.4E+00	c	3.1E+01	c					5.4E-01	c		4.3E-02	c	
				1.3E-02	I					1	0.1		Paclobutrazol	76738-62-0	8.2E+02	n	1.1E+04	n					2.3E+02	n		4.6E-01	n	
				4.5E-03	I					1	0.1		Paraquat Dichloride	1910-42-5	2.8E+02	n	3.7E+03	n					9.0E+01	n		1.2E+00	n	
				6.0E-03	H					1	0.1		Parathion	56-38-2	3.8E+02	n	4.9E+03	n					8.6E+01	n		4.3E-01	n	
				5.0E-02	H			V		1			Pebulate	1114-71-2	3.9E+03	n	5.8E+04	n					5.6E+02	n		4.5E-01	n	
				3.0E-01	O					1	0.1		Pendimethalin	40487-42-1	1.9E+04	n	2.5E+05	nm					1.4E+03	n		1.6E+01	n	
				2.0E-03	I			V		1		3.1E-01	Pentabromodiphenyl Ether	32534-81-9	1.6E+02	ns	2.3E+03	ns					4.0E+01	n		1.7E+00	n	
				1.0E-04	I					1	0.1		Pentabromodiphenyl ether, 2,2',4,4',5- (BDE-99)	60348-60-9	6.3E+00	n	8.2E+01	n					2.0E+00	n		8.7E-02	n	
				8.0E-04	I			V		1			Pentachlorobenzene	608-93-5	6.3E+01	n	9.3E+02	n					3.2E+00	n		2.4E-02	n	
9.0E-02	P							V		1		4.6E+02	Pentachloroethane	76-01-7	7.7E+00	c	3.6E+01	c					6.5E-01	c		3.1E-04	c	
2.6E-01	H			3.0E-03	I			V		1			Pentachloronitrobenzene	82-68-8	2.7E+00	c*	1.3E+01	c					1.2E-01	c		1.5E-03	c	
4.0E-01	I	5.1E-06	C	5.0E-03	I					1	0.25		Pentachlorophenol	87-86-5	1.0E+00	c	4.0E+00	c	5.5E-01	c	2.4E+00	c	4.1E-02	c	1.0E+00	5.7E-05	c	1.4E-03
4.0E-03	X			2.0E-03	P					1	0.1		Pentaerythritol tetranitrate (PETN)	78-11-5	1.3E+02	n	5.7E+02	c**					1.9E+01	c**		2.8E-02	c**	
				1.0E-04	X					1	0.1		Pentamethylphosphoramide (PMPA)	10159-46-3	6.3E+00	n	8.2E+01	n					2.0E+00	n		4.1E-04	n	
						1.0E+00	P	V		1		3.9E+02	Pentane, n-	109-66-0	8.1E+02	ns	3.4E+03	ns	1.0E+03	n	4.4E+03	n	2.1E+03	n		1.0E+01	n	
													Perchlorates																
				7.0E-04	I					1			~Ammonium Perchlorate	7790-98-9	5.5E+01	n	8.2E+02	n					1.4E+01	n				
				7.0E-04	I					1			~Lithium Perchlorate	7791-03-9	5.5E+01	n	8.2E+02	n					1.4E+01	n				
				7.0E-04	I					1			~Perchlorate and Perchlorate Salts	14797-73-0	5.5E+01	n	8.2E+02	n					1.4E+01	n	1.5E+01(G)			
				7.0E-04	I					1			~Potassium Perchlorate	7778-74-7	5.5E+01	n	8.2E+02	n					1.4E+01	n				
				7.0E-04	I					1			~Sodium Perchlorate	7601-89-0	5.5E+01	n	8.2E+02	n					1.4E+01	n				
				2.0E-02	P					1	0.1		Perfluorobutane sulfonic acid (PFBS)	375-73-5	1.3E+03	n	1.6E+04	n					4.0E+02	n		1.3E-01	n	
				2.0E-02	P					1	0.1		Perfluorobutanesulfonate	45187-15-3	1.3E+03	n	1.6E+04	n					4.0E+02	n		1.3E-01	n	
				5.0E-02	I					1	0.1		Permethrin	52645-53-1	3.2E+03	n	4.1E+04	n					1.0E+03	n		2.4E+02	n	
2.2E-03	C	6.3E-07	C							1	0.1		Phenacetin	62-44-2	2.5E+02	c	1.0E+03	c	4.5E+00	c	1.9E+01	c	3.4E+01	c		9.7E-03	c	
				2.4E-01	O					1	0.1		Phenmedipham	13684-63-4	1.5E+04	n	2.0E+05	nm					3.8E+03	n		2.1E+01	n	
				3.0E-01	I	2.0E-01	C			1	0.1		Phenol	108-95-2	1.9E+04	n	2.5E+05	nm	2.1E+02	n	8.8E+02	n	5.8E+03	n		3.3E+00	n	
				4.0E-03	I					1	0.1		Phenol, 2-(1-methylethoxy)-, methylcarbamate	114-26-1	2.5E+02	n	3.3E+03	n					7.8E+01	n		2.5E-02	n	
				5.0E-04	X					1	0.1		Phenothiazine	92-84-2	3.2E+01	n	4.1E+02	n					4.3E+00	n		1.4E-02	n	
				2.0E-04	X			V		1		1.3E+02	Phenyl Isothiocyanate	103-72-0	1.6E+01	n	2.3E+02	ns					2.6E+00	n		1.7E-03	n	
				6.0E-03	I					1	0.1		Phenylenediamine, m-	108-45-2	3.8E+02	n	4.9E+03	n					1.2E+02	n		3.2E-02	n	
1.2E-01	P			4.0E-03	P					1	0.1		Phenylenediamine, o-	95-54-5	4.5E+00	c*	1.9E+01	c					6.5E-01	c		1.7E-04	c	
				1.0E-03	X					1	0.1		Phenylenediamine, p-	106-50-3	6.3E+01	n	8.2E+02	n					2.0E+01	n		5.4E-03	n	
1.9E-03	H									1	0.1		Phenylphenol, 2-	90-43-7	2.8E+02	c	1.2E+03	c					3.0E+01	c		4.1E-01	c	
				2.0E-04	H					1	0.1		Phorate	298-02-2	1.3E+01	n	1.6E+02	n					3.0E+00	n		3.4E-03	n	
						3.0E-04	I	V		1		1.6E+03	Phosgene	75-44-5	3.1E-01	n	1.3E+00	n	3.1E-01	n	1.3E+00	n	6.3E-01	n		1.6E-04	n	
				2.0E-02	I					1	0.1		Phosmet	732-11-6	1.3E+03	n	1.6E+04	n					3.7E+02	n		8.2E-02	n	
													Phosphates, Inorganic																
				4.9E+01	P					1			~Aluminum metaphosphate	13776-88-0	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Ammonium polyphosphate	68333-79-9	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Calcium pyrophosphate	7790-76-3	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Diammonium phosphate	7783-28-0	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Dicalcium phosphate	7757-93-9	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Dimagnesium phosphate	7782-75-4	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Dipotassium phosphate	7758-11-4	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Disodium phosphate	7558-79-4	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Monoaluminum phosphate	13530-50-2	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Monoammonium phosphate	7722-76-1	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Monocalcium phosphate	7758-23-8	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Monomagnesium phosphate	7757-86-0	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Monopotassium phosphate	7778-77-0	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Monosodium phosphate	7558-80-7	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Polyphosphoric acid	8017-16-1	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Potassium tripolyphosphate	13845-36-8	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Sodium acid pyrophosphate	7758-16-9	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Sodium aluminum phosphate (acidic)	7785-88-8	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Sodium aluminum phosphate (anhydrous)	10279-59-1	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Sodium aluminum phosphate (tetrahydrate)	10305-76-7	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Sodium hexametaphosphate	10124-56-8	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Sodium polyphosphate	68915-31-1	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Sodium trimetaphosphate	7785-84-4	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Sodium tripolyphosphate	7758-29-4	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Tetrapotassium phosphate	7320-34-5	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Tetrasodium pyrophosphate	7722-88-5	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Trialuminum sodium tetra decahydrogenoctaorthophosphate (dihydrate)	15136-87-5	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Tricalcium phosphate	7758-87-4	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Trimagnesium phosphate	7757-87-1	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Tripotassium phosphate	7778-53-2	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				4.9E+01	P					1			~Trisodium phosphate	7601-54-9	3.8E+06	nm	5.7E+07	nm					9.7E+05	n				
				3.0E-04	I	3.0E-04	I	V		1			Phosphine	7803-51-2	2.3E+01	n	3.5E+02	n	3.1E-01	n	1.3E+00	n	5.7E-01	n				
				4.9E+01	P	1.0E-02	I			1			Phosphoric Acid	7664-38-2	3.0E+06	nm	2.9E+07	nm	1.0E+01	n	4.4E+01	n	9.7E+05	n				
				2.0E-05	I			V		1			Phosphorus, White	7723-14-0	1.6E+00	n	2.3E+01	n					4.0E-01	n		1.5E-03	n	
													Phthalates																
1.4E-02	I	2.4E-06	C	2.0E-02	I					1	0.1		~Bis(2-ethylhexyl)phthalate	117-81-7	3.9E+01	c*	1.6E+02	c	1.2E+00	c	5.1E+00	c	5.6E+00	c*	6.0E+00	1.3E+00	c*	1.4E+00
1.9E-03	P			2.0E-01	I					1	0.1		~Butyl Benzyl Phthalate	85-68-7	2.9E+02	c*	1.2E+03	c					1.6E+01	c		2.4E-01	c	
				1.0E+00	I					1	0.1		~Butylphthalyl Butylglycolate	85-70-1	6.3E+04	n	8.2E+05	nm					1.3E+04	n		3.1E+02	n	

R=1E-06 THQ=1.0

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; W = TEF applied; E = RPF applied; G = user's guide Section 5; M = mutagen; V = volatile; R = RBA applied ; c = cancer; n = noncancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; SSL values are based on DAF=1; m = ceiling limit exceeded; s = Csat exceeded.

Toxicity and Chemical-specific Information												Contaminant		Screening Levels										Protection of Ground Water SSLs		
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	volatile	mutagen	GIABS	ABS_d	C_{sat} (mg/kg)	Analyte	CAS No.	Resident Soil (mg/kg)	key	Industrial Soil (mg/kg)	key	Resident Air (ug/m^3)	key	Industrial Air (ug/m^3)	key	Tapwater (ug/L)	key	MCL (ug/L)	Risk-based SSL (mg/kg)	key	MCL-based SSL (mg/kg)
				1.0E-01	I					1	0.1		~Dibutyl Phthalate	84-74-2	6.3E+03	n	8.2E+04	n					9.0E+02	n		2.3E+00	n	
				8.0E-01	I					1	0.1		~Diethyl Phthalate	84-66-2	5.1E+04	n	6.6E+05	nm					1.5E+04	n		6.1E+00	n	
				1.0E-01	I			V		1			~Dimethylterephthalate	120-61-6	7.8E+03	n	1.2E+05	nm					1.9E+03	n		4.9E-01	n	
				1.0E-02	P					1	0.1		~Octyl Phthalate, di-N-	117-84-0	6.3E+02	n	8.2E+03	n					2.0E+02	n		5.7E+01	n	
				5.0E-01	X					1	0.1		~Phthalic Acid, p-	100-21-0	3.2E+04	n	4.1E+05	nm					9.4E+03	n		3.4E+00	n	
				2.0E+00	I	2.0E-02	C			1	0.1		~Phthalic Anhydride	85-44-9	1.3E+05	nm	1.6E+06	nm	2.1E+01	n	8.8E+01	n	3.9E+04	n		8.5E+00	n	
				7.0E-02	I					1	0.1		Picloram	1918-02-1	4.4E+03	n	5.7E+04	n					1.4E+03	n	5.0E+02	3.8E-01	n	1.4E-01
				1.0E-04	X					1	0.1		Picramic Acid (2-Amino-4,6-dinitrophenol)	96-91-3	6.3E+00	n	8.2E+01	n					2.0E+00	n		1.3E-03	n	
				2.0E-03	X					1	0.1		Picric Acid (2,4,6-Trinitrophenol)	88-89-1	1.3E+02	n	1.6E+03	n					4.0E+01	n		1.9E-01	n	
				7.0E-05	O					1	0.1		Pirimiphos, Methyl	29232-93-7	4.4E+00	n	5.7E+01	n					8.5E-01	n		8.1E-04	n	
3.0E+01	C	8.6E-03	C	7.0E-06	H					1	0.1		Polybrominated Biphenyls	36355-01-8	1.8E-02	c*	7.7E-02	c*	3.3E-04	c	1.4E-03	c	2.6E-03	c*				
													Polychlorinated Biphenyls (PCBs)															
7.0E-02	G	2.0E-05	G	7.0E-05	I			V		1	0.14		~Aroclor 1016	12674-11-2	4.1E+00	n	2.7E+01	c**	1.4E-01	c	6.1E-01	c	2.2E-01	c**		2.1E-02	c**	
2.0E+00	G	5.7E-04	G					V		1	0.14		~Aroclor 1221	11104-28-2	2.0E-01	c	8.3E-01	c	4.9E-03	c	2.1E-02	c	4.7E-03	c		8.0E-05	c	
2.0E+00	G	5.7E-04	G					V		1	0.14		~Aroclor 1232	11141-16-5	1.7E-01	c	7.2E-01	c	4.9E-03	c	2.1E-02	c	4.7E-03	c		8.0E-05	c	
2.0E+00	G	5.7E-04	G					V		1	0.14		~Aroclor 1242	53469-21-9	2.3E-01	c	9.5E-01	c	4.9E-03	c	2.1E-02	c	7.8E-03	c		1.2E-03	c	
2.0E+00	G	5.7E-04	G					V		1	0.14		~Aroclor 1248	12672-29-6	2.3E-01	c	9.4E-01	c	4.9E-03	c	2.1E-02	c	7.8E-03	c		1.2E-03	c	
2.0E+00	G	5.7E-04	G	2.0E-05	I			V		1	0.14		~Aroclor 1254	11097-69-1	2.4E-01	c**	9.7E-01	c*	4.9E-03	c	2.1E-02	c	7.8E-03	c*		2.0E-03	c*	
2.0E+00	G	5.7E-04	G					V		1	0.14		~Aroclor 1260	11096-82-5	2.4E-01	c	9.9E-01	c	4.9E-03	c	2.1E-02	c	7.8E-03	c		5.5E-03	c	
				6.0E-04	X			V		1	0.14		~Aroclor 5460	11126-42-4	3.5E+01	n	4.4E+02	n					1.2E+01	n		2.0E+00	n	
3.9E+00	W	1.1E-03	W	2.3E-05	W	1.3E-03	W	V		1	0.14		~Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189)	39635-31-9	1.3E-01	c*	5.2E-01	c*	2.5E-03	c	1.1E-02	c	4.0E-03	c		2.8E-03	c	
3.9E+00	W	1.1E-03	W	2.3E-05	W	1.3E-03	W	V		1	0.14		~Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167)	52663-72-6	1.2E-01	c*	5.1E-01	c*	2.5E-03	c	1.1E-02	c	4.0E-03	c		1.7E-03	c	
3.9E+00	W	1.1E-03	W	2.3E-05	W	1.3E-03	W	V		1	0.14		~Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157)	69782-90-7	1.2E-01	c*	5.0E-01	c*	2.5E-03	c	1.1E-02	c	4.0E-03	c		1.7E-03	c	
3.9E+00	W	1.1E-03	W	2.3E-05	W	1.3E-03	W	V		1	0.14		~Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156)	38380-08-4	1.2E-01	c*	5.0E-01	c*	2.5E-03	c	1.1E-02	c	4.0E-03	c		1.7E-03	c	
3.9E+03	W	1.1E+00	W	2.3E-08	W	1.3E-06	W	V		1	0.14		~Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169)	32774-16-6	1.2E-04	c*	5.1E-04	c*	2.5E-06	c	1.1E-05	c	4.0E-06	c		1.7E-06	c	
3.9E+00	W	1.1E-03	W	2.3E-05	W	1.3E-03	W	V		1	0.14		~Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123)	65510-44-3	1.2E-01	c*	4.9E-01	c*	2.5E-03	c	1.1E-02	c	4.0E-03	c		1.0E-03	c	
3.9E+00	W	1.1E-03	W	2.3E-05	W	1.3E-03	W	V		1	0.14		~Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118)	31508-00-6	1.2E-01	c*	4.9E-01	c*	2.5E-03	c	1.1E-02	c	4.0E-03	c		1.0E-03	c	
3.9E+00	W	1.1E-03	W	2.3E-05	W	1.3E-03	W	V		1	0.14		~Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105)	32598-14-4	1.2E-01	c*	4.9E-01	c*	2.5E-03	c	1.1E-02	c	4.0E-03	c		1.0E-03	c	
3.9E+00	W	1.1E-03	W	2.3E-05	W	1.3E-03	W	V		1	0.14		~Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114)	74472-37-0	1.2E-01	c*	5.0E-01	c*	2.5E-03	c	1.1E-02	c	4.0E-03	c		1.0E-03	c	
1.3E+04	W	3.8E+00	W	7.0E-09	W	4.0E-07	W	V		1	0.14		~Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126)	57465-28-8	3.6E-05	c*	1.5E-04	c*	7.4E-07	c	3.2E-06	c	1.2E-06	c		3.0E-07	c	
2.0E+00	I	5.7E-04	I					V		1	0.14		~Polychlorinated Biphenyls (high risk)	1336-36-3	2.3E-01	c	9.4E-01	c	4.9E-03	c	2.1E-02	c			5.0E-01			
4.0E-01	I	1.0E-04	I					V		1	0.14		~Polychlorinated Biphenyls (low risk)	1336-36-3					2.8E-02	c	1.2E-01	c	4.4E-02	c	5.0E-01	6.8E-03	c	7.8E-02
7.0E-02	I	2.0E-05	I					V		1	0.14		~Polychlorinated Biphenyls (lowest risk)	1336-36-3					1.4E-01	c	6.1E-01	c			5.0E-01			
1.3E+01	W	3.8E-03	W	7.0E-06	W	4.0E-04	W			1	0.14		~Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77)	32598-13-3	3.8E-02	c*	1.6E-01	c*	7.4E-04	c	3.2E-03	c	6.0E-03	c*		9.4E-04	c*	
3.9E+01	W	1.1E-02	W	2.3E-06	W	1.3E-04	W	V		1	0.14		~Tetrachlorobiphenyl, 3,4,4',5- (PCB 81)	70362-50-4	1.2E-02	c*	4.8E-02	c*	2.5E-04	c	1.1E-03	c	4.0E-04	c		6.2E-05	c	
						6.0E-04	I			1	0.1		Polymeric Methylene Diphenyl Diisocyanate (PMDI)	9016-87-9	8.5E+05	nm	3.6E+06	nm	6.3E-01	n	2.6E+00	n						
													Polynuclear Aromatic Hydrocarbons (PAHs)															
				6.0E-02	I			V		1	0.13		~Acenaphthene	83-32-9	3.6E+03	n	4.5E+04	n					5.3E+02	n		5.5E+00	n	
				3.0E-01	I			V		1	0.13		~Anthracene	120-12-7	1.8E+04	n	2.3E+05	nm					1.8E+03	n		5.8E+01	n	
1.0E-01	E	6.0E-05	E					V	M	1	0.13		~Benz[a]anthracene	56-55-3	1.1E+00	c	2.1E+01	c	1.7E-02	c	2.0E-01	c	3.0E-02	c		1.1E-02	c	
1.2E+00	C	1.1E-04	C							1	0.13		~Benzo(j)fluoranthene	205-82-3	4.2E-01	c	1.8E+00	c	2.6E-02	c	1.1E-01	c	6.5E-02	c		7.8E-02	c	
1.0E+00	I	6.0E-04	I	3.0E-04	I	2.0E-06	I		M	1	0.13		~Benzo[a]pyrene	50-32-8	1.1E-01	c	2.1E+00	c	1.7E-03	c**	8.8E-03	n	2.5E-02	c	2.0E-01	2.9E-02	c	2.4E-01
1.0E-01	E	6.0E-05	E						M	1	0.13		~Benzo[b]fluoranthene	205-99-2	1.1E+00	c	2.1E+01	c	1.7E-02	c	2.0E-01	c	2.5E-01	c		3.0E-01	c	
1.0E-02	E	6.0E-06	E						M	1	0.13		~Benzo[k]fluoranthene	207-08-9	1.1E+01	c	2.1E+02	c	1.7E-01	c	2.0E+00	c	2.5E+00	c		2.9E+00	c	
				8.0E-02	I			V		1	0.13		~Chloronaphthalene, Beta-	91-58-7	4.8E+03	n	6.0E+04	n					7.5E+02	n		3.9E+00	n	
1.0E-03	E	6.0E-07	E						M	1	0.13		~Chrysene	218-01-9	1.1E+02	c	2.1E+03	c	1.7E+00	c	2.0E+01	c	2.5E+01	c		9.0E+00	c	
1.0E+00	E	6.0E-04	E						M	1	0.13		~Dibenz[a,h]anthracene	53-70-3	1.1E-01	c	2.1E+00	c	1.7E-03	c	2.0E-02	c	2.5E-02	c		9.6E-02	c	
1.2E+01	C	1.1E-03	C							1	0.13		~Dibenzo(a,e)pyrene	192-65-4	4.2E-02	c	1.8E-01	c	2.6E-03	c	1.1E-02	c	6.5E-03	c		8.4E-02	c	
2.5E+02	C	7.1E-02	C						M	1	0.13		~Dimethylbenz(a)anthracene, 7,12-	57-97-6	4.6E-04	c	8.4E-03	c	1.4E-05	c	1.7E-04	c	1.0E-04	c		9.9E-05	c	
				4.0E-02	I					1	0.13		~Fluoranthene	206-44-0	2.4E+03	n	3.0E+04	n					8.0E+02	n		8.9E+01	n	
				4.0E-02	I			V		1	0.13		~Fluorene	86-73-7	2.4E+03	n	3.0E+04	n					2.9E+02	n		5.4E+00	n	
1.0E-01	E	6.0E-05	E						M	1	0.13		~Indeno[1,2,3-cd]pyrene	193-39-5	1.1E+00	c	2.1E+01	c	1.7E-02	c	2.0E-01	c	2.5E-01	c		9.8E-01	c	
2.9E-02	P			7.0E-02	A			V		1	0.13	3.9E+02	~Methylnaphthalene, 1-	90-12-0	1.8E+01	c	7.3E+01	c					1.1E+00	c		6.0E-03	c	
				4.0E-03	I			V		1	0.13		~Methylnaphthalene, 2-	91-57-6	2.4E+02	n	3.0E+03	n					3.6E+01	n		1.9E-01	n	
1.2E-01	C	3.4E-05	C	2.0E-02	I	3.0E-03	I	V		1	0.13		~Naphthalene	91-20-3	2.0E+00	c*	8.6E+00	c*	8.3E-02	c*	3.6E-01	c*	1.2E-01	c*		3.8E-04	c*	
1.2E+00	C	1.1E-04	C							1	0.13		~Nitropyrene, 4-	57835-92-4	4.2E-01	c	1.8E+00	c	2.6E-02	c	1.1E-01	c	1.9E-02	c		3.3E-03	c	
				3.0E-02	I			V		1	0.13		~Pyrene	129-00-0	1.8E+03	n	2.3E+04	n					1.2E+02	n		1.3E+01	n	
				2.0E-02	P					1	0.1		Potassium Perfluorobutane Sulfonate	29420-49-3	1.3E+03	n	1.6E+04	n					4.0E+02	n				
1.5E-01	I			9.0E-03	I					1	0.1		Prochloraz	67747-09-5	3.6E+00	c	1.5E+01	c					3.8E-01	c		1.9E-03	c	
				6.0E-03	H			V		1			Profluralin	26399-36-0	4.7E+02	n	7.0E+03	n					2.6E+01	n		1.6E+00	n	
				1.5E-02	I					1	0.1		Prometon	1610-18-0	9.5E+02	n	1.2E+04	n					2.5E+02	n		1.2E-01	n	
				4.0E-02	O					1	0.1		Prometryn	7287-19-6	2.5E+03	n	3.3E+04	n					6.0E+02	n		9.0E-01	n	
				7.5E-02	I					1	0.1		Pronamide	23950-58-5	4.7E+03	n	6.2E+04	n					1.2E+03	n		1.2E+00	n	
				1.3E-02	I					1	0.1		Propachlor	1918-16-7	8.2E+02	n	1.1E+04	n					2.5E+02	n		1.5E-01	n	
				5.0E-03	I					1	0.1		Propanil	709-98-8	3.2E+02	n	4.1E+03	n					8.2E+01	n		4.5E-02	n	
1.9E-01	O			4.0E-02	O					1	0.1		Propargite	2312-35-8	2.8E+00	c	1.2E+01	c					1.6E-01	c		1.1E-02	c	
				2.0E-03	I			V		1		1.1E+05	Propargyl Alcohol	107-19-7	1.6E+02	n	2.3E+03	n					4.0E+01	n		8.1E-03	n	
				2.0E-02	I					1	0.1		Propazine	139-40-2	1.3E+03	n	1.6E+04	n					3.4E+02	n		3.0E-01	n	
				2.0E-02	I					1	0.1		Propham	122-42-9	1.3E+03	n	1.6E+04	n					3.5E+02	n		2.2E-01	n	
				1.0E-01	O					1	0.1		Propiconazole	60207-90-1	6.3E+03	n	8.2E+04	n					1.6E+03	n		5.3E+00	n	
						8.0E-03	I	V		1		3.3E+04	Propionaldehyde	123-38-6	7.5E+01	n	3.1E+02	n	8.3E+00	n	3.5E+01	n	1.7E+01	n		3.4E-03	n	
				1.0E-01	X	1.0E+00	X	V		1		2.6E+02	Propyl benzene	103-65-1	3.8E+03	ns	2.4E+04	ns	1.0E+03	n	4.4E+03	n	6.6E+02	n		1.2E+00	n	
						3.0E+00	C	V		1		3.5E+02	Propylene	115-07-1	2.2E+03	ns	9.3E+03	ns	3.1E+03	n	1.3E+04	n	6.3E+03	n		6.0E+00	n	
				2.0E+01	P					1	0.1		Propylene Glycol	57-55-6	1.3E+06	nm	1.6E+07	nm					4.0E+05	n		8.1E+01	n	
						2.7E-04	A			1	0.1		Propylene Glycol Dinitrate	6423-43-4	3.9E+05	nm	1.6E+06	nm	2.8E-01	n	1.2E+00	n						
				7.0E-01	H	2.0E+00	I	V		1		1.1E+05	Propylene Glycol Monomethyl Ether	107-98-2	4.1E+04	n	3.7E+05	nms	2.1E+03	n	8.8E+03	n	3.2E+03	n		6.5E-01	n	
2.4E-01	I	3.7E-06	I			3.0E-02	I	V		1		7.8E+04	Propylene Oxide	75-56-9	2.1E+00	c	9.7E+00	c	7.6E-01	c*	3.3E+00	c*	2.7E-01	c		5.6E-05	c	

TR=1E-06
THQ=1.0

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; W = TEF applied; E = RPF applied; G = user's guide Section 5; M = mutagen; V = volatile; R = RBA applied ; c = cancer; n = noncancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; SSL values are based on DAF=1; m = ceiling limit exceeded; s = Csat exceeded.

Toxicity and Chemical-specific Information												Contaminant		Screening Levels												Protection of Ground Water SSLs		
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	volatile	mutagen	GIABS	ABS_d	C_{sat} (mg/kg)	Analyte	CAS No.	Resident Soil (mg/kg)	key	Industrial Soil (mg/kg)	key	Resident Air (ug/m^3)	key	Industrial Air (ug/m^3)	key	Tapwater (ug/L)	key	MCL (ug/L)	Risk-based SSL (mg/kg)	key	MCL-based SSL (mg/kg)
				1.0E-03	I			V		1		5.3E+05	Pyridine	110-86-1	7.8E+01	n	1.2E+03	n					2.0E+01	n		6.8E-03	n	
				5.0E-04	I					1	0.1		Quinalphos	13593-03-8	3.2E+01	n	4.1E+02	n					5.1E+00	n		4.3E-02	n	
3.0E+00	I									1	0.1		Quinoline	91-22-5	1.8E-01	c	7.7E-01	c					2.4E-02	c		7.8E-05	c	
				9.0E-03	I					1	0.1		Quizalofop-ethyl	76578-14-8	5.7E+02	n	7.4E+03	n					1.2E+02	n		1.9E+00	n	
						3.0E+04	A			1			Refractory Ceramic Fibers (units in fibers)	E715557					3.1E+04	G	1.3E+05	G						
				3.0E-02	I					1	0.1		Resmethrin	10453-86-8	1.9E+03	n	2.5E+04	n					6.7E+01	n		4.2E+01	n	
				5.0E-02	H			V		1			Ronnel	299-84-3	3.9E+03	n	5.8E+04	n					4.1E+02	n		3.7E+00	n	
				4.0E-03	I					1	0.1		Rotenone	83-79-4	2.5E+02	n	3.3E+03	n					6.1E+01	n		3.2E+01	n	
2.2E-01	C	6.3E-05	C						M	1	0.1		Safrole	94-59-7	5.5E-01	c	1.0E+01	c	1.6E-02	c	1.9E-01	c	9.6E-02	c		5.9E-05	c	
				5.0E-03	I					1			Selenious Acid	7783-00-8	3.9E+02	n	5.8E+03	n					1.0E+02	n				
				5.0E-03	I	2.0E-02	C			1			Selenium	7782-49-2	3.9E+02	n	5.8E+03	n	2.1E+01	n	8.8E+01	n	1.0E+02	n	5.0E+01	5.2E-01	n	2.6E-01
				5.0E-03	C	2.0E-02	C			1			Selenium Sulfide	7446-34-6	3.9E+02	n	5.8E+03	n	2.1E+01	n	8.8E+01	n	1.0E+02	n				
				1.4E-01	O					1	0.1		Sethoxydim	74051-80-2	8.8E+03	n	1.1E+05	nm					1.6E+03	n		1.4E+01	n	
						3.0E-03	C			1			Silica (crystalline, respirable)	7631-86-9	4.3E+06	nm	1.8E+07	nm	3.1E+00	n	1.3E+01	n						
				5.0E-03	I					0.04			Silver	7440-22-4	3.9E+02	n	5.8E+03	n					9.4E+01	n		8.0E-01	n	
1.2E-01	H			5.0E-03	I					1	0.1		Simazine	122-34-9	4.5E+00	c*	1.9E+01	c					6.1E-01	c	4.0E+00	3.0E-04	c	2.0E-03
				1.3E-02	I					1	0.1		Sodium Acifluorfen	62476-59-9	8.2E+02	n	1.1E+04	n					2.6E+02	n		2.1E+00	n	
				4.0E-03	I					1			Sodium Azide	26628-22-8	3.1E+02	n	4.7E+03	n					8.0E+01	n				
2.7E-01	H			3.0E-02	I					1	0.1		Sodium Diethyldithiocarbamate	148-18-5	2.0E+00	c	8.5E+00	c					2.9E-01	c		1.8E-04	c	
				5.0E-02	A	1.3E-02	C			1			Sodium Fluoride	7681-49-4	3.9E+03	n	5.8E+04	n	1.4E+01	n	5.7E+01	n	1.0E+03	n	4.0E+03	1.5E+02	n	6.0E+02
				2.0E-05	I					1	0.1		Sodium Fluoroacetate	62-74-8	1.3E+00	n	1.6E+01	n					4.0E-01	n		8.1E-05	n	
				1.0E-03	H					1			Sodium Metavanadate	13718-26-8	7.8E+01	n	1.2E+03	n					2.0E+01	n				
				8.0E-04	P					1			Sodium Tungstate	13472-45-2	6.3E+01	n	9.3E+02	n					1.6E+01	n				
				8.0E-04	P					1			Sodium Tungstate Dihydrate	10213-10-2	6.3E+01	n	9.3E+02	n					1.6E+01	n				
2.4E-02	H			3.0E-02	I					1	0.1		Stirofos (Tetrachlorovinphos)	961-11-5	2.3E+01	c*	9.6E+01	c					2.8E+00	c		8.2E-03	c	
				6.0E-01	I					1			Strontium, Stable	7440-24-6	4.7E+04	n	7.0E+05	nm					1.2E+04	n		4.2E+02	n	
				3.0E-04	I					1	0.1		Strychnine	57-24-9	1.9E+01	n	2.5E+02	n					5.9E+00	n		6.5E-02	n	
				2.0E-01	I	1.0E+00	I	V		1		8.7E+02	Styrene	100-42-5	6.0E+03	ns	3.5E+04	ns	1.0E+03	n	4.4E+03	n	1.2E+03	n	1.0E+02	1.3E+00	n	1.1E-01
				3.0E-03	P					1	0.1		Styrene-Acrylonitrile (SAN) Trimer (THNA isomer)	57964-39-3	1.9E+02	n	2.5E+03	n					4.8E+01	n				
				3.0E-03	P					1	0.1		Styrene-Acrylonitrile (SAN) Trimer (THNP isomer)	57964-40-6	1.9E+02	n	2.5E+03	n					4.8E+01	n				
				1.0E-03	P	2.0E-03	X			1	0.1		Sulfolane	126-33-0	6.3E+01	n	8.2E+02	n	2.1E+00	n	8.8E+00	n	2.0E+01	n		4.4E-03	n	
				8.0E-04	P					1	0.1		Sulfonylbis(4-chlorobenzene), 1,1'-	80-07-9	5.1E+01	n	6.6E+02	n					1.1E+01	n		6.5E-02	n	
						1.0E-03	C	V		1			Sulfur Trioxide	7446-11-9	1.4E+06	nm	6.0E+06	nm	1.0E+00	n	4.4E+00	n	2.1E+00	n				
						1.0E-03	C			1			Sulfuric Acid	7664-93-9	1.4E+06	nm	6.0E+06	nm	1.0E+00	n	4.4E+00	n						
2.5E-02	I	7.1E-06	I	5.0E-02	H					1	0.1		Sulfurous acid, 2-chloroethyl 2-[4-(1,1-dimethylethyl)phenoxy]-1-methylethyl ester	140-57-8	2.2E+01	c	9.2E+01	c	4.0E-01	c	1.7E+00	c	1.3E+00	c		1.5E-02	c	
				3.0E-02	H					1	0.1		TCMTB	21564-17-0	1.9E+03	n	2.5E+04	n					4.8E+02	n		3.3E+00	n	
				7.0E-02	I					1	0.1		Tebuthiuron	34014-18-1	4.4E+03	n	5.7E+04	n					1.4E+03	n		3.9E-01	n	
				2.0E-02	H					1	0.1		Temephos	3383-96-8	1.3E+03	n	1.6E+04	n					4.0E+02	n		7.6E+01	n	
				1.3E-02	I					1	0.1		Terbacil	5902-51-2	8.2E+02	n	1.1E+04	n					2.5E+02	n		7.5E-02	n	
				2.5E-05	H			V		1		3.1E+01	Terbufos	13071-79-9	2.0E+00	n	2.9E+01	n					2.4E-01	n		5.2E-04	n	
				1.0E-03	I					1	0.1		Terbutryn	886-50-0	6.3E+01	n	8.2E+02	n					1.3E+01	n		1.9E-02	n	
5.0E-03	C	1.3E-06	C					V		1			Tert-Butyl Acetate	540-88-5	8.1E+00	c	3.6E+01	c	2.2E+00	c	9.4E+00	c	3.3E+00	c		7.6E-04	c	
				1.0E-04	I					1	0.1		Tetrabromodiphenyl ether, 2,2',4,4'- (BDE-47)	5436-43-1	6.3E+00	n	8.2E+01	n					2.0E+00	n		5.3E-02	n	
				3.0E-04	I			V		1			Tetrachlorobenzene, 1,2,4,5-	95-94-3	2.3E+01	n	3.5E+02	n					1.7E+00	n		7.9E-03	n	
2.6E-02	I	7.4E-06	I	3.0E-02	I			V		1		6.8E+02	Tetrachloroethane, 1,1,1,2-	630-20-6	2.0E+00	c	8.8E+00	c	3.8E-01	c	1.7E+00	c	5.7E-01	c		2.2E-04	c	
2.0E-01	I	5.8E-05	C	2.0E-02	I			V		1		1.9E+03	Tetrachloroethane, 1,1,2,2-	79-34-5	6.0E-01	c	2.7E+00	c	4.8E-02	c	2.1E-01	c	7.6E-02	c		3.0E-05	c	
2.1E-03	I	2.6E-07	I	6.0E-03	I	4.0E-02	I	V		1		1.7E+02	Tetrachloroethylene	127-18-4	2.4E+01	c**	1.0E+02	c**	1.1E+01	c**	4.7E+01	c**	1.1E+01	c**	5.0E+00	5.1E-03	c**	2.3E-03
				3.0E-02	I					1	0.1		Tetrachlorophenol, 2,3,4,6-	58-90-2	1.9E+03	n	2.5E+04	n					2.4E+02	n		1.8E-01	n	
1.6E+01	X			6.0E-05	X			V		1			Tetrachlorotoluene, p- alpha, alpha, alpha-	5216-25-1	4.3E-02	c	2.0E-01	c					1.7E-03	c		5.7E-06	c	
				5.0E-04	I					1	0.1		Tetraethyl Dithiopyrophosphate	3689-24-5	3.2E+01	n	4.1E+02	n					7.1E+00	n		5.2E-03	n	
						8.0E+01	I	V		1		2.1E+03	Tetrafluoroethane, 1,1,1,2-	811-97-2	1.0E+05	nms	4.3E+05	nms	8.3E+04	n	3.5E+05	n	1.7E+05	n		9.3E+01	n	
				1.0E-04	X					1	0.1		Tetramethylphosphoramide, -N,N,N',N' (TMPA)	16853-36-4	6.3E+00	n	8.2E+01	n					2.0E+00	n				
				2.0E-03	P					1	0.00065		Tetryl (Trinitrophenylmethylnitramine)	479-45-8	1.6E+02	n	2.3E+03	n					3.9E+01	n		3.7E-01	n	
				2.0E-05	G					1			Thallic Oxide	1314-32-5	1.6E+00	n	2.3E+01	n					4.0E-01	n				
				1.0E-05	X					1			Thallium (I) Nitrate	10102-45-1	7.8E-01	n	1.2E+01	n					2.0E-01	n				
				1.0E-05	X					1			Thallium (Soluble Salts)	7440-28-0	7.8E-01	n	1.2E+01	n					2.0E-01	n	2.0E+00	1.4E-02	n	1.4E-01
				1.0E-05	X			V		1			Thallium Acetate	563-68-8	7.8E-01	n	1.2E+01	n					2.0E-01	n		4.1E-05	n	
				2.0E-05	X			V		1			Thallium Carbonate	6533-73-9	1.6E+00	n	2.3E+01	n					4.0E-01	n		8.3E-05	n	
				1.0E-05	X					1			Thallium Chloride	7791-12-0	7.8E-01	n	1.2E+01	n					2.0E-01	n				
				1.0E-05	G					1			Thallium Selenite	12039-52-0	7.8E-01	n	1.2E+01	n					2.0E-01	n				
				2.0E-05	X					1			Thallium Sulfate	7446-18-6	1.6E+00	n	2.3E+01	n					4.0E-01	n				
				4.3E-02	O					1	0.1		Thifensulfuron-methyl	79277-27-3	2.7E+03	n	3.5E+04	n					8.6E+02	n		2.6E-01	n	
				1.0E-02	I					1	0.1		Thiobencarb	28249-77-6	6.3E+02	n	8.2E+03	n					1.6E+02	n		5.5E-01	n	
				7.0E-02	X					1	0.0075		Thiodiglycol	111-48-8	5.4E+03	n	7.9E+04	n					1.4E+03	n		2.8E-01	n	
				3.0E-04	H					1	0.1		Thiofanox	39196-18-4	1.9E+01	n	2.5E+02	n					5.3E+00	n		1.8E-03	n	
1.2E-02	O			2.7E-02	O					1	0.1		Thiophanate, Methyl	23564-05-8	4.7E+01	c*	2.0E+02	c					6.7E+00	c*		5.7E-03	c*	
				1.5E-02	O					1	0.1		Thiram	137-26-8	9.5E+02	n	1.2E+04	n					2.9E+02	n		4.2E-01	n	
				6.0E-01	H					1			Tin	7440-31-5	4.7E+04	n	7.0E+05	nm					1.2E+04	n		3.0E+03	n	
						1.0E-04	A	V		1			Titanium Tetrachloride	7550-45-0	1.4E+05	nm	6.0E+05	nm	1.0E-01	n	4.4E-01	n	2.1E-01	n				
				8.0E-02	I	5.0E+00	I	V		1		8.2E+02	Toluene	108-88-3	4.9E+03	ns	4.7E+04	ns	5.2E+03	n	2.2E+04	n	1.1E+03	n	1.0E+03	7.6E-01	n	6.9E-01
3.9E-02	C	1.1E-05	C			8.0E-06	C	V		1			Toluene-2,4-diisocyanate	584-84-9	6.4E+00	n	2.7E+01	n	8.3E-03	n	3.5E-02	n	1.7E-02	n		2.5E-04	n	
1.8E-01	X			2.0E-04	X					1	0.1		Toluene-2,5-diamine	95-70-5	3.0E+00	c**	1.3E+01	c*					4.3E-01	c**		1.3E-04	c**	
3.9E-02	C	1.1E-05	C			8.0E-06	C	V		1		1.7E+03	Toluene-2,6-diisocyanate	91-08-7	5.3E+00	n	2.2E+01	n	8.3E-03	n	3.5E-02	n	1.7E-02	n		2.6E-04	n	
				5.0E-03	P					1	0.1		Toluic Acid, p-	99-94-5	3.2E+02	n	4.1E+03	n					9.0E+01	n		2.3E-02	n	
1.6E-02	P	5.1E-05	C							1	0.1		Toluidine, o- (Methylaniline, 2-)	95-53-4	3.4E+01	c	1.4E+02	c	5.5E-02	c	2.4E-01	c	4.7E+00	c		2.0E-03	c	
3.0E-02	P			4.0E-03	X					1	0.1		Toluidine, p-	106-49-0	1.8E+01	c*	7.7E+01	c*					2.5E+00	c*		1.1E-03	c*	
				3.0E+00	P			V		1		3.4E-01	Total Petroleum Hydrocarbons (Aliphatic High)	E1790670	2.3E+05	nms	3.5E+06	nms					6.0E+04	n		2.4E+03	n	

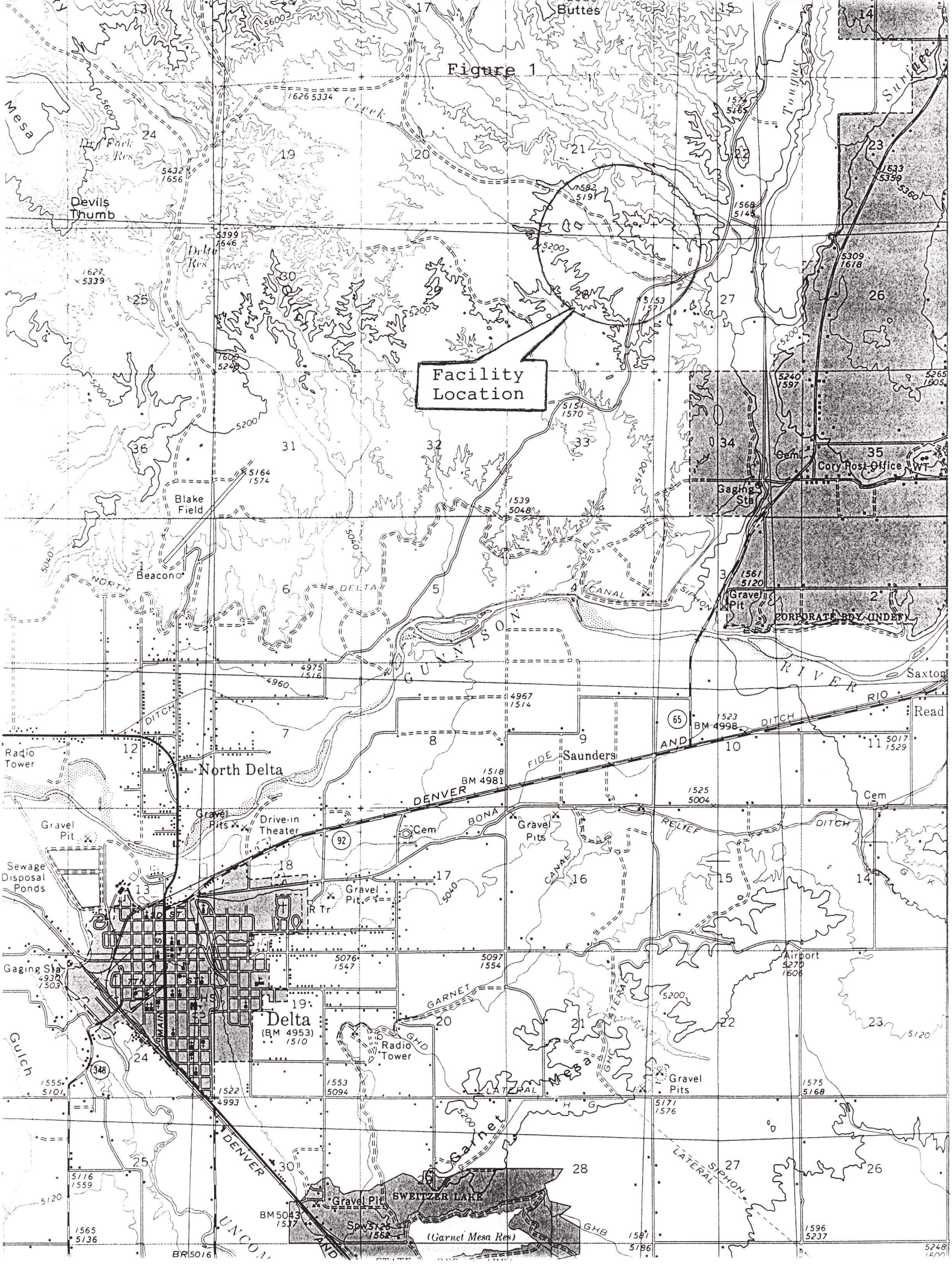
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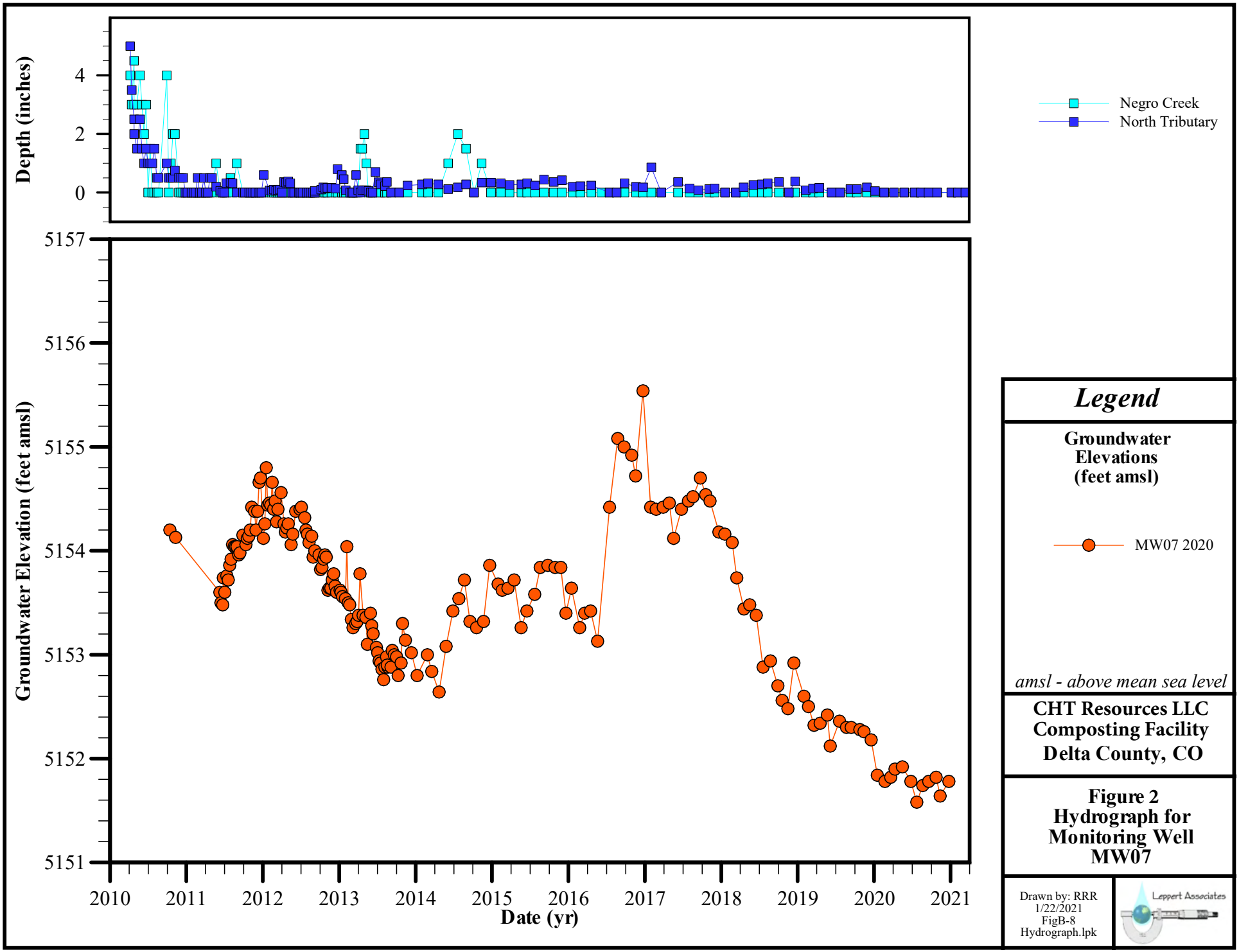
Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; W = TEF applied; E = RPF applied; G = user's guide Section 5; M = mutagen; V = volatile; R = RBA applied ; c = cancer; n = noncancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; SSL values are based on DAF=1; m = ceiling limit exceeded; s = Csat exceeded.

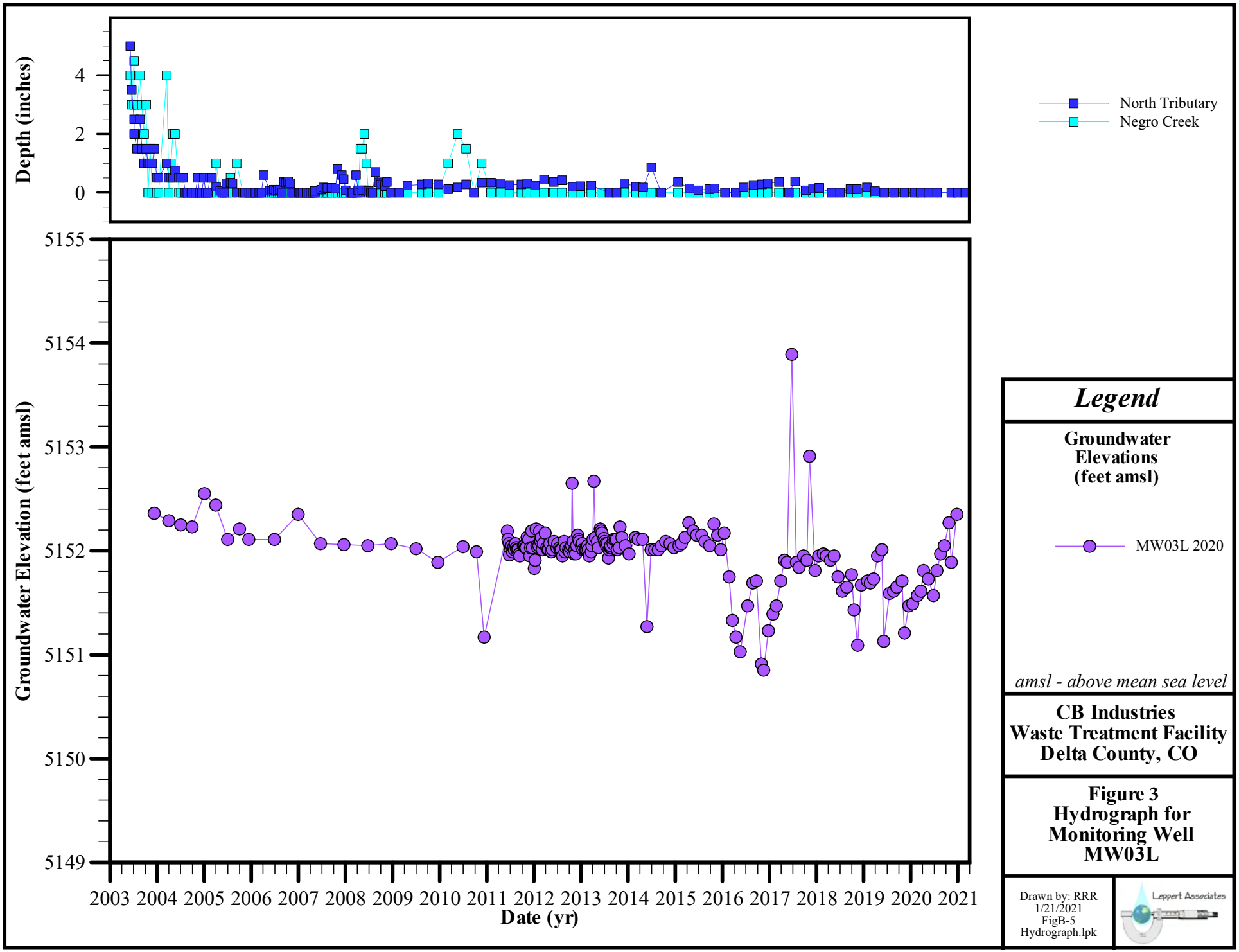
Toxicity and Chemical-specific Information												Contaminant		Screening Levels										Protection of Ground Water SSLs		
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	volatile	mutagen	GIABS	ABS_d	C_{sat} (mg/kg)	Analyte	CAS No.	Resident Soil (mg/kg)	key	Industrial Soil (mg/kg)	key	Resident Air (ug/m^3)	key	Industrial Air (ug/m^3)	key	Tapwater (ug/L)	key	MCL (ug/L)	Risk-based SSL (mg/kg)	key	MCL-based SSL (mg/kg)
						6.0E-01	P	V		1		1.4E+02	Total Petroleum Hydrocarbons (Aliphatic Low)	E1790666	5.2E+02	ns	2.2E+03	ns	6.3E+02	n	2.6E+03	n	1.3E+03	n		8.8E+00	n	
				1.0E-02	X	1.0E-01	P	V		1		6.9E+00	Total Petroleum Hydrocarbons (Aliphatic Medium)	E1790668	9.6E+01	ns	4.4E+02	ns	1.0E+02	n	4.4E+02	n	1.0E+02	n		1.5E+00	n	
				4.0E-02	P					1	0.13		Total Petroleum Hydrocarbons (Aromatic High)	E1790676	2.4E+03	n	3.0E+04	n					8.0E+02	n		8.9E+01	n	
				4.0E-03	P	3.0E-02	P	V		1		1.8E+03	Total Petroleum Hydrocarbons (Aromatic Low)	E1790672	8.2E+01	n	4.2E+02	n	3.1E+01	n	1.3E+02	n	3.3E+01	n		1.7E-02	n	
				4.0E-03	P	3.0E-03	P	V		1	0.13		Total Petroleum Hydrocarbons (Aromatic Medium)	E1790674	9.7E+01	n	5.6E+02	n	3.1E+00	n	1.3E+01	n	5.5E+00	n		2.3E-02	n	
1.1E+00	I	3.2E-04	I	9.0E-05	P					1	0.1		Toxaphene	8001-35-2	4.9E-01	c*	2.1E+00	c*	8.8E-03	c	3.8E-02	c	7.1E-02	c*	3.0E+00	1.1E-02	c*	4.6E-01
				3.0E-05	X					1	0.1		Toxaphene, Weathered	E1841606	1.9E+00	n	2.5E+01	n					6.0E-01	n		9.3E-02	n	
				7.5E-03	I					1	0.1		Tralomethrin	66841-25-6	4.7E+02	n	6.2E+03	n					1.5E+02	n		5.8E+01	n	
				3.0E-04	A			V		1			Tri-n-butyltin	688-73-3	2.3E+01	n	3.5E+02	n					3.7E+00	n		8.2E-02	n	
				8.0E+01	X					1	0.1		Triacetin	102-76-1	5.1E+06	nm	6.6E+07	nm					1.6E+06	n		4.5E+02	n	
				3.4E-02	O					1	0.1		Triadimefon	43121-43-3	2.1E+03	n	2.8E+04	n					6.3E+02	n		5.0E-01	n	
7.2E-02	O			2.5E-02	O			V		1			Triallate	2303-17-5	9.7E+00	c	4.6E+01	c					4.7E-01	c		1.0E-03	c	
				1.0E-02	I					1	0.1		Triasulfuron	82097-50-5	6.3E+02	n	8.2E+03	n					2.0E+02	n		2.1E-01	n	
				8.0E-03	I					1	0.1		Tribenuron-methyl	101200-48-0	5.1E+02	n	6.6E+03	n					1.6E+02	n		6.1E-02	n	
				5.0E-03	I			V		1			Tribromobenzene, 1,2,4-	615-54-3	3.9E+02	n	5.8E+03	n					4.5E+01	n		6.4E-02	n	
				9.0E-03	X					1	0.1		Tribromophenol, 2,4,6-	118-79-6	5.7E+02	n	7.4E+03	n					1.2E+02	n		2.2E-01	n	
				1.0E-04	O					1	0.1		Tribufos	78-48-8	6.3E+00	n	8.2E+01	n					2.8E-01	n		1.4E-03	n	
9.0E-03	P			1.0E-02	P					1	0.1		Tributyl Phosphate	126-73-8	6.0E+01	c*	2.6E+02	c*					5.2E+00	c*		2.5E-02	c*	
				3.0E-04	P					1	0.1		Tributyltin Compounds	E1790678	1.9E+01	n	2.5E+02	n					6.0E+00	n				
				3.0E-04	I					1	0.1		Tributyltin Oxide	56-35-9	1.9E+01	n	2.5E+02	n					5.7E+00	n		2.9E+02	n	
													Trichloramine	10025-85-1											4.0E+03(G)			
				3.0E+01	I	5.0E+00	P	V		1		9.1E+02	Trichloro-1,2,2-trifluoroethane, 1,1,2-	76-13-1	6.7E+03	ns	2.8E+04	ns	5.2E+03	n	2.2E+04	n	1.0E+04	n		2.6E+01	n	
7.0E-02	I			2.0E-02	I					1	0.1		Trichloroacetic Acid	76-03-9	7.8E+00	c	3.3E+01	c					1.1E+00	c	6.0E+01(G)	2.2E-04	c	1.2E-02
2.9E-02	H									1	0.1		Trichloroaniline HCl, 2,4,6-	33663-50-2	1.9E+01	c	7.9E+01	c					2.7E+00	c		7.4E-03	c	
7.0E-03	X			3.0E-05	X					1	0.1		Trichloroaniline, 2,4,6-	634-93-5	1.9E+00	n	2.5E+01	n					4.0E-01	n		3.6E-03	n	
				8.0E-04	X			V		1			Trichlorobenzene, 1,2,3-	87-61-6	6.3E+01	n	9.3E+02	n					7.0E+00	n		2.1E-02	n	
2.9E-02	P			1.0E-02	I	2.0E-03	P	V		1		4.0E+02	Trichlorobenzene, 1,2,4-	120-82-1	2.4E+01	c**	1.1E+02	c**	2.1E+00	n	8.8E+00	n	1.2E+00	c**	7.0E+01	3.4E-03	c**	2.0E-01
				2.0E+00	I	5.0E+00	I	V		1		6.4E+02	Trichloroethane, 1,1,1-	71-55-6	8.1E+03	ns	3.6E+04	ns	5.2E+03	n	2.2E+04	n	8.0E+03	n	2.0E+02	2.8E+00	n	7.0E-02
5.7E-02	I	1.6E-05	I	4.0E-03	I	2.0E-04	X	V		1		2.2E+03	Trichloroethane, 1,1,2-	79-00-5	1.1E+00	c**	5.0E+00	c**	1.8E-01	c**	7.7E-01	c**	2.8E-01	c**	5.0E+00	8.9E-05	c**	1.6E-03
4.6E-02	I	4.1E-06	I	5.0E-04	I	2.0E-03	I	V	M	1		6.9E+02	Trichloroethylene	79-01-6	9.4E-01	c**	6.0E+00	c**	4.8E-01	c**	3.0E+00	c**	4.9E-01	c**	5.0E+00	1.8E-04	c**	1.8E-03
				3.0E-01	I			V		1		1.2E+03	Trichlorofluoromethane	75-69-4	2.3E+04	ns	3.5E+05	nms					5.2E+03	n		3.3E+00	n	
				1.0E-01	I					1	0.1		Trichlorophenol, 2,4,5-	95-95-4	6.3E+03	n	8.2E+04	n					1.2E+03	n		4.0E+00	n	
1.1E-02	I	3.1E-06	I	1.0E-03	P					1	0.1		Trichlorophenol, 2,4,6-	88-06-2	4.9E+01	c**	2.1E+02	c**	9.1E-01	c	4.0E+00	c	4.1E+00	c**		4.0E-03	c**	
				1.0E-02	I					1	0.1		Trichlorophenoxyacetic Acid, 2,4,5-	93-76-5	6.3E+02	n	8.2E+03	n					1.6E+02	n		6.8E-02	n	
				8.0E-03	I					1	0.1		Trichlorophenoxypropionic acid, -2,4,5	93-72-1	5.1E+02	n	6.6E+03	n					1.1E+02	n	5.0E+01	6.1E-02	n	2.8E-02
				5.0E-03	I			V		1		1.3E+03	Trichloropropane, 1,1,2-	598-77-6	3.9E+02	n	5.8E+03	ns					8.8E+01	n		3.5E-02	n	
3.0E+01	I			4.0E-03	I	3.0E-04	I	V	M	1		1.4E+03	Trichloropropane, 1,2,3-	96-18-4	5.1E-03	c	1.1E-01	c	3.1E-01	n	1.3E+00	n	7.5E-04	c		3.2E-07	c	
				3.0E-03	X	3.0E-04	P	V		1		3.1E+02	Trichloropropene, 1,2,3-	96-19-5	7.3E-01	n	3.1E+00	n	3.1E-01	n	1.3E+00	n	6.2E-01	n		3.1E-04	n	
				2.0E-02	A					1	0.1		Tricresyl Phosphate (TCP)	1330-78-5	1.3E+03	n	1.6E+04	n					1.6E+02	n		1.5E+01	n	
				3.0E-03	I					1	0.1		Tridiphane	58138-08-2	1.9E+02	n	2.5E+03	n					1.8E+01	n		1.3E-01	n	
						7.0E-03	I	V		1		2.8E+04	Triethylamine	121-44-8	1.2E+02	n	4.8E+02	n	7.3E+00	n	3.1E+01	n	1.5E+01	n		4.4E-03	n	
				2.0E+00	P					1	0.1		Triethylene Glycol	112-27-6	1.3E+05	nm	1.6E+06	nm					4.0E+04	n		8.8E+00	n	
						2.0E+01	P	V		1		4.8E+03	Trifluoroethane, 1,1,1-	420-46-2	1.5E+04	ns	6.2E+04	ns	2.1E+04	n	8.8E+04	n	4.2E+04	n		1.3E+02	n	
7.7E-03	I			7.5E-03	I			V		1			Trifluralin	1582-09-8	9.0E+01	c**	4.2E+02	c*					2.6E+00	c*		8.4E-02	c*	
2.0E-02	P			1.0E-02	P					1	0.1		Trimethyl Phosphate	512-56-1	2.7E+01	c*	1.1E+02	c*					3.9E+00	c*		8.6E-04	c*	
				1.0E-02	I	6.0E-02	I	V		1		2.9E+02	Trimethylbenzene, 1,2,3-	526-73-8	3.4E+02	ns	2.0E+03	ns	6.3E+01	n	2.6E+02	n	5.5E+01	n		8.1E-02	n	
				1.0E-02	I	6.0E-02	I	V		1		2.2E+02	Trimethylbenzene, 1,2,4-	95-63-6	3.0E+02	ns	1.8E+03	ns	6.3E+01	n	2.6E+02	n	5.6E+01	n		8.1E-02	n	
				1.0E-02	I	6.0E-02	I	V		1		1.8E+02	Trimethylbenzene, 1,3,5-	108-67-8	2.7E+02	ns	1.5E+03	ns	6.3E+01	n	2.6E+02	n	6.0E+01	n		8.7E-02	n	
				1.0E-02	X			V		1		3.0E+01	Trimethylpentene, 2,4,4-	25167-70-8	7.8E+02	ns	1.2E+04	ns					3.8E+01	n		1.3E-01	n	
				3.0E-02	I					1	0.019		Trinitrobenzene, 1,3,5-	99-35-4	2.2E+03	n	3.2E+04	n					5.9E+02	n		2.1E+00	n	
3.0E-02	I			5.0E-04	I					1	0.032		Trinitrotoluene, 2,4,6-	118-96-7	2.1E+01	c**	9.6E+01	c**					2.5E+00	c**		1.5E-02	c**	
				2.0E-02	P					1	0.1		Triphenylphosphine Oxide	791-28-6	1.3E+03	n	1.6E+04	n					3.6E+02	n		1.5E+00	n	
				2.0E-02	A					1	0.1		Tris(1,3-Dichloro-2-propyl) Phosphate	13674-87-8	1.3E+03	n	1.6E+04	n					3.6E+02	n		8.0E+00	n	
				1.0E-02	X					1	0.1		Tris(1-chloro-2-propyl)phosphate	13674-84-5	6.3E+02	n	8.2E+03	n					1.9E+02	n		6.5E-01	n	
2.3E+00	C	6.6E-04	C					V		1		4.7E+02	Tris(2,3-dibromopropyl)phosphate	126-72-7	2.8E-01	c	1.3E+00	c	4.3E-03	c	1.9E-02	c	6.8E-03	c		1.3E-04	c	
2.0E-02	P			7.0E-03	P					1	0.1		Tris(2-chloroethyl)phosphate	115-96-8	2.7E+01	c*	1.1E+02	c*					3.8E+00	c*		3.8E-03	c*	
3.2E-03	P			1.0E-01	P					1	0.1		Tris(2-ethylhexyl)phosphate	78-42-2	1.7E+02	c*	7.2E+02	c					2.4E+01	c*		1.2E+02	c*	
				8.0E-04	P					1			Tungsten	7440-33-7	6.3E+01	n	9.3E+02	n					1.6E+01	n		2.4E+00	n	
				2.0E-04	A	4.0E-05	A			1			Uranium	7440-61-1	1.6E+01	n	2.3E+02	n	4.2E-02	n	1.8E-01	n	4.0E+00	n	3.0E+01	1.8E+00	n	1.4E+01
1.0E+00	C	2.9E-04	C						M	1	0.1		Urethane	51-79-6	1.2E-01	c	2.3E+00	c	3.5E-03	c	4.2E-02	c	2.5E-02	c		5.6E-06	c	
		8.3E-03	P	9.0E-03	I	7.0E-06	P			0.026			Vanadium Pentoxide	1314-62-1	4.6E+02	c**	2.0E+03	c**	3.4E-04	c*	1.5E-03	c*	1.5E+02	n				
				5.0E-03	G	1.0E-04	A			0.026			Vanadium and Compounds	7440-62-2	3.9E+02	n	5.8E+03	n	1.0E-01	n	4.4E-01	n	8.6E+01	n		8.6E+01	n	
				1.0E-03	I			V		1			Vernolate	1929-77-7	7.8E+01	n	1.2E+03	n					1.1E+01	n		8.9E-03	n	
				1.2E-03	O					1	0.1		Vinclozolin	50471-44-8	7.6E+01	n	9.8E+02	n					2.1E+01	n		1.6E-02	n	
				1.0E+00	H	2.0E-01	I	V		1		2.8E+03	Vinyl Acetate	108-05-4	9.1E+02	n	3.8E+03	ns	2.1E+02	n	8.8E+02	n	4.1E+02	n		8.7E-02	n	
		1.5E-05	P			3.0E-03	I	V		1		2.5E+03	Vinyl Bromide	593-60-2	2.6E-01	c*	1.1E+00	c*	1.9E-01	c*	8.2E-01	c*	3.7E-01	c*		1.1E-04	c*	
7.2E-01	I	4.4E-06	I	3.0E-03	I	1.0E-01	I	V	M	1		3.9E+03	Vinyl Chloride	75-01-4	5.9E-02	c	1.7E+00	c	1.7E-01	c	2.8E+00	c	1.9E-02	c	2.0E+00	6.5E-06	c	6.9E-04
				3.0E-04	I					1	0.1		Warfarin	81-81-2	1.9E+01	n	2.5E+02	n					5.6E+00	n		5.9E-03	n	
				2.0E-01	G	1.0E-01	G	V		1		3.9E+02	Xylene, m-	108-38-3	5.5E+02	ns	2.4E+03	ns	1.0E+02	n	4.4E+02	n	1.9E+02	n		1.9E-01	n	
				2.0E-01	G	1.0E-01	G	V		1		4.3E+02	Xylene, o-	95-47-6	6.5E+02	ns	2.8E+03	ns	1.0E+02	n	4.4E+02	n	1.9E+02	n		1.9E-01	n	
				2.0E-01	G	1.0E-01	G	V		1		3.9E+02	Xylene, p-	106-42-3	5.6E+02	ns	2.4E+03	ns	1.0E+02	n	4.4E+02	n	1.9E+02	n		1.9E-01	n	
				2.0E-01	I	1.0E-01	I	V		1		2.6E+02	Xylenes	1330-20-7	5.8E+02	ns	2.5E+03	ns	1.0E+02	n	4.4E+02	n	1.9E+02	n	1.0E+04	1.9E-01	n	9.9E+00
				3.0E-04	I					1			Zinc Phosphide	1314-84-7	2.3E+01	n	3.5E+02	n					6.0E+00	n				
				3.0E-01	I					1			Zinc and Compounds	7440-66-6	2.3E+04	n	3.5E+05	nm					6.0E+03	n		3.7E+02	n	
				5.0E-02	I					1	0.1		Zineb	12122-67-7	3.2E+03	n	4.1E+04	n					9.9E+02	n		2.9E+00	n	
				8.0E-05	X					1			Zirconium	7440-67-7	6.3E+00	n	9.3E+01	n					1.6E+00	n		4.8E+00	n	

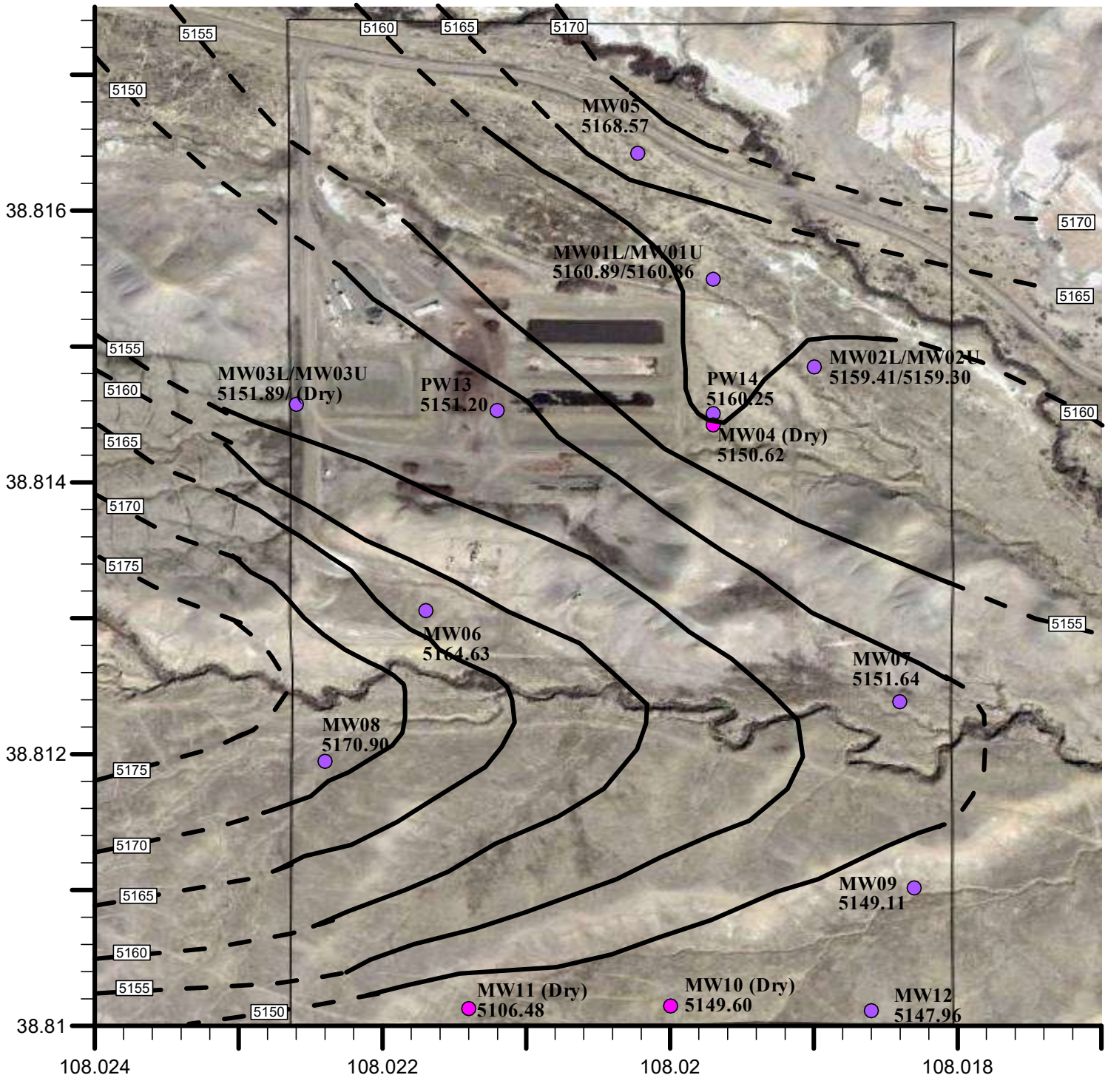
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Figure 1


Facility Location
Buttes
Mesa
Devils Thumb
Dike Res
Blake Field
Beacono
North Delta
Delta
(BM 4953)
Saunders
Cory Post Office
Gaging Sta
Gravel Pit
Gravel Pits
Drive-in Theater
Sewage Disposal Ponds
Radio Tower
Airport
Cem
SWEITZER LAKE
(Garnet Mesa Res)
Garnet Mesa
Gulch
Saxton
Read
CORPORATE BDY (UNDEV)
DENVER
NORTH DELTA CANAL
GUNNISON RIVER
BONANZA CANAL
GARNET MESA LATERAL
SIPHON
RELIEF DITCH
MAIN
GHD
GHC
GHB


Depth (inches)
4
2
0
Negro Creek
North Tributary
Groundwater Elevation (feet amsl)
5157
5156
5155
5154
5153
5152
5151
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Date (yr)
Legend
Groundwater Elevations (feet amsl)
MW07 2020
amsl - above mean sea level
CHT Resources LLC
Composting Facility
Delta County, CO
Figure 2
Hydrograph for Monitoring Well MW07
Drawn by: RRR
1/22/2021
FigB-8 Hydrograph.lpk
Leppert Associates


Depth (inches)
4
2
0
North Tributary
Negro Creek
5155
5154
5153
5152
5151
5150
5149
Groundwater Elevation (feet amsl)
2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021
Date (yr)
Legend
Groundwater Elevations (feet amsl)
MW03L 2020
amsl - above mean sea level
CB Industries
Waste Treatment Facility
Delta County, CO
Figure 3
Hydrograph for Monitoring Well MW03L
Drawn by: RRR
1/21/2021
FigB-5
Hydrograph.lpk
Leppert Associates



Legend

Scale: 0 ft 265

N

Dry Groundwater Monitoring Wells and Piezometers *

Groundwater Monitoring Wells and Piezometers

* For wells and piezometers that are dry, the total depth is reported

Groundwater Elevation (feet above mean sea level)

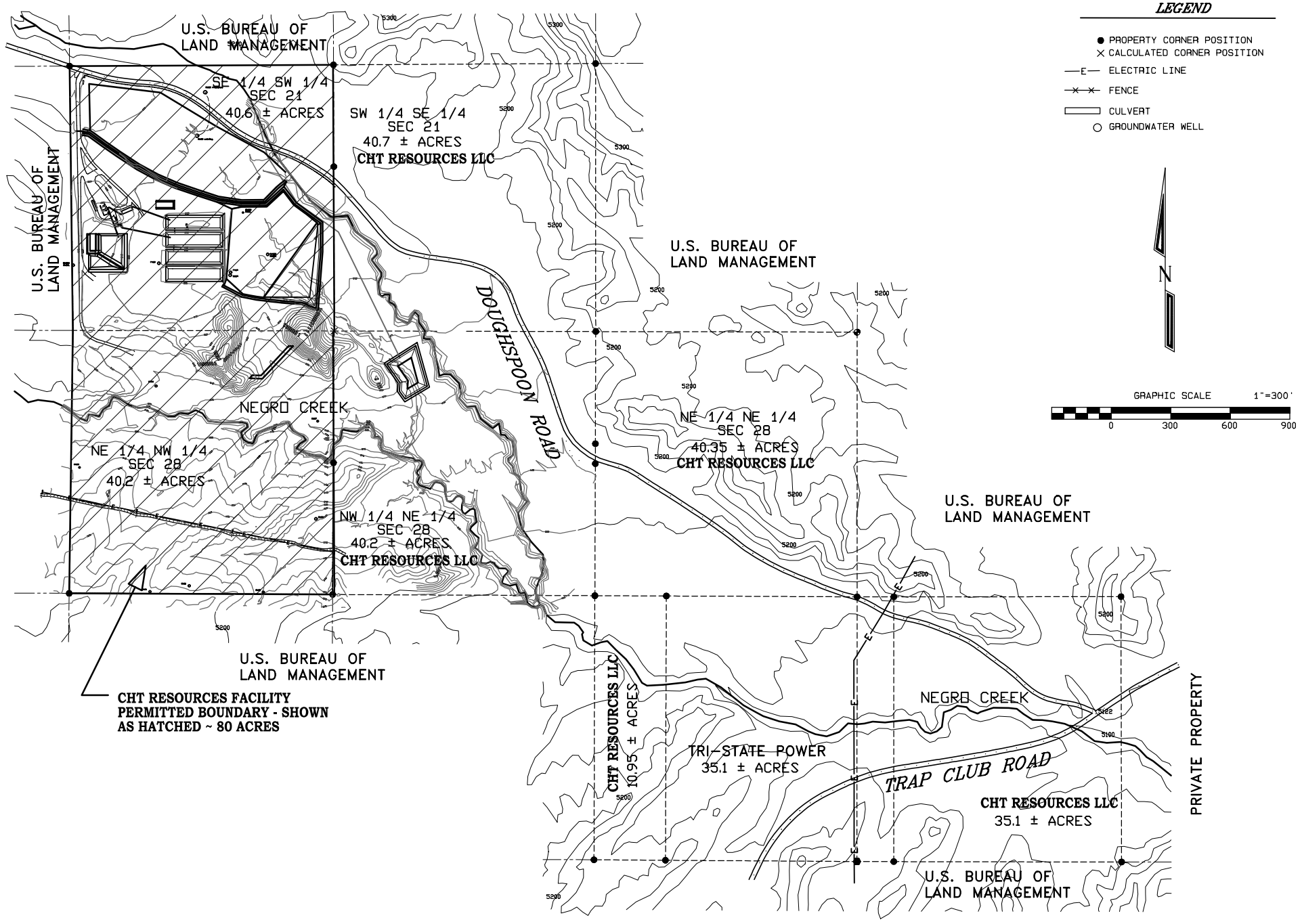
Negro Creek is dry

CHT Resources LLC
Composting Facility
Delta County, CO

Figure 4:
Potentiometric Surface Map November 2020

Drawn By: RR
03-09-2021
CBIPMap-November.lpk

Leppert Associates



Facility Location
Scale: 1" = 300'

REVISIONS		
DATE	REMARKS	BY
02/17/21	MONOFILL DELETION	TAC

CHT RESOURCES LLC
Facility Location Map
11289 Doughspoon Road
Austin, CO 81410

GERALD W. KNUDSEN
REGISTERED
16991
2/17/21
PROFESSIONAL ENGINEER
STATE OF COLORADO

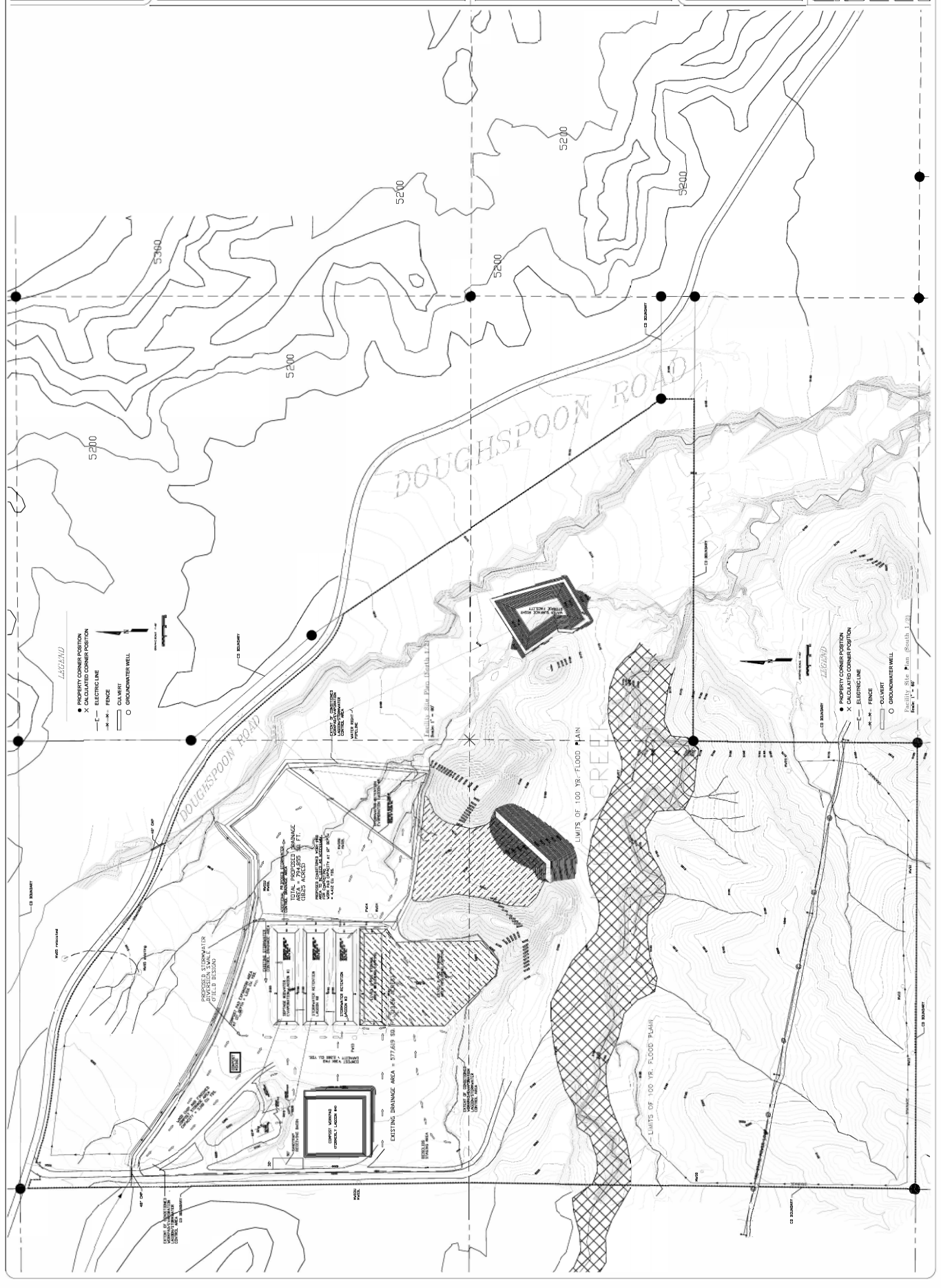
PROJECT	CB Industries facility location
SCALE	as shown
DATE DRAWN	02/07/12
LATEST REVISION	02/17/21
SHEET	P1 OF __

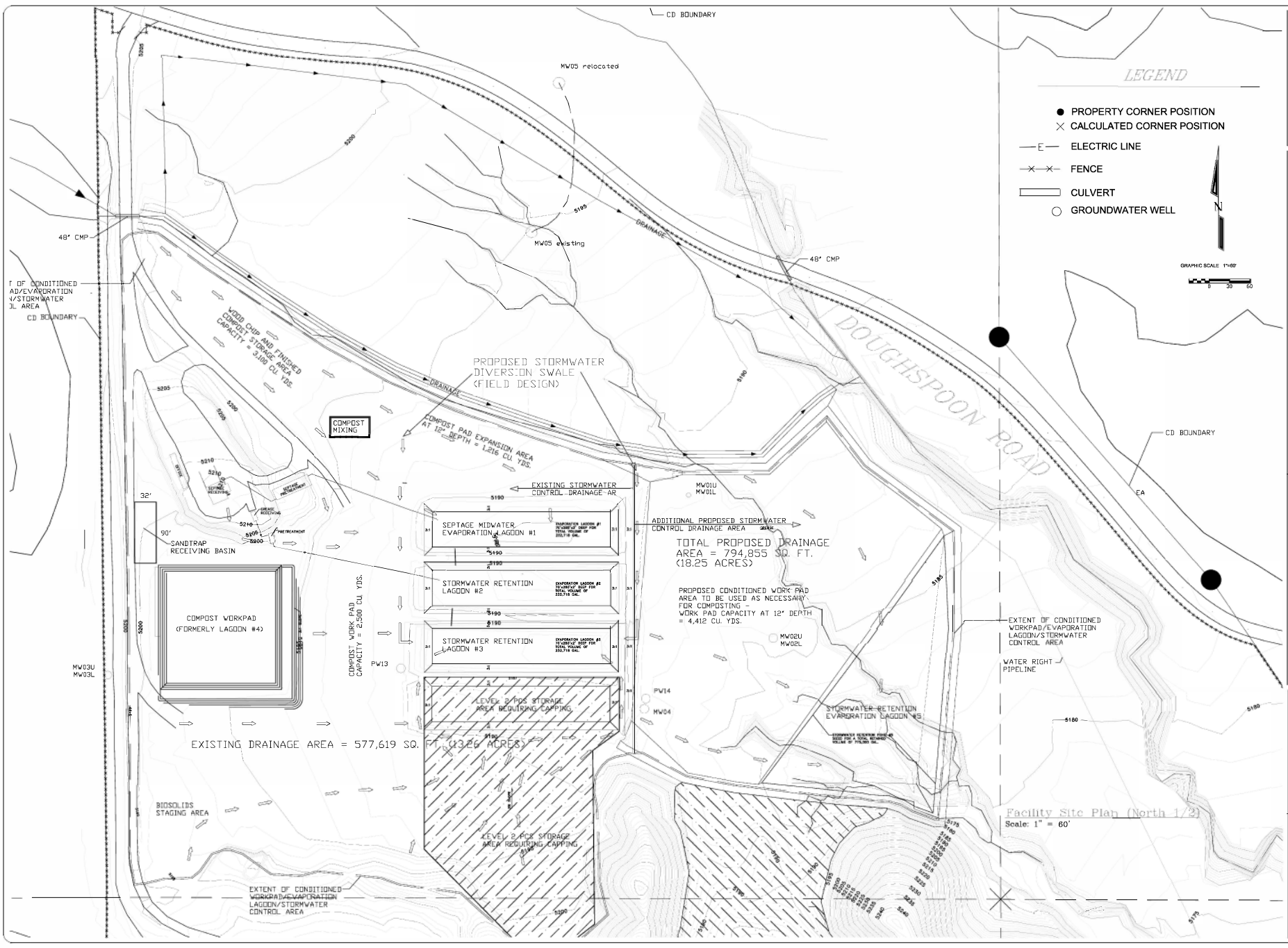
CHT RESOURCES LLC
Facility Site Plan
11289 Doughspoon Road
Austin, CO 81410

Facility Site Plan (North 1/2)

REVISIONS		
DATE	REMARKS	BY
01/04/13	CDPHE COMMTS	TAC
12/16/21	CDPHE COMMTS	TAC
12/16/21	NONPLL DELITION	TAC

PROJECT: CB Industries
SCALE: as shown
DATE DRAWN: 12/16/21
LATEST REVISION: 12/17/21
SHEET P2 OF


DOUGHSPOON ROAD
5200
5300
LEGEND
PROPERTY CORNER POSITION
CALCULATED CORNER POSITION
ELECTRIC LINE
FENCE
CULVERT
GROUNDWATER WELL
EXISTING DRAINAGE AREA = 577,693 SQ. FT.
LIMITS OF 100 YR. FLOOD PLAIN
PROPOSED STORMWATER DETENTION BASIN
EXISTING STORAGE BUILDING
EXISTING PRODUCT MIXING BLDG.
EXISTING SHOP BUILDING
EXISTING WELL
EXISTING SEPTIC SYSTEM
EXISTING LEACH FIELD
EXISTING WATER WELL



Facility Site Plan (North 1/2)
Scale: 1" = 60'

REVISIONS		
DATE	REMARKS	BY
01/24/13	COPPE COMMTS	TAC
10/15/21	MONOFIL DELETION	TAC
12/16/21	MONOFIL DELETION	TAC

CHT RESOURCES LLC
Facility Site Plan (North 1/2)
11289 Doughspoon Road
Austin, CO 81410

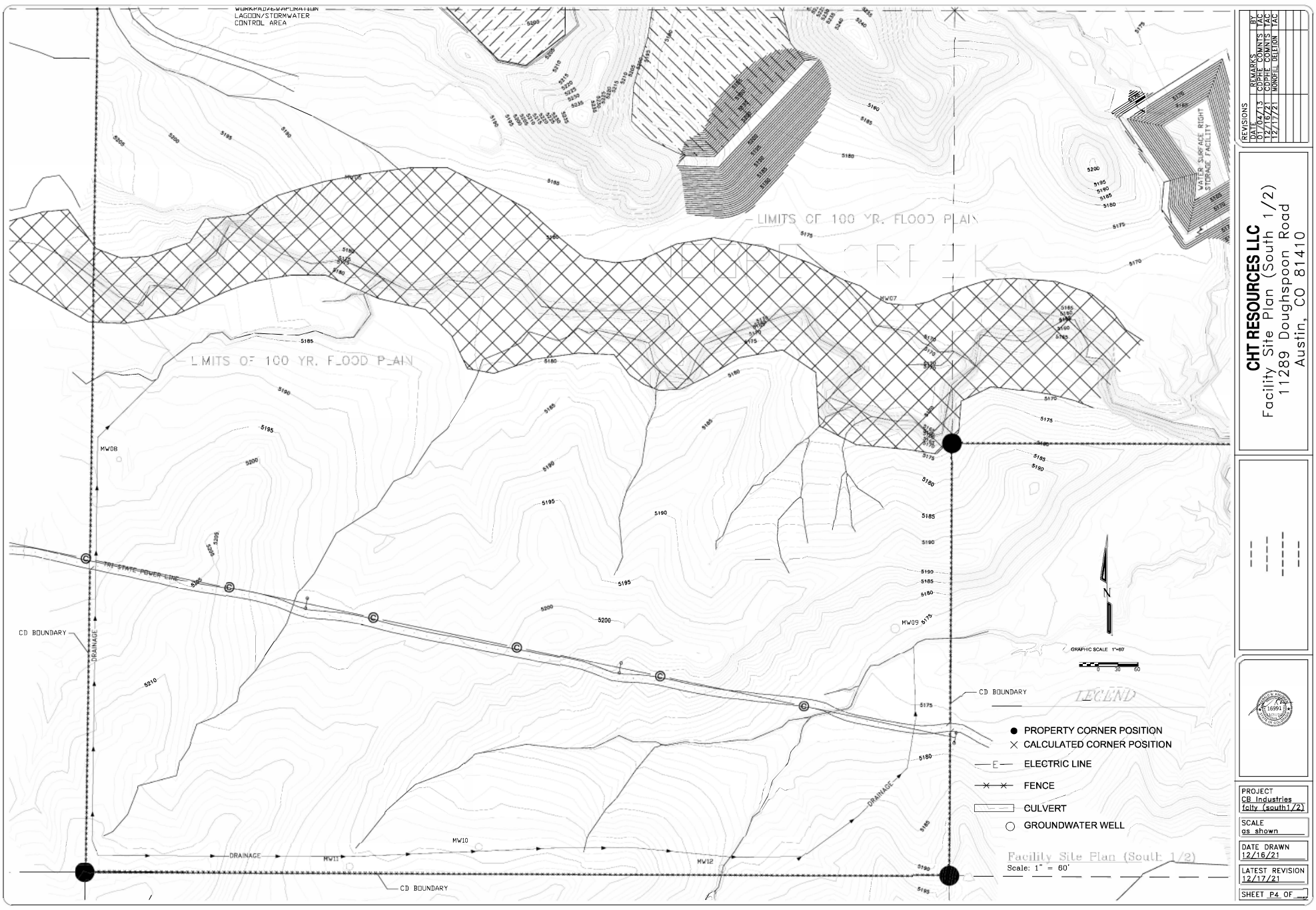
PROJECT
CB Industries
fcity (north1/2)

SCALE
as shown

DATE DRAWN
12/16/21

LATEST REVISION
12/17/21

SHEET P3 OF



REVISIONS

DATE	REMARKS	BY
01/24/13	COPIE COUNTS	YAC
12/16/21	MONOFIL DELETION	YAC
12/17/21	MONOFIL DELETION	YAC

CHT RESOURCES LLC
Facility Site Plan (South 1/2)
11289 Doughspoon Road
Austin, CO 81410

PROJECT
CB Industries
fcity (south1/2)

SCALE
as shown

DATE DRAWN
12/16/21

LATEST REVISION
12/17/21

SHEET P4 OF

WORKAREA/EVAPORATION LAGOON/STORMWATER CONTROL AREA

Level 1 PCS soils on-site storage area/long term management

WATER SURFACE RIGHT STORAGE FACILITY

LIMITS OF 100 YR. FLOOD PLAIN

NEGRO CREEK

LIMITS OF 100 YR. FLOOD PLAIN

MW05

MW07

MW08

MW09

MW10

MW11

MW12

CD BOUNDARY

DRAINAGE

INTRASTATE POWER LINE

DRAINAGE

CD BOUNDARY

CD BOUNDARY

DRAINAGE

CD BOUNDARY

N

GRAPHIC SCALE 1"=60'

0 30 60

LEGEND

- PROPERTY CORNER POSITION
- CALCULATED CORNER POSITION
- E — ELECTRIC LINE
- FENCE
- CULVERT
- GROUNDWATER WELL

Facility Site Plan (South 1/2)
Scale: 1" = 60'

REVISIONS		
DATE	REMARKS	BY
01/04/13	CDPHE COMNTS	TAC
02/08/13	CDPHE COMNTS	TAC
02/17/21	MONOFILL DELETION	TAC

CHT RESOURCES LLC
Facility Site Plan (South 1/2)
11289 Doughspoon Road
Austin, CO 81410

GERALD W. KNUDSEN
REGISTERED
16991
2/17/21
PROFESSIONAL ENGINEER
STATE OF COLORADO

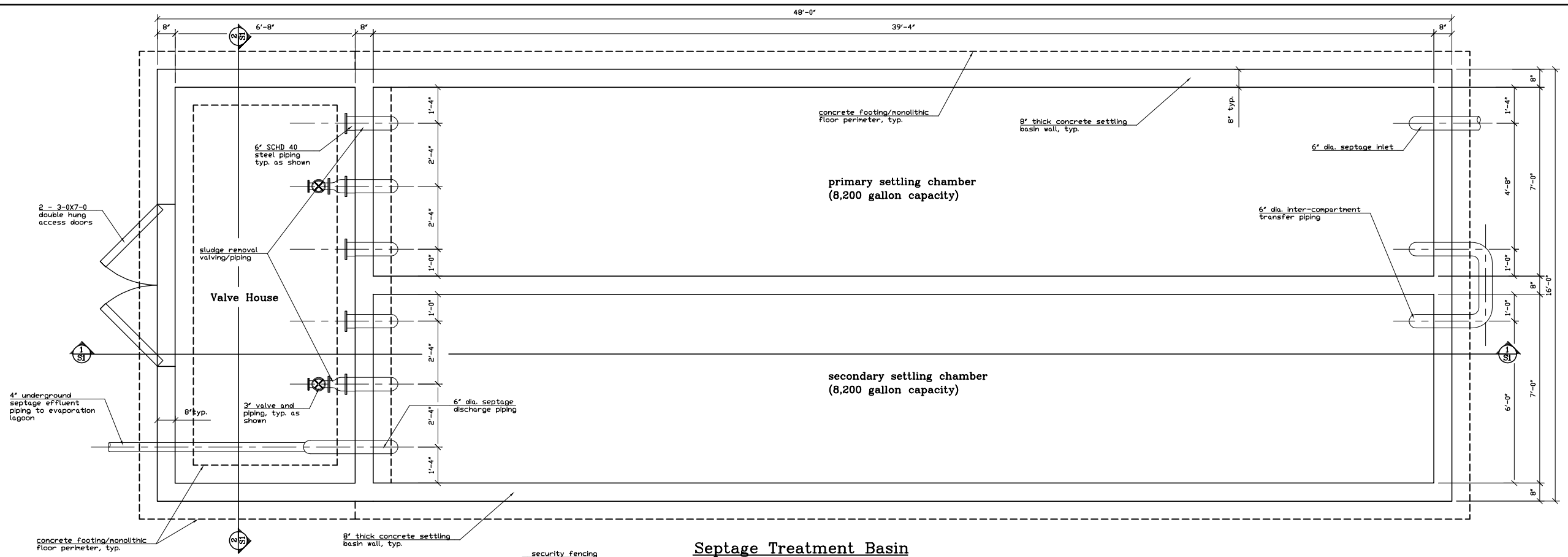
PROJECT
CB Industries fcity (south1/2)

SCALE
as shown

DATE DRAWN
02/07/12

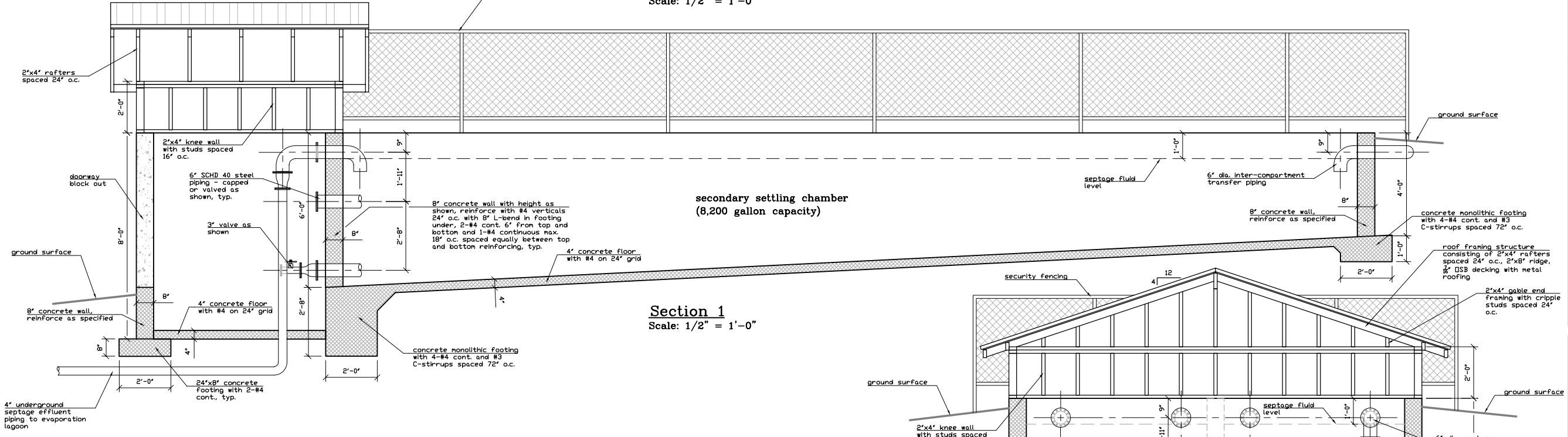
LATEST REVISION
02/17/21

SHEET P4 OF __



Septage Treatment Basin

Scale: 1/2" = 1'-0"



Section 1

Scale: 1/2" = 1'-0"

Section 2

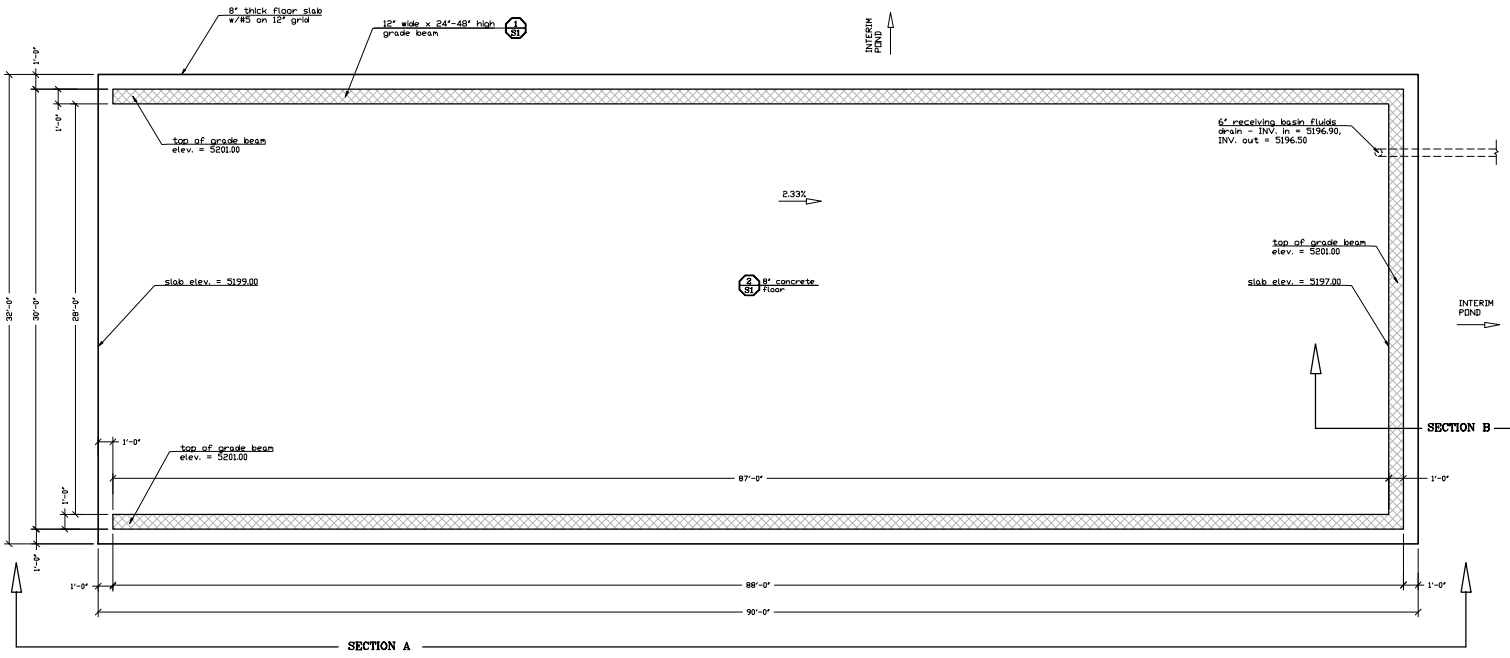
Scale: 1/2" = 1'-0"

GERALD W. KNUDSEN REGISTERED 16991 PROFESSIONAL ENGINEER STATE OF COLORADO 12/17/21

REVISIONS		
DATE	REMARKS	BY

CHT RESOURCES LLC
Septage Treatment Basin
11289 Doughspoon Road
Austin, CO 81410

PROJECT	CBIDI sep. treat. bas.
SCALE	as shown
DATE DRAWN	11/05/03
LATEST REVISION	NO REVISION
SHEET	S2 OF __



REINFORCING SCHEDULE

GRADE BEAM SPECIFICATIONS

1/S1 — 12" thick grade beam with height as shown on cross section detail reinforce according to height as per reinforcing schedule

CONCRETE FLOOR SPECIFICATIONS

2/S1 — 8" concrete floor with #5 rebar on 12" grid

REINFORCING SCHEDULE

Horizontal Reinforcing

24"–30" height:
Top: 2–#5 6" from top
Bottom: 2–#5 6" from bottom
Int: none

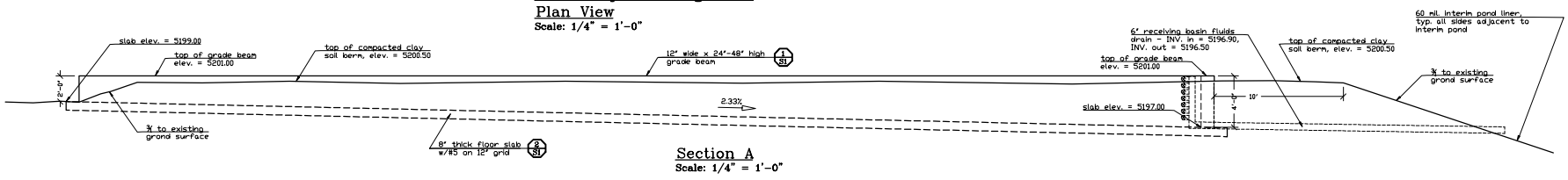
30"–42" height:
Top: 2–#5 6" from top
Bottom: 2–#5 6" from bottom
Int: 1–#5 spaced equally between top and bottom reinforcing steel

42"–48" height:
Top: 2–#5 6" from top
Bottom: 2–#5 6" from bottom
Int: 2–#5 spaced equally between top and bottom reinforcing steel

Vertical Reinforcing

24"–48" height 1–#5 spaced 24" o.c. (all vertical steel cont. from top to bottom with 8" L-bend in slab under, typical)

Sand Trap Receiving Basin
Plan View
Scale: 1/4" = 1'-0"



Section A
Scale: 1/4" = 1'-0"

Section B
Scale: 1/4" = 1'-0"

TYPE OF DESIGN: COMMERCIAL
CONSTRUCTION: CONCRETE
LOCATION: 11289 DOUGHSPOON ROAD, AUSTIN, CO
SOIL TYPE: SILTY CLAY

NOTES

- ALL CONCRETE SHALL BE MINIMUM 3500 PSI TYPE II-V (SULFATE RESISTANT)
- ALL STEEL SHALL BE MINIMUM GRADE 60 AND PLACED IN ACCORDANCE WITH IBC STANDARDS WITH A MINIMUM OF 3 IN OF CONCRETE COVER OVER SOIL AND 2-1/2 IN OF CONCRETE COVER ELSEWHERE
- ALL STEEL SHALL BE SUPPORTED AT A MINIMUM OF 4 FT INTERVALS BY TYING
- MINIMUM LAP FOR CONTINUOUS REINFORCING STEEL SHALL BE 26 IN.
- ALL SLABS SHALL SHALL BE REINFORCED WITH #5 REBAR PLACED ON 12" GRID
- PROVIDE WATER TIGHT JOINT SEALING TREATMENT AT ALL COLD JOINTS, TYPICAL
- SOILS EXPOSED BY FOUNDATION EXCAVATION SHALL BE MOISTENED DURING FOUNDATION CONSTRUCTION TO PREVENT EXCESSIVE DRYING AND MAINTAIN THE NATURAL MOISTURE CONTENT AS CLOSE AS POSSIBLE
- CONCRETE SHALL NOT BE POURED ON FROZEN SOIL
- ADEQUATE DRAINAGE SHALL BE PROVIDED TO CHANNEL SURFACE WATER FLOWS AWAY FROM THE STRUCTURE FOR A MINIMUM DISTANCE OF 10 FT.
- THE FOUNDATION EXCAVATION AND FORMS SHALL BE INSPECTED BY A REPRESENTATIVE OF THE DESIGN ENGINEER PRIOR TO PLACEMENT OF CONCRETE
- PROVIDE A MINIMUM OF 24 HOURS NOTICE FOR REQUIRED INSPECTIONS

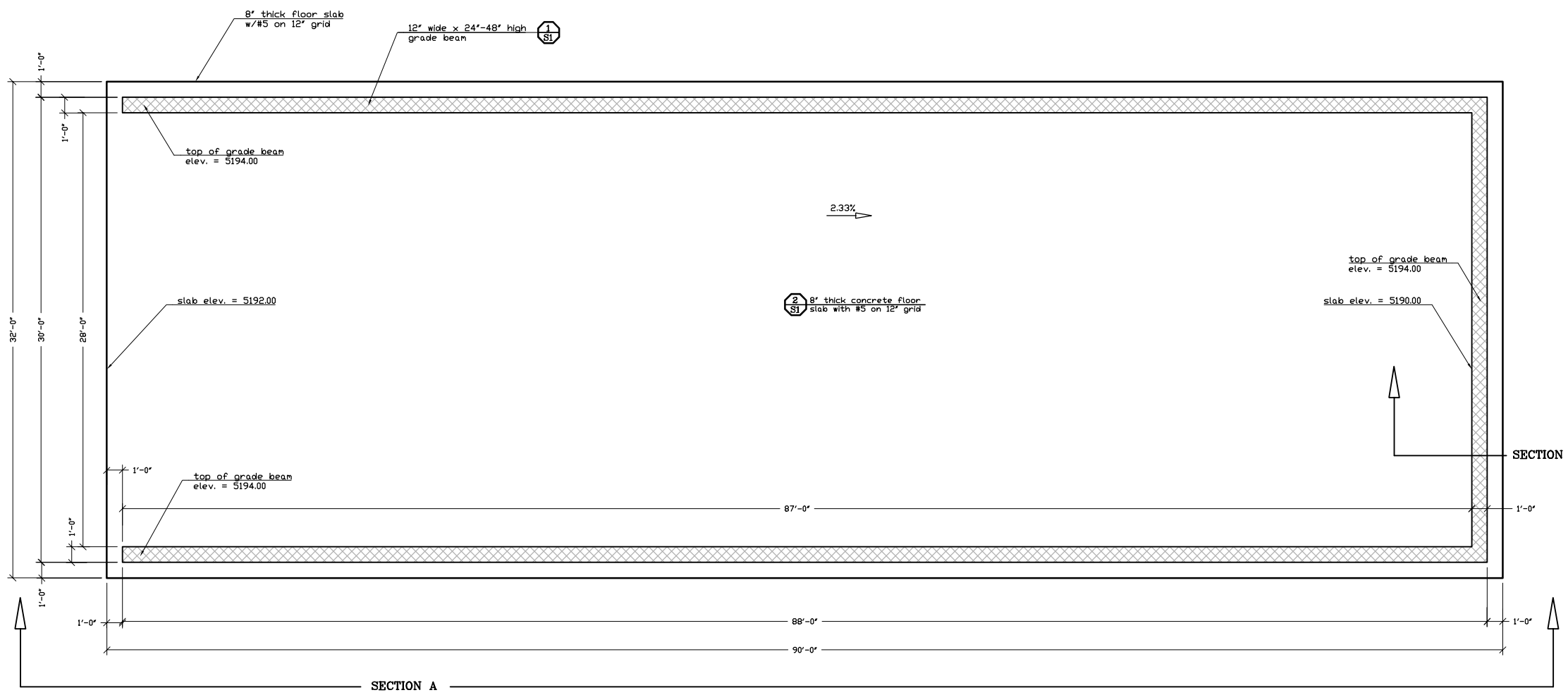


REVISIONS

DATE	REMARKS	BY

CHT RESOURCES LLC
Sand Trap Receiving Basin
11289 Doughspoon Road
Austin, CO

PROJECT: CBIDI ST rec basin
SCALE: as shown
DATE DRAWN: 10/29/10
LATEST REVISION: NO REVISION
SHEET S3 OF __



REINFORCING SCHEDULE

GRADE BEAM SPECIFICATIONS

1/S1 — 12" thick grade beam with height as shown on cross section detail reinforce according to height as per reinforcing schedule

CONCRETE FLOOR SPECIFICATIONS

2/S1 — 8" concrete floor with #5 rebar on 12" grid

REINFORCING SCHEDULE

Horizontal Reinforcing

24"–30" height:
Top: 2–#5 6" from top
Bottom: 2–#5 6" from bottom
Int: none

30"–42" height:
Top: 2–#5 6" from top
Bottom: 2–#5 6" from bottom
Int: 1–#5 spaced equally between top and bottom reinforcing steel

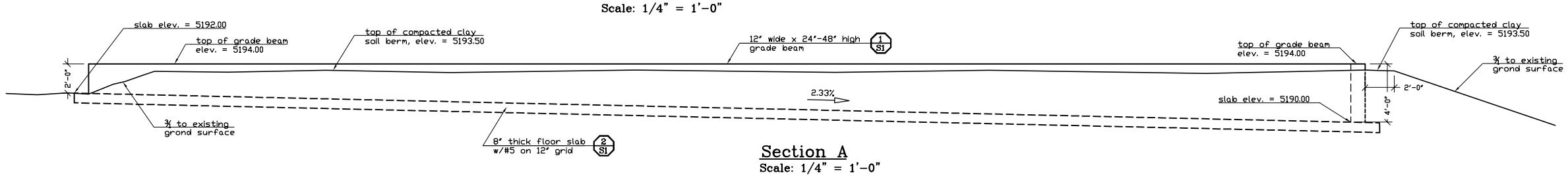
42"–48" height:
Top: 2–#5 6" from top
Bottom: 2–#5 6" from bottom
Int: 2–#5 spaced equally between top and bottom reinforcing steel

Vertical Reinforcing

24"–48" height: 1–#5 spaced 24" o.c. (all vertical steel cont. from top to bottom with 8" L-bend in slab under, typical)

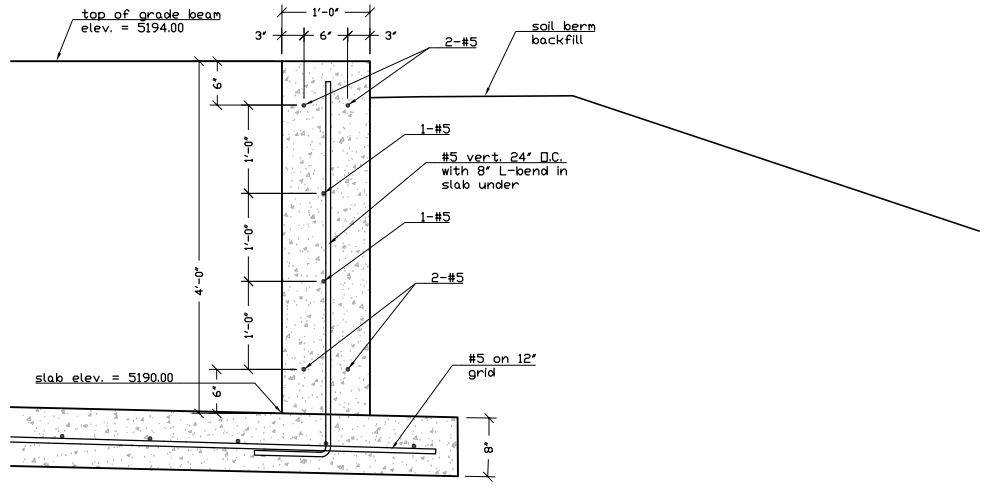
Compost Mixing Basin Plan View

Scale: 1/4" = 1'–0"



Section A

Scale: 1/4" = 1'–0"



Section B

Scale: 1/4" = 1'–0"

TYPE OF DESIGN: COMMERCIAL
CONSTRUCTION: CONCRETE
LOCATION: 11289 DOUGHSPOON ROAD, AUSTIN, CO
SOIL TYPE: SILTY CLAY

NOTES

- ALL CONCRETE SHALL BE MINIMUM 3500 PSI TYPE II-V (SULFATE RESISTANT)
- ALL STEEL SHALL BE MINIMUM GRADE 60 AND PLACED IN ACCORDANCE WITH IBC STANDARDS WITH A MINIMUM OF 3 IN. OF CONCRETE COVER OVER SOIL AND 2-1/2 IN. OF CONCRETE COVER ELSEWHERE
- ALL STEEL SHALL BE SUPPORTED AT A MINIMUM OF 4 FT INTERVALS BY TYING
- MINIMUM LAP FOR CONTINUOUS REINFORCING STEEL SHALL BE 26 IN.
- ALL SLABS SHALL SHALL BE REINFORCED WITH #5 REBAR PLACED ON 12" GRID
- SOILS EXPOSED BY FOUNDATION EXCAVATION SHALL BE MOISTENED DURING FOUNDATION CONSTRUCTION TO PREVENT EXCESSIVE DRYING AND MAINTAIN THE NATURAL MOISTURE CONTENT AS CLOSE AS POSSIBLE
- CONCRETE SHALL NOT BE POURED ON FROZEN SOIL
- ADEQUATE DRAINAGE SHALL BE PROVIDED TO CHANNEL SURFACE WATER FLOWS AWAY FROM THE STRUCTURE FOR A MINIMUM DISTANCE OF 10 FT.
- THE FOUNDATION EXCAVATION AND FORMS SHALL BE INSPECTED BY A REPRESENTATIVE OF THE DESIGN ENGINEER PRIOR TO PLACEMENT OF CONCRETE
- PROVIDE A MINIMUM OF 24 HOURS NOTICE FOR REQUIRED INSPECTIONS

GERALD W. KNUTSON — REGISTERED — 16991 — 2/17/21 — PROFESSIONAL ENGINEER — STATE OF COLORADO

REVISIONS		
DATE	REMARKS	BY

CHT RESOURCES LLC
Compost Mixing Basin
11289 Doughspoon Road
Austin, CO

PROJECT
CBIDI
compost mixing

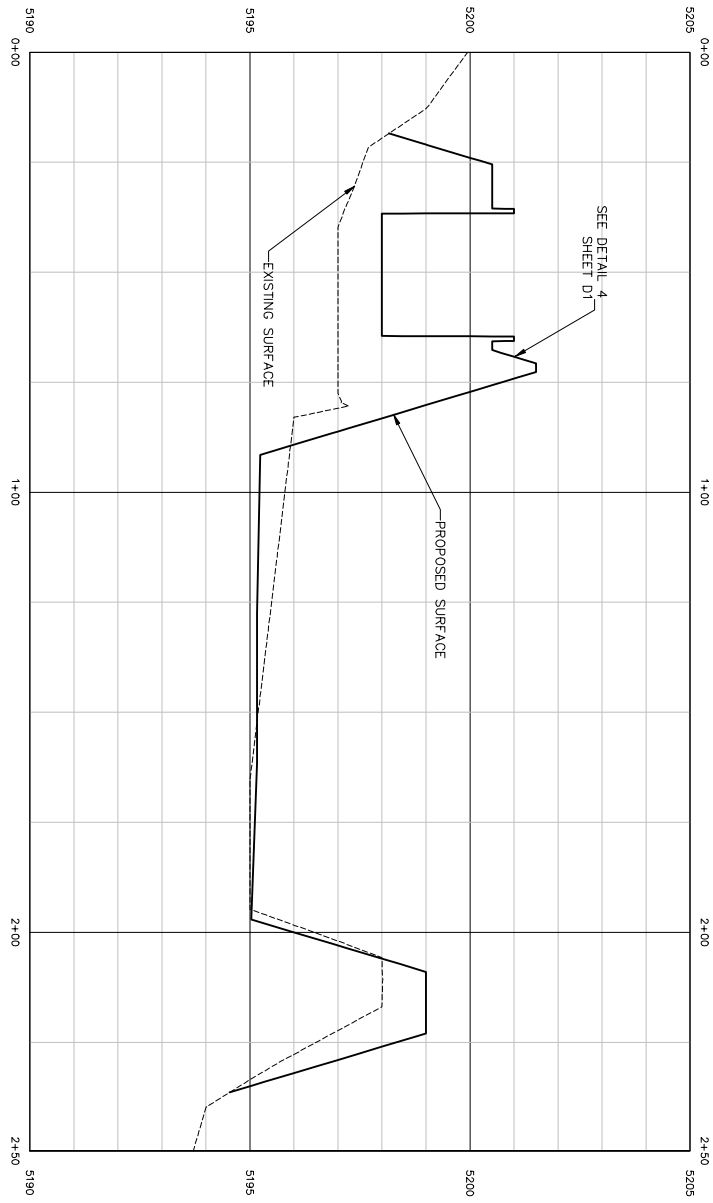
SCALE
as shown

DATE DRAWN
10/31/10

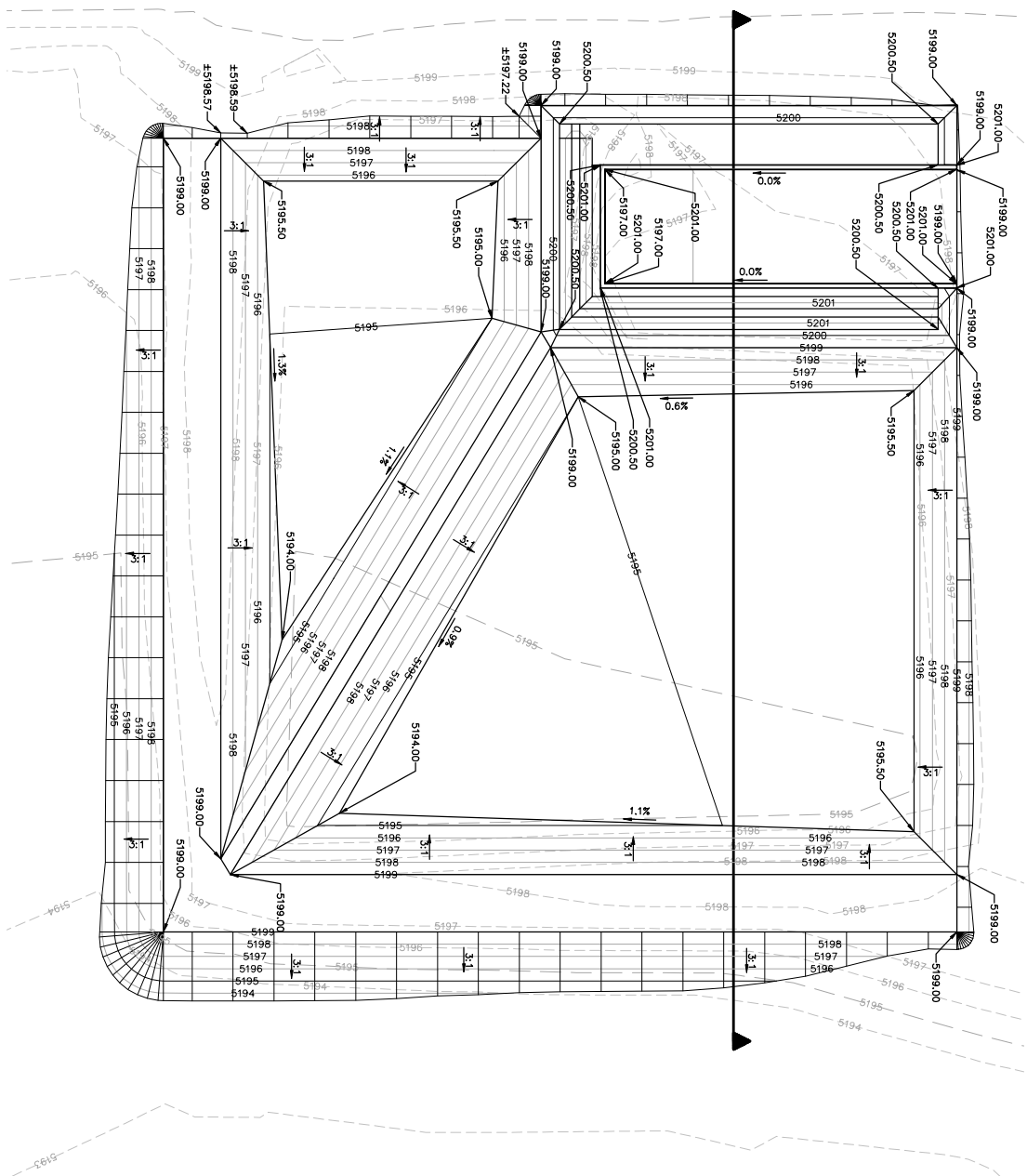
LATEST REVISION
NO REVISION

SHEET S4 OF __

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INTERIM POND SECTION
HORIZONTAL: 1"=20', VERTICAL: 1"=20'



0' 20' 40' 60'

SHEET CZ OF	
LATEST REVISION	NO. REVISION
DATE DRAWN	2/16/2012
SCALE	1:20
PROJECT	CB Industries

CHT RESOURCES LLC
Interim Pond Grading
11289 Doughspoon Road
Austin, CO 81410

REVISIONS		
DATE	REMARKS	BY

COLORADO
Department of Public
Health & Environment

Electronic Submittal
ericasparhawk@gmail.com

August 12, 2021

Erica Sparhawk, CEO
CHT Resources, Inc.
167 Garfield Avenue
Carbondale, CO 81623

Re: Application for Certificate of Designation
Completeness Determination: **Complete**
CHT Resources prospective new owner of CB Industries Compost Facility
DLT9 CDPHERM HAZ SW – Permitting

Dear Ms. Sparhawk:

The Hazardous Materials and Waste Management Division of the Colorado Department of Public Health and Environment (Department) has conducted a completeness review the following document:

> *Revised Engineering Design and Operation Plan (EDOP), Revision 4* for the former CB Industries Waste Treatment Facility, dated May 2021 and prepared by Knudsen Engineering, Inc.

The EDOP was submitted as part of a certificate of designation application whose purpose is to issue a new certificate to the prospective new owner of the facility, CHT Resources, Inc. Delta County issued a referral email on July 13, 2021 requesting the Department initiate its review of the certificate of designation application. The first step of that department's review process is a completeness determination on the application, which is the subject of this letter.

Within the limited scope of a completeness review, the Division has reviewed the document in accordance with the Solid Waste Disposal Sites and Facilities Act, Title 30, Article 20, Parts 1 and 10 (Solid Waste Act) of the Colorado Revised Statutes (CRS), as amended, and with the regulations promulgated there under: 6 CCR 1007-2, Part 1, the *Regulations Pertaining to Solid Waste Sites and Facilities* (the solid waste regulations). Based on this review, the Division has determined the application to be complete.

The Division will now commence its detailed technical review of the application. This determination is not meant to imply anything about the ultimate outcome of the review (i.e. recommendation of approval or disapproval of the application), nor should it be construed as such. A formal recommendation of approval or disapproval of the application per the solid waste statute and regulations will be made after the Division has completed its technical review. Accordingly, the Division may request additional information as part of this review. In addition, the previously approved EDOP was used as a starting point for this revision, and it predated a 2016 change to Section 14 of the Solid Waste Regulations. As a result, some provisions of the current regulation are not addressed in the document currently under review. After speaking with CHT Resources and Knudsen Engineering, the Division has elected not to have these omissions put a stop to the review, but rather, to let applicant remedy these omissions during the technical review comment-and-response period to follow.

The Division is authorized to bill for its review of document submittals (including certificate of designation applications) at $125 per hour, pursuant to Section 1.7 of the Solid Waste Regulations (the Regulations). Section 1.7 sets a document review ceiling of $35,000 for a certificate of designation application. Section 1.7 also requires the division to provide an applicant notice when a document review exceeds, or is on the verge of exceeding, thirty hours of billable review time. The Division reasonably expects, based on experience, to

exceed by a wide margin thirty hours of billable review time on a certificate of designation application. This letter serves to provide the applicant with the required thirty-hour notice. The thirty-hour threshold, when reached for this type of review, will be early in the review process, rendering any prediction on the remaining review time meaningless. Absent reaching the document review ceiling, the division will continue work on the review unless and until the applicant directs the Division in writing to stop work on the project. The applicant should be aware that directing the Division to stop work would be terminate the review prior to completion and would effectively force the Division to recommend denial of the application on that basis. Nonetheless, the applicant would still be responsible for reimbursing the Division for any hours incurred up to the point of receiving written stop-work direction from the applicant.

If you have any questions regarding this letter, please send them to me at jerry.henderson@state.co.us, or feel free to call me at 720-263-0710.

Sincerely,

Jerry Henderson, Unit Leader
Permitting Groundwater and Environmental Unit
Hazardous Materials and Waste Management Division

Ec: Kate Kelly, Delta County
Jake DeWolfe, CHT Resources

COLORADO
Department of Public
Health & Environment

Electronic delivery to:
ericasparhawk@gmail.com

November 4, 2021

Ms. Erica Sparhawk, CEO
CHT Resources, LLC

Re: Comments on Certificate of Designation Application for Transfer of Ownership
CHT Resources Acquisition of the CB Industries Compost Facility
11289 Doughspoon Road, Delta County, Colorado
DLT9
SW - Permitting

Dear Ms. Sparhawk:

The Hazardous Materials and Waste Management Division of the Colorado Department of Public Health and Environment (Division) received the certificate of designation application referred from Delta County on July 13, 2021, and described in more detail below.

> *Revised Engineering Design and Operation Plan for CHT Resources LLC – Waste Treatment Facility Formerly Known as CB Industries – Delta Inc. (the Plan). Revision 4. May 2021. Prepared by Knudsen Engineering, Inc. on behalf of CHT Resources LLC.*

This revision of the Plan was prepared to accompany the application that CHT Resources LLC has made to Delta County to have the facility certificate of designation issued to CHT Resources LLC, the new owner and operator of the facility. The scope of this revision is not a redesign of the facility, but it is intended to reflect some facility changes that CHT Resources LLC plans to implement right away. In addition, the prior EDOP submitted by CB Industries included designs for a landfill that was never approved by Delta County. The new owner does not intend to pursue obtaining approval for the landfill; therefore, the division understands that the intent was to remove the landfill from the current version of the EDOP.

There are no doubt other components to the certificate of designation application under review with Delta County, and such components were neither received nor reviewed by the Division. The Division reviewed the Plan. Based on its review, the Division has the following technical comments on the Plan. The Division requests that CHT Resources LLC provide a revised EDOP incorporating any changes and clarifications requested herein.

Comment 1. Section 1.0, p. 6: Bullets 3 and 4 include landfarm treatment of pcs and long term storage. Suggest deleting landfarm operations and closing landfarm area based on the division's understanding that landfarming is not planned as a waste management activity going forward.

Comment 2. Section 1.0: "The revised EDOP will also identify a new boundary configuration. The existing facility consists of approximately 80 acres of land located in the dry adobe clay soils near the intersection of Trap Club Road and Doughspoon Road in Delta County. The area of the facility will increase to 100 acres." Clarify if this is part of the current CD modification process or an artifact of a prior site modification. If an artifact, please modify accordingly. If a current

pending change, then this areal expansion will need to be made a point of emphasis for the public notice and public hearing.

Comment 3, Section 3.0 Groundwater Monitoring, p. 20: "A Sampling Protocol is attached as Appendix I2. The Sampling Protocol may be modified based on the requirements of the long-term compliance monitoring plan." This language suggests that Appendix I-2 was not modified in the current EDOP revision, but may be in the future. However, Appendix I-2 has been re-dated to May 2021, suggesting that it was modified. In addition, there appear to be discrepancies between Section 3.0 and Appendix I-2. Due to these discrepancies and the fact that the division and the new owners have not had a chance to engage in technical discussions surrounding potential changes to the groundwater monitoring program, the Division requests that no monitoring plan changes be made with this current revision. In other words, the Division does not approve abandoning any monitoring points (wells or piezometers) with this current revision. If both parties agree that changes to the groundwater monitoring program are warranted at some point in the future, these can be addressed in a future stand-alone groundwater monitoring plan, following necessary discussions.

Comment 4. Section 4.0 Stormwater Control: Some parts of this section are written in the future tense, noting action items that are pending for Section 9. These Section 9 issues appear to have been resolved with the issuance of a November 2017 letter by CDPHE, which is attached. If that is correct, the text should be revised to reflect the division's final determination. Another example an item needing clarification is the workpad extension. Clarify whether it is currently proposed for extension (and therefore within the scope of the current review) or old language reflecting an extension already approved.

Comment 5. Section 5.2.1, p. 29: "As stated in Section 4.0, demonstrations for liners for Evaporation Lagoons 1, 2, and 3 will be made regarding Section 9 Pond liner requirements." As noted above, these demonstrations appear to have been made and the division has made its determinations. The text should be revised accordingly.

Comment 6. Section 5.2.3, p. 33: "If the work pad will receive PCS, the lagoon will be constructed in accordance with the Section 9 process. Section 9 requires that impoundments be lined with a composite liner, a double liner system or an alternate liner system of performance based alternative design. In addition, the facility design must include leak detection monitoring." Again, this language should be revised to memorialize what the outcome of the Section 9 process was.

Comment 7. Section 5.2.3, p. 33: "All lagoons shall be affixed with a depth gauge calibrated in 0.05' intervals to indicate the depth of retained fluid in the lagoon. A calibration chart was prepared for each lagoon referencing the retained volume (in gallons) and the corresponding exposed fluid surface area (in sq ft) associated with each 0.05' interval of the depth gauge (see Appendix A)." Clarify whether this was implemented and if so, change the text accordingly.

Comment 8. p. 33: "As discussed in Appendix G, use of a silty/sandy buffer layer to prevent desiccation and cracking of the work pad was unnecessary because of the low Skempton's Activity number." Skempton's number does not rule out the concern of unprotected liner degrading over time due to dessication or freeze/thaw cycles or more importantly, mechanical damage.

Comment 9. p. 35, Construction Quality Assurance: "This section is too generic to ensure that engineered features constructed using this section would be approvable by the Division. Therefore, it should be stricken and replaced (and Appendix O should likewise be removed and replaced with a placeholder page) with a statement such as: 'a project specific CQA plan will be developed for any new engineered features to be constructed at the facility, and this plan will be submitted to the Division for review and approval prior to these features being constructed.'

Comment 10. p. 38, Section 8.0 Waste Characterization: "CHT will accept waste from the following potential sources:

- Hydrocarbon contaminated soil, water and sludge
- Oil and gas industry exploration and production (E&P) soils and sludge waste. Produced water regulated through 6 CCR 1007-2, Part 1, Section 17 will not be accepted"

These waste streams should be removed. Not typical for a compost facility. Not part of the CHT business model, as CDPHE understands it. Accepting these waste streams would increase the facility's regulatory burden, and having them in the EDOP would increase the facility's EDOP requirements.

Comment 11. p. 38, Section 8.1 Waste Generator Procedures: This section should state that the generator will be required to make a hazardous waste determination for each waste stream on each waste application for delivery (many facilities call this a waste profile).

Comment 12. p. 39, Section 8.2 CHT Waste Acceptance Procedures: This section appears to require hazardous waste testing be done by the generator: "If the application discloses any items of concern (i.e., unexpected contaminants or high contaminant levels, questionable or unclear waste generation sources, large waste quantities, etc.), facility personnel will conduct a site inspection of the applicant and/or waste generator to further assess waste generation conditions, including the processes employed by the generator to assist in determining the type and levels of contamination and potential environmental concerns related to the waste. After sufficient information about the waste has been assembled, facility personnel will determine necessary analytical testing required for waste characterization according to the methods set forth in 6 CCR 1007-3, Part 261, Subpart C." By reducing the number of waste streams to those typical of a compost facility, the facility can eliminate this involved procedure. Suggest deleting this paragraph up to the sentence: "CHT will require the waste generator test for hazardous waste…." It should be noted that, assuming the above mentioned wastes are removed from the list of acceptable wastes, then generator knowledge should suffice for most of these wastes.

Comment 13. p. 40, Section 9.0 Facility Operations: This section states: "Facility operations include the treatment and disposal of septage, biosolids from municipal wastewater treatment plants, food and animal related waste, grease trap waste, sand trap waste, hydrocarbon contaminated soil, and hydrocarbon contaminated water." For reasons mentioned previously in this letter, the division request removal of the last two items, hydrocarbon contaminated soil and hydrocarbon contaminated water. This would result in the deletion of Section 9.2 and the associated Appendix L sections.

Comment 14. Section 9.2.1, p. 41: "Sand trap waste resulting from washing operations will be treated through evaporation of mid-waters and landfarming / landfilling of residual sludges. A discussion of the treatment operations is provided in Appendix L3." The receipt of sand trap waste contemplates ultimate landfill disposal of solids. The facility is moving away from the concept of operating a landfill in order to focus on composting. Therefore, sand trap waste, as a non-organic, non-compostable waste, is no longer on the accepted waste list going forward.

Comment 15. Section 9.2.2, p.41: "Hydrocarbon contaminated soils resulting from accidental spills, vehicle accidents, leaking underground storage tank removals, and dewatered sludges and soils generated from exploration and production (E&P) drilling operations may be treated at the facility by landfilling. A discussion of the landfilling activities at the facility is presented in Appendix L4.2." This paragraph should be stricken as landfilling is no longer contemplated.

Comment 16. "Oil and gas industry exploration and production (E&P) soils and sludge waste. Produced water regulated through 6 CCR 1007-2, Part 1, Section 17 will not be accepted." This waste stream is a concern for a compost facility. Since it is exempt from RCRA hazardous waste requirements, it can contain hazardous levels of benzene. It is also suspect for TENORM. This creates additional liabilities and requirements associated with accepting this waste. Based on our site visit in September, the Division understands CHT wishes to move away from this waste being managed at the facility. Therefore, all references to future acceptance of the waste should be stricken.

Comment 17. Section 9.2.2, p.41: "Hydrocarbon contaminated soils resulting from accidental spills, vehicle accidents, leaking underground storage tank removals, and dewatered sludges and soils generated from exploration and production (E&P) drilling operations may be managed at the facility by landfarming. A discussion of the landfarming activities at the facility is presented in Appendix L4.1." This section should be stricken based on the division's understanding that the facility no longer wishes to engage in this waste management activity. If it were to continue going forward, landfarm treatment of hydrocarbon contaminated soils should be evaluated to see if an air permit is required. Additionally, acceptance criteria should be developed to ensure waste being received is treatable via landfarming.

Comment 18. Section 9.2.3, p. 41: "Hydrocarbon contaminated water resulting from accidental spills and extraction from groundwater monitoring/remediation systems will be treated at the facility through recovery of free product, evaporation of mid-water, and landfarming/landfilling of any residual sludges in accordance with the procedures identified in Appendix L3, Sand Trap Treatment Operations. Waste characterization and acceptance will be as specified in Appendix L3. Waste defined as hazardous will not be accepted. The final design for the Pond 4 Interim Storage. Evaporation Lagoon liner will be in accordance with Section 9 requirements." The facility lacks the infrastructure to manage this waste stream in compliance with the solid waste regulations. Pond 4 is not in service. Residual sludges cannot be landfilled in the manner described in the sand trap waste section. Therefore, this section should be stricken from the plan.

Comment 19. pp. 42-44, Petroleum Contaminated Soil Long Term Use and Disposal Categories: This section dealing with treated petroleum contaminated soil states: "Existing on-site treated or stored contaminated soil will be tested to characterize remaining contaminant levels. Results of the soil analytical analysis will be used to classify waste soil product into one of three categories,

depending on the level of contamination. EPA Regional Screening Levels (ERSL) contamination levels will be used to determine which category the remediated soil product is classified in and the acceptable use for the remediated soil product." CHT will need to develop a systematic process for determining what soil has been tested and classified on the basis of test results, and how to field identify the different classes of soil remaining on site from prior operations. If such records don't exist, or if it is not possible to identify which soil piles belong to which classification, then CHT will have to come up with a plan for the ultimate disposition of this treated soil.

Comment 20. p. 47, Section 12.1 Unacceptable Waste: This section states: "Nuisance conditions which become apparent during facility operations will be addressed on an as- needed basis. Mitigation will occur within 72 hours." This provision will not indemnify the facility from other more restrictive permit or regulatory requirements that exist either in a county special use permit, or in Air Pollution Control Division or Water Quality Control Division permits or regulations. Further, the solid waste regulatory requirement is to prevent offsite nuisance conditions and control onsite nuisance conditions. This section needs to include more detail as to how the facility will address nuisance conditions associated with stored feedstocks such as biosolids, or windrows in process.

Comment 21. p. 51, Section 13.0, Closure and Post Closure Care: This section states: "If treatment of the lagoon bottom and work pad area soil is necessary, the affected soil will be excavated and biologically treated at the landfarm." Now that the facility no longer is going to be operated as a landfarm, other disposal options need to be developed for this soil. Additionally, not all constituents of concern are appropriate for landfarm treatment (e.g. metals). Despite the fact that the facility will no longer be accepting certain waste streams, such as oil and gas waste, constituents associated with these activities will still need to be considered as part of the closure of these areas. The division requests that the facility develop a limited-scope, landfarm-specific closure plan to convert the landfarm to other uses. This would mainly entail sampling for key constituents that are a concern with the landfarm operation, but not with composting. For example, TENORM constituents.

Comment 22. p. 52, Closure and Post Closure Care: This section states: "Post-closure care will consist of periodic inspection and maintenance of revegetated areas for a minimum period of five (5) years to ensure that the revegetation effort is successful. Continued monitoring and sampling of ground water shall continue for a minimum period of five (5) years. At the end of the five year closure monitoring period, CHT will provide data demonstrating that the post-closure period is sufficient to protect human health and the environment and petition CDPHE to terminate closure activities." The division reserves the right to make a determination on the necessary length of the post closure monitoring, considering the groundwater data that has been gathered up to the time of closure. Approval of this EDOP is not meant to prejudge a future data driven decision on the necessary length of the post closure period.

Comment 23. Plate 2 – Facility Site Plan

Section 4.0 provides a narrative description of the routing of current on-site runoff that is somewhat augmented by the visual topography and runoff flow direction arrows on Plate 2. The topography represented on Plate 2 would seem to be a great resource for understanding,

evaluating and planning runoff control, but it may not include some imperceptible features or drainage patterns (both shown, with arrows, and not shown). Please clarify the following with additional narrative and/or graphic depiction on Plate 2.

a. Does on-site runoff flow into each of Lagoons 1, 2, and 3 (evenly or unevenly)? The narrative in Section 4 seems to imply that runoff is routed primarily to Lagoons 2 and 3. The topography on Plate 2 suggests that the majority of runoff from the northwest portion of the operating area flows to Lagoon 1. Also, flow direction arrows along the south, east, and west of the Level 2 PCS Storage Area imply that runoff from the west and south is routed to Lagoon 3. Is this correct?
b. On Plate 2, there is a north-south solid line just east of the existing lagoons (with leader arrows implying separation between 'Existing Stormwater Drainage Area' & 'Additional Proposed Stormwater Drainage Area'). Is there an existing berm where this solid line is shown? If so, would it be cut to allow future stormwater routing to proposed Lagoon 5 (or more expensive berm removal)? Narrative (Section 4 and/or 5.2.3) and/or additional graphic depiction would be helpful.
c. Is the drainage channel shown along the north boundary (from the 48" CMP culvert to the ravine near Doughspoon Road) already constructed, of just currently planned?

In closing, the Division is authorized to bill for the review of technical submittals pursuant to C.R.S. 30-20-109 (2) (b) at the rate of $125 per hour. An invoice for the Division's review of the report will be transmitted to you under separate cover. Please contact the undersigned at 720-263-0710 if you have questions regarding this correspondence.

Sincerely,

Jerry Henderson, Unit Leader
Solid Waste Permitting –
Groundwater and Environmental Unit
Solid Waste and Materials Mgmt. Program
Hazardous Materials and Waste Mgmt. Div.

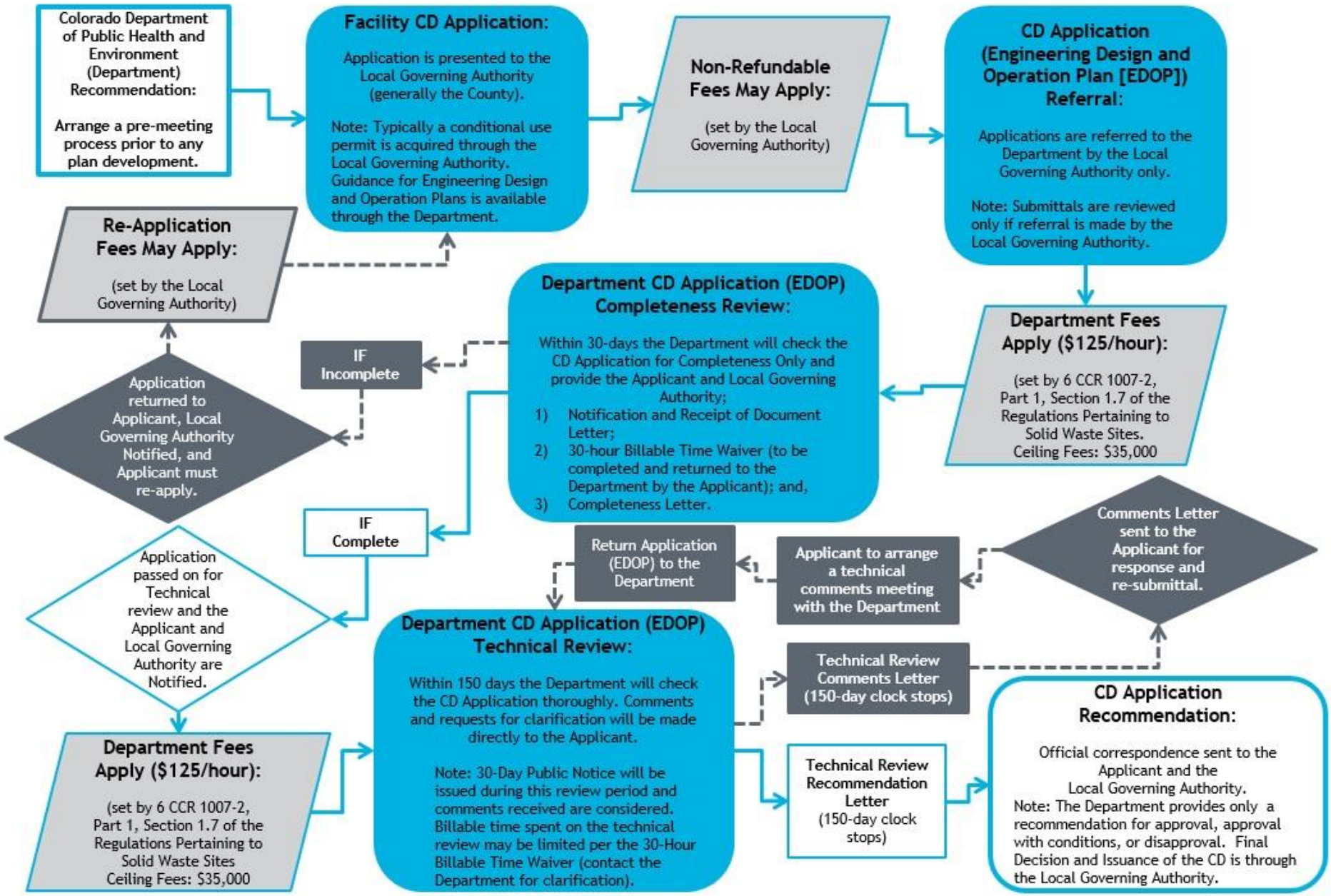
Andrew Todd, P.E.
Solid Waste Permitting -
Engineering Design Unit
Solid Waste and Materials Mgmt. Program
Hazardous Materials and Waste Mgmt. Div.

ec: Jake DeWolf, CHT
Forrest Fulker, CHT
Kate Kelly, Delta County Planning
Jerry Knudsen, Knudsen Engineering Inc.

Appendix A

Certificate of Designation Application Flow Chart

Certificate of Designation (CD) Process Flow Chart



Certificate of Designation (CD) Process Flow Chart Legend



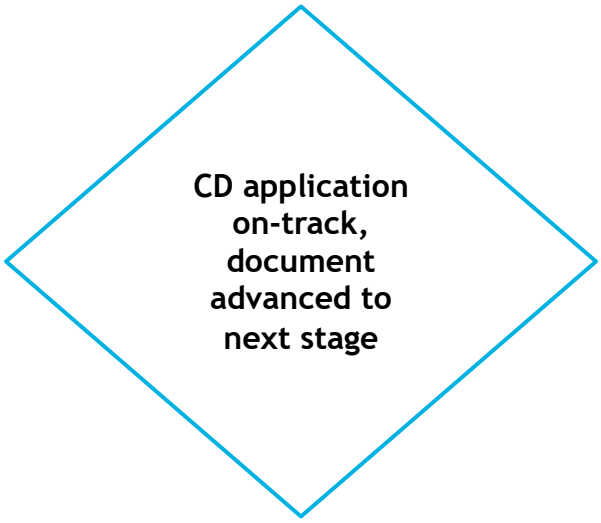


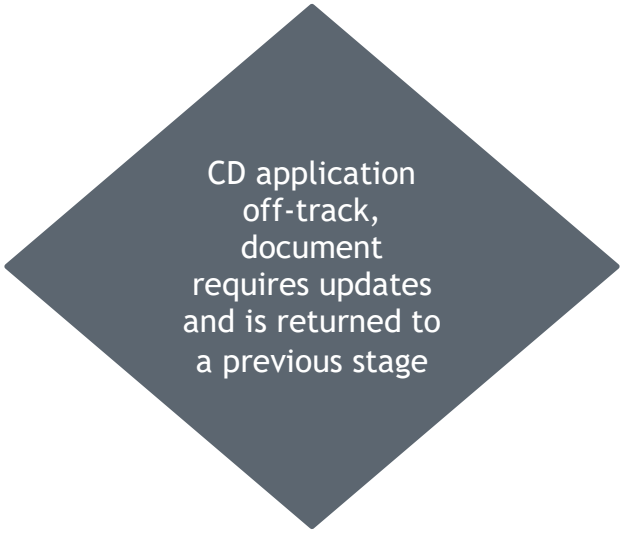


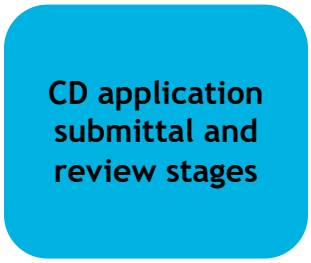
Signifies an on-track pathway



Signifies an off-track pathway











Delta County COLORADO
Canyons • Rivers • Mountains

Kate Kelly <kkelly@deltacounty.com>

SD03-006/CB Industries (Compost Facility Transfer of Ownership to CHT Resources, LLC)

Killian - CDOT, Brian <brian.killian@state.co.us> Tue, Jan 25, 2022 at 10:42 AM
To: Kate Kelly <kkelly@deltacounty.com>
Cc: Kandis Aggen - CDOT <kandis.aggen@state.co.us>

Kate,

CDOT has no comment on the ownership change.

Thanks,

Brian Killian
Region 3 Access Program Manager
Traffic & Safety

COLORADO
Department of Transportation

P 970-683-6284 | C 970-210-1101 | F 970-683-6290
222 S. 6th St, Room 100 Grand Junction, CO 81501
brian.killian@state.co.us | www.codot.gov | www.cotrip.org

[Quoted text hidden]

> [Quoted text hidden]
> **NOTICE:** This email transmission from the County of Delta, and any documents, files, or previous email messages attached to it, are intended solely for the individual(s) to whom it is addressed and may contain information that is confidential, legally privileged, and/or exempt from disclosure under applicable law. If you are not the intended recipient, you are hereby notified that any unauthorized review, forwarding, printing, copying, distribution, or use of this transmission or the information it contains is strictly prohibited. A misdirected transmittal of this email does not constitute waiver of any applicable privilege. If you received this transmission in error, please immediately notify the sender and delete the original transmission and its attachments. Notwithstanding the foregoing, sender and receiver should be aware that all incoming and outgoing emails may be subject to the Colorado Open Records Act, C.R.S. 24-72-100.1 et seq. Thank you.

Delta County COLORADO
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Kate Kelly <kkelly@deltacounty.com>

SD03-006/CB Industries (Compost Facility Transfer of Ownership to CHT Resources, LLC)

Darleen Carron <Darleen.Carron@dmea.com> Thu, Jan 27, 2022 at 1:56 PM
To: Kate Kelly <kkelly@deltacounty.com>

Good afternoon,

DMEA has no comment on this plat.

Thanks,

Darleen Carron

Delta Montrose Electric Association

970-901-0755

From: Kate Kelly <kkelly@deltacounty.com>
Sent: Monday, January 24, 2022 4:09 PM
To: Mark McMillan <mmcmillan@deltacounty.com>; Dan Sickles <dsickles@deltacounty.com>; Robbie LeValley <rlevalley@deltacounty.com>; Mark Taylor <mtaylor@deltacounty.com>; Greg Rajnowski <grajnowski@deltacounty.com>; Tim McCracken <tmccracken@deltacounty.com>; Carrie Derco <cderco@deltacounty.com>; Debbie Griffith <debbieg@deltacounty.com>; Melissa Oelke <finance@kaycee.net>; Cedaredge Fire <cedaredgefire@gmail.com>; susankeiser9529@gmail.com; paul.ficklin@blackhillscorp.com; Shelby Bear <Shelby.Bear@dmea.com>; Darleen Carron <Darleen.Carron@dmea.com>; Jim Farmer <jim.farmer@deltaschools.com>; Kurt Clay <kurt.clay@deltaschools.com>; scopping@blm.gov; Werkmeister, Melissa J <mwerkmeister@usbr.gov>; deltaconservationd@gmail.com; cody.purcell@state.co.us; Aggen - CDOT, Kandis <kandis.aggen@state.co.us>; Killian - CDOT, Brian <brian.killian@state.co.us>; rob@wserc.org
Cc: Kim Henderson <khenderson@deltacounty.com>; Erica Sparhawk <ericasparhawk@gmail.com>
Subject: SD03-006/CB Industries (Compost Facility Transfer of Ownership to CHT Resources, LLC)

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

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WEST MONTROSE
SANITATION DISTRICT
Wastewater Collection & Treatment

January 19, 2022

Delta County Planning Commission
295 W. 6th Street
Delta, CO 81416

Dear Planning Commission,

I am writing today to share our support for the SD03-006, Specific Development permit, submitted by CHT Resources as they take over ownership of the CB Industries compost facility, located at 11289 Doughspoon Road, Austin, CO 81410.

West Montrose Sanitation District provides the collection and treatment of wastewater generated in our service area, west of the Uncompahgre River and parallel to the City of Montrose. Our facility began accepting septic waste in 2003 as part of our agreement with the City of Montrose, and continued receiving septage until 2009, when the City/County constructed their receiving station at the City of Montrose sewage treatment plant. The City closed down its facility in 2015 due to operational issues tied to septage waste treatment, and with few other options available for haulers, West Montrose Sanitation District constructed a receiving facility and began receiving septage waste. Having a fully functional septage receiving station available encourages septic system owners to regularly maintain their septic systems, and discourages illegal dumping of septic wastes. Approximately, 30% of the septic waste loads that we receive from septic haulers at our facility are generated in Delta, County.

Receiving septic waste is not the core mission of our District, and we do not want to be forced into a situation where we would need to limit receiving septage waste in order to reserve capacity for our primary function of receiving and treating wastewater in the West Montrose Sanitation District service area. Having another facility in the area relieves the strain on our system and reserves capacity for our primary purpose.

We strongly support approval of this application as our region needs clean, responsible facilities for septic haulers to dispose of septic waste.

Sincerely,

Darrell Kastendieck
Board President

Notice of Opportunity to Comment on Compost Facility Transfer of Ownership, Delta, CO

Facility: CB Industries Compost Facility

Address: 11289 Doughspoon Road, Austin, CO 81410.

Background:

Delta County has referred a Certificate of Designation (CD) application for review to the Colorado Department of Public Health and Environment (CDPHE) to update the facility permit for a change of ownership that has occurred. The new owner, CHT Resources, LLC, plans no major operational changes. It is the change of ownership that triggers the certificate of designation application currently under review. The facility is making minor corrections and revisions to their Engineering Design and Operations Plan for conformance with the new owner's operations, and the facility name will change to CHT Resources Compost Facility once a new certificate of designation is issued.

The facility composts biosolids, septage, food and grease wastes, and animal wastes. In total, the facility is 80 acres, but only a small portion of the site is used for the composting operation, which covers just under 15 acres.

Following the public comment period, we will consider comments prior to providing our recommendation to Delta County, who will issue a final decision to approve or deny the application.

Public comments:

Please submit written comments via electronic mail by February 19, 2022 to: Jerry Henderson, Environmental Protection Specialist jerry.henderson@state.co.us | 720.263.0710

Legal Notices

The application is available for review on our website at https://cdphe.colorado.gov/HMWMD-public-notices.

Published in the Delta County Independent Jan 19, 2022

RESOLUTION
OF THE
BOARD OF COUNTY COMMISSIONERS
OF THE
COUNTY OF DELTA, STATE OF COLORADO

RESOLUTION NO. 2022-R-____

RESOLUTION APPROVING A CERTIFICATE OF DESIGNATION (CD) UPDATING AN EXISTING COMPOST FACILITY PERMIT TO CHANGE OWNERSHIP FROM CB INDUSTRIES TO CHT RESOURCES, LLC AND REFLECT MINOR CORRECTIONS AND REVISIONS TO THE ENGINEERING DESIGN AND OPERATIONS PLAN (EDOP) FOR CONFORMANCE WITH THE NEW OWNER'S OPERATIONS AND CURRENT REGULATIONS, AND HEREBY REPLACING AND REPEALING PRIOR RESOLUTIONS RELATIVE TO SD03-006 (11289 DOUGHSPOON ROAD, DELTA (PARCEL 323721300003).

RECITALS

WHEREAS, CHT Resources, LLC is the owner of record of the real property located at 11289 Doughspoon Road (Account R022296, Parcel 323721300003), which according to Assessor records is 80.0 acres located approximately 1.9 miles directly west of Eckert (Orchard City) with frontage on Doughspoon Road (property is split by the road); and

WHEREAS, in November 2020, CHT Resources, LLC contacted Delta County in regards to a change of ownership for SD03-006/CB Industries permit and the possible amendment to the Engineering Design and Operations Plan (EDOP, 2014); and

WHEREAS, this Board issued a Certificate of Designation on August 4, 2003 (Resolution 2003-R-031, as amended by Resolution 2003-R-032), for the receipt, composting, and landfarming of septage, green wastes, grease trap, and sand trap wastes. This Board further amended Resolution 2003-R-031 on August 15, 2005 (Resolution 2005-R-034), allowing the compost feeder stream to include animal bedding/manure and animal mortalities; and

WHEREAS, in December 2020, County staff determined that a new Certificate of Designation and EDOP would be required to address the ownership change and the minor revisions that were being proposed; and

WHEREAS, per State Regulations, any facility that continues to operate under an outdated CD, would be in violation of the Solid Waste Act and Regulations; and

WHEREAS, on January 5, 2021, Delta County Board of County Commissioners adopted the Delta County Land Use Code (LUC). Resolution No 2021-R-001 repealed regulations regarding land use and subdivision and adopted a new land use code (including zoning maps); and

WHEREAS, the subject property is zoned per the Delta County Land Use Code as Rural Industrial/Commercial (RI/C); and

WHEREAS, applications submitted prior to adoption of the Land Use Code are subject to rules in place at that time, which in this case constituted of Specific Development Regulations, as amended (2020); and

WHEREAS, Goal 5.1 of the Delta County Master Plan encourages business and industrial development while protecting resources that contribute to the economy and are integral to the quality of life; and

WHEREAS, on February 22, 2021, Erica Sparhawk, CEO of CHT Resources, LLC, submitted a letter (formally) along with a revised EDOP (dated February 2021) requesting Delta County to review the Revision 4 EDOP and amend the Certificate of Designation, accordingly; and

WHEREAS, the application consists of the Revision 5 (Final) EDOP (dated December 2021) and includes Figures and Plates of the Facility (representing current years of operations) - about 15-acres of the 80-acre site is used for the composting operation; and

WHEREAS, on April 29, 2021, a letter was sent to the applicant addressing the technical review of the EDOP for CHT Resources, LLC, and was not completed as part of an Environmental Assessment of the application; and

WHEREAS, on May 13, 2021, the applicant submitted a revised CD Application (including an updated EDOP, dated May 2021) along with a letter addressing Staff concerns/comments to the Planning Department; and

WHEREAS, on June 30, 2021, Staff sent a second revision letter to the applicant addressing numerous errors in the EDOP that needed to be addressed; and

WHEREAS, on July 9, 2021, Staff confirmed that Delta County Environmental Health that they had completed their review of the EDOP and that no additional comments were presented, and the Colorado Department of Public Health and

Environment (CDPHE) could begin the State review process parallel with the County review process; and

WHEREAS, on July 13, 2021, Staff emailed the revised EDOP (dated May 2021) to Jerry Henderson, Unit Leader for the Solid Waste Permitting Unit and the Solid Waste and Materials Management Program, CDPHE; and

WHEREAS, this EDOP was submitted to the CDPHE's Hazardous Materials and Waste Management Division as based on the requirements of 6 CCR 1007-2, Part 1 (State Regulations) pertaining to Solid Waste Sites and Facilities; and

WHEREAS, Compost facilities are subject to the rules promulgated by the solid and hazardous waste commission pursuant to 30-20-102(8) C.R.S. Compost regulations are found under Section 14 of 6 CCR 1007-2, Part 1; and

WHEREAS, *any proposed, or currently operating solid waste disposal site or facility that requires a CD shall submit an application the Local Governing Authority (LGA, e.g., Board of County Commissioners, City Council, Town Trustees) having jurisdiction for a CD pursuant to 30-20-103(1) C.R.S. and Section 1.3.3 of 6 CCR 1007-2, Part 1*; and

WHEREAS, *once an application is received by CDPHE has 30 days to conduct an initial examination of the EDOP that is meant to ensure all parts necessary for a complete EDOP are included in the application; and*

WHEREAS, *written notification to the applicant will be mailed within this time period regarding the department's decision to begin the full review of the EDOP or reject the EDOP based on incompleteness pursuant to 30-20-103(2) C.R.S. and Section 1.6.5 of 6 CCR 1007-2, Part 1*; and

WHEREAS, *following the completeness determination, any EDOP determined to be complete will then be reviewed from a technical completeness aspect. The technical review of the EDOP will be conducted within 150 days from the date of the notification of completeness by either CDPHE or a private contractor selected by the department pursuant to 30-20-103(2) C.R.S. and Section 1.6.7 of 6 CCR 1007-2, Part 1*; and

WHEREAS, *pursuant to 30-20-104(3)(a) C.R.S. following the technical review CDPHE will issue a technical referral letter to the LGA having jurisdiction and provide the applicant a copy of the letter; and*

WHEREAS, t*he LGA then conducts a public review period prior to issuance of a CD, and technical conditions made by CDPHE shall be incorporated into the*

EDOP; and

WHEREAS, *the CD application comprised of the EDOP, any comprehensive land use plan, relevant zoning ordinances and other pertinent information shall be presented to the LGA having jurisdiction at a public hearing only after a public notice is provided*; and

WHEREAS, Staff received a Technical Review Letter from CDPHE on (Date TBD); and

WHEREAS, Staff sent a Public Notice on March 8, 2022 to Adjoining Property Owners (within a ½ mile radius from Parcel #323721300003) as required by the Specific Development Regulations; and

WHEREAS, *once the LGA deems the CD should be granted to the applicant the LGA shall issue the CD. The applicant is required to display the CD in a prominent place at the solid waste site and facility pursuant to 30-20-105(1) C.R.S.*; and

WHEREAS, *pursuant to 30-20-105(3) C.R.S. CDPHE shall then consult the LGA on behalf of the solid and hazardous waste commission and consider recommendations made by that governing body prior to establishing financial assurance for the solid waste site and facility pursuant to Section 4 of 6 CCR 1007-2, Part 1*; and

WHEREAS, County staff sent the EDOP along with a summary to Review Agencies for comment on January 24, 2022; and

WHEREAS, CDPHE conducted a Public Comment period from January 19, 2022 to February 18, 2022. A publication was printed in the Delta County Independent on January 19, 2022; and

WHEREAS, on March 8, 2022, a Public Notice was posted on the property and sent to adjacent property owners informing the public of the date, time and place for the Planning Commission hearing this matter; and

WHEREAS, on March 23, 2022, the Planning Commission held a duly noticed public hearing and voted ____to recommend the Board of County Commissioners ____; and

WHEREAS, on March 18, 2022, notice was posted at the Delta County Court House Bulletin Board and on site at 11289 Doughspoon Rd, Delta, to meet the 30-day notice of public hearing requirement from CDPHE, *as a notice of the public*

hearing must also be posted in a least one conspicuous location at the office of the LGA having jurisdiction and at the proposed solid waste site and facility at least thirty (30) days prior to the hearing; and

WHEREAS, on April 6, 2022, notice of the public hearing was published in the Delta County Independent (DCI) being *the local newspaper having general circulation in the county or municipality where the proposed solid waste site or facility is located at least ten (10) days but no more than thirty (30) days prior to the hearing*; and

WHEREAS, on April 5, 2022, notice was posted on the property and sent to adjacent property owners informing the public of the date, time and place for the Board of County Commissioners hearing this matter; and

WHEREAS, the application (SD03-006/CHT Resources, LLC) came on for a hearing before the Delta County Board of County Commissioners on April 19, 2022.

DECISION

NOW, THEREFORE, BE IT RESOVLED, having considered all the written and documentary evidence, the administrative record, and other evidence presented, the Delta County Board of County Commissioners (BoCC) does hereby:

A. FIND that the Certificate of Designation to amend (SD03-006/CB Industries), for the ownership transfer from CB Industries to CHT Resources, LLC, and the minor corrections and revisions to the Engineering Design and Operations Plan (EDOP), as presented and conditioned, meets all requirements of the Solid Wastes Disposal Sites and Facilities Act, Title 30, Article 20, Part 1, Colorado Revised Statutes (C.R.S) and The Regulations Pertaining to Solid Waste Sites and Facilities (6 CCR 1007-2, Part 1) to assist with the development of a certificate of designation (CD).

FINDINGS:

1. CHT is assuming ownership of an existing, permitted, compost facility consisting of about 15 acres on an 80-acre parcel.
2. The amended Engineering Design and Operations Plan (EDOP, dated December 2021) removes all reference to long-term storage of contaminated soils.
3. On August 12, 2021, CDPHE sent a Letter in regards to the Division's Completeness Review, which resulted in a Completeness Determination.
4. On November 4, 2021, CDPHE sent a Letter in regards to the Division's Technical Review, and supplied a Comment Letter to the applicant for the compost facility. The applicant responded to the Comment Letter, addressing all comments brought forward by CDPHE and submitted a

revised (final) version of the EDOP (dated December 2021) to both CDPHE and Delta County.

5. The Colorado Department of Public Health and Environment (CDPHE) has conducted a Technical Review and has recommended (approval/denial, TBD) with stipulations of the amendment submitted by CHT Resources, LLC.
6. The amended EDOP provides good use of the composting facility through good engineering practices and operations at the composting facility; and
7. To issue an amendment to the Certificate of Designation for CHT Resources, LLC Composting Site is in accordance with the statutes and regulations, justified by the information presented to the Board, and in the best interests of the County and the residents thereof.

B. Approves a Certificate of Designation (CD) with revised (EDOP, dated December 2021) to amend the existing permit for SD03-006, a Composting Facility (CB Industries) transferring ownership to CHT Resources, LLC, including the minor corrections and revisions to the Engineering Design and Operations Plan (EDOP) at 11289 Doughspoon Road (Account R022296, Parcel 32372130003) Delta, subject to the Development Agreement (**Exhibit A, attached**).

ADOPTED AS SET FORTH ABOVE on this 19th day of April, 2022.

BOARD OF COUNTY COMMISSIONERS
COUNTY OF DELTA
STATE OF COLORADO

ATTEST:

_____
Don Suppes, Chair

_____
Wendell Koontz, Vice Chair

_____
Teri Stephenson
Delta County Clerk & Recorder

_____
Mike Lane, Commissioner

DRAFT

EXHIBIT A

Development Agreement
SD03-006/CHT Resources, LLC Compost Facility
April 19, 2022

TBD

DRAFT

DELTA COUNTY
PLANNING & COMMUNITY DEVELOPMENT

295 W 6th Street
Delta, Colorado 81416
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STAFF REPORT

Delta County Planning Commission

Delta County Administrative Building
560 Dodge Street, Delta, CO 81416

Wednesday, March 23, 2022 @ 5:30 p.m.

PLN21-071/Armstrong Subdivision

Consider a 5-lot Clustered Subdivision (Preliminary Plat) in the A-20 zoning district; Lot 1 (2.286 acres), Lot 2 (2.162 acres), Lot 3 (1.227 acres), Lot 4 (0.863 acres), Lot 5 (31.048 acres). The property is located at 15627-15767 Bull Mesa Road (Parcel: 3195-362-00-013), Cedaredge.

PROJECT INFORMATION:

Property Owner:	C Ward Armstrong Family Limited Partnership CLL
Applicant:	Milan Armstrong
Site Address(s):	15627, 15631, 15671-Unit 2, 15675/15675-Unit 4, and 15767 Bull Mesa Road, Cedaredge
Parcel ID/Acct:	3195-362-00-013/R004617
Parcel Size:	38.963 Ac (32.95 Ac per Assessor records)
Zoning:	A-20

RECOMMENDATION:

Staff recommends that the Planning Commission (PC) recommend the following action(s) to the Board of County Commissioners (BoCC):

a) Find that PLN21-071/Armstrong is consistent with applicable policies of the 2018 Master Plan and complies with requirements of the 2021 Land Use Code (LUC) for a Preliminary Plat (clustered subdivision), including Chapters 3, 4, 5 & 6; and
b) Conditionally Approve PLN21-071/Armstrong, presented as a Preliminary Plat (clustered subdivision) creating five (5) parcels in the A-20 zoning designation

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located at 15627-15767 Bull Mesa Road, Cedaredge (Parcel: 319536200013), all with existing residential units and utilities.

SUMMARY:

Mr. Milan Armstrong, applicant/representative, is seeking a 5-lot subdivision (Preliminary Plat) from an approximately 39-acre parcel with frontage on Bull Mesa Road, north of Hamilton Road. There are six existing units, including one duplex, that have been developed by/for separate family members. The subdivision is designed to separate existing homes for family estate planning purposes.

The zoning is A-20 so the minimum acreage for subdividing this parcel is 20 acres per lot. Four of the five lots do not meet standards for acreage set forth in the Land Use Code (LUC) so staff initially processed variances with the Board of Adjustment (BOA). The main question/concern expressed was between Lot 4 and Lot 5 meeting, or being able to meet the minimum setbacks from the new (proposed) property line. Also, as initially proposed, the net area for Lot 4 was less than 1.0 acre.

At direction of staff and the BOA, the Preliminary Plat was revised such that Lot 4 was increased to 1.005 acres, and the applicant demonstrated there would be no issues with structural setbacks (including septic). As currently proposed, Lots 1-4 lots would range from 1.005 to 2.286 acres and Lot 5 would be about 31 acres.

Upon further review, following BOA approval of the lot size variances, the Director determined that this project could qualify as a clustered subdivision (LUC Chapter 4, Section 1.D). In this case, the applicant could either proceed with variances to the lot size (approved by the BOA 1/27/2022) or a Clustered Subdivision. Either way, a Preliminary Plat is processed to the Planning Commission (PC) for recommendation to the Board of County Commissioners (BoCC). A variance for lot size requires restricting all lots/parcels involved from further subdivision. A Clustered Subdivision requires establishing Stewardship Area(s) where development would not occur (e.g., building envelopes). The main focus of a Stewardship Area would be the irrigated portion of Lot 5, which could exclude a rectangular area along the south side of the property.

Staff has reviewed all documents submitted by the applicant and finds that they are sufficient. All required fees have been paid for this application. Staff finds that the Preliminary Plat is consistent with Master Plan policies that encourage thoughtful and beneficial development while also preserving the characteristics that form quality of life in Delta County. Staff further finds that the Preliminary Plat is consistent with the LUC standards in that there are adequate facilities to serve the existing development pattern. As proposed, the project achieves the applicant's objective while minimizing impact to irrigated agricultural lands.

Staff is recommending approval of PLN21-071 for a 5-lot (clustered) subdivision, subject to conditions. A draft resolution for consideration by the Board of County Commissioners (BoCC) is attached for review by the Planning Commission (PC). Staff

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requests that the PC provide direction on any edits to findings and/or conditions to be presented to the BoCC.

DISCUSSION:
The application (PLN21-071/Armstrong) is for a 5-lot subdivision (Preliminary Plat) with frontage on Bull Mesa Road, north of Hamilton Road about 2 miles west of Cedaredge. Bull Mesa Road is a County Road, public Right-of-Way (ROW). Assessor records show the parcel to be 32.95 acres; however, the surveyor illustrates the parcel as 38.963 acres.

The parcel has been zoned per the Delta County Land Use Code as A-20. The minimum acreage for subdividing this parcel is 20 acres per lot. The application proposes to subdivide one parcel into five (5) lots where 4-5 lots would be less than the 20-acre minimum. Most of the irrigated portion would remain intact, splitting off four parcels each with an existing residence, utilities and services:

- Lot 1/15767 Bull Mesa Road (2.286 Ac); Ag Field, Individual access along north property line
- Lot 2/15675 & 15675 #4 Bull Mesa Road (2.162 Ac); Duplex, Ag Field, Shared Access with Lot 3
- Lot 3/15671 #2 Bull Mesa Road (1.227 Ac); two sheds, Shared Access with Lot 2 - connects to Lot 5
- Lot 4/15631 Bull Mesa Road (1.005 Ac); Shared Access with Lot 5
- Lot 5/15627 Bull Mesa Road (30.905 Ac); Ag Field, multiple outbuildings, Shared Access with/through Lot 4 connects to Lot 3
- Bull Mesa Road (1.378 Ac); Right-of-Way Dedication to Delta County

The applicant noted that these homes are currently “owned” by different family members even though they exist on one parcel. The objective is to create lots for each family member to be able to manage their home/land as they desire.

At the Pre-Application conference on August 2, 2021, staff noted that the proposed property lines are logical given the existing development pattern on the property. As part of the application, staff requested the applicant identify the location of the septic/leach fields on the Preliminary Plat. Staff identified options that could reduce the number of lots that do not meet the 20-acre minimum; however, the plan reflects the current family conditions.

Engineering stated that Bull Mesa Road is classified as a Local Access Road with a 60-foot Right-of-Way (30 feet from the centerline). Based on County records, Engineering is requesting Right-of-Way (ROW) along the frontage of Bull Mesa Road as part of this subdivision. The proposed plat illustrates dedicating 40 feet of ROW (1.378 Ac). Staff requires a Plat to include the centerline and edges (both sides) of the improved road surface. Based on that, the County generally requests dedication to the centerline of the roadway, except any land already dedicated and depending on the conditions for that area (e.g., steep slopes).

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Each proposed lot has a minimum frontage of 155 feet along Bull Mesa Road, and the standard is a minimum of 30 feet. Road standards require driveways to be at least 200 feet apart, which is met with the use of existing shared driveways. A Shared Driveway is defined in County Road Standards as serving only two lots. If an access is revised to serve three (3) or more lots, then it must be designed/constructed as a local road. In addition, County GIS assesses if an access must be named in accordance with County Address Regulations where it serves three or more units (addresses).

Childs Ditch runs between the houses. An Irrigation Plan will be required as part of the subdivision to describe how the shares are assigned (source and quantity) and also specify the operation of irrigation and how it will protect irrigated Ag lands (head gate location, pipe location, direction of flow, where/how irrigation water will be applied, etc.). The plat will need to accurately illustrate any easements for water ditches/lines affected by this project. Easements will be required where irrigation, utility and/or access cross property lines to serve another lot.

A subdivision requires proof of an adequate water supply for each new lot that is not already served by a domestic water source (e.g.; tap, domestic well). Existing development includes access (3), addresses (6), water taps (5), utilities and septic systems (5). The Plat will be required to include tap numbers and irrigation shares.

The Land Use Code (LUC) requires minimum setbacks (all structures, including septic) of 25 feet from the edge of ROW for all roads (public and private) and 15 feet from all interior property lines. In addition, a setback of 25 feet is required from the edge of any ditch, and 50 feet from the top of bank of a river, stream, or creek. Staff is primarily looking at new property lines meeting the required setbacks. Where a structure and/or septic system would not meet the setback from a proposed lot line, there are three options: 1) Require lot lines to meet setbacks, or deny the subdivision as designed if that is not possible; 2) Remedy the non-conforming condition (relocate, remove); or 3) Consider a variance for creating a condition that does not meet current standards. Generally, staff would not recommend Option #3 (in any case) because with granting a variance the non-conforming condition is allowed to remain where the intent of the LUC Code is to bring things into compliance with the current standards over time.

The residence addressed as 15631 was built being approximately 62-feet from the centerline of the road. With the required right-of-way, this structure would not meet the minimum 25 feet from the edge of road right-of-way after dedication. This would create what is considered a legal, nonconforming condition, meaning it was legal when it was built but then made nonconforming as a result of changing standards or actions (e.g., right-of-way dedication). Chapter 11 of the LUC establishes standards for nonconformities. Generally, a legal nonconforming structure is allowed to be retained and maintained, but cannot increase the degree of nonconformity (e.g., new construction must me the required setbacks). If the structure is damaged by more than 50% of the appraised value, it must be brought up to the current standards.

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Chapter 3, Section 1.A.3 of the Land Use Code (LUC) includes criteria for granting a variance to lot size. Subsection "b" establishes lot dimensions for the UGA zone (Table 3.a LUC) as the minimum standard for variances to lot size (lot size = 7500 sf, lot width = 75 ft, and lot frontage = 30 ft). Subsection "c" establishes a standard to minimize disturbance or development of irrigated agricultural portion of a property. Subsection "d" states that: "*The final plat is annotated such that no further subdivision of either lot created by this subsection is allowed*." "Either" can mean one or more lots. In this case, the LUC requires restricting all five lots from further subdivision.

Chapter 4, Section 1.D LUC established clustered subdivision design standards. The key objective is to protect an identified resource (e.g., irrigated Ag). Lot design standards are similar to that for a variance to lot size (noted above). There are four steps to a clustered subdivision:

1) Stewardship Areas. Shall be identified and mapped – designated as tracts. Staff discussed applying this to Lot 5. The applicant's intent is to retain the irrigated Ag land in conjunction with adjacent irrigated lands held by the same family member.
2) Development Areas. Building Envelopes can be used to identify areas where development could occur. For Lot 5, this would include the area where the house and barns are clustered as well as an area that is not irrigated along the south side of the property.
3) Road System. Existing access roads/driveways are located where there is no impact to the Stewardship Area.
4) Lot Lines. Staff has worked with the applicant on a plat lot design that meets the design objectives for a clustered subdivision.

A clustered subdivision also requires either a financial surety or some other mechanism to ensure long-term maintenance of the stewardship areas. Staff finds that irrigated Ag lands are less demanding for a financial surety since use of the land provides revenue to continue that operation. Staff recommends **condition(s)** that include requirements for designating area(s) and/or including plat notes restricting use of the Stewardship Area. Changing this restriction requires BoCC consent in order to meet this standard without requiring a financial surety.

The County Fee resolution incudes mitigation fees for fire and open space. These fees are applied to each additional new lot (**Conditions**). A 5-lot subdivision would create four (4) additional lots.

PROCESS

Subdivisions consisting of three or more (3+) lots are subject to a Preliminary Plat presented to the Planning Commission (Public Hearing) for a recommendation to the Board of County Commissioners (BoCC). The BoCC is the final decision-making body for a Preliminary Plat. In addition, within 12 months, a Final Plat must be accepted by the BoCC once the conditions of approval are met.

On January 27, 2022, the Board of Adjustment (BOA) held a public hearing to consider PLN21-071/Armstrong. It was presented as a 5-Lot Subdivision consisting of 4

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variances to create 5-lots, four (4) of those lots requiring a variance as they do not meet the minimum criteria for lot size (20 acres) for the zoning designation A-20. The BOA voted 3-0 to approve all four variances to create a 5-Lot Subdivision with the following direction:

- Increase Lot 4 from 0.863 acres to a minimum of 1.0 acres
- If necessary, when adjusting the new property line between Lots 4 & 5, the BOA expressed a willingness to consider setback variances to allow existing buildings to remain in place.

Upon further review of the Land Use Code (LUC) and consideration of the project, the Director determined that this project could qualify as a clustered subdivision (LUC Chapter 4, Section 1.D). Clustered subdivisions can generally allow for smaller lot configuration and may allow for more lots than the minimum allowed by zoning in exchange for a layout designed to protect significant agricultural, natural, scenic, or archaeological resources on the subject property. Clustered subdivisions shall have a defined stewardship objective such as protecting irrigated agricultural lands with a mechanism that ensures irrigation will continue. Stewardship Areas shall be identified and mapped (e.g., building envelopes).

On February 7, 2022, Planning Staff met with Mr. Armstrong to follow-up with him in regards to his proposed subdivision. Staff explained to Mr. Armstrong that with his proposal of preserving the majority of irrigated Ag lands (30+ acres) while splitting off sites for four established homesteads, his application could be processed as a Clustered Subdivision. In that case, there would be no need for any variances unless a building was not able to meet the required setbacks.

This meeting included discussion of setbacks, Right-of-Way (ROW) dedication for Bull Mesa Road, and septic. Mr. Armstrong presented a revised lot layout such that Lot 4 would have at least 1.0 acres (currently 1.005 Ac). It was confirmed through a revised Preliminary Plat that all buildings would meet County required setbacks with the new lot configuration and that the septic for each proposed lot is well outside the setbacks.

With a Preliminary Plat, a Final Plat is scheduled at a noticed hearing before the BoCC. Prior to accepting/recording a Final Plat, conditions of the Preliminary Plat must be cleared to the satisfaction of the Planning Director. The BoCC will also consider acceptance of dedicated rights-of-way with the Final Plat. Staff requires deeds for each new lot to be recorded in order to effectuate the new lot description.

OTHER AGENCIES INVOLVED:

A pre-application was submitted on July 23, 2021 and a conference was held with the owner on August 2, 2021. At that meeting, representatives from multiple County departments were present to identify applicable regulations and address potential issues. The purpose of a pre-application conference (meeting) is to inform the applicant of pertinent regulations and identify any potential issues.

295 W 6th Street
Delta, Colorado 81416
planning@deltacounty.com
970.874.2110

The variance process does not generally involve other agencies. However, a public notice was sent to neighboring property owners, interested parties, and posted on the subject property for a public hearing before the BOA. Only the applicant attended this meeting.

A subdivision is referred to adjacent property owners and agencies for a 21-day comment period. Planning Staff sent the Preliminary Plat along with a summary to the Review Agencies for comment on March 8, 2022. Adjoining Property Owners (within a 200-foot radius) were also sent a Public Notice for this application, including the applicant.

Comments have been received from DMEA, CDOT, Delta County Engineering Department, and Cedaredge Fire District. Planning has not received any additional feedback from any other review agencies or adjoining property owners.

DMEA**:** Lots 1-5 have existing electrical service. No comment.

CDOT: No Comment.

Cedaredge Fire District: No Comment.

County Engineering (7/27/21): Bull Mesa Road is classified as a Collector Road with an 80-foot right-of-way width. There is 30-feet of right-of-way called out in Reception #370072 (dated 5/8/78).

Collector roads require 200 feet between residential driveways in accordance with Item 13 of the Delta County Roadway Design and Construction Standards. Distances between these existing driveways are as follows:

- 15767 & 15675 = 511 feet +/-
- 15675 & 15671 = 214 feet +/-
- 15767 & Gary Vickrey = 31 feet

All are existing permitted accesses.

Existing and proposed utilities will require easements to be shown on the Final Plat. Adjoining Property Owners will also need to be shown on the Final Plat (**Condition**).

Prepared by: Carl P. Holm, AICP
Planning & Community Development Director
970.874.2110
March 16, 2022

Attachment(s):

- Draft BoCC Resolution
  - Recommended Conditions

295 W 6th Street
Delta, Colorado 81416
planning@deltacounty.com
970.874.2110

- Preliminary Plat (dated 3/8/2022)
- Aerial Plat (dated 3/8/2022)

RESOLUTION
OF THE
BOARD OF COUNTY COMMISSIONERS
OF THE COUNTY OF DELTA,
STATE OF COLORADO

RESOLUTION NO. 2022-R-___

RESOLUTION APPROVING A PRELIMINARY PLAT TO SUBDIVIDE 38.963 ACRES INTO FOUR LOTS RANGING IN SIZE FROM 1.005 TO 2.286 ACRES PLUS A 30.905-ACRE PARCEL LOCATED AT 15767, 15675, 15675 UNIT 4, 15671 UNIT 1, 15671 UNIT 2, 15631, AND 15627 BULL MESA ROAD, CEDAREDGE (PARCEL: 319536200013/C. WARD ARMSTRONG FAMILY LIMITED PARTNERSHIP) IN THE A-20 ZONING DISTRICT.

RECITALS

WHEREAS, pursuant to County Assessor records, C Ward Armstrong Family Limited Partnership is the property owners of record of the real property consisting of 32.95 acres located at 15672 Bull Mesa Road, Cedaredge (Parcel 319536200013, Account: R004617) the project surveyor shows this parcel to be 38.963 acres; and

WHEREAS, on January 5, 2021, Delta County Board of County Commissioners adopted the Delta County Land Use Code (LUC) where Resolution No 2021-R-001 repealed regulations regarding land use and subdivision and adopted a new land use code (including zoning maps); and

WHEREAS, the subject property is zoned per the Delta County Land Use Code as Agriculture (20-acre) or A-20, which requires a minimum acreage of 20.0 acres per lot; and

WHEREAS, on July 23, 2021, Mr. Milan Armstrong, representing the C Ward Armstrong Family Limited Partnership, as one of the partners, submitted a pre-application form requesting a 5-Lot subdivision with four parcels being less than the 20-acre minimum (PLN21-071); and

WHEREAS, on August 2, 2021, a pre-application conference was held between the applicants and staff from Delta County to review preliminary materials to help identify potential issues and applicable review procedures; and

WHEREAS, the Sketch provided with the pre-application illustrates keeping most of the irrigated portion intact and splitting off four parcels each with an existing residence: Parcel 1 (15627 Bull Mesa Rd); Parcel 2 (15631 Bull Mesa Rd); Parcel 3 (15671 #2 Bull Mesa Rd); Parcel 4 (15675 and 15675 #4 Bull Mesa Rd); and Parcel 5 (15767 Bull Mesa Rd); and

WHEREAS, on August 5, 2021, a letter was sent to the applicant summarizing the pre-application conference, an application form and checklists identifying materials required with the application; and

WHEREAS, Chapter 3, Section 1.A.3 of the Delta County Land Use Code (LUC) provides criteria for variations to lot size, which in this case applies to lots that do not meet the 20-acre

minimum in the A-20 zone; and

WHEREAS, Chapter 4, Section 1.D of the Delta County Land Use Code provides Clustered Subdivision Design Standards that allows flexibility to the number and size of lots where there is protection of significant resources (e.g., agricultural lands); and

WHEREAS, Subdivisions consisting of three or more (3+) lots are subject to a Preliminary Plat presented to the Planning Commission (Public Hearing) for a recommendation to the Board of County Commissioners (Chapter 8, Section 4 LUC); and

WHEREAS, on December 21, 2021, Mr. Milan Armstrong submitted an application requesting consideration of variances prior to consideration of the subdivision; and

WHEREAS, on December 23, 2021, the application package was determined to be complete by the Planning Department; and

WHEREAS, on January 19, 2022, notice was sent to adjacent property owners and posted on the property informing the public of the dates, times and place for the Board of Adjustment would consider this matter; and

WHEREAS, on January 27, 2022, the Board of Adjustment held a duly noticed public hearing and voted 3-0 to approve lot size variances relative to PLN21-071/Armstrong with direction to increase Lot 4 from 0.863 acres to at least 1.0 acre; and

WHEREAS, on February 7, 2022, Planning staff met with Mr. Armstrong explaining that with preserving the majority of irrigated Ag lands (30+ acres) while splitting off sites for four established homesteads, this application could be processed as a Clustered Subdivision where there would be no need for any variances; and

WHEREAS, PLN21-071 is being processed as a Preliminary Plat for clustered subdivision of 38.963 acres as follows: Lot 1 (2.286 acres with one existing residence, including a small irrigated area), Lot 2 (2.162 acres with an existing duplex, including a small irrigated area), Lot 3 (1.227 acres with one existing residence), Lot 4 (1.005 acres one existing residence, including a small irrigated area), Lot 5 (30.905 acres one existing residence and irrigated land), and Dedication of Right-of-Way for Bull Mesa Road to Delta County (1.378 acres); and

WHEREAS, applications for a Preliminary Plat are a discretionary action subject to consideration by the Planning Commission to make a recommendation to the Board of County Commissioners; and

WHEREAS, the proposed Preliminary Plat is designed to meet applicable development standards relative to land use (setbacks, etc.) roads and bridges (access), water, and septic; and

WHEREAS, the proposed Preliminary Plat has been reviewed to ensure proper access to utilities and services (water, electricity, septic, etc.), including easements where necessary; and

WHEREAS, on March 8, 2022, County sent the Preliminary Plat along with a summary to Adjacent Property Owners and applicable Review Agencies for comment; and

WHEREAS, on March 8, 2022, a Public Notice was sent to Adjoining Property Owners (200-foot radius) and notice was posted on the property informing the public that on March 23, 2022 the Delta County Planning Commission would consider this matter; and

WHEREAS, on March 23, 2022, the Planning Commission held a duly noticed public hearing and voted ___ to recommend Board of County Commissioners ___; and

WHEREAS, on ___, notice was sent to adjacent property owners and posted on the property informing the public of the date, time and place for the Board of County Commissioners would consider this matter; and

WHEREAS, on ___, the Board of County Commissioners held a duly noticed public hearing to consider PLN21-071/Armstrong.

DECISION

NOW, THEREFORE, BE IT RESOLVED, having considered all the written and documentary evidence, the administrative record, and other evidence presented, the Delta County Board of County Commissioners (BoCC) does hereby:

A. FIND that the proposed Preliminary Plat (PLN21-071/Armstrong), as designed and conditioned, meets all applicable standards of the 2018 Master Plan and 2021 Delta County Land Use Code:
   1. The Preliminary Plat is consistent with Master Plan policies that encourage thoughtful and beneficial development while also preserving the characteristics that form quality of life in Delta County.
   2. The project meets minimum standards for lot size. The property is zoned A-20, which requires a minimum of 20 acres per parcel, lot width of 450 feet, and lot frontage of 75 feet. Lots 1-4 lots would range from 1.005 to 2.286 acres and Lot 5 would be about 31 acres. Each proposed lot has a minimum frontage of 155 feet along Bull Mesa Road
   3. There are six existing units, including one duplex, that have been developed by/for separate family members. The subdivision is designed to separate existing homes for family estate planning purposes.
   4. A subdivision requires proof of an adequate water supply for each new lot that is not already served by a domestic water source (e.g.; tap, domestic well). Existing development includes access (3), addresses (6), water taps (5), utilities and septic systems (5). Lot 4 would have at least 1.0 acres (1.005 Ac).
   5. The Lake Fork Ditch runs north-south through Lots 1, 2, 3, & 5. Childs Ditch runs between the houses. An Irrigation Plan will be required as part of the subdivision to describe how the shares are assigned (source and quantity) and also specify the operation of irrigation and how it will protect irrigated Ag lands (head gate location, pipe location, direction of flow, where/how irrigation water will be applied, etc.). The plat will need to accurately illustrate any easements for water ditches/lines affected by this project. Easements will be required where irrigation, utility and/or access cross property lines to serve another lot.
   6. Bull Mesa Road is a County maintained (public) road. The project would provide adequate access for the new lots. Road standards require driveways to be at least 200 feet apart, which is met with the use of existing shared driveways. A Shared Driveway is defined in County Road Standards as serving only two lots.

7. The Land Use Code (LUC) requires minimum setbacks (all structures, including septic) of 25 feet from the edge of ROW for all roads (public and private) and 15 feet from all interior property lines. In addition, a setback of 25 feet is required from the edge of any ditch, and 50 feet from the top of bank of a river, stream, or creek. Staff is primarily looking at new property lines meeting the required setbacks. The Plat demonstrates that all structures meet the required setbacks from proposed property lines so no non-conforming condition is created as a result of this subdivision.
8. The residence addressed as 15631 was built being approximately 62-feet from the centerline of the road. With the required right-of-way, this structure would not meet the minimum 25 feet from the edge of road right-of-way after dedication. This would create what is considered a legal, nonconforming condition, meaning it was legal when it was built but then made nonconforming as a result of changing standards or actions (e.g., right-of-way dedication). Chapter 11 of the LUC establishes standards for nonconformities.
9. Chapter 4, Section 1.D LUC established clustered subdivision design standards. The key objective is to protect an identified resource (e.g., irrigated Ag). The applicant's intent is to retain the irrigated Ag land in conjunction with adjacent irrigated lands held by the same family member. As designed, the project preserves the majority of irrigated Ag lands (30+ acres) while splitting off sites for four established homesteads. Lot 5 would include developable area (e.g., building envelopes) where the house and barns are clustered as well as an area that is not irrigated along the south side of the property. Existing access roads/driveways are located where there is no impact to the Stewardship Area.
10. The project adequately mitigates impacts to fire and open space. The County Fee resolution incudes mitigation fees for fire and open space. These fees are applied to each additional new lot. A 5-lot subdivision would create four (4) additional lots.

B. APPROVE PLN21-071/Armstrong located within SW ¼ NE ¼ of Section 36, T.13S, R.95W, 6th P.M. about 2.07 miles west of the Town of Cedaredge (Parcel: 319536200013, Account: R004617), a Preliminary Plat (clustered subdivision) creating five (5) parcels in the A-20 zoning designation located at 15627-15767 Bull Mesa Road, Cedaredge (Parcel: 319536200013), all with existing residential units and utilities, subject to conditions of approval attached hereto and incorporated herein by reference as Exhibit A.

ADOPTED AS SET FORTH ABOVE on this _____ day of _____, 2022.

BOARD OF COUNTY COMMISSIONERS
COUNTY OF DELTA
STATE OF COLORADO

ATTEST:

_____
Mike Lane, Chair

_____
Don Suppes, Vice Chair

_____
Teri Stephenson
Delta County Clerk & Recorder

_____
Wendell Koontz, Commissioner

DRAFT

EXHIBIT A

Conditions of Approval
PLN21-071/Armstrong

1. PLN21-071 is approved as a Preliminary Plat (clustered subdivision) creating five (5) parcels in the A-20 zoning designation located at 15627-15767 Bull Mesa Road, Cedaredge (Parcel: 319536200013), all with existing residential units and utilities. This approval shall expire and the plat is considered vacated if a Final Plat is not submitted within 12 months from the date of Preliminary Plat approval by the Board of County Commissioners. Written request to extend the approval timeline must be received by the Planning Department at least 30 days prior to the prescribed expiration.

2. Prior to accepting a Final Plat, the applicant shall provide a Deed offering to dedicate right-of-way for Bull Mesa Road to Delta County – to be conveyed in Fee Simple Title – to the satisfaction of the County Engineer.

3. The Final Plat shall illustrate required setbacks of existing structures and septic systems on each lot.

4. The Final Plat shall illustrate Stewardship Areas and developable areas (e.g., building envelopes) to the satisfaction of the Planning Director.

5. All existing and proposed easements and encumbrances, including, but not limited to: existing and proposed utility easements, shared access, and water delivery (including ditches) shall be shown on the Final Plat.

6. The applicant shall submit Access Easement and Maintenance Agreement(s) for shared access where applicable (Lots 2 & 3 and Lots 4 & 5) to the satisfaction of the Planning Director.

7. The Final Plat shall include the most current name and parcel number of adjoining property owners as well as existing road conditions for abutting roads (centerline and edge of pavement) to the satisfaction of the County Engineer.

8. Label all wells and water taps within the subject property on the Final Plat.

9. Prior to accepting a Final Plat, the applicant shall submit an Irrigation Plan assigning irrigation shares (source and quantity) to the proposed lots and how said irrigation is managed; specify the operation of irrigation and how it will protect irrigated Ag lands (head gate location, pipe location, direction of flow, where/how irrigation water will be applied, etc.). Also include a Plat note explaining rights to irrigation water.

10. Prior to accepting a Final Plat, provide Deeds with a legal description of each new lot with notarized signatures, to be recorded with the Plat.

11. The Final Plat shall include all Standard Plat notes required by the 2021 Land Use Code.

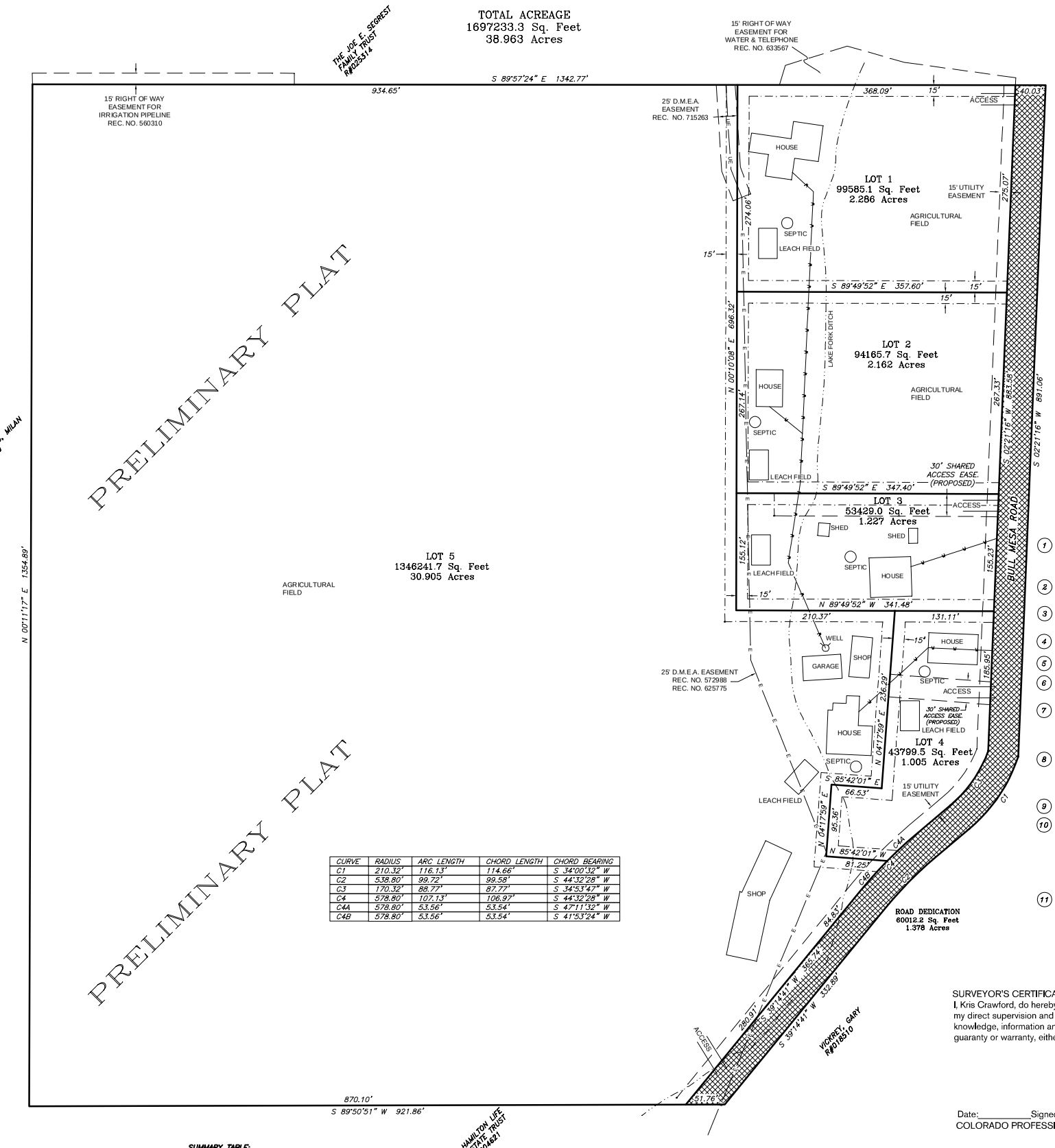
12. The applicant shall pay the Fire Impact/Mitigation Fee of $500 per lot for an increase of four lots (total $2,000) per Resolution No 2021-R-007 (LUC Chapter 6, Section 2).

DRAFT

13. The applicant shall pay the Public Sites/Open Space Fee of $300 per lot for an increase of four lots (total $1,200) per Resolution No 2021-R-007.

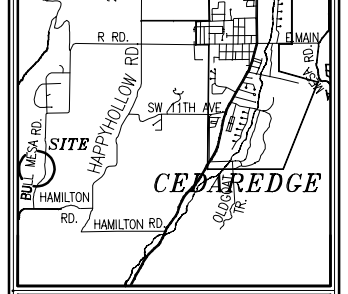
DRAFT

PRELIMINARY PLAT OF
ARMSTRONG 5-LOT SUBDIVISION
WITHIN THE SW1/4 NW1/4 OF SECTION 36, T.13S., R.95W., 6TH P.M.
DELTA COUNTY, COLORADO



CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING
C1	210.32'	116.13'	114.66'	S 34°00'32" W
C2	538.80'	99.73'	99.58'	S 44°32'28" W
C3	170.32'	88.77'	87.77'	S 34°53'47" W
C4	578.80'	107.13'	106.97'	S 44°32'28" W
C4A	578.80'	53.56'	53.54'	S 47°11'32" W
C4B	578.80'	53.56'	53.54'	S 41°53'24" W

AREA LOCATOR



TYPICAL LEGEND

- Set Mag Nail in Asphalt
- Set 5/8" rebar 30" long with 2" aluminum cap PLS25972
- Set 5/8" rebar 30" long with 2" aluminum cap as Witness corner or linepin PLS25972
- Found 5/8" rebar with 2" aluminum cap PLS25972
- Found 5/8" rebar with 2" aluminum cap as Witness corner or linepin PLS25972
- Found 3/4" rebar 30" long with 3-1/4" aluminum cap PLS25972 per monument record
- Found 5/8" rebar 30" long with 2" aluminum cap PLS25972
- Found 5/8" rebar with 1 1/2" aluminum cap RLS 1456 or as noted
- —x— Fencelines
- —E— Electric (overhead)
- —UE— Electric (underground)
- —W— Water line
- — — Easement
- ····· Previous Parcel Boundary
- New Quit Claim to Delta County
- —·—·— Setback line

BASIS OF BEARINGS:
N.01°35'20"E. FROM THE SECTION CORNER COMMON TO SEC. 11, 12, 13 & 14 TO THE S1/16 COR. COMMON TO SEC. 11 & 12 GEODETIC NORTH GPS OBSERVATION

SCALE 1"=80 U.S. SURVEY FEET
0 40 80 160

SUMMARY TABLE:

LOT 1 = 2.286 ACRES/99585.1 SQ. FT.
LOT 2 = 2.162 ACRES/94165.7 SQ. FT.
LOT 3 = 1.227 ACRES/53429.0 SQ. FT.
LOT 4 = 0.863 ACRES/37586.7 SQ. FT.
LOT 5 = 31.048 ACRES/1352454.5 SQ. FT.
TOTAL AREA OF SUBDIVISION = 38.963 ACRES/1697233.3 SQ. FT.
NUMBER OF BUILDABLE LOTS = 5
NUMBER OF NON-BUILDABLE LOTS = 0
LAND USE ZONING = A20

COUNTY SURVEYOR'S CERTIFICATE:
Approved for content and form only and not as to the accuracy of survey, computations or drafting, pursuant to CRS 38-51-106.

County Surveyor _____ Date _____

1. ON DECEMBER **, 2021, THE DELTA COUNTY BOARD OF ADJUSTMENTS APPROVED A VARIANCE FOR LOT SIZE (PLN21-071/ARMSTRONG). PURSANT TO LAND USE CODE CHAPTER 3, SECTION1.A.3., NO FURTHER SUBDIVISION OF EITHER LOT CREATED BY THIS SUBDIVISION IS ALLOWED.
2. OUTDOOR LIGHTING SHALL BE HOODED OR SHIELDED SO THAT LIGHT IS DIRECTED DOWNWARD SO AS NOT TO GLARE INTO THE ADJACENT PROPERTY, OR DILUTE THE NIGHT SKY.
3. ALL DEVELOPMENT IN DELTA COUNTY IS SUBJECT TO THE DELTA COUNTY RIGHT TO FARM AND RANCH POLICY, ADOPTED AS RESOLUTION 96-R-020 BY THE BOARD OF COUNTY COMMISSIONERS OF DELTA COUNTY ON SEPTEMBER 27, 1999.
4. ACCESS TO ALL SHOWN OR UN-SHOWN IRRIGATION DITCHES FOR CLEANING AND MAINTENANCE PURPOSES IS PERMITTED.
5. COLORADO IS AN "OPEN RANGE" STATE. IT IS NOT THE RESPONSIBILITY OF A LIVESTOCK OWNER TO FENCE IN LIVESTOCK.
6. THIS PROPERTY IS LOCATED IN AN AGRICULTURAL AREA, NORMAL AGRICULTURAL ACTIVITIES WILL CONTINUE UNABATED IN THE SURROUNDING AREAS AND MAY NOT BE THE BASIS FOR A LAWSUIT EXCEPT IN CASES OF PROVEN GROSS NEGLIGENCE.
7. EACH LOT OWNER SHALL BE PERSONALLY RESPONSIBLE TO CONTROL, UNDESIRABLE, NOXIOUS WEEDS WITHIN THE BOUNDARIES OF THAT LOT, TO PREVENT THE SPREADING OF SUCH WEEDS TO OTHER LANDS AND TO COMPLY WITH THE RECOMMENDATIONS OF THE DELTA COUNTY (WEED BOARD) CONCERNING THE CONTROL OF SUCH WEEDS.
8. UNLESS APPROVED OTHERWISE, ALL LOTS WITHIN THIS SUBDIVISION HAVE BEEN APPROVED FOR ONE SINGLE RESIDENTIAL USE ONLY. ANY FURTHER SUBDIVISION OR ANY CHANGE OF USE TO OTHER THAN SINGLE FAMILY RESIDENTIAL OR AGRICULTURAL USE REQUIRES THE LOT OWNER TO PROCESS THE REQUEST IN ACCORDANCE WITH THE REGULATION OF DELTA COUNTY.
9. ALL NEW UTILITIES MUST BE PLACED UNDERGROUND ON ALL PARCELS.
10. THE MINIMUM SETBACKS FOR ALL STRUCTURES (INCLUDING ONSITE WASTEWATER TREATMENT SYSTEMS) IN THIS SUBDIVISION SHALL BE:

DISTANCE	SETBACK MEASURED FROM THE:
25'	EDGE OF ANY DITCH
25'	EDGE OF ROAD EASEMENT OR RIGHT-OF-WAY (PUBLIC AND PRIVATE)
15'	INTERIOR PROPERTY LINES, OTHER THAN ABUTTING ROAD
50'	TOP OF BANK (RIVER, STREAM, CREEK)

11. THE SHARES OF IRRIGATION WATER ASSIGNED TO THE SUBJECT PROPERTY SHALL BE ASSIGNED AS FOLLOWS:
LOT 1 – #SHARED (APPLICABLE COMPANY/IES)
LOT 2 – #SHARED (APPLICABLE COMPANY/IES)

SHARES OF IRRIGATION WATER CONVEYED TO LOTS AT THE TIME OF PLAT RECORDING ARE SUBJECT TO THE IRRIGATION PLAN (DATED########) INCLUDED WITH THIS SUBDIVISION.

SURVEYOR'S CERTIFICATION
I, Kris Crawford, do hereby certify that the above described parcel has been surveyed by me and under my direct supervision and that such survey is accurately represented hereon, and is based upon my knowledge, information and belief, and is in accordance with applicable standards of practice and is not a guaranty or warranty, either expressed or implied.

Date:_____Signed: _____
COLORADO PROFESSIONAL LAND SURVEYOR #38255

SUBDIVISION DEDICATION

C. Ward Armstrong Family Limited Partnership, being the owner of land described as follows:

THE SW1/4 NW1/4 OF SECTION 36, TOWNSHIP 13 SOUTH, RANGE 95 WEST OF THE 6TH PRINCIPAL MERIDIAN,

EXCEPTING A TRACT DESCRIBED AS FOLLOWS: BEGINNING AT THE SOUTHEAST CORNER OF SAID SW1/4 NW1/4, SECTION 36, TOWNSHIP 13 SOUTH, RANGE 95 WEST, 6TH PRINCIPAL MERIDIAN, THENCE NORTH 89°56'14" WEST ALONG THE SUBDIVISION LINE 413.19 FEET TO THE CENTER LINE OF AN EXISTING COUNTY ROAD; THENCE FOLLOWING THE CENTER LINE OF SAID COUNTY ROAD NORTH 39°27'34" EAST 332.85 FEET; THENCE FOLLOWING THE ARC OF A CURVE TO THE RIGHT 99.71 FEET (WHOSE RADIUS OF 539.05 FEET AND WHOSE LONG CHORD IS NORTH 44°45'21" EAST, 99.58 FEET); THENCE NORTH 50°03'29" EAST 57.80 FEET, THENCE ALONG A CURVE TO THE LEFT 116.17 FEET (WHOSE RADIUS IS 210.12 FEET AND WHOSE LONG CHORD IS NORTH 34°13'25" EAST 114.66 FEET); THENCE NORTH 2°34'09" EAST 891.06 FEET TO THE NORTHEAST CORNER OF THE SW1/4 NW1/4 OF SAID SECTION 36; THENCE FOLLOWING THE SUBDIVISION LINE SOUTH 0°43'49" WEST, 1350.36 FEET TO THE POINT OF BEGINNING,

COUNTY OF DELTA, STATE OF COLORADO.

in Delta County, Colorado, under the name of ARMSTRONG 5-LOT SUBDIVISION PLN21-071, have laid out, platted and/or subdivided the same as shown on this plat and do hereby dedicate to the public at large the streets, alleys, roads and other public areas as shown hereon and those portions of land labeled as easements for the installation and maintenance of public utilities as shown hereon.

***In witness whereof C. Ward Armstrong Family Limited Partnership** have subscribed their names this _____ day of _____, A.D. 20_____.*

By:_____
C. Ward Armstrong Family Limited Partnership

NOTARIAL:
State of)
) ss.
County of)

The foregoing instrument was acknowledged before me this _____ day of _____, A.D. 20_____, by C. Ward Armstrong Family Limited Partnership

My commission expires: _____

My address is _____
_____

_____
Witness my hand and official seal.

DELTA COUNTY PLANNING DEPARTMENT APPROVAL

The within plat of the above subdivision has been checked for compliance in accordance wing Case No. PL#####.

Dated this _____ day of _____, A.D., 20 ____

_____
Planning Director

BOARD OF COUNTY COMMISSIONERS APPROVAL

The within plat of ARMSTRONG 5-LOT SUBDIVISION PLN21-071 is accepted by the Delta County Board of County Commissioners. The roads and other public areas are hereby accepted provided; however that such acceptance shall not in any way be considered as an acceptance for maintenance purposes.Maintenance of, or snow removal from, the subject roads shall be only upon a separate resolution of the Board of County Commissioners passed in accordance with such policies, resolutions or regulations in effect at that time.

Dated this_____day of_____, AD 20____,

_____
Chairman, Delta County Board of County Commissioners

Attest:

_____
County Clerk of Delta County, Colorado

CERTIFICATE OF TAXES PAID

I, the undersigned, do hereby certify that the entire amount of taxes and assessments due and payable as of _____upon all parcels of real estate described on this plat (Account No. R004617) are paid in full.

Dated this_____ day of _____, A.D. 20____

_____
Treasurer of Delta County, Colorado

DELTA COUNTY CLERK AND RECORDER'S ACCEPTANCE

This plat was accepted for filing in the office of the Clerk and Recorder of Delta County, Colorado, on this _____ day of _____, A.D. 20_____;

Reception Number _____, Time _____, Date _____

_____
County Clerk

NOTE: According to Colorado law any legal action based upon a defect in this survey must be commenced within three years after such defect is discovered. In no event may any action based upon any defect in this survey be commenced more than ten years from the date shown on the certification hereon.

WILMORE & COMPANY
PROFESSIONAL LAND SURVEYING, INC.
406 Grand Avenue
P.O. Box 1652
Paonia, Colorado 81428
970.527-4200 PHONE
970.260-4130 PHONE
www.wilmorelandsurveying.com
Defining Boundaries
EMAIL randy@wilmorelandsurveying.com

FIELD CREW:	KC
DRAFTER:	KC
CHECKED BY:	KC

ARMSTRONG 5-LOT SUBDIVISION
WITHIN THE SW1/4 NW1/4 OF SECTION 36, T.13S., R.95W., 6TH P.M.
DELTA COUNTY, COLORADO

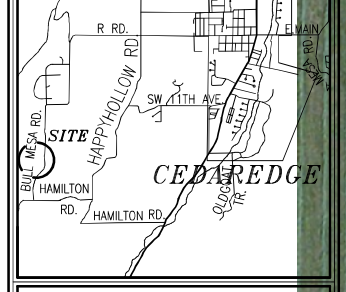
J21359 | 17 FEBRUARY 2022

PRELIMINARY PLAT OF
ARMSTRONG 5-LOT SUBDIVISION
WITHIN THE SW1/4 NW1/4 OF SECTION 36, T.13S., R.95W., 6TH P.M.
DELTA COUNTY, COLORADO



CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING
C1	210.32'	116.13'	114.66'	S 34°00'52" W
C2	539.80'	99.72'	99.58'	S 44°32'26" W
C3	170.32'	88.77'	87.77'	S 34°51'42" W
C4	576.80'	107.13'	106.97'	S 44°32'26" W
C4A	576.80'	53.56'	53.54'	S 47°11'52" W
C4B	578.60'	53.56'	53.54'	S 41°53'24" W

AREA LOCATOR



TYPICAL LEGEND

- Set Mag Nail in Asphalt
- Set 5/8" rebar 30" long with 2" aluminum cap PLS25972
- Set 5/8" rebar 30" long with 2" aluminum cap as Witness corner or linepin PLS25972
- Found 5/8" rebar with 2" aluminum cap PLS25972
- Found 5/8" rebar with 2" aluminum cap as Witness corner or linepin PLS25972
- Found 3/4" rebar 30" long with 3-1/4" aluminum cap PLS25972 per monument record
- Found 5/8" rebar 30" long with 2" aluminum cap PLS25972
- Found 5/8" rebar with1 1/2" aluminum cap RLS 1456 or as noted
- —x— Fencelines
- —E— Electric (overhead)
- —UE— Electric (underground)
- —W— Water line
- — — — Easement
- ····· Previous Parcel Boundary
- New Quit Claim to Delta County
- — — Setback line

BASIS OF BEARINGS:
N.01°35'20"E. FROM THE SECTION CORNER COMMON TO SEC. 11, 12, 13 & 14 TO THE S1/16 COR. COMMON TO SEC. 11 & 12 GEODETIC NORTH GPS OBSERVATION

SCALE 1"=80 U.S. SURVEY FEET
0 40 80 160

SUMMARY TABLE:
LOT 1 = 2.286 ACRES/99585.1 SQ. FT.
LOT 2 = 2.162 ACRES/94165.7 SQ. FT.
LOT 3 = 1.227 ACRES/53429.0 SQ. FT.
LOT 4 = 0.863 ACRES/37586.7 SQ. FT.
LOT 5 = 31.048 ACRES/1352454.5 SQ. FT.
TOTAL AREA OF SUBDIVISION = 38.963 ACRES/1697233.3 SQ. FT.
NUMBER OF BUILDABLE LOTS = 5
NUMBER OF NON-BUILDABLE LOTS = 0
LAND USE ZONING = A20

COUNTY SURVEYOR'S CERTIFICATE:
Approved for content and form only and not as to the accuracy of survey, computations or drafting, pursuant to CRS 38-51-106.

County Surveyor _____ Date _____

SUBDIVISION DEDICATION

C. Ward Armstrong Family Limited Partnership, being the owner of land described as follows:

THE SW1/4 NW1/4 OF SECTION 36, TOWNSHIP 13 SOUTH, RANGE 95 WEST OF THE 6TH PRINCIPAL MERIDIAN.

EXCEPTING A TRACT DESCRIBED AS FOLLOWS: BEGINNING AT THE SOUTHEAST CORNER OF SAID SW1/4 NW1/4, SECTION 36, TOWNSHIP 13 SOUTH, RANGE 95 WEST, 6TH PRINCIPAL MERIDIAN, THENCE NORTH 89°56'14" WEST ALONG THE SUBDIVISION LINE 413.19 FEET TO THE CENTER LINE OF AN EXISTING COUNTY ROAD; THENCE FOLLOWING THE CENTER LINE OF SAID COUNTY ROAD NORTH 39°27'34" EAST 332.85 FEET; THENCE FOLLOWING THE ARC OF A CURVE TO THE RIGHT 99.71 FEET (WHOSE RADIUS OF 539.05 FEET AND WHOSE LONG CHORD IS NORTH 44°45'21" EAST, 99.58 FEET); THENCE NORTH 50°03'29" EAST 57.80 FEET; THENCE ALONG A CURVE TO THE LEFT 116.17 FEET (WHOSE RADIUS IS 210.12 FEET AND WHOSE LONG CHORD IS NORTH 34°13'25" EAST 114.66 FEET); THENCE NORTH 2°34'09" EAST 891.06 FEET TO THE NORTHEAST CORNER OF THE SW1/4 NW1/4 OF SAID SECTION 36; THENCE FOLLOWING THE SUBDIVISION LINE SOUTH 0°43'49" WEST, 1350.36 FEET TO THE POINT OF BEGINNING.

COUNTY OF DELTA, STATE OF COLORADO.

In Delta County, Colorado, under the name of ARMSTRONG 5-LOT SUBDIVISION PLN21-071, have laid out, platted and/or subdivided the same as shown on this plat and do hereby dedicate to the public at large the streets, alleys, roads and other public areas as shown hereon and those portions of land labeled as easements for the installation and maintenance of public utilities as shown hereon.

In witness whereof C. Ward Armstrong Family Limited Partnership *have subscribed their names this _____ day of _____, A.D. 20_____.*

By:_____
C. Ward Armstrong Family Limited Partnership

NOTARIAL:
State of)
} ss.
County of)

The foregoing instrument was acknowledged before me this _____ day of _____, A.D. 20_____, by C. Ward Armstrong Family Limited Partnership

My commission expires: _____

My address is _____
_____

_____
Witness my hand and official seal.

DELTA COUNTY PLANNING DEPARTMENT APPROVAL

The within plat of the above subdivision has been checked for compliance in accordance wing Case No. PL#####.

Dated this _____ day of _____, A.D., 20 ___

_____
Planning Director

BOARD OF COUNTY COMMISSIONERS APPROVAL

The within plat of ARMSTRONG 5-LOT SUBDIVISION PLN21-071 is accepted by the Delta County Board of County Commissioners. The roads and other public areas are hereby accepted provided; however that such acceptance shall not in any way be considered as an acceptance for maintenance purposes.Maintenance of, or snow removal from, the subject roads shall be only upon a separate resolution of the Board of County Commissioners passed in accordance with such policies, resolutions or regulations in effect at that time.

Dated this_____day of_____, AD 20____,

_____
Chairman, Delta County Board of County Commissioners

Attest:

_____
County Clerk of Delta County, Colorado

CERTIFICATE OF TAXES PAID

I, the undersigned, do hereby certify that the entire amount of taxes and assessments due and payable as of _____upon all parcels of real estate described on this plat (Account No. R004617) are paid in full.

Dated this_____ day of _____, A.D. 20____

_____
Treasurer of Delta County, Colorado

DELTA COUNTY CLERK AND RECORDER'S ACCEPTANCE

This plat was accepted for filing in the office of the Clerk and Recorder of Delta County, Colorado, on this _____ day of _____, A.D. 20_____; Reception Number _____, Time _____, Date _____

_____
County Clerk

1. *ON DECEMBER **, 2021, THE DELTA COUNTY BOARD OF ADJUSTMENTS APPROVED A VARIANCE FOR LOT SIZE (PLN21-071/ARMSTRONG). PURSANT TO LAND USE CODE CHAPTER 3, SECTION1.A.3, NO FURTHER SUBDIVISION OF EITHER LOT CREATED BY THIS SUBDIVISION IS ALLOWED.*
2. *OUTDOOR LIGHTING SHALL BE HOODED OR SHIELDED SO THAT LIGHT IS DIRECTED DOWNWARD SO AS NOT TO GLARE INTO THE ADJACENT PROPERTY, OR DILUTE THE NIGHT SKY.*
3. *ALL DEVELOPMENT IN DELTA COUNTY IS SUBJECT TO THE DELTA COUNTY RIGHT TO FARM AND RANCH POLICY, ADOPTED AS RESOLUTION 96-R-020 BY THE BOARD OF COUNTY COMMISSIONERS OF DELTA COUNTY ON SEPTEMBER 27, 1999.*
4. *ACCESS TO ALL SHOWN OR UN-SHOWN IRRIGATION DITCHES FOR CLEANING AND MAINTENANCE PURPOSES IS PERMITTED.*
5. *COLORADO IS AN "OPEN RANGE" STATE. IT IS NOT THE RESPONSIBILITY OF A LIVESTOCK OWNER TO FENCE IN LIVESTOCK.*
6. *THIS PROPERTY IS LOCATED IN AN AGRICULTURAL AREA. NORMAL AGRICULTURAL ACTIVITIES WILL CONTINUE UNABATED IN THE SURROUNDING AREAS AND MAY NOT BE THE BASIS FOR A LAWSUIT EXCEPT IN CASES OF PROVEN GROSS NEGLIGENCE.*
7. *EACH LOT OWNER SHALL BE PERSONALLY RESPONSIBLE TO CONTROL UNDESIRABLE, NOXIOUS WEEDS WITHIN THE BOUNDARIES OF THAT LOT, TO PREVENT THE SPREADING OF SUCH WEEDS TO OTHER LANDS AND TO COMPLY WITH THE RECOMMENDATIONS OF THE DELTA COUNTY (WEED BOARD) CONCERNING THE CONTROL OF SUCH WEEDS.*
8. *UNLESS APPROVED OTHERWISE, ALL LOTS WITHIN THIS SUBDIVISION HAVE BEEN APPROVED FOR ONE SINGLE RESIDENTIAL USE ONLY. ANY FURTHER SUBDIVISION OR ANY CHANGE OF USE TO OTHER THAN SINGLE FAMILY RESIDENTIAL OR AGRICULTURAL USE REQUIRES THE LOT OWNER TO PROCESS THE REQUEST IN ACCORDANCE WITH THE REGULATION OF DELTA COUNTY.*
9. *ALL NEW UTILITIES MUST BE PLACED UNDERGROUND ON ALL PARCELS.*
10. *THE MINIMUM SETBACKS FOR ALL STRUCTURES (INCLUDING ONSITE WASTEWATER TREATMENT SYSTEMS) IN THIS SUBDIVISION SHALL BE:*

DISTANCE	SETBACK MEASURED FROM THE:
25'	EDGE OF ANY DITCH
25'*	EDGE OF ROAD EASEMENT OR RIGHT-OF-WAY (PUBLIC AND PRIVATE)
15'	INTERIOR PROPERTY LINES, OTHER THAN ABUTTING ROAD
50'	TOP OF BANK (RIVER, STREAM, CREEK)

11. *THE SHARES OF IRRIGATION WATER ASSIGNED TO THE SUBJECT PROPERTY SHALL BE ASSIGNED AS FOLLOWS:*
LOT 1 – #SHARED (APPLICABLE COMPANY/IES)
LOT 2 – #SHARED (APPLICABLE COMPANY/IES)
SHARES OF IRRIGATION WATER CONVEYED TO LOTS AT THE TIME OF PLAT RECORDING ARE SUBJECT TO THE IRRIGATION PLAN (DATED########) INCLUDED WITH THIS SUBDIVISION.

SURVEYOR'S CERTIFICATION
I, Kris Crawford, do hereby certify that the above described parcel has been surveyed by me and under my direct supervision and that such survey is accurately represented hereon, and is based upon my knowledge, information and belief, and is in accordance with applicable standards of practice and is not a guaranty or warranty, either expressed or implied.

Date: _____ Signed: _____
COLORADO PROFESSIONAL LAND SURVEYOR #38255

NOTE: According to Colorado law any legal action based upon a defect in this survey must be commenced within three years after such defect is discovered. In no event may any action based upon any defect in this survey be commenced more than ten years from the date shown on the certification hereon.

PRELIMINARY PLAT

WILMORE & COMPANY
PROFESSIONAL LAND SURVEYING, INC.
406 Grand Avenue
P.O. Box 1652
Paonia, Colorado 81428
970.527-4200 PHONE
970.260-4130 PHONE
www.wilmorelandsurveying.com
EMAIL randy@wilmorelandsurveying.com
Defining Boundaries

FIELD CREW:	KC
DRAFTER:	KC
CHECKED BY:	KC

ARMSTRONG 5-LOT SUBDIVISION
WITHIN THE SW1/4 NW1/4 OF SECTION 36, T.13S., R.95W., 6TH P.M.
DELTA COUNTY, COLORADO

J21359 | 17 FEBRUARY 2022