GOOSE HAVEN RESERVOIR EXPANSION GROUNDWATER MODELING REPORT

Prepared for:

Rock Products of Colorado LLC
PO Box 983
Broomfield, CO 80038

Prepared by:

Weiland, Inc.
PO Box 18087
Boulder, CO 80308

December 8, 2023

WSI Weiland, Inc.
Environmental & Engineering

TABLE OF CONTENTS

1.0 INTRODUCTION

The Goose Haven Reservoir Expansion project has the potential to impact groundwater elevations in the vicinity of the site do to the construction of low permeability compacted clay liners designed to store water rights for the City of Lafayette. This study utilizes a groundwater mode as a predictive tool to determine potential impacts to groundwater levels as well as quantify the efficacy of existing and proposed subsurface drains. A previous groundwater modeling study was developed by CTL Thompson in 2010 (Groundwater Response Study Goose Haven Reservoir Complex Expansion Goose Haven Reservoir No.2 Lafayette, Colorado) however the files were not available from CTL.

The model has been developed through application of 3d surface modeling in Autodesk Civil 3d and the Modflow 2005 Graphical User Interface (GUI) software Aquaveo VMS 10.6.1. (VMS)

Although the model encompasses the entire site and beyond, the primary focus is on the addition of Cell 2A, which is the subject of the currently pending approval of the Amendment 2 of DRMS Permit #M2010-M071.

Standard engineering practices have been used in preparation of this study and all best available data sources have been utilized.

2.0 MODEL PURPOSE AND DESIGN

The objective of this model is to predict ground water levels and flow rates in the alluvium and water bearing surficial sediments around the Goose Haven reservoirs. Within that objective, the model is also used to predict increased water level elevations due to construction of compacted clay liners (liners). The model is then used to simulate drains just up-gradient of the liners and quantify drain flows necessary to mitigate groundwater mounding. Sizing of the drain and resulting capacity is then based on the cell by cell and cumulative flow terms of the drain simulation in the model and the layer zone budgets.

The model is used to simulate water table conditions before and after mining and reclamation operations. To accomplish this, a steady-state single layer model that is convertible from confined to unconfined conditions is used. The pre-mining condition is simulated and calibrated to observed water table elevations (heads). Calibration is achieved by varying hydraulic conductivity values and running the model in an iterative fashion until the solution converges close to the observed heads.

To simulate the effect of the perimeter drains, the MODFLOW drain package is used. The existing and proposed reservoirs are modeled as horizontal flow barriers with elevations of the reservoir stages and conductance equal to the compacted clay liner design criteria.

2.1. MODEL DISCRETIZATION AND METHODS

The finite difference grid measures 7000ft in the X direction and 4600ft in the Y direction. The grid is oriented North-South with no rotation. The Grid cell size is set to 50ft. The model consists of one hydro-stratigraphic unit with variable zones of hydraulic conductivity including silty sand, clayey silt and dirty slightly indurated gravel. Top and bottom elevations are based on test hole data and resultant TINs developed in Autodesk Civil 3d. The tins were developed based on onsite data from boring conducted by CTL Thompson (Geotechnical Investigation Goose Haven Reservoir Complex Expansion Goose Haven Reservoir No. 2, Lafayette CO, March 10, 2010) and well logs from the DWR Colorado Decision Support System (CDSS). Areal locations of the test holes and DWR wells are shown in GW-1. The TINs were sampled at node centers and exported to the VMS GUI which converts to formatted input for MODFLOW.

2.2. LOCAL GROUNDWATER AQUIFERS

The general physiographic setting can be described as the southern flank of the Boulder Creek Valley alluvial aquifer. Cells 2 and 2A occur at the southern boundary of the alluvial aquifer. The underlying bedrock is the Fox Hills/ Laramie Formation composed of weathered claystone, indurated claystone interbedded with sandstone.

The Boulder creek valley alluvial aquifer is tributary to Boulder Creek and is composed of alluvial sand and gravel with an average thickness of 4-15ft. The water table varies seasonally with local irrigation contributing to enhanced recharge and higher water tables during the irrigation season. The gravel layer becomes thinner at the south margin of the valley and the southern boundary. The reservoir complex generally coincides with the southern Boundary of the Boulder Creek alluvial valley. The aquifer to the south of Cell 2A varies in thickness from 4ft to 10ft and is composed of aeolian silts and lacustrine clays. A thicker layer of water bearing sediment occurs in a paleochannel in what is known as the Bullhead Gulch drainage. This gulch trends north-north east and has a higher transmissivity up gradient of Cells 2 and 3.

2.3. PRE-MINING MODEL INPUT PARAMETERS

2.3.1. Hydraulic Conductivities

Hydraulic conductivity for the gravel aquifer was set to 50 ft/day. This value is lower than a typical value for sand and gravel due to the fact the gravel is somewhat indurated (cemented). This area of the alluvial aquifer appears to be an upper older terrace which would explain the degree of cementation. The area due south the Cell 2 A was assigned a hydraulic conductivity of 12 ft/day based on onsite well logs to the south as well as DWR well logs along Isabell Road to the south. The area of Bullhead Gulch was assigned a hydraulic conductivity of 10ft/day. East of Bullhead Gulch the value was set to 12 ft/day. The hydraulic conductivity zones as shown in GW-1.

2.3.2. Boundary Conditions

The model domain was created to be large enough so to allow for the use of constant head boundaries based on water table elevation data or interpolated data in the absence of data points. Regarding interpolated data, boundary head elevations were interpolated to follow the general principle of groundwater flow, which is that that surficial groundwater follows the contour of the land. As such if the general understanding of the area is that the water table occurs at about -6ft from the surface (based on DWR wells, see Appendix A) then the water table was set at approximately 6ft below the ground. Similar methods were used for depth to bedrock elevations near the model boundary. The existing Reservoirs (Cell 1 & Cell 3) were modeled as horizontal flow boundaries with elevations set at normal pool elevations and conductance set to .001 ft/day.

2.3.3. Sinks and Sources

Aside from the sinks and sources inherent to the constant head boundary conditions, sources for the pre-mining simulation include recharge from the irrigated land to the south. Recharge rates were determined using results from local consumptive use models used for similar crop types in support of engineering reports prepared by WI for district 6 water rights court cases. Flood irrigation is assumed to be 50% irrigation efficiency. Of the water not consumed by crops, 50% is surface runoff and 50% deep percolation. The calculated deep percolation is what was applied as recharge. Since a Transient Model was not used, the irrigation season recharge was distributed throughout the calendar year to yield a ft/day value of .003 ft/day. Fields to the south and east of Cell 2A utilize sprinkler irrigation which was assigned an irrigation efficiency of 90% with deep percolation values determined in a similar fashion as flood.

2.4. PRE-MINING MODFLOW SIMULATIONS AND CALIBRATION

The model was run in VMS utilizing only Horizontal Barrier and Recharge optional packages. The initial K values were varied to arrive at a calibrated solution that most closely matched the onsite baseline piezometer data from June 30, 2009 in the letter to Michael Cunningham dated March 31, 2011 from Aaron Asquith Re: Goose Haven Reservoir No. 2; DRMS File No. M-2010-071 Groundwater Monitoring and Mitigation Plan. It should be noted that in general the calibration was within +- 1-2 feet which is within the seasonal variability of the water table. As a conservative approach, the error was chosen to be on the higher side. The reasoning being that mitigation of more water in the system when considering the reclamation condition would likewise be a conservative approach. MODFLOW output for the pre-mining condition has been plotted in Sheet GW-1.

2.5. RECLAMATION MODFLOW INPUT AND SIMULATIONS

The reclamation condition model took the calibrated pre-mining model and added horizontal flow barriers for Cells 2 and 2A. The MODFLOW drain package was added to simulate an as built perimeter drain south of Cell 2A and a previously engineered perimeter drain specified in the report prepared by CTL Thompson and titled Groundwater Response Study Goose Haven Reservoir Complex Expansion Goose Haven Reservoir No. 2 Lafayette, Colorado (9/8/2010).

2.5.1. Perimeter Drain Design and MODFLOW Parameters

The as-built perimeter drain design is given in the Exhibit G materials previously submitted to the DRMS. The 6” perforated PVC drain pipe is calculated to have a total flow capacity of 1 c.f.s. over the length of the drain. The unit inflow capacity of 0.06 c.f.s. per ft. The inflow capacity exceeds the hydraulic conductivity of the drain filter pack material and as such the drain conductance parameter is calculated as follows:

C=(K*L*W)/M

where:

K=Hydraulic Conductivity of drain filter [l/t]= 300ft/day

L=Length of boundary drain cell [l] = 50 ft *

W=width of drain boundary filter pack [l] = 3ft

M=thickness of drain boundary filter pack [l] = 1.5ft

*VMS computes the length of the Cell, therefore this term is omitted from the parameter

$C = (200ft/day*3ft)/1.5ft = 400ft^2/day$

Drain conductance was set to $300ft^2/day$ as a conservative estimate. It should be noted drain flow was unaffected by conductance values greater than 150 ft^2/day, which indicates the aquifer hydraulic conductivity and head are the limiting parameters to drain flow.

2.6. Reclamation Model Output

The reclamation model output head elevations are plotted in GW-2 and GW-3. GW-2 shows the model output contours and GW-3 shows the delta between the Pre-mining condition and the reclamation condition. The model output sink zone budget for the drain as built upgradient of Cell 2A is 0.16 c.f.s. The sink zone budget for the CTL designed drain is .04 c.f.s.

3.0 DISCUSSION AND CONCLUSIONS

A groundwater model has been developed based on detailed onsite information and data gathered from DWR CDSS for bedrock elevations, surficial sediment type and groundwater elevations from older well logs. Data has been interpolated based on general principals of groundwater flow and trends in the local hydro stratigraphic geometries and water bearing stratigraphy. It is important to note that the majority of the water wells to the south of Cell 2A have been completed in non-tributary aquifers deep in the Laramie Fox-Hills bedrock aquifer (those wells were not used for water levels). The surficial aquifer south of the site which recharges the area occupied by the Goose Haven Reservoir Complex, is composed of fine grain sediment with low transmissivity with areas of bedrock near the surface.

For the area south of Cell 2A, the reclamation condition model included simulation of the drain, which was calibrated to approximate observed flow. The drain was observed to flow at approximately .25 c.f.s. during the peak of the 2022 irrigation season. The model predicted the drain to flow approximately 0.16 c.f.s. It should be noted that the gravity design flow for the drain pipe previously submitted to the DWR in Exhibit G, is 1 c.f.s.

The model output delta contours shown in GW-3 predicts some minor increase in water table elevations and minor depressions as well, however generally predicts a zero rise in offsite groundwater elevations. The variable behavior of the model in this area can be attributed to the variable nature of bedrock elevations and low transmissivity of the stratigraphy in this area.

To the East of the Reservoir complex, the model predicts a slight increase in water table elevations of ~ 0.5ft near the eastern boundary of the Windsor Grollman Residence and a lowering of water table elevations of up to ~ 2ft at the Schneider property. Since these properties do not have water wells, these predicted water levels are not expected to have any affect. Furthermore, the City has executed structure agreements with both of these land owners.

The model predicts a shadowing effect down gradient and north of the reservoir complex. Since the affected lands are permanently in a conservation easement and owned by Boulder County, lowering of the water table in that area will not affect the preservation of agricultural land use in that area. There are no wells on this property.

As an added measure of protection, the City will agree to construct 3 additional piezometers (P-11, P-12 & P-13) in the areas shown in GW-3 which will be monitored on the same schedule as the existing monitoring plan.

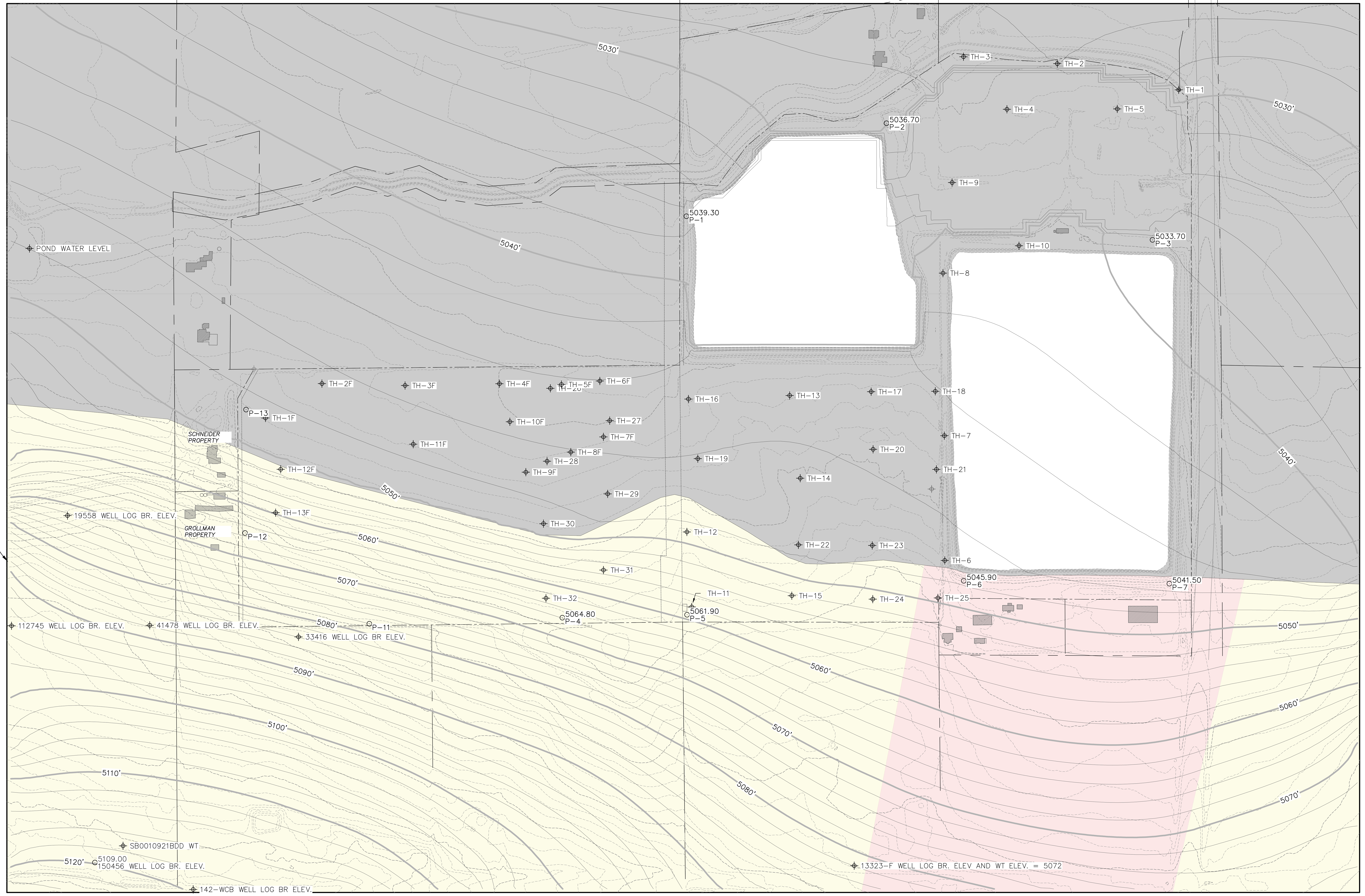
Appendix A

LEGEND

HYDRAULIC CONDUCTIVITY
- K=12 FT/DAY
- K=10 FT/DAY
- K=50 FT/DAY

- MODFLOW OUTPUT HEAD MAJOR CONTOUR (10FT)
- MODFLOW OUTPUT HEAD MINOR CONTOUR (2FT)
- SUBSURFACE TEST HOLE — TH-2F
- DWR WELL LOG — 5109.00 150456 WELL LOG BR. ELEV.
- EXISTING PIEZOMETERS — 5061.90 P-5

MODEL DOMAIN BOUNDARY



0 250 500 Feet

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

OWNER: CITY OF LAFAYETTE

CONTRACTOR: ROCK PRODUCTS OF COLORADO L.L.C.
P.O. BOX 893
BROOMFIELD, CO 80038

WSI Weiland, Inc. Environmental & Engineering
PO BOX 18087
BOULDER CO 80308
ph 303-443-9521

PROJECT: GOOSE HAVEN RESERVOIRS COMPLEX
EXPANSION #2, #4 – MODFLOW OUTPUT
MODFLOW OUTPUT PRE-MINING

SHEET	GW-1
DRAWING NO.	1 OF 1
REVISION	0
SCALE	1"=250'

CAD FILE NAME	PLOT DATE	APPROVED	DATE	DESIGNED	CHECKED	DRAWN	CONTRACT	DATE	B.A. JOB
PRE-MINING MODFLOW OUT GW-1 R 1.DWG	11/30/23			PFW	RB	PFW		November 30, 2023	113136-000

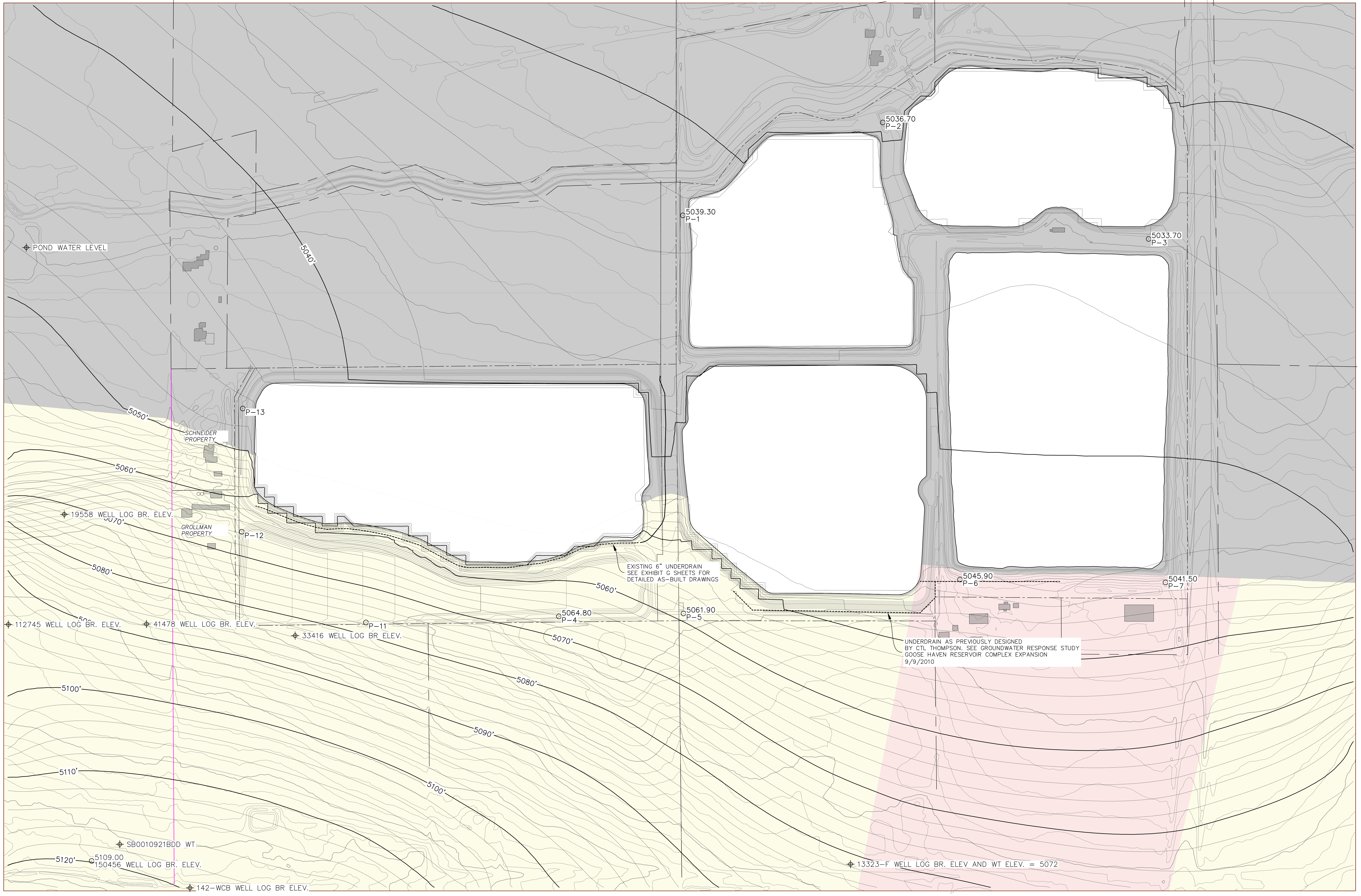
LEGEND

HYDRAULIC CONDUCTIVITY

- K=12 FT/DAY
- K=10 FT/DAY
- K=50 FT/DAY

- MODFLOW OUTPUT HEAD MAJOR CONTOUR (10FT)
- MODFLOW OUTPUT HEAD MINOR CONTOUR (2FT)

- DWR WELL LOG — 5109.00 150456 WELL LOG BR. ELEV.
- EXISTING PIEZOMETERS — 5061.90 P-5
- POND WATER LEVEL



REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

OWNER: CITY OF LAFAYETTE

CONTRACTOR: ROCK PRODUCTS OF COLORADO L.L.C.
P.O. BOX 893
BROOMFIELD, CO 80038

WSI Weiland, Inc.
Environmental & Engineering
PO BOX 18087
BOULDER CO 80308
ph 303-443-9521

PROJECT: GOOSE HAVEN RESERVOIRS COMPLEX EXPANSION #2, #4 – MODFLOW OUTPUT RECLAMATION

SHEET	GW-2
DRAWING NO.	1 OF 1
REVISION	0
SCALE	1"=250'

CAD FILE NAME	PLOT DATE	APPROVED	DATE	DESIGNED	CHECKED	DRAWN	CONTRACT	DATE	B.A. JOB
RECLAMATION MODFLOW OUT GW-2 R1.dwg	11/30/23			PFW	RB	PFW		November 30, 2023	113136-000

LEGEND

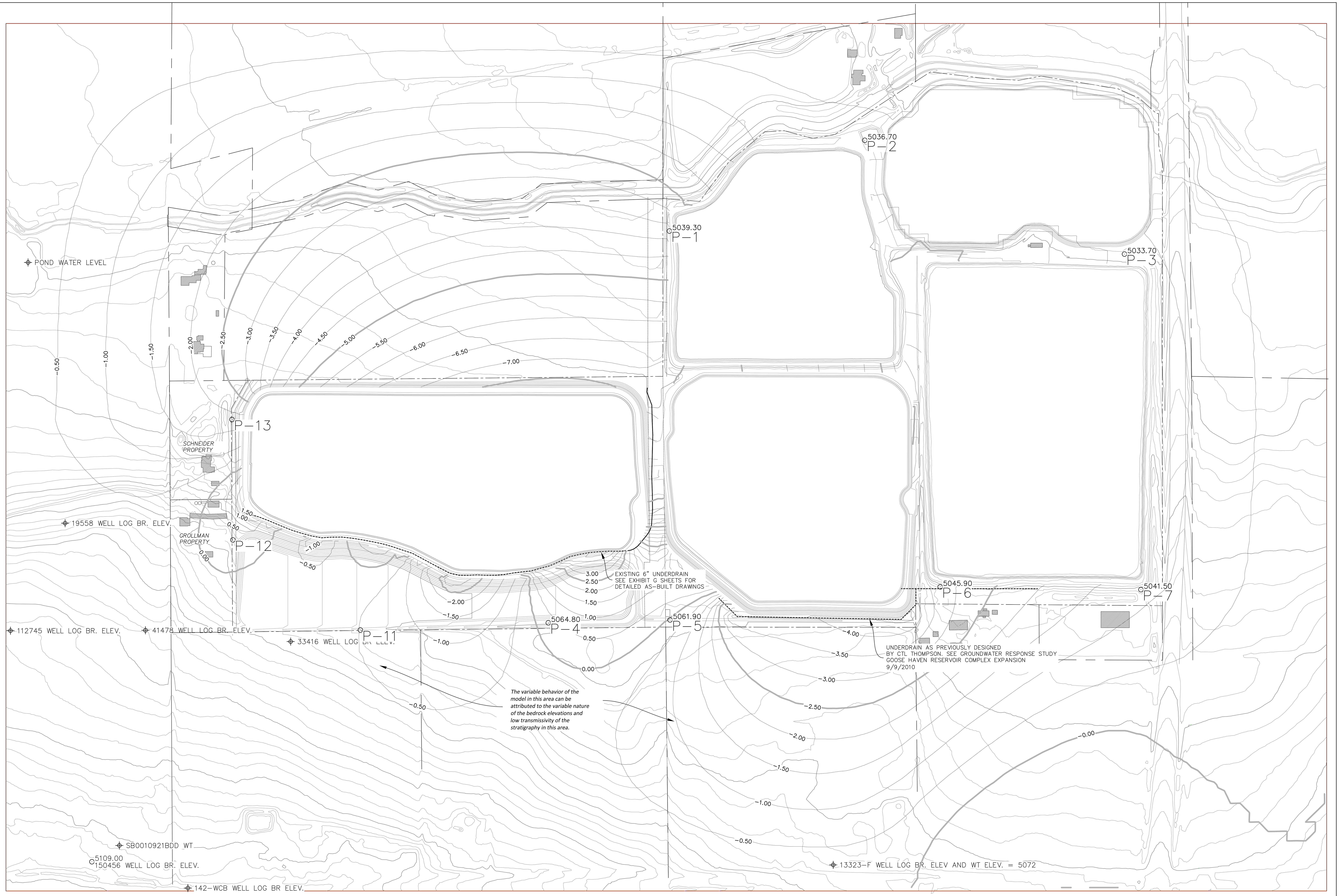
MODFLOW OUTPUT DELTA HEAD MAJOR CONTOUR (2.5FT)

MODFLOW OUTPUT DELTA HEAD MINOR CONTOUR (0.5FT)

DWR WELL LOG — 5109.00 150456 WELL LOG BR. ELEV.

EXISTING PIEZOMETERS — 5061.90 P−5

PROPOSED PIEZOMETERS — P−5



0 250 500 Feet

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

OWNER: CITY OF LAFAYETTE

CONTRACTOR: ROCK PRODUCTS OF COLORADO L.L.C.
P.O. BOX 893
BROOMFIELD, CO 80038

WSI Weiland, Inc. Environmental & Engineering
PO BOX 18087
BOULDER CO 80308
ph 303-443-9521

PROJECT: GOOSE HAVEN RESERVOIRS COMPLEX EXPANSION #2, #4 − MODFLOW OUTPUT PRE−MINING/RECLAMATION DELTA

SHEET: GW-3

DRAWING NO.: 1 OF 1

REVISION: 0

CAD FILE NAME: RECLAMATION MODFLOW OUT COMP GW-3.dwg

PLOT DATE: 11/30/23

APPROVED:

DATE:

DESIGNED: PFW

CHECKED: RB

DRAWN: PFW

CONTRACT:

DATE: November 30, 2023

B.A. JOB: 113136−000

SCALE: 1"=250'

142CWB

APPENDIX A

LOG OF WELL

DESCRIPTION OF MATERIAL DRILLED METHOD OF DRILLING Rotary

Feet			
00	to	8	Clay
8	to	15	yellow clay
15	to	25	Grey shale
25	to	72	Blue shale.
	to		
	to		

THIS FORM MUST BE SUBMITTED WITHIN 60 DAYS OF COMPLETION OF THE WORK DESCRIBED HERE ON. TYPE OR PRINT IN BLACK INK.

APPENDIX A

COLORADO DIVISION OF WATER RESOURCES

1313 Sherman Street - Room 818
Denver, Colorado 80203

RECEIVED
DEC 14 1981
WATER RESOURCES
STATE ENGINEER
COLO

WELL COMPLETION AND PUMP INSTALLATION REPORT

PERMIT NUMBER 112745

WELL OWNER Boulder Valley Farms

ADDRESS PO Box 883
Boulder, CO 80306

SE ¼ of the NW ¼ of Sec. 21
T. 1 N, R. 69 W, 6th P.M.

DATE COMPLETED October 30, 1981

WELL LOG

From	To	Type and Color of Material	Water Loc.
0	8	Sand & clay	
8	10	Gravel	
10	37	Weathered sandstone	
37	40	Cap rock	
40	50	Weathered sandstone	
50	52	Cap rock	
52	57	Weathered sandstone	
57	138	Foxhill sandstone	
138	150	Shale	
150	225	Foxhill sandstone	
225	240	Shale	
		5 GPM @ 37'	
		3 GPM @ 70'	
		4 GPM @ 90'	
		13 GPM @ 155'	
		35 GPM @ 180 - 220'	
		The testing of production of water from this well [illegible] report [illegible] conditions [illegible] [illegible] ection as in [illegible] s dependent upon future condi tions	

TOTAL DEPTH 240'

Use additional pages necessary to complete log.

HOLE DIAMETER

9 in. from 0 to 22 ft.

5 3/4 in. from 22 to 240 ft.

in. from to ft.

DRILLING METHOD Air rotary

CASING RECORD:

Plain Casing

Size 6 5/8 & kind Steel from -1 to 22 ft.

Size 4 1/2 & kind PVC from 10 to 140 ft.

Size & kind from to ft.

Perforated Casing

Size 4 1/2 & kind PVC from 140 to 240 ft.

Size & kind from to ft.

Size & kind from to ft.

GROUTING RECORD

Material Cement

Intervals 8' - 22'

Placement Method Poured

GRAVEL PACK: Size N A

Interval

TEST DATA

Date Tested October 30, 1981

Static Water Level Prior to Test 15 ft.

Type of Test Pump Air

Length of Test Two hours

Sustained Yield (Metered) 60+ GPM

Final Pumping Water Level 240'

APPENDIX A

WELL LOG 19558

Ground Elevation 5260 (if known) How Drilled Rotary

FROM FEET	TO FEET	TYPE OF MATERIAL	REMARKS (such as Cementing, Packing, Shut off, etc.)	Indicate Water Bearing Formation	Indicate Perforated Casing Location
0	4	Clay	7 inch seal at 42 ft		
4	50	Sand stone	Aquagel Packed		
50	52	Hard sandstone		Sand stone	Open 42 ft to 210 Sand stone
52	95	sand stone			
95	96	Iron Rock			
96	107	sand stone			
107	108	Lime stone			
108	137	sand stone			
137	159	sand shale			
159	162	sand stone			
162	175	Hard sand stone			
175	177	Iron Rock			
177	190	Sand stone			
196	210	split sandstone			

(if more space is required use additional sheet)

WELL DRILLER'S STATEMENT

This well was drilled under my supervision and the above information is true and correct to the best of my knowledge and belief.

Signed George Wanika Son

By George Wanika

George Wanika

Dated May 19, 1964

13744-F

APPENDIX A

WELL LOG

From	To	Type of Material	Water Loc.
0	9	brown clay	
9	47	fine clay-like sand	X

Use additional paper if necessary to complete log.

WELL DATA

Type Drilling: reverse rotary

HOLE DIAMETER:

36 in. from 0 ft. to 47 ft.

in. from ft. to ft.

in. from ft. to ft.

CASING RECORD

Plain Casing

Size 24, kind steel from 1 ft. to 27 ft.

Size , kind from ft. to ft.

Size , kind from ft. to ft.

Perforated Casing

Size 24, kind steel from 27 ft. to 47 ft.

Size , kind from ft. to ft.

Size , kind from ft. to ft.

GROUTING RECORD

Material: puddled clay

Intervals: 0-10

Placement Method:

GRAVEL PACK RECORD

Size: pea Interval: 10-47

TEST DATA

Date Tested: June 26, 1969

Type of Pump: turbine

Length of Test: five hours

Constant Yield: 52 GPM

Drawdown: 18' - 8"

WELL DRILLERS STATEMENT

The undersigned, being duly sworn, deposes and says: he is the driller of the well hereon described; he has read the statement made hereon; knows the content thereof; and the same is true of his own knowledge.

X Carl R. Larson

Carl R. Larson

License No. 162

State of Colorado, County of Arapahoe) ss

Subscribed and sworn to before me this 6th day of January, 19 70

My Commission expires: My Commission expires Dec. 6, 1972

Notary Public

41478

APPENDIX A

WELL LOG

From	To	Type of Material	Water Loc.
0	12	Clay Rocks	
12	15	Rocks. -	
15	20	Pea Gravel	—
20	35	Light slate	
35	36	Sandy shale	
36	50	shale	
50	51	Sandy shale	
51	73	Shale	
73	75	Sand shale	
75	92	Blue shale	
92	94	Sandy shale	
94	100	Blue shale	

Use additional paper if necessary to complete log.

WELL DATA

Type Drilling Rotary

HOLE DIAMETER:

8 in. from 0 ft. to 23 ft.

5 5/8 in. from 23 ft. to 100 ft.

___ in. from ___ ft. to ___ ft.

CASING RECORD

Plain Casing

Size 6, kind PLASTIC from 0 ft. to 23 ft.

Size ___, kind ___ from ___ ft. to ___ ft.

Size ___, kind ___ from ___ ft. to ___ ft.

Perforated Casing

Size 5 5/8 kind OPEN from 23 ft. to 100 ft.

Size ___, kind ___ from ___ ft. to ___ ft.

Size ___, kind ___ from ___ ft. to ___ ft.

GROUTING RECORD

Material Cement

Intervals from 5 ft to 12 ft

Placement Method Poured Back Casing

GRAVEL PACK RECORD

Size ___ Interval ___

TEST DATA

Date Tested June 4. 70

Type of Pump Bailor

Length of Test 3 hrs

Constant Yield 15 gal

Drawdown 17 ft

WELL DRILLERS STATEMENT

The undersigned, being duly sworn, deposes and says: he is the driller of the well hereon described; he has read the statement made hereon; knows the content thereof, and the same is true of his own knowledge.

x Don Wanka

License No. #2

State of Colorado, County of ________) ss

Subscribed and sworn to before me this ______ day of ______, 19___

My Commission expires ______, 19___.

____
Notary Public

33416

APPENDIX A
LOG AND HISTORY

WELL LOG

Ground Elevation ______

Type Drilling Rotary

From	To	Type of Material	Water Loc.	Perf.
0	14	Sandy clay		
14	47	Br. & Yellow sandstone		
47	53	Grey sandstone		
53	55	Sandrock		
55	62	Gr. sandstone & sandy clay		
62	65	Shale		
65	84	Sandstone		
84	90	Shale & sand stks.		
90	105	Sandstone		
105	115	Shale		
115	124	Sandstone		
124	126	Sandrock		
126	157	Sandstone	X	X
157	163	Sandrock		
163	220	Sandstone	x	x
220	224	Shale		
224	267	Sandstone	X	X
267		Sandrock.		

Use additional paper if necessary to complete log and attach.

WELL DATA

Date Started April 15, 1968

Date Completed April 20, 1968

Hole Diameter:
9 in. from 0 ft. to 55 ft.
7 7/8 in. from 55 ft. to 267 ft.
____ in. from ____ ft. to ____ ft.

CASING RECORD packer set 58'
Cemented from 10--55

~~Plain~~ Casing
Size 6 5/8 kind steel from 0 ft. to 267 ft.
Size ___, kind ___ from ___ ft. to ___ ft.
Size ___, kind ___ from ___ ft. to ___ ft.

Perforated Casing
Size 6 5/8 kind steel from 131 ft. to 267 ft.
Size ___, kind ___ from ___ ft. to ___ ft.
Size ___, kind ___ from ___ ft. to ___ ft.

TEST DATA
Date Tested April 20, 1968
Type of Pump Baler
Length of Test 4 hrs.
Constant Yield 30
Drawdown to 85'

PUMP DATA (To be filled in)
Type of Pump Not installed
Outlet Size ______
Driven by ______
Horsepower ______

DEPTH TO WATER 25

TOTAL DEPTH 267'

WELL DRILLERS STATEMENT

State of Colorado) ss
County of ______)

Kenneth L. Rutt being duly sworn, deposes and says: he is the driller of the above described well; he has read the above map and statement, knows the content thereof, and the same is true of his own knowledge.

Kenneth L. Rutt

License No. 9

Subscribed and sworn to before me this ______ day of ______, 19__

My Commission expires ______, 19__.

______
Notary Public

FORM TO BE MADE OUT IN QUADRUPLICATE:
Original WHITE (both sides) & Triplicate GREEN Copy must be filed with the State Engineer within 30-days after well is completed. Duplicate PINK copy is for the Owner & YELLOW copy for the Driller. WHITE FORM MUST BE AN ORIGINAL COPY ON BOTH SIDES AND SIGNED.

WRJ-25-75

APPENDIX A

RECEIVED
JAN 27 1988
WATER RESOURCES
STATE ENGINEER
COLO.

COLORADO DIVISION OF WATER RESOURCES

818 Centennial Bldg., 1313 Sherman St.
Denver, Colorado 80203

TYPE OR PRINT IN BLACK INK. COPY OF ACCEPTED STATEMENT MAILED ON REQUEST.

STATE OF COLORADO
COUNTY OF Boulder } SS.

AFFIDAVIT

____ STATEMENT OF BENEFICIAL USE OF GROUND WATER
____ AMENDMENT OF EXISTING RECORD
X LATE REGISTRATION

PERMIT NUMBER 150456

LOCATION OF WELL

THE AFFIANT(S) The Bixler Company
whose mailing % Leroy Overfelt
address is 5605 North 115th
City Longmont, CO (STATE) 80501 (ZIP)

County Boulder
SE ¼ of the NW ¼, Section 21
Twp. 1 N (N OR S), Rng. 69 W (E OR W), 6th P.M.

being duly sworn upon oath, deposes and says that he (they) is (are) the owner(s) of the well described hereon; the well is located as described above, at distances of 2490 feet from the North (NORTH OR SOUTH) section line and 2110 feet from the West (EAST OR WEST) section line; water from this well was first applied to a beneficial use for the purpose(s) described herein on the 1 day of July, 19 58; the maximum sustained pumping rate of the well is 15 gallons per minute, the pumping rate claimed hereby is 15 gallons per minute; the total depth of the well is 16 feet; the average annual amount of water to be diverted is 1 acre-feet; for which claim is hereby made for domestic purpose(s); the legal description of the land on which the water from this well is used is SE¼ of the NW¼, Sec. 21, T 1N, R 69W of which .1 acres are irrigated and which is illustrated on the map on the reverse side of this form; that this well was completed in compliance with the permit approved therefor; this statement of beneficial use of ground water is filed in compliance with law; he (they) has (have) read the statements made hereon; knows the content thereof; and that the same are true of his (their) knowledge.

(COMPLETE REVERSE SIDE OF THIS FORM)

Signature(s) Leroy Overfelt

Subscribed and sworn to before me on this 25th day of Jan, 19 88

My Commission expires: 9-30-91
(SEAL)

Sharon M. Bussard
NOTARY PUBLIC
401 Main Longmont Co 80501

84202A

FOR OFFICE USE ONLY

Court Case No. ____
Prior. ____ Mo. ____ Day ____ Yr ____
Div. 1 Cty. 07
Sec. ____ ¼, ____ ¼, ____ ¼
Well Use 1
Dist 06 Basin ____ Man Dis ____

ACCEPTED FOR FILING BY THE STATE ENGINEER OF COLORADO PURSUANT TO THE FOLLOWING CONDITIONS:

1) IN ACCORDANCE WITH CRS 37-92-602(5) FOR HISTORIC USE AS INDICATED BELOW AND DESCRIBED IN CRS 37-92-602(1)(b).

2) A WELL PRODUCING 15 G.P.M. OR LESS AND USED FOR ORDINARY HOUSEHOLD PURPOSES INSIDE ONE SINGLE FAMILY DWELLING, FIRE PROTECTION, THE WATERING OF DOMESTIC ANIMALS AND POULTRY, AND THE IRRIGATION OF NOT MORE THAN 4,300 SQUARE FEET OF HOME GARDENS AND LAWNS. GRG 2/5/88

FEB 05 1988
DATE

Jeris A. Danielson
STATE ENGINEER

BY Steve Lautenschlager

JAN 26 1970

WRJ-25-70

Index No. 2833
IDWD 1-6
Use 6
Registered

Ent

APPENDIX

STATE OF COLORADO
DIVISION OF WATER RESOURCES
OFFICE OF THE STATE ENGINEER

RECEIVED
DEC 29 1969
WATER SECT.
COLO.
ENGINEER

MAP AND STATEMENT FOR WATER WELL FILING

PERMIT NUMBER 13323-F

STATE OF COLORADO)
SS
COUNTY OF BOULDER)

Know all men by these presents: That the undersigned ROY E. GRAHAM, claimant(s), whose address is 10405 Isabelle Rd., City Lafayette, Colorado, 80026, states;

Claimant(s) is (are) the owner(s) of the well described hereon; the total number of acres of land irrigated from this well is 15; work was commenced on this well by actual construction 17th day of December, 1969; the yield from said well is 40 (gpm), for which claim is hereby made for Irrigation purposes; that the average annual amount of water to be diverted is 25 acre-feet; and that the aforementioned statements are made and this map and statement are filed in compliance with the law.

x Roy E. Graham
Claimant(s)

Subscribed before me on this 26th day of December, 1969.

My commission expires My Commission Expires July 3, 1973

Marcella Ball
Notary Public

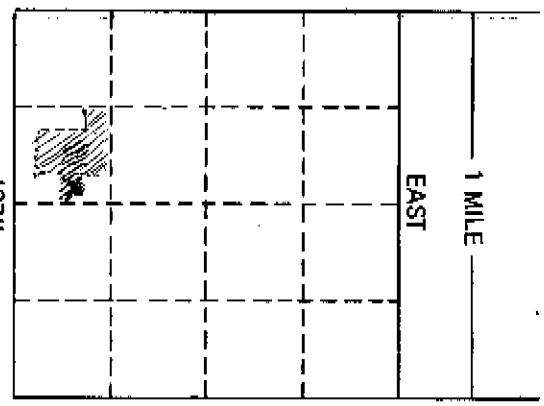
WELL LOCATION 07

BOULDER County

SW ¼ of NW ¼, sec. 22

T. 1 N R. 69 W 6th P.M.

INDICATE WELL LOCATION ON DIAGRAM



WELL SHALL BE LOCATED WITH REFERENCE TO GOVERNMENT SURVEY CORNERS OR MONUMENTS, OR SECTION LINES BY DISTANCE AND BEARING.

2602 ft. from North section line.
(North or South)

865 ft. from West section line.
(East or West)

Ground Water Basin BOULDER VALLEY

Water Management District Southern District

Domestic wells may be located by the following:

LOT ______, BLOCK ______

SUBDIVISION ______

FILING # ______

WELL DATA

Date Completed 12-17-69

Static Water Level at 5(½) ft. 5 ft

Total Depth 15 ft.

ACCEPTED FOR FILING IN THE OFFICE OF THE STATE ENGINEER OF COLORADO ON THIS ______ DAY OF ______, 19____.

State Engineer

FORM TO BE MADE OUT IN QUADRUPLICATE: WHITE FORM MUST BE AN ORIGINAL COPY ON BOTH SIDES AND SIGNED. WHITE copy & GREEN copy must be filed with the State Engineer within 30 days after well is completed; PINK copy is for the Owner & YELLOW copy is for the Driller.

APPENDIX A

WELL LOG

From	To	Type of Material	Water Loc.
0	7FT.	Sandy Loam	7 ft.
7'	10Ft	Small Gravel	
10'	15FT.	Clay Loam	

Use additional paper if necessary to complete log.

WELL DATA

Type Drilling DRAG LINE

HOLE DIAMETER:

24" in. from 0 ft. to 8 ft.

48" in. from 8 ft. to 16 ft.

in. from ft. to ft.

CASING RECORD

Plain Casing

Size 24", kind Conc. from 0 ft. to 8 ft.

Size 48", kind Conc. Perf. from 8 ft. to 16 ft.

Size , kind from ft. to ft.

Perforated Casing

Size 48 kind Conc. from 8 ft. to 16 ft.

Size , kind from ft. to ft.

Size , kind from ft. to ft.

GROUTING RECORD

Material None

Intervals

Placement Method

GRAVEL PACK RECORD

Size 1½ in. Interval 40 yds. 8' Deep around casing at 7ft to 15ft deep

TEST DATA

Date Tested 12-21-69

Type of Pump Centrifugal 1½

Length of Test 1 hour

Constant Yield 33 gpm

Drawdown 3 ft. from 9½ to 6½ ft.

WELL DRILLERS STATEMENT

The undersigned, being duly sworn, deposes and says: he is the driller of the well hereon described; he has read the statement made hereon; knows the content thereof, and the same is true of his own knowledge.

X. Roy E. Graham

License No.

State of Colorado, County of Boulder) ss

Subscribed and sworn to before me this 26th day of December, 1969

My Commission expires My Commission Expires July 3, 1973, 19

Notary Public

Form No. GWS-31 02/2017	**WELL CONSTRUCTION AND YIELD ESTIMATE REPORT** State of Colorado, Office of the State Engineer 1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581 dwr.colorado.gov and dwrpermitsonline@state.co.us	For Office Use Only

1. Well Permit Number: 4000064-MH **Receipt Number:** 04000064

2. Owner's Well Designation: P-11

3. Well Owner Name: Rock Products of Colorado - Jon File

4. Well Location Street Address: n/a

5. As Built GPS Well Location (required): ☐ Zone 12 ☒ Zone 13 Easting: 489904.8 Northing: 4432229.5

6. Legal Well Location: NW 1/4, NE 1/4, Sec., 21 Twp. 1 ☒ N or S ☐, Range 69 ☐ E or W ☒, S P.M.

County: Boulder

Subdivision: n/a, Lot ____, Block ____, Filing (Unit) ____

7. Ground Surface Elevation: 5086 feet **Date Completed:** 06/08/2023 **Drilling Method:** 4.25 inch I.D. hollowstem

8. Completed Aquifer Name : n/a alluvial **Total Depth:** 19 feet **Depth Completed:** 19 feet

9. Advance Notification: Was Notification Required Prior to Construction? ☒ Yes ☐ No, Date Notification Given: 06/02/2023

10. Aquifer Type: (Check one)
☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layers) ☐ Laramie-Fox Hills
☐ Type II (Not overlain by Type III) ☐ Type II (Overlain by Type III) ☒ Type III (alluvial/colluvial)

11. Geologic Log:

Depth	Type	Grain Size	Color	Water Loc.
0-7'	Clay, sandy, fill	fine-med	d. brn	
7-11'	Clay, sandy	fine-med	brown	
11-19'	Sandstone, silty	fine	l. brn	11'

Remarks:

12. Hole Diameter (in.)

Hole Diameter (in.)	From (ft)	To (ft)
7	0	19

13. Plain Casing

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
2.375	Sch40PVC	0.154	0	4

Perforated Casing Screen Slot Size (in): ____

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
2.375	Sch40PVC	0.154	4	19

14. Filter Pack:
Material: Silica Sand
Size: 10/20
Interval: 3-19'

15. Packer Placement:
Type: Bentonite chips
Depth: 0-3'

16. Grouting Record

Material	Amount	Density	Interval	Method

17. Disinfection: Type Amt. Used

18. Well Yield Estimate Data: ☐ Check box if Test Data is submitted on Form Number GWS-39, Well Yield Test Report

Well Yield Estimate Method: ____

Static Level: 11' Estimated Yield (gpm) ____

Date/Time measured: 6/8/23 Estimate Length (hrs) ____

Remarks:

19. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed (or name entered if filing online) 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 $1,000 and/or revocation of the contracting license. If filing online the State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4.

Company Name:	Email:	Phone w/area code:	License Number:
CMT Technical Services	jay.edwards@cmttechnicalservices.c	(303) 220-0300	

Mailing Address: 7108 S. Alton Way, Bldg B., Centennial, CO 80112

Sign (or enter name if filing online)	Print Name and Title	Date:
Jay B. Edwards	Jay B. Edwards - Engineering Field Services Coordinator	06/08/2023

Form No. GWS-31 02/2017	**WELL CONSTRUCTION AND YIELD ESTIMATE REPORT** State of Colorado, Office of the State Engineer 1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581 dwr.colorado.gov and dwrpermitsonline@state.co.us	For Office Use Only

1. Well Permit Number: 4000064-MH **Receipt Number:** 04000064

2. Owner's Well Designation: P-12

3. Well Owner Name: Rock Products of Colorado - Jon File

4. Well Location Street Address: n/a

5. As Built GPS Well Location (required): ☐ Zone 12 ☒ Zone 13 Easting: 489722.9 Northing: 4432415.7

6. Legal Well Location: NW 1/4, NE 1/4, Sec., 21 Twp. 1 ☒ N or S ☐, Range 69 ☐ E or W ☒, S P.M.

County: Boulder

Subdivision: n/a, Lot ___, Block ___, Filing (Unit) ___

7. Ground Surface Elevation: 5072 feet **Date Completed:** 06/08/2023 **Drilling Method:** 4.25 inch I.D. hollowstem

8. Completed Aquifer Name : n/a alluvial **Total Depth:** 19 feet **Depth Completed:** 19 feet

9. Advance Notification: Was Notification Required Prior to Construction? ☒ Yes ☐ No, Date Notification Given: 06/02/2023

10. Aquifer Type: (Check one) ☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layers) ☐ Laramie-Fox Hills ☐ Type II (Not overlain by Type III) ☐ Type II (Overlain by Type III) ☒ Type III (alluvial/colluvial)

11. Geologic Log:

Depth	Type	Grain Size	Color	Water Loc.
0-7'	Clay, sandy	fine-med	brown	
7-15'	Sandstone, silty	fine	brown	7'
15-19'	Siltstone	fine	brown	

Remarks:

12. Hole Diameter (in.)

Hole Diameter (in.)	From (ft)	To (ft)
7	0	19

13. Plain Casing

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
2.375	Sch40PVC	0.154	0	4

Perforated Casing Screen Slot Size (in): ___

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
2.375	Sch40PVC	0.154	4	19

14. Filter Pack:

Material: Silica Sand

Size: 10/20

Interval: 3-19'

15. Packer Placement:

Type: Bentonite chips

Depth: 0-3'

16. Grouting Record

Material	Amount	Density	Interval	Method

17. Disinfection: Type Amt. Used

18. Well Yield Estimate Data: ☐ Check box if Test Data is submitted on Form Number GWS-39, Well Yield Test Report

Well Yield Estimate Method: ___

Static Level: 11'

Date/Time measured: 6/8/23

Estimated Yield (gpm) ___

Estimate Length (hrs) ___

Remarks:

19. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed (or name entered if filing online) 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 $1,000 and/or revocation of the contracting license. If filing online the State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4.

Company Name:	Email:	Phone w/area code:	License Number:
CMT Technical Services	jay.edwards@cmttechnicalservices.c	(303) 220-0300	

Mailing Address: 7108 S. Alton Way, Bldg B., Centennial, CO 80112

Sign (or enter name if filing online)	Print Name and Title	Date:
Jay B. Edwards	Jay B. Edwards - Engineering Field Services Coordinator	06/08/2023

Form No. GWS-31 02/2017	**WELL CONSTRUCTION AND YIELD ESTIMATE REPORT** State of Colorado, Office of the State Engineer 1313 Sherman St., Room 821, Denver, CO 80203 303.866.3581 dwr.colorado.gov and dwrpermitsonline@state.co.us	For Office Use Only

1. Well Permit Number: 4000064-MH **Receipt Number:** 04000064

2. Owner's Well Designation: P-13

3. Well Owner Name: Rock Products of Colorado - Jon File

4. Well Location Street Address: n/a

5. As Built GPS Well Location (required): ☐ Zone 12 ☒ Zone 13 Easting: 489720.9 Northing: 4432590.8

6. Legal Well Location: NW 1/4, NE 1/4, Sec., 21 Twp. 1 ☒ N or S ☐, Range 69 ☐ E or W ☒, S P.M.

County: Boulder

Subdivision: n/a, Lot ——, Block ——, Filing (Unit) ____

7. Ground Surface Elevation: 5059 feet **Date Completed:** 06/08/2023 **Drilling Method:** 4.25 inch I.D. hollowstem

8. Completed Aquifer Name : n/a alluvial **Total Depth:** 19 feet **Depth Completed:** 19 feet

9. Advance Notification: Was Notification Required Prior to Construction? ☒ Yes ☐ No, Date Notification Given: 06/02/2023

10. Aquifer Type: (Check one) ☐ Type I (One Confining Layer) ☐ Type I (Multiple Confining Layers) ☐ Laramie-Fox Hills ☐ Type II (Not overlain by Type III) ☐ Type II (Overlain by Type III) ☒ Type III (alluvial/colluvial)

11. Geologic Log:

Depth	Type	Grain Size	Color	Water Loc.
0-5'	Clay, sandy	fine-med	brown	
5-16'	Clay, gravelly	fine-coarse	brown	12'
16-19'	Sandstone	fine-med	brown	

Remarks:

12. Hole Diameter (in.)

Hole Diameter (in.)	From (ft)	To (ft)
7	0	19

13. Plain Casing

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
2.375	Sch40PVC	0.154	0	4

Perforated Casing Screen Slot Size (in): ____

OD (in)	Kind	Wall Size (in)	From (ft)	To (ft)
2.375	Sch40PVC	0.154	4	19

14. Filter Pack:
Material: Silica Sand
Size: 10/20
Interval: 3-19'

15. Packer Placement:
Type: Bentonite chips
Depth: 0-3'

16. Grouting Record

Material	Amount	Density	Interval	Method

17. Disinfection: Type Amt. Used

18. Well Yield Estimate Data: ☐ Check box if Test Data is submitted on Form Number GWS-39, Well Yield Test Report

Well Yield Estimate Method: ____

Static Level: 11' Estimated Yield (gpm) ____

Date/Time measured: 6/8/23 Estimate Length (hrs) ____

Remarks:

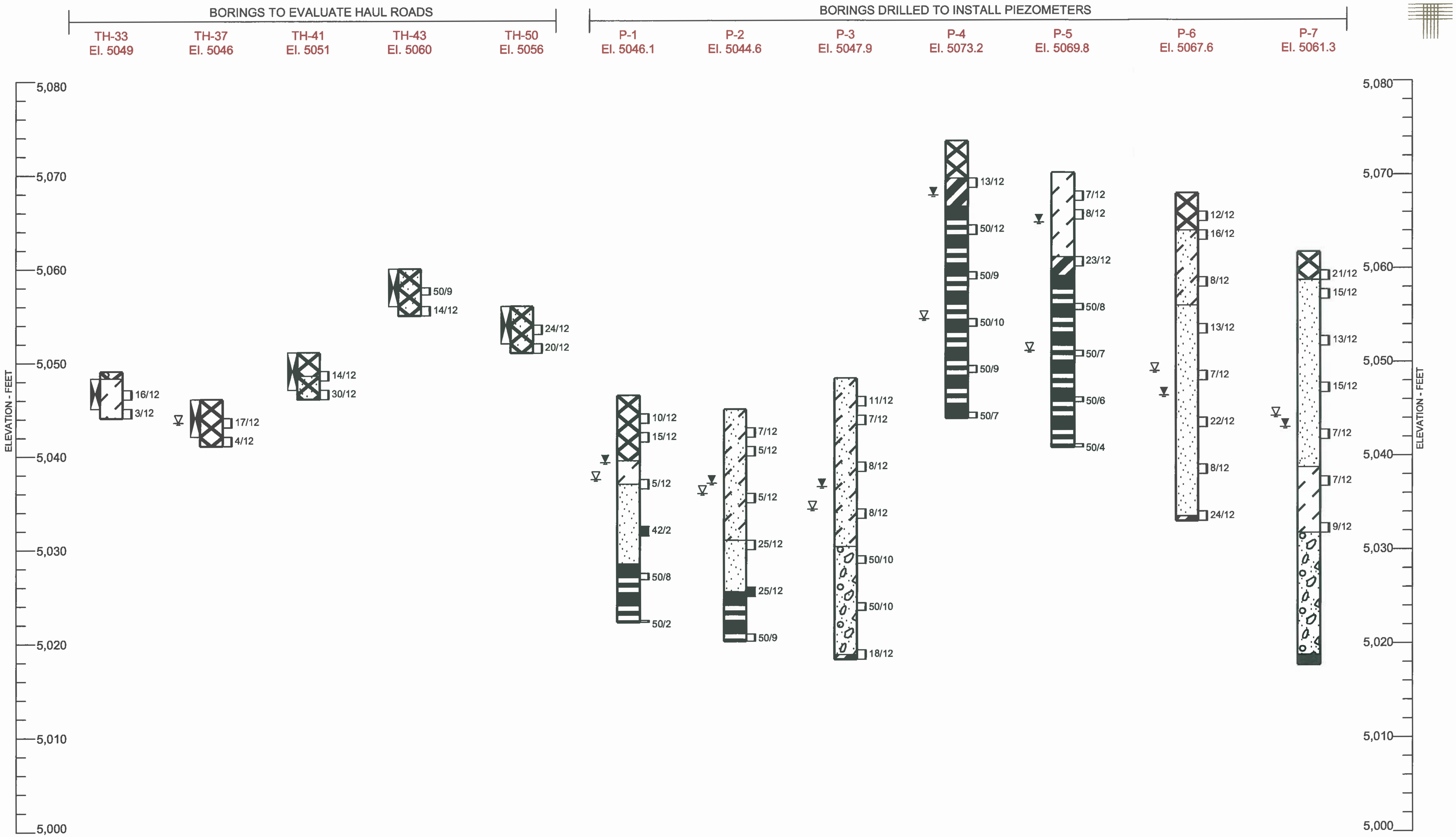
19. I have read the statements made herein and know the contents thereof, and they are true to my knowledge. This document is signed (or name entered if filing online) and certified in accordance with Rule 17.4 of the Water Well Construction Rules, 2 CCR 402 2. The filing of a document that contains false statements is a violation of section 37 91 108(1)(e), C.R.S., and is punishable by fines up to $1,000 and/or revocation of the contracting license. If filing online the State Engineer considers the entry of the licensed contractor's name to be compliance with Rule 17.4.

Company Name:	Email:	Phone w/area code:	License Number:
CMT Technical Services	jay.edwards@cmttechnicalservices.c	(303) 220-0300	

Mailing Address: 7108 S. Alton Way, Bldg B., Centennial, CO 80112

Sign (or enter name if filing online)	Print Name and Title	Date:
Jay B. Edwards	Jay B. Edwards - Engineering Field Services Coordinator	06/08/2023

APPENDIX A



Summary Logs of Exploratory Borings and Test Pits

FIGURE A-4

McLAUGHLIN WATER ENGINEERS, LTD
GOOSE HAVEN RESERVOIR COMPLEX EXPANSION
CTL I T PROJECT NO. FC04797-145

APPENDIX B

```
                                  MODFLOW-2005
      U.S. GEOLOGICAL SURVEY MODULAR FINITE-DIFFERENCE GROUND-WATER FLOW
MODEL
                            VERSION 1.12.00 2/3/2017

 LIST FILE: GH-1.out
                         UNIT    2

 OPENING "GH-1.hed"
 FILE TYPE:DATA(BINARY)   UNIT    3   STATUS:UNKNOWN
 FORMAT:UNFORMATTED            ACCESS:STREAM

 OPENING "GH-1.ccf"
 FILE TYPE:DATA(BINARY)   UNIT   40   STATUS:UNKNOWN
 FORMAT:UNFORMATTED            ACCESS:STREAM

 OPENING "GH-1.lmt"
 FILE TYPE:LMT6   UNIT    4   STATUS:OLD
 FORMAT:FORMATTED              ACCESS:SEQUENTIAL
#
# Global Input Files

 OPENING "GH-1.dis"
 FILE TYPE:DIS   UNIT    7   STATUS:OLD
 FORMAT:FORMATTED              ACCESS:SEQUENTIAL
#
# Flow Process Input
Files

 OPENING "GH-1.ba6"
 FILE TYPE:BAS6   UNIT    8   STATUS:OLD
 FORMAT:FORMATTED              ACCESS:SEQUENTIAL

 OPENING "GH-1.lpf"
 FILE TYPE:LPF   UNIT    9   STATUS:OLD
 FORMAT:FORMATTED              ACCESS:SEQUENTIAL

 OPENING "GH-1.oc"
 FILE TYPE:OC   UNIT   10   STATUS:OLD
 FORMAT:FORMATTED              ACCESS:SEQUENTIAL

 OPENING "GH-1.rch"
 FILE TYPE:RCH   UNIT    1   STATUS:OLD
 FORMAT:FORMATTED              ACCESS:SEQUENTIAL

 OPENING "GH-1.hfb"
 FILE TYPE:HFB6   UNIT   12   STATUS:OLD
 FORMAT:FORMATTED              ACCESS:SEQUENTIAL

 OPENING "GH-1.pcg"
 FILE TYPE:PCG   UNIT   13   STATUS:OLD
 FORMAT:FORMATTED              ACCESS:SEQUENTIAL

 BAS -- BASIC PACKAGE, VERSION 7, 5/2/2005 INPUT READ FROM UNIT    8
```

APPENDIX B

```
 MODFLOW was compiled using mixed precision
 Precision of REAL variables:           6
 Precision of DOUBLE PRECISION variables:          15

 DISCRETIZATION INPUT DATA READ FROM UNIT    7
 # MF2K DISCRETIZATION FILE
 #
 #
 # NLAY NROW NCOL NPER TIMEUNITS LENUNITS
    1 LAYERS        93 ROWS       141 COLUMNS
    1 STRESS PERIOD(S) IN SIMULATION
 MODEL TIME UNIT IS DAYS
 MODEL LENGTH UNIT IS FEET
  Confining bed flag for each layer:
   0



                              DELR
 READING ON UNIT    7 WITH FORMAT: (FREE)



                              DELC
 READING ON UNIT    7 WITH FORMAT: (FREE)


 STRESS PERIOD     LENGTH       TIME STEPS     MULTIPLIER FOR DELT    SS
FLAG
 ------------------------------------------------------------------------
----
        1         1.000000          1                    1.000         SS

 STEADY-STATE SIMULATION




 #GMS MODFLOW Simulation
 #02 January 2023
 THE FREE FORMAT OPTION HAS BEEN SELECTED



                    BOUNDARY ARRAY FOR LAYER   1
 READING DATA FROM HDF5 FILE

 AQUIFER HEAD WILL BE SET TO  -999.00     AT ALL NO-FLOW NODES
(IBOUND=0).

 OUTPUT CONTROL IS SPECIFIED ONLY AT TIME STEPS FOR WHICH OUTPUT IS
DESIRED
 COMPACT CELL-BY-CELL BUDGET FILES WILL BE WRITTEN
```

APPENDIX B

```
 AUXILIARY DATA WILL BE SAVED IN CELL-BY-CELL BUDGET FILES
 HEAD PRINT FORMAT CODE IS   0    DRAWDOWN PRINT FORMAT CODE IS   0
 HEADS WILL BE SAVED ON UNIT    3    DRAWDOWNS WILL BE SAVED ON UNIT    0

 LPF -- LAYER-PROPERTY FLOW PACKAGE, VERSION 7, 5/2/2005
         INPUT READ FROM UNIT    9
 CELL-BY-CELL FLOWS WILL BE SAVED ON UNIT   40
 HEAD AT CELLS THAT CONVERT TO DRY=  -888.00
 No named parameters

   LAYER FLAGS:
 LAYER       LAYTYP        LAYAVG         CHANI        LAYVKA
LAYWET
 -------------------------------------------------------------------------
---
    1            0             0    -1.000E+00            1
0

   INTERPRETATION OF LAYER FLAGS:
                        INTERBLOCK     HORIZONTAL    DATA IN
         LAYER TYPE   TRANSMISSIVITY   ANISOTROPY   ARRAY VKA
WETTABILITY
 LAYER      (LAYTYP)      (LAYAVG)       (CHANI)      (LAYVKA)
(LAYWET)
 -------------------------------------------------------------------------
---
    1      CONFINED      HARMONIC      VARIABLE    ANISOTROPY  NON-
WETTABLE

 WETTING CAPABILITY IS NOT ACTIVE IN ANY LAYER

 RCH -- RECHARGE PACKAGE, VERSION 7, 5/2/2005 INPUT READ FROM UNIT    1
 #GMS_HDF5_01
 No named parameters
 OPTION 3 -- RECHARGE TO HIGHEST ACTIVE NODE IN EACH VERTICAL COLUMN
 CELL-BY-CELL FLOWS WILL BE SAVED ON UNIT   40


     0 Recharge parameters

 HFB -- HORIZONTAL-FLOW BARRIER PACKAGE, VERSION 7, 5/2/2005.
   INPUT READ FROM UNIT   12
     0 PARAMETERS DEFINE A MAXIMUM OF      0 HORIZONTAL FLOW BARRIERS
    312 HORIZONTAL FLOW BARRIERS NOT DEFINED BY PARAMETERS


     0 HFB parameters

    312 BARRIERS NOT DEFINED BY PARAMETERS

 BARRIER  LAYER  IROW1  ICOL1  IROW2  ICOL2    HYDCHR
 ---------------------------------------------------------
      1      1      15     91     15     92   1.0000E-04
      2      1      14     91     15     91   1.0000E-04
```

APPENDIX B

3	1	14	90	15	90	1.0000E-04
4	1	14	89	15	89	1.0000E-04
5	1	14	88	15	88	1.0000E-04
6	1	14	87	15	87	1.0000E-04
7	1	14	86	15	86	1.0000E-04
8	1	14	85	15	85	1.0000E-04
9	1	14	84	15	84	1.0000E-04
10	1	14	83	15	83	1.0000E-04
11	1	14	82	15	82	1.0000E-04
12	1	14	81	15	81	1.0000E-04
13	1	14	80	15	80	1.0000E-04
14	1	15	79	15	80	1.0000E-04
15	1	15	79	16	79	1.0000E-04
16	1	16	78	16	79	1.0000E-04
17	1	17	78	17	79	1.0000E-04
18	1	17	78	18	78	1.0000E-04
19	1	18	77	18	78	1.0000E-04
20	1	18	77	19	77	1.0000E-04
21	1	19	76	19	77	1.0000E-04
22	1	19	76	20	76	1.0000E-04
23	1	20	75	20	76	1.0000E-04
24	1	20	75	21	75	1.0000E-04
25	1	20	74	21	74	1.0000E-04
26	1	20	73	21	73	1.0000E-04
27	1	21	72	21	73	1.0000E-04
28	1	21	72	22	72	1.0000E-04
29	1	22	71	22	72	1.0000E-04
30	1	23	71	23	72	1.0000E-04
31	1	24	71	24	72	1.0000E-04
32	1	24	72	25	72	1.0000E-04
33	1	25	72	25	73	1.0000E-04
34	1	26	72	26	73	1.0000E-04
35	1	27	72	27	73	1.0000E-04
36	1	28	72	28	73	1.0000E-04
37	1	29	72	29	73	1.0000E-04
38	1	30	72	30	73	1.0000E-04
39	1	30	72	31	72	1.0000E-04
40	1	31	71	31	72	1.0000E-04
41	1	32	71	32	72	1.0000E-04
42	1	33	71	33	72	1.0000E-04
43	1	34	71	34	72	1.0000E-04
44	1	35	71	35	72	1.0000E-04
45	1	36	71	36	72	1.0000E-04
46	1	36	72	37	72	1.0000E-04
47	1	36	73	37	73	1.0000E-04
48	1	36	74	37	74	1.0000E-04
49	1	36	75	37	75	1.0000E-04
50	1	36	76	37	76	1.0000E-04
51	1	36	77	37	77	1.0000E-04
52	1	36	78	37	78	1.0000E-04
53	1	36	79	37	79	1.0000E-04
54	1	36	80	37	80	1.0000E-04
55	1	36	81	37	81	1.0000E-04
56	1	36	82	37	82	1.0000E-04

APPENDIX B

57	1	36	83	37	83	1.0000E-04
58	1	36	84	37	84	1.0000E-04
59	1	36	85	37	85	1.0000E-04
60	1	36	86	37	86	1.0000E-04
61	1	36	87	37	87	1.0000E-04
62	1	36	88	37	88	1.0000E-04
63	1	36	89	37	89	1.0000E-04
64	1	36	90	37	90	1.0000E-04
65	1	36	91	37	91	1.0000E-04
66	1	36	92	37	92	1.0000E-04
67	1	36	93	37	93	1.0000E-04
68	1	36	94	37	94	1.0000E-04
69	1	36	95	37	95	1.0000E-04
70	1	36	95	36	96	1.0000E-04
71	1	35	95	35	96	1.0000E-04
72	1	34	95	34	96	1.0000E-04
73	1	33	95	33	96	1.0000E-04
74	1	32	95	32	96	1.0000E-04
75	1	31	95	31	96	1.0000E-04
76	1	30	95	30	96	1.0000E-04
77	1	29	95	30	95	1.0000E-04
78	1	29	94	29	95	1.0000E-04
79	1	28	94	28	95	1.0000E-04
80	1	27	94	28	94	1.0000E-04
81	1	27	93	27	94	1.0000E-04
82	1	26	93	26	94	1.0000E-04
83	1	25	93	25	94	1.0000E-04
84	1	24	93	24	94	1.0000E-04
85	1	23	93	24	93	1.0000E-04
86	1	23	92	23	93	1.0000E-04
87	1	22	92	22	93	1.0000E-04
88	1	21	92	21	93	1.0000E-04
89	1	20	92	20	93	1.0000E-04
90	1	19	92	20	92	1.0000E-04
91	1	19	91	19	92	1.0000E-04
92	1	18	91	18	92	1.0000E-04
93	1	17	91	17	92	1.0000E-04
94	1	16	91	16	92	1.0000E-04
95	1	8	119	9	119	1.0000E-04
96	1	8	118	9	118	1.0000E-04
97	1	8	117	9	117	1.0000E-04
98	1	8	116	9	116	1.0000E-04
99	1	8	115	9	115	1.0000E-04
100	1	8	114	8	115	1.0000E-04
101	1	7	114	8	114	1.0000E-04
102	1	7	113	8	113	1.0000E-04
103	1	7	112	8	112	1.0000E-04
104	1	7	111	8	111	1.0000E-04
105	1	7	110	8	110	1.0000E-04
106	1	7	109	8	109	1.0000E-04
107	1	7	108	8	108	1.0000E-04
108	1	7	107	8	107	1.0000E-04
109	1	7	106	8	106	1.0000E-04
110	1	7	105	8	105	1.0000E-04

APPENDIX B

111	1	7	104	8	104	1.0000E-04
112	1	7	103	8	103	1.0000E-04
113	1	7	102	8	102	1.0000E-04
114	1	7	101	8	101	1.0000E-04
115	1	7	100	8	100	1.0000E-04
116	1	7	99	8	99	1.0000E-04
117	1	8	98	8	99	1.0000E-04
118	1	8	98	9	98	1.0000E-04
119	1	9	97	9	98	1.0000E-04
120	1	10	97	10	98	1.0000E-04
121	1	10	97	11	97	1.0000E-04
122	1	10	96	11	96	1.0000E-04
123	1	11	95	11	96	1.0000E-04
124	1	11	95	12	95	1.0000E-04
125	1	12	94	12	95	1.0000E-04
126	1	13	94	13	95	1.0000E-04
127	1	14	94	14	95	1.0000E-04
128	1	15	94	15	95	1.0000E-04
129	1	16	94	16	95	1.0000E-04
130	1	17	94	17	95	1.0000E-04
131	1	18	94	18	95	1.0000E-04
132	1	19	94	19	95	1.0000E-04
133	1	20	94	20	95	1.0000E-04
134	1	20	95	21	95	1.0000E-04
135	1	21	95	21	96	1.0000E-04
136	1	22	95	22	96	1.0000E-04
137	1	22	96	23	96	1.0000E-04
138	1	23	96	23	97	1.0000E-04
139	1	23	97	24	97	1.0000E-04
140	1	23	98	24	98	1.0000E-04
141	1	24	98	24	99	1.0000E-04
142	1	24	99	25	99	1.0000E-04
143	1	24	100	25	100	1.0000E-04
144	1	24	101	25	101	1.0000E-04
145	1	24	102	25	102	1.0000E-04
146	1	24	103	25	103	1.0000E-04
147	1	24	104	25	104	1.0000E-04
148	1	24	105	25	105	1.0000E-04
149	1	24	106	25	106	1.0000E-04
150	1	24	106	24	107	1.0000E-04
151	1	23	107	24	107	1.0000E-04
152	1	23	108	24	108	1.0000E-04
153	1	23	108	23	109	1.0000E-04
154	1	22	109	23	109	1.0000E-04
155	1	22	110	23	110	1.0000E-04
156	1	22	111	23	111	1.0000E-04
157	1	22	112	23	112	1.0000E-04
158	1	23	112	23	113	1.0000E-04
159	1	23	113	24	113	1.0000E-04
160	1	23	114	24	114	1.0000E-04
161	1	24	114	24	115	1.0000E-04
162	1	24	115	25	115	1.0000E-04
163	1	24	116	25	116	1.0000E-04
164	1	24	117	25	117	1.0000E-04

165	1	24	118	25	118	1.0000E-04
166	1	24	119	25	119	1.0000E-04
167	1	24	119	24	120	1.0000E-04
168	1	23	120	24	120	1.0000E-04
169	1	23	121	24	121	1.0000E-04
170	1	23	121	23	122	1.0000E-04
171	1	22	122	23	122	1.0000E-04
172	1	22	122	22	123	1.0000E-04
173	1	21	122	21	123	1.0000E-04
174	1	20	122	20	123	1.0000E-04
175	1	19	122	19	123	1.0000E-04
176	1	18	122	18	123	1.0000E-04
177	1	17	122	17	123	1.0000E-04
178	1	16	122	16	123	1.0000E-04
179	1	15	122	15	123	1.0000E-04
180	1	14	122	14	123	1.0000E-04
181	1	13	122	13	123	1.0000E-04
182	1	12	122	12	123	1.0000E-04
183	1	11	122	12	122	1.0000E-04
184	1	11	121	11	122	1.0000E-04
185	1	10	121	10	122	1.0000E-04
186	1	9	121	10	121	1.0000E-04
187	1	9	120	10	120	1.0000E-04
188	1	9	119	9	120	1.0000E-04
189	1	28	122	28	123	2.000
190	1	29	122	29	123	2.000
191	1	30	122	30	123	2.000
192	1	31	122	31	123	2.000
193	1	32	122	32	123	2.000
194	1	33	122	33	123	2.000
195	1	34	122	34	123	2.000
196	1	35	122	35	123	2.000
197	1	36	122	36	123	2.000
198	1	37	122	37	123	2.000
199	1	38	122	38	123	2.000
200	1	39	122	39	123	2.000
201	1	40	122	40	123	2.000
202	1	41	122	41	123	2.000
203	1	42	122	42	123	2.000
204	1	43	122	43	123	2.000
205	1	44	122	44	123	2.000
206	1	45	122	45	123	2.000
207	1	46	122	46	123	2.000
208	1	47	122	47	123	2.000
209	1	48	122	48	123	2.000
210	1	49	122	49	123	2.000
211	1	50	122	50	123	2.000
212	1	51	122	51	123	2.000
213	1	52	122	52	123	2.000
214	1	53	122	53	123	2.000
215	1	54	122	54	123	2.000
216	1	55	122	55	123	2.000
217	1	56	122	56	123	2.000
218	1	57	122	57	123	2.000

APPENDIX B

219	1	58	122	58	123	2.000
220	1	59	122	59	123	2.000
221	1	59	122	60	122	2.000
222	1	60	121	60	122	2.000
223	1	60	121	61	121	2.000
224	1	60	120	61	120	2.000
225	1	60	119	61	119	2.000
226	1	60	118	61	118	2.000
227	1	60	117	61	117	2.000
228	1	60	116	61	116	2.000
229	1	60	115	61	115	2.000
230	1	60	114	61	114	2.000
231	1	60	113	61	113	2.000
232	1	60	112	61	112	2.000
233	1	60	111	61	111	2.000
234	1	60	110	61	110	2.000
235	1	60	109	61	109	2.000
236	1	60	108	61	108	2.000
237	1	60	107	61	107	2.000
238	1	60	106	61	106	2.000
239	1	60	105	61	105	2.000
240	1	60	104	61	104	2.000
241	1	60	103	61	103	2.000
242	1	60	102	61	102	2.000
243	1	60	101	61	101	2.000
244	1	60	100	61	100	2.000
245	1	60	99	60	100	2.000
246	1	59	99	60	99	2.000
247	1	59	98	59	99	2.000
248	1	58	98	58	99	2.000
249	1	57	98	57	99	2.000
250	1	56	98	56	99	2.000
251	1	55	98	55	99	2.000
252	1	54	98	54	99	2.000
253	1	53	98	53	99	2.000
254	1	52	98	52	99	2.000
255	1	51	98	51	99	2.000
256	1	50	98	50	99	2.000
257	1	49	98	49	99	2.000
258	1	48	98	48	99	2.000
259	1	47	98	47	99	2.000
260	1	46	98	46	99	2.000
261	1	45	98	45	99	2.000
262	1	44	98	44	99	2.000
263	1	43	98	43	99	2.000
264	1	42	98	42	99	2.000
265	1	41	98	41	99	2.000
266	1	40	98	40	99	2.000
267	1	39	98	39	99	2.000
268	1	38	98	38	99	2.000
269	1	37	98	37	99	2.000
270	1	36	98	36	99	2.000
271	1	35	98	35	99	2.000
272	1	34	98	34	99	2.000

273	1	33	98	33	99	2.000
274	1	32	98	32	99	2.000
275	1	31	98	31	99	2.000
276	1	30	98	30	99	2.000
277	1	29	98	29	99	2.000
278	1	28	98	28	99	2.000
279	1	27	98	27	99	2.000
280	1	26	99	27	99	2.000
281	1	26	99	26	100	2.000
282	1	25	100	26	100	2.000
283	1	26	100	26	101	2.000
284	1	26	101	27	101	2.000
285	1	26	101	26	102	2.000
286	1	25	102	26	102	2.000
287	1	25	103	26	103	2.000
288	1	25	104	26	104	2.000
289	1	26	104	26	105	2.000
290	1	26	105	27	105	2.000
291	1	26	105	26	106	2.000
292	1	25	106	26	106	2.000
293	1	26	106	26	107	2.000
294	1	26	107	27	107	2.000
295	1	26	107	26	108	2.000
296	1	25	108	26	108	2.000
297	1	25	109	26	109	2.000
298	1	25	110	26	110	2.000
299	1	26	110	26	111	2.000
300	1	26	111	27	111	2.000
301	1	26	112	27	112	2.000
302	1	26	113	27	113	2.000
303	1	26	114	27	114	2.000
304	1	26	115	27	115	2.000
305	1	26	116	27	116	2.000
306	1	26	117	27	117	2.000
307	1	26	118	27	118	2.000
308	1	26	119	27	119	2.000
309	1	26	120	27	120	2.000
310	1	26	121	27	121	2.000
311	1	26	122	27	122	2.000
312	1	27	122	27	123	2.000

312 HFB BARRIERS

PCG -- CONJUGATE-GRADIENT SOLUTION PACKAGE, VERSION 7, 5/2/2005
MAXIMUM OF 25 CALLS OF SOLUTION ROUTINE
MAXIMUM OF 50 INTERNAL ITERATIONS PER CALL TO SOLUTION ROUTINE
MATRIX PRECONDITIONING TYPE : 1

SOLUTION BY THE CONJUGATE-GRADIENT
METHOD

APPENDIX B

```
                    MAXIMUM NUMBER OF CALLS TO PCG ROUTINE =       25
                        MAXIMUM ITERATIONS PER CALL TO PCG =       50
                               MATRIX PRECONDITIONING TYPE =        1
        RELAXATION FACTOR (ONLY USED WITH PRECOND. TYPE 1) =
0.10000E+01
 PARAMETER OF POLYNOMIAL PRECOND. = 2 (2) OR IS CALCULATED :        0
                         HEAD CHANGE CRITERION FOR CLOSURE =    0.10000E-
01
                     RESIDUAL CHANGE CRITERION FOR CLOSURE =    0.10000E-
01
            PCG HEAD AND RESIDUAL CHANGE PRINTOUT INTERVAL =      999
     PRINTING FROM SOLVER IS LIMITED(1) OR SUPPRESSED (>1) =        2
                            STEADY-STATE DAMPING PARAMETER =
0.10000E+01
                               TRANSIENT DAMPING PARAMETER =
0.10000E+01

 WARNING READING LMT PACKAGE INPUT DATA:
 [STANDARD] HEADER NO LONGER SUPPORTED; [EXTENDED] HEADER USED INSTEAD.


 ***Link-MT3DMS Package v7***
 OPENING LINK-MT3DMS OUTPUT FILE: GH-1.hff
 ON UNIT NUMBER:   333
 FILE TYPE: UNFORMATTED
 HEADER OPTION: EXTENDED
 ***Link-MT3DMS Package v7***

1
                            STRESS PERIOD NO.    1, LENGTH =   1.000000
                            ---------------------------------------------
--

                              NUMBER OF TIME STEPS =     1

                               MULTIPLIER FOR DELT =     1.000

                            INITIAL TIME STEP SIZE =   1.000000

 SOLVING FOR HEAD

 OUTPUT CONTROL FOR STRESS PERIOD    1   TIME STEP    1
    PRINT BUDGET
    SAVE HEAD FOR ALL LAYERS
    SAVE BUDGET
 UBDSV2 SAVING "   CONSTANT HEAD" ON UNIT  40 AT TIME STEP  1, STRESS
PERIOD   1
 UBDSV1 SAVING "FLOW RIGHT FACE " ON UNIT  40 AT TIME STEP  1, STRESS
PERIOD   1
 UBDSV1 SAVING "FLOW FRONT FACE " ON UNIT  40 AT TIME STEP  1, STRESS
PERIOD   1
 UBDSV3 SAVING "        RECHARGE" ON UNIT  40 AT TIME STEP  1, STRESS
PERIOD   1
```

APPENDIX B

```
 SAVING SATURATED THICKNESS AND FLOW TERMS ON UNIT  333 FOR MT3DMS
 BY THE LINK-MT3DMS PACKAGE V7 AT TIME STEP    1, STRESS PERIOD    1


 HEAD WILL BE SAVED ON UNIT    3 AT END OF TIME STEP    1, STRESS PERIOD
1
1
  VOLUMETRIC BUDGET FOR ENTIRE MODEL AT END OF TIME STEP    1, STRESS
PERIOD   1
  ----------------------------------------------------------------------
-------

     CUMULATIVE VOLUMES      L**3       RATES FOR THIS TIME STEP
L**3/T
     ------------------                 ------------------------

           IN:                                      IN:
           ---                                      ---
             STORAGE =           0.0000               STORAGE =
0.0000
       CONSTANT HEAD =       29969.7676         CONSTANT HEAD =
29969.7676
            RECHARGE =       32198.0039              RECHARGE =
32198.0039

            TOTAL IN =       62167.7734              TOTAL IN =
62167.7734

          OUT:                                     OUT:
          ----                                     ----
             STORAGE =           0.0000               STORAGE =
0.0000
       CONSTANT HEAD =       62167.5742         CONSTANT HEAD =
62167.5742
            RECHARGE =           0.0000              RECHARGE =
0.0000

           TOTAL OUT =       62167.5742             TOTAL OUT =
62167.5742

            IN - OUT =           0.1992              IN - OUT =
0.1992

 PERCENT DISCREPANCY =           0.00     PERCENT DISCREPANCY =
0.00




         TIME SUMMARY AT END OF TIME STEP    1 IN STRESS PERIOD    1
                    SECONDS     MINUTES      HOURS       DAYS
YEARS
```

```
                    ----------------------------------------------------
------
   TIME STEP LENGTH  86400.      1440.0      24.000      1.0000
2.73785E-03
 STRESS PERIOD TIME  86400.      1440.0      24.000      1.0000
2.73785E-03
         TOTAL TIME  86400.      1440.0      24.000      1.0000
2.73785E-03
1

 Run end date and time (yyyy/mm/dd hh:mm:ss): 2023/01/06 11:29:55
 Elapsed run time:  0.230 Seconds
```

APPENDIX B

```
                                  MODFLOW-2005
      U.S. GEOLOGICAL SURVEY MODULAR FINITE-DIFFERENCE GROUND-WATER FLOW
MODEL
                            VERSION 1.12.00 2/3/2017

 LIST FILE: GH-1-RECLAMATION_F.out
                        UNIT    2

 OPENING "GH-1-RECLAMATION_F.hed"
 FILE TYPE:DATA(BINARY)   UNIT    3   STATUS:UNKNOWN
 FORMAT:UNFORMATTED            ACCESS:STREAM

 OPENING "GH-1-RECLAMATION_F.ccf"
 FILE TYPE:DATA(BINARY)   UNIT   40   STATUS:UNKNOWN
 FORMAT:UNFORMATTED            ACCESS:STREAM

 OPENING "GH-1-RECLAMATION_F.lmt"
 FILE TYPE:LMT6   UNIT    4   STATUS:OLD
 FORMAT:FORMATTED              ACCESS:SEQUENTIAL
#
# Obs-Sen-Pes Process Input Files

 OPENING "GH-1-RECLAMATION_F.drob"
 FILE TYPE:DROB   UNIT   11   STATUS:OLD
 FORMAT:FORMATTED              ACCESS:SEQUENTIAL
#
# Obs Process Output File(s)

 OPENING "GH-1-RECLAMATION_F._os"
 FILE TYPE:DATA   UNIT   14   STATUS:UNKNOWN
 FORMAT:FORMATTED              ACCESS:SEQUENTIAL
#
# Global Input Files

 OPENING "GH-1-RECLAMATION_F.dis"
 FILE TYPE:DIS   UNIT    7   STATUS:OLD
 FORMAT:FORMATTED              ACCESS:SEQUENTIAL
#
# Flow Process Input Files

 OPENING "GH-1-RECLAMATION_F.ba6"
 FILE TYPE:BAS6   UNIT    8   STATUS:OLD
 FORMAT:FORMATTED              ACCESS:SEQUENTIAL

 OPENING "GH-1-RECLAMATION_F.lpf"
 FILE TYPE:LPF   UNIT    9   STATUS:OLD
 FORMAT:FORMATTED              ACCESS:SEQUENTIAL

 OPENING "GH-1-RECLAMATION_F.oc"
 FILE TYPE:OC   UNIT   10   STATUS:OLD
 FORMAT:FORMATTED              ACCESS:SEQUENTIAL

 OPENING "GH-1-RECLAMATION_F.rch"
 FILE TYPE:RCH   UNIT    1   STATUS:OLD
```

APPENDIX B

```
 FORMAT:FORMATTED              ACCESS:SEQUENTIAL

 OPENING "GH-1-RECLAMATION_F.hfb"
 FILE TYPE:HFB6   UNIT   12   STATUS:OLD
 FORMAT:FORMATTED              ACCESS:SEQUENTIAL

 OPENING "GH-1-RECLAMATION_F.drn"
 FILE TYPE:DRN   UNIT   15   STATUS:OLD
 FORMAT:FORMATTED              ACCESS:SEQUENTIAL

 OPENING "GH-1-RECLAMATION_F.pcg"
 FILE TYPE:PCG   UNIT   13   STATUS:OLD
 FORMAT:FORMATTED              ACCESS:SEQUENTIAL

 BAS -- BASIC PACKAGE, VERSION 7, 5/2/2005 INPUT READ FROM UNIT    8

 MODFLOW was compiled using mixed precision
 Precision of REAL variables:           6
 Precision of DOUBLE PRECISION variables:          15

 DISCRETIZATION INPUT DATA READ FROM UNIT    7
 # MF2K DISCRETIZATION FILE
 #
 #
 # NLAY NROW NCOL NPER TIMEUNITS LENUNITS
    1 LAYERS        93 ROWS       141 COLUMNS
    1 STRESS PERIOD(S) IN SIMULATION
 MODEL TIME UNIT IS DAYS
 MODEL LENGTH UNIT IS FEET
  Confining bed flag for each layer:
   0



                              DELR
 READING ON UNIT    7 WITH FORMAT: (FREE)



                              DELC
 READING ON UNIT    7 WITH FORMAT: (FREE)


 STRESS PERIOD     LENGTH       TIME STEPS     MULTIPLIER FOR DELT    SS
FLAG
 ----------------------------------------------------------------------
----
        1         1.000000          1                    1.000         SS

 STEADY-STATE SIMULATION
```

APPENDIX B

```
 #GMS MODFLOW Simulation
 #02 January 2023
 THE FREE FORMAT OPTION HAS BEEN SELECTED



                     BOUNDARY ARRAY FOR LAYER   1
 READING DATA FROM HDF5 FILE

 AQUIFER HEAD WILL BE SET TO  -999.00     AT ALL NO-FLOW NODES
(IBOUND=0).

 OUTPUT CONTROL IS SPECIFIED ONLY AT TIME STEPS FOR WHICH OUTPUT IS
DESIRED
 COMPACT CELL-BY-CELL BUDGET FILES WILL BE WRITTEN
 AUXILIARY DATA WILL BE SAVED IN CELL-BY-CELL BUDGET FILES
 HEAD PRINT FORMAT CODE IS   0    DRAWDOWN PRINT FORMAT CODE IS   0
 HEADS WILL BE SAVED ON UNIT    3    DRAWDOWNS WILL BE SAVED ON UNIT    0

 LPF -- LAYER-PROPERTY FLOW PACKAGE, VERSION 7, 5/2/2005
         INPUT READ FROM UNIT    9
 CELL-BY-CELL FLOWS WILL BE SAVED ON UNIT   40
 HEAD AT CELLS THAT CONVERT TO DRY=  -888.00
 No named parameters

   LAYER FLAGS:
 LAYER       LAYTYP        LAYAVG         CHANI        LAYVKA
LAYWET
 ------------------------------------------------------------------------
---
    1             0             0    -1.000E+00             1
0

   INTERPRETATION OF LAYER FLAGS:
                        INTERBLOCK     HORIZONTAL    DATA IN
         LAYER TYPE   TRANSMISSIVITY   ANISOTROPY   ARRAY VKA
WETTABILITY
 LAYER      (LAYTYP)      (LAYAVG)       (CHANI)      (LAYVKA)
(LAYWET)
 ------------------------------------------------------------------------
---
    1      CONFINED      HARMONIC      VARIABLE    ANISOTROPY  NON-
WETTABLE

 WETTING CAPABILITY IS NOT ACTIVE IN ANY LAYER

 DRN -- DRAIN PACKAGE, VERSION 7, 5/2/2005 INPUT READ FROM UNIT   15
 #GMS_HDF5_01
 No named parameters
 MAXIMUM OF     91 ACTIVE DRAINS AT ONE TIME
 CELL-BY-CELL FLOWS WILL BE SAVED ON UNIT   40
 AUXILIARY DRAIN VARIABLE: IFACE
 AUXILIARY DRAIN VARIABLE: CONDFACT
 AUXILIARY DRAIN VARIABLE: CELLGRP
```

APPENDIX B

```
    0 Drain parameters

RCH -- RECHARGE PACKAGE, VERSION 7, 5/2/2005 INPUT READ FROM UNIT    1
#GMS_HDF5_01
No named parameters
OPTION 3 -- RECHARGE TO HIGHEST ACTIVE NODE IN EACH VERTICAL COLUMN
CELL-BY-CELL FLOWS WILL BE SAVED ON UNIT   40


    0 Recharge parameters

HFB -- HORIZONTAL-FLOW BARRIER PACKAGE, VERSION 7, 5/2/2005.
  INPUT READ FROM UNIT   12
    0 PARAMETERS DEFINE A MAXIMUM OF      0 HORIZONTAL FLOW BARRIERS
   539 HORIZONTAL FLOW BARRIERS NOT DEFINED BY PARAMETERS


    0 HFB parameters

   539 BARRIERS NOT DEFINED BY PARAMETERS
```

BARRIER	LAYER	IROW1	ICOL1	IROW2	ICOL2	HYDCHR
1	1	15	91	15	92	1.0000E-04
2	1	14	91	15	91	1.0000E-04
3	1	14	90	15	90	1.0000E-04
4	1	14	89	15	89	1.0000E-04
5	1	14	88	15	88	1.0000E-04
6	1	14	87	15	87	1.0000E-04
7	1	14	86	15	86	1.0000E-04
8	1	14	85	15	85	1.0000E-04
9	1	14	84	15	84	1.0000E-04
10	1	14	83	15	83	1.0000E-04
11	1	14	82	15	82	1.0000E-04
12	1	14	81	15	81	1.0000E-04
13	1	14	80	15	80	1.0000E-04
14	1	15	79	15	80	1.0000E-04
15	1	15	79	16	79	1.0000E-04
16	1	16	78	16	79	1.0000E-04
17	1	17	78	17	79	1.0000E-04
18	1	17	78	18	78	1.0000E-04
19	1	18	77	18	78	1.0000E-04
20	1	18	77	19	77	1.0000E-04
21	1	19	76	19	77	1.0000E-04
22	1	19	76	20	76	1.0000E-04
23	1	20	75	20	76	1.0000E-04
24	1	20	75	21	75	1.0000E-04
25	1	20	74	21	74	1.0000E-04
26	1	20	73	21	73	1.0000E-04
27	1	21	72	21	73	1.0000E-04
28	1	21	72	22	72	1.0000E-04
29	1	22	71	22	72	1.0000E-04

30	1	23	71	23	72	1.0000E-04
31	1	24	71	24	72	1.0000E-04
32	1	24	72	25	72	1.0000E-04
33	1	25	72	25	73	1.0000E-04
34	1	26	72	26	73	1.0000E-04
35	1	27	72	27	73	1.0000E-04
36	1	28	72	28	73	1.0000E-04
37	1	29	72	29	73	1.0000E-04
38	1	30	72	30	73	1.0000E-04
39	1	30	72	31	72	1.0000E-04
40	1	31	71	31	72	1.0000E-04
41	1	32	71	32	72	1.0000E-04
42	1	33	71	33	72	1.0000E-04
43	1	34	71	34	72	1.0000E-04
44	1	35	71	35	72	1.0000E-04
45	1	36	71	36	72	1.0000E-04
46	1	36	72	37	72	1.0000E-04
47	1	36	73	37	73	1.0000E-04
48	1	36	74	37	74	1.0000E-04
49	1	36	75	37	75	1.0000E-04
50	1	36	76	37	76	1.0000E-04
51	1	36	77	37	77	1.0000E-04
52	1	36	78	37	78	1.0000E-04
53	1	36	79	37	79	1.0000E-04
54	1	36	80	37	80	1.0000E-04
55	1	36	81	37	81	1.0000E-04
56	1	36	82	37	82	1.0000E-04
57	1	36	83	37	83	1.0000E-04
58	1	36	84	37	84	1.0000E-04
59	1	36	85	37	85	1.0000E-04
60	1	36	86	37	86	1.0000E-04
61	1	36	87	37	87	1.0000E-04
62	1	36	88	37	88	1.0000E-04
63	1	36	89	37	89	1.0000E-04
64	1	36	90	37	90	1.0000E-04
65	1	36	91	37	91	1.0000E-04
66	1	36	92	37	92	1.0000E-04
67	1	36	93	37	93	1.0000E-04
68	1	36	94	37	94	1.0000E-04
69	1	36	95	37	95	1.0000E-04
70	1	36	95	36	96	1.0000E-04
71	1	35	95	35	96	1.0000E-04
72	1	34	95	34	96	1.0000E-04
73	1	33	95	33	96	1.0000E-04
74	1	32	95	32	96	1.0000E-04
75	1	31	95	31	96	1.0000E-04
76	1	30	95	30	96	1.0000E-04
77	1	29	95	30	95	1.0000E-04
78	1	29	94	29	95	1.0000E-04
79	1	28	94	28	95	1.0000E-04
80	1	27	94	28	94	1.0000E-04
81	1	27	93	27	94	1.0000E-04
82	1	26	93	26	94	1.0000E-04
83	1	25	93	25	94	1.0000E-04

APPENDIX B

84	1	24	93	24	94	1.0000E-04
85	1	23	93	24	93	1.0000E-04
86	1	23	92	23	93	1.0000E-04
87	1	22	92	22	93	1.0000E-04
88	1	21	92	21	93	1.0000E-04
89	1	20	92	20	93	1.0000E-04
90	1	19	92	20	92	1.0000E-04
91	1	19	91	19	92	1.0000E-04
92	1	18	91	18	92	1.0000E-04
93	1	17	91	17	92	1.0000E-04
94	1	16	91	16	92	1.0000E-04
95	1	8	119	9	119	1.0000E-04
96	1	8	118	9	118	1.0000E-04
97	1	8	117	9	117	1.0000E-04
98	1	8	116	9	116	1.0000E-04
99	1	8	115	9	115	1.0000E-04
100	1	8	114	8	115	1.0000E-04
101	1	7	114	8	114	1.0000E-04
102	1	7	113	8	113	1.0000E-04
103	1	7	112	8	112	1.0000E-04
104	1	7	111	8	111	1.0000E-04
105	1	7	110	8	110	1.0000E-04
106	1	7	109	8	109	1.0000E-04
107	1	7	108	8	108	1.0000E-04
108	1	7	107	8	107	1.0000E-04
109	1	7	106	8	106	1.0000E-04
110	1	7	105	8	105	1.0000E-04
111	1	7	104	8	104	1.0000E-04
112	1	7	103	8	103	1.0000E-04
113	1	7	102	8	102	1.0000E-04
114	1	7	101	8	101	1.0000E-04
115	1	7	100	8	100	1.0000E-04
116	1	7	99	8	99	1.0000E-04
117	1	8	98	8	99	1.0000E-04
118	1	8	98	9	98	1.0000E-04
119	1	9	97	9	98	1.0000E-04
120	1	10	97	10	98	1.0000E-04
121	1	10	97	11	97	1.0000E-04
122	1	10	96	11	96	1.0000E-04
123	1	11	95	11	96	1.0000E-04
124	1	11	95	12	95	1.0000E-04
125	1	12	94	12	95	1.0000E-04
126	1	13	94	13	95	1.0000E-04
127	1	14	94	14	95	1.0000E-04
128	1	15	94	15	95	1.0000E-04
129	1	16	94	16	95	1.0000E-04
130	1	17	94	17	95	1.0000E-04
131	1	18	94	18	95	1.0000E-04
132	1	19	94	19	95	1.0000E-04
133	1	20	94	20	95	1.0000E-04
134	1	20	95	21	95	1.0000E-04
135	1	21	95	21	96	1.0000E-04
136	1	22	95	22	96	1.0000E-04
137	1	22	96	23	96	1.0000E-04

APPENDIX B

138	1	23	96	23	97	1.0000E-04
139	1	23	97	24	97	1.0000E-04
140	1	23	98	24	98	1.0000E-04
141	1	24	98	24	99	1.0000E-04
142	1	24	99	25	99	1.0000E-04
143	1	24	100	25	100	1.0000E-04
144	1	24	101	25	101	1.0000E-04
145	1	24	102	25	102	1.0000E-04
146	1	24	103	25	103	1.0000E-04
147	1	24	104	25	104	1.0000E-04
148	1	24	105	25	105	1.0000E-04
149	1	24	106	25	106	1.0000E-04
150	1	24	106	24	107	1.0000E-04
151	1	23	107	24	107	1.0000E-04
152	1	23	108	24	108	1.0000E-04
153	1	23	108	23	109	1.0000E-04
154	1	22	109	23	109	1.0000E-04
155	1	22	110	23	110	1.0000E-04
156	1	22	111	23	111	1.0000E-04
157	1	22	112	23	112	1.0000E-04
158	1	23	112	23	113	1.0000E-04
159	1	23	113	24	113	1.0000E-04
160	1	23	114	24	114	1.0000E-04
161	1	24	114	24	115	1.0000E-04
162	1	24	115	25	115	1.0000E-04
163	1	24	116	25	116	1.0000E-04
164	1	24	117	25	117	1.0000E-04
165	1	24	118	25	118	1.0000E-04
166	1	24	119	25	119	1.0000E-04
167	1	24	119	24	120	1.0000E-04
168	1	23	120	24	120	1.0000E-04
169	1	23	121	24	121	1.0000E-04
170	1	23	121	23	122	1.0000E-04
171	1	22	122	23	122	1.0000E-04
172	1	22	122	22	123	1.0000E-04
173	1	21	122	21	123	1.0000E-04
174	1	20	122	20	123	1.0000E-04
175	1	19	122	19	123	1.0000E-04
176	1	18	122	18	123	1.0000E-04
177	1	17	122	17	123	1.0000E-04
178	1	16	122	16	123	1.0000E-04
179	1	15	122	15	123	1.0000E-04
180	1	14	122	14	123	1.0000E-04
181	1	13	122	13	123	1.0000E-04
182	1	12	122	12	123	1.0000E-04
183	1	11	122	12	122	1.0000E-04
184	1	11	121	11	122	1.0000E-04
185	1	10	121	10	122	1.0000E-04
186	1	9	121	10	121	1.0000E-04
187	1	9	120	10	120	1.0000E-04
188	1	9	119	9	120	1.0000E-04
189	1	27	122	28	122	1.0000E-04
190	1	28	122	28	123	1.0000E-04
191	1	29	122	29	123	1.0000E-04

192	1	30	122	30	123	1.0000E-04
193	1	31	122	31	123	1.0000E-04
194	1	32	122	32	123	1.0000E-04
195	1	33	122	33	123	1.0000E-04
196	1	34	122	34	123	1.0000E-04
197	1	35	122	35	123	1.0000E-04
198	1	36	122	36	123	1.0000E-04
199	1	37	122	37	123	1.0000E-04
200	1	38	122	38	123	1.0000E-04
201	1	39	122	39	123	1.0000E-04
202	1	40	122	40	123	1.0000E-04
203	1	41	122	41	123	1.0000E-04
204	1	42	122	42	123	1.0000E-04
205	1	43	122	43	123	1.0000E-04
206	1	44	122	44	123	1.0000E-04
207	1	45	122	45	123	1.0000E-04
208	1	46	122	46	123	1.0000E-04
209	1	47	122	47	123	1.0000E-04
210	1	48	122	48	123	1.0000E-04
211	1	49	122	49	123	1.0000E-04
212	1	50	122	50	123	1.0000E-04
213	1	51	122	51	123	1.0000E-04
214	1	52	122	52	123	1.0000E-04
215	1	53	122	53	123	1.0000E-04
216	1	54	122	54	123	1.0000E-04
217	1	55	122	55	123	1.0000E-04
218	1	56	122	56	123	1.0000E-04
219	1	57	122	57	123	1.0000E-04
220	1	58	122	58	123	1.0000E-04
221	1	59	122	59	123	1.0000E-04
222	1	59	122	60	122	1.0000E-04
223	1	60	121	60	122	1.0000E-04
224	1	60	121	61	121	1.0000E-04
225	1	60	120	61	120	1.0000E-04
226	1	60	119	61	119	1.0000E-04
227	1	60	118	61	118	1.0000E-04
228	1	60	117	61	117	1.0000E-04
229	1	60	116	61	116	1.0000E-04
230	1	60	115	61	115	1.0000E-04
231	1	60	114	61	114	1.0000E-04
232	1	60	113	61	113	1.0000E-04
233	1	60	112	61	112	1.0000E-04
234	1	60	111	61	111	1.0000E-04
235	1	60	110	61	110	1.0000E-04
236	1	60	109	61	109	1.0000E-04
237	1	60	108	61	108	1.0000E-04
238	1	60	107	61	107	1.0000E-04
239	1	60	106	61	106	1.0000E-04
240	1	60	105	61	105	1.0000E-04
241	1	60	104	61	104	1.0000E-04
242	1	60	103	61	103	1.0000E-04
243	1	60	102	61	102	1.0000E-04
244	1	60	101	61	101	1.0000E-04
245	1	60	100	61	100	1.0000E-04

246	1	60	99	60	100	1.0000E-04
247	1	59	99	60	99	1.0000E-04
248	1	59	98	59	99	1.0000E-04
249	1	58	98	58	99	1.0000E-04
250	1	57	98	57	99	1.0000E-04
251	1	56	98	56	99	1.0000E-04
252	1	55	98	55	99	1.0000E-04
253	1	54	98	54	99	1.0000E-04
254	1	53	98	53	99	1.0000E-04
255	1	52	98	52	99	1.0000E-04
256	1	51	98	51	99	1.0000E-04
257	1	50	98	50	99	1.0000E-04
258	1	49	98	49	99	1.0000E-04
259	1	48	98	48	99	1.0000E-04
260	1	47	98	47	99	1.0000E-04
261	1	46	98	46	99	1.0000E-04
262	1	45	98	45	99	1.0000E-04
263	1	44	98	44	99	1.0000E-04
264	1	43	98	43	99	1.0000E-04
265	1	42	98	42	99	1.0000E-04
266	1	41	98	41	99	1.0000E-04
267	1	40	98	40	99	1.0000E-04
268	1	39	98	39	99	1.0000E-04
269	1	38	98	38	99	1.0000E-04
270	1	37	98	37	99	1.0000E-04
271	1	36	98	36	99	1.0000E-04
272	1	35	98	35	99	1.0000E-04
273	1	34	98	34	99	1.0000E-04
274	1	33	98	33	99	1.0000E-04
275	1	32	98	32	99	1.0000E-04
276	1	31	98	31	99	1.0000E-04
277	1	30	98	30	99	1.0000E-04
278	1	29	98	29	99	1.0000E-04
279	1	28	98	28	99	1.0000E-04
280	1	27	98	27	99	1.0000E-04
281	1	26	99	27	99	1.0000E-04
282	1	26	99	26	100	1.0000E-04
283	1	25	100	26	100	1.0000E-04
284	1	26	100	26	101	1.0000E-04
285	1	26	101	27	101	1.0000E-04
286	1	26	101	26	102	1.0000E-04
287	1	25	102	26	102	1.0000E-04
288	1	25	103	26	103	1.0000E-04
289	1	25	104	26	104	1.0000E-04
290	1	26	104	26	105	1.0000E-04
291	1	26	105	27	105	1.0000E-04
292	1	26	105	26	106	1.0000E-04
293	1	25	106	26	106	1.0000E-04
294	1	26	106	26	107	1.0000E-04
295	1	26	107	27	107	1.0000E-04
296	1	26	107	26	108	1.0000E-04
297	1	25	108	26	108	1.0000E-04
298	1	25	109	26	109	1.0000E-04
299	1	25	110	26	110	1.0000E-04

APPENDIX B

300	1	26	110	26	111	1.0000E-04
301	1	26	111	27	111	1.0000E-04
302	1	26	112	27	112	1.0000E-04
303	1	26	113	27	113	1.0000E-04
304	1	26	114	27	114	1.0000E-04
305	1	26	115	27	115	1.0000E-04
306	1	26	116	27	116	1.0000E-04
307	1	26	117	27	117	1.0000E-04
308	1	26	118	27	118	1.0000E-04
309	1	26	119	27	119	1.0000E-04
310	1	26	120	27	120	1.0000E-04
311	1	26	121	27	121	1.0000E-04
312	1	26	122	27	122	1.0000E-04
313	1	27	122	27	123	1.0000E-04
314	1	39	95	39	96	1.0000E-03
315	1	38	95	39	95	1.0000E-03
316	1	38	94	39	94	1.0000E-03
317	1	38	93	39	93	1.0000E-03
318	1	38	92	39	92	1.0000E-03
319	1	38	91	39	91	1.0000E-03
320	1	38	90	39	90	1.0000E-03
321	1	38	89	39	89	1.0000E-03
322	1	38	88	39	88	1.0000E-03
323	1	38	87	39	87	1.0000E-03
324	1	38	86	39	86	1.0000E-03
325	1	38	85	39	85	1.0000E-03
326	1	38	84	39	84	1.0000E-03
327	1	38	83	39	83	1.0000E-03
328	1	38	82	39	82	1.0000E-03
329	1	38	81	39	81	1.0000E-03
330	1	38	80	39	80	1.0000E-03
331	1	38	79	39	79	1.0000E-03
332	1	38	78	39	78	1.0000E-03
333	1	38	77	39	77	1.0000E-03
334	1	38	76	39	76	1.0000E-03
335	1	38	75	39	75	1.0000E-03
336	1	38	74	39	74	1.0000E-03
337	1	39	73	39	74	1.0000E-03
338	1	39	73	40	73	1.0000E-03
339	1	39	72	40	72	1.0000E-03
340	1	40	71	40	72	1.0000E-03
341	1	41	71	41	72	1.0000E-03
342	1	42	71	42	72	1.0000E-03
343	1	43	71	43	72	1.0000E-03
344	1	44	71	44	72	1.0000E-03
345	1	44	71	45	71	1.0000E-03
346	1	45	70	45	71	1.0000E-03
347	1	46	70	46	71	1.0000E-03
348	1	47	70	47	71	1.0000E-03
349	1	48	70	48	71	1.0000E-03
350	1	49	70	49	71	1.0000E-03
351	1	49	71	50	71	1.0000E-03
352	1	50	71	50	72	1.0000E-03
353	1	51	71	51	72	1.0000E-03

354	1	52	71	52	72	1.0000E-03
355	1	53	71	53	72	1.0000E-03
356	1	54	71	54	72	1.0000E-03
357	1	55	71	55	72	1.0000E-03
358	1	56	71	56	72	1.0000E-03
359	1	56	72	57	72	1.0000E-03
360	1	57	72	57	73	1.0000E-03
361	1	57	73	58	73	1.0000E-03
362	1	57	74	58	74	1.0000E-03
363	1	58	74	58	75	1.0000E-03
364	1	58	75	59	75	1.0000E-03
365	1	59	75	59	76	1.0000E-03
366	1	59	76	60	76	1.0000E-03
367	1	60	76	60	77	1.0000E-03
368	1	60	77	61	77	1.0000E-03
369	1	61	77	61	78	1.0000E-03
370	1	61	78	62	78	1.0000E-03
371	1	61	79	62	79	1.0000E-03
372	1	62	79	62	80	1.0000E-03
373	1	62	80	63	80	1.0000E-03
374	1	62	81	63	81	1.0000E-03
375	1	62	82	63	82	1.0000E-03
376	1	62	83	63	83	1.0000E-03
377	1	62	84	63	84	1.0000E-03
378	1	62	85	63	85	1.0000E-03
379	1	62	86	63	86	1.0000E-03
380	1	62	87	63	87	1.0000E-03
381	1	62	88	63	88	1.0000E-03
382	1	62	89	63	89	1.0000E-03
383	1	62	90	63	90	1.0000E-03
384	1	62	91	63	91	1.0000E-03
385	1	62	92	63	92	1.0000E-03
386	1	62	93	63	93	1.0000E-03
387	1	62	94	63	94	1.0000E-03
388	1	62	95	63	95	1.0000E-03
389	1	62	95	62	96	1.0000E-03
390	1	61	96	62	96	1.0000E-03
391	1	61	96	61	97	1.0000E-03
392	1	60	96	60	97	1.0000E-03
393	1	59	96	59	97	1.0000E-03
394	1	58	96	58	97	1.0000E-03
395	1	57	96	57	97	1.0000E-03
396	1	56	96	56	97	1.0000E-03
397	1	55	96	55	97	1.0000E-03
398	1	54	96	54	97	1.0000E-03
399	1	53	96	53	97	1.0000E-03
400	1	52	96	52	97	1.0000E-03
401	1	51	96	51	97	1.0000E-03
402	1	50	96	50	97	1.0000E-03
403	1	49	97	50	97	1.0000E-03
404	1	49	97	49	98	1.0000E-03
405	1	48	97	48	98	1.0000E-03
406	1	47	97	47	98	1.0000E-03
407	1	46	97	46	98	1.0000E-03

APPENDIX B

408	1	45	97	45	98	1.0000E-03
409	1	44	97	44	98	1.0000E-03
410	1	43	97	43	98	1.0000E-03
411	1	42	97	42	98	1.0000E-03
412	1	41	97	42	97	1.0000E-03
413	1	41	96	41	97	1.0000E-03
414	1	40	96	40	97	1.0000E-03
415	1	39	96	40	96	1.0000E-03
416	1	45	67	45	68	1.0000E-03
417	1	44	67	44	68	1.0000E-03
418	1	43	67	43	68	1.0000E-03
419	1	42	67	42	68	1.0000E-03
420	1	41	67	42	67	1.0000E-03
421	1	41	66	41	67	1.0000E-03
422	1	40	66	41	66	1.0000E-03
423	1	40	65	41	65	1.0000E-03
424	1	40	64	41	64	1.0000E-03
425	1	40	63	41	63	1.0000E-03
426	1	40	62	41	62	1.0000E-03
427	1	40	61	41	61	1.0000E-03
428	1	40	60	41	60	1.0000E-03
429	1	40	59	41	59	1.0000E-03
430	1	40	58	41	58	1.0000E-03
431	1	40	57	41	57	1.0000E-03
432	1	40	56	41	56	1.0000E-03
433	1	40	55	41	55	1.0000E-03
434	1	40	54	41	54	1.0000E-03
435	1	40	53	41	53	1.0000E-03
436	1	40	52	41	52	1.0000E-03
437	1	40	51	41	51	1.0000E-03
438	1	40	50	41	50	1.0000E-03
439	1	40	49	41	49	1.0000E-03
440	1	40	48	41	48	1.0000E-03
441	1	40	47	41	47	1.0000E-03
442	1	40	46	41	46	1.0000E-03
443	1	40	45	41	45	1.0000E-03
444	1	40	44	41	44	1.0000E-03
445	1	40	43	41	43	1.0000E-03
446	1	40	42	41	42	1.0000E-03
447	1	40	41	41	41	1.0000E-03
448	1	40	40	41	40	1.0000E-03
449	1	40	39	41	39	1.0000E-03
450	1	40	38	41	38	1.0000E-03
451	1	40	37	41	37	1.0000E-03
452	1	40	36	41	36	1.0000E-03
453	1	40	35	41	35	1.0000E-03
454	1	40	34	41	34	1.0000E-03
455	1	40	33	41	33	1.0000E-03
456	1	40	32	41	32	1.0000E-03
457	1	40	31	41	31	1.0000E-03
458	1	40	30	41	30	1.0000E-03
459	1	40	29	41	29	1.0000E-03
460	1	40	28	41	28	1.0000E-03
461	1	41	27	41	28	1.0000E-03

462	1	42	27	42	28	1.0000E-03
463	1	42	27	43	27	1.0000E-03
464	1	43	26	43	27	1.0000E-03
465	1	44	26	44	27	1.0000E-03
466	1	45	26	45	27	1.0000E-03
467	1	46	26	46	27	1.0000E-03
468	1	47	26	47	27	1.0000E-03
469	1	48	26	48	27	1.0000E-03
470	1	49	26	49	27	1.0000E-03
471	1	50	26	50	27	1.0000E-03
472	1	51	26	51	27	1.0000E-03
473	1	51	27	52	27	1.0000E-03
474	1	52	27	52	28	1.0000E-03
475	1	52	28	53	28	1.0000E-03
476	1	53	28	53	29	1.0000E-03
477	1	53	29	54	29	1.0000E-03
478	1	53	30	54	30	1.0000E-03
479	1	54	30	54	31	1.0000E-03
480	1	54	31	55	31	1.0000E-03
481	1	54	32	55	32	1.0000E-03
482	1	54	33	55	33	1.0000E-03
483	1	55	33	55	34	1.0000E-03
484	1	55	34	56	34	1.0000E-03
485	1	55	35	56	35	1.0000E-03
486	1	55	35	55	36	1.0000E-03
487	1	54	36	55	36	1.0000E-03
488	1	55	36	55	37	1.0000E-03
489	1	55	37	56	37	1.0000E-03
490	1	55	38	56	38	1.0000E-03
491	1	55	39	56	39	1.0000E-03
492	1	55	40	56	40	1.0000E-03
493	1	55	41	56	41	1.0000E-03
494	1	55	42	56	42	1.0000E-03
495	1	56	42	56	43	1.0000E-03
496	1	56	43	57	43	1.0000E-03
497	1	56	44	57	44	1.0000E-03
498	1	57	44	57	45	1.0000E-03
499	1	57	45	58	45	1.0000E-03
500	1	57	46	58	46	1.0000E-03
501	1	58	46	58	47	1.0000E-03
502	1	58	47	59	47	1.0000E-03
503	1	58	48	59	48	1.0000E-03
504	1	59	48	59	49	1.0000E-03
505	1	59	49	60	49	1.0000E-03
506	1	59	50	60	50	1.0000E-03
507	1	59	51	60	51	1.0000E-03
508	1	59	52	60	52	1.0000E-03
509	1	59	53	60	53	1.0000E-03
510	1	59	54	60	54	1.0000E-03
511	1	59	55	60	55	1.0000E-03
512	1	59	55	59	56	1.0000E-03
513	1	58	56	59	56	1.0000E-03
514	1	58	57	59	57	1.0000E-03
515	1	58	58	59	58	1.0000E-03

516	1	58	59	59	59	1.0000E-03
517	1	58	59	58	60	1.0000E-03
518	1	57	60	58	60	1.0000E-03
519	1	57	61	58	61	1.0000E-03
520	1	57	62	58	62	1.0000E-03
521	1	57	62	57	63	1.0000E-03
522	1	56	63	57	63	1.0000E-03
523	1	56	64	57	64	1.0000E-03
524	1	56	65	57	65	1.0000E-03
525	1	56	66	57	66	1.0000E-03
526	1	56	66	56	67	1.0000E-03
527	1	55	67	56	67	1.0000E-03
528	1	55	67	55	68	1.0000E-03
529	1	54	67	54	68	1.0000E-03
530	1	53	67	53	68	1.0000E-03
531	1	52	67	53	67	1.0000E-03
532	1	52	66	52	67	1.0000E-03
533	1	51	67	52	67	1.0000E-03
534	1	51	67	51	68	1.0000E-03
535	1	50	67	50	68	1.0000E-03
536	1	49	67	49	68	1.0000E-03
537	1	48	67	48	68	1.0000E-03
538	1	47	67	47	68	1.0000E-03
539	1	46	67	46	68	1.0000E-03

```
    539 HFB BARRIERS

 PCG -- CONJUGATE-GRADIENT SOLUTION PACKAGE, VERSION 7, 5/2/2005
 MAXIMUM OF     25 CALLS OF SOLUTION ROUTINE
 MAXIMUM OF     50 INTERNAL ITERATIONS PER CALL TO SOLUTION ROUTINE
 MATRIX PRECONDITIONING TYPE :    1



                                    SOLUTION BY THE CONJUGATE-GRADIENT
METHOD
                                   --------------------------------------
-----
                    MAXIMUM NUMBER OF CALLS TO PCG ROUTINE =        25
                        MAXIMUM ITERATIONS PER CALL TO PCG =        50
                               MATRIX PRECONDITIONING TYPE =         1
        RELAXATION FACTOR (ONLY USED WITH PRECOND. TYPE 1) =
0.10000E+01
 PARAMETER OF POLYNOMIAL PRECOND. = 2 (2) OR IS CALCULATED :         0
                         HEAD CHANGE CRITERION FOR CLOSURE =    0.10000E-
01
                     RESIDUAL CHANGE CRITERION FOR CLOSURE =    0.10000E-
01
            PCG HEAD AND RESIDUAL CHANGE PRINTOUT INTERVAL =       999
     PRINTING FROM SOLVER IS LIMITED(1) OR SUPPRESSED (>1) =         2
                            STEADY-STATE DAMPING PARAMETER =
0.10000E+01
                               TRANSIENT DAMPING PARAMETER =
0.10000E+01
```

APPENDIX B

```
 WARNING READING LMT PACKAGE INPUT DATA:
 [STANDARD] HEADER NO LONGER SUPPORTED; [EXTENDED] HEADER USED INSTEAD.


 ***Link-MT3DMS Package v7***
 OPENING LINK-MT3DMS OUTPUT FILE: GH-1-
RECLAMATION_F.hff
 ON UNIT NUMBER:   333
 FILE TYPE: UNFORMATTED
 HEADER OPTION: EXTENDED
 ***Link-MT3DMS Package v7***


 OBS2DRN7 -- OBSERVATION PROCESS (DRAIN FLOW OBSERVATIONS)
 VERSION 2, 02/28/2006
 INPUT READ FROM UNIT   11
 #           CoverageGUID ObjectType ID X Y Time OBNAME
 #GMSCOMMENT 3a14d79a-9bfa-4839-b4a9-7790357570f1 ARC 1 3107314.1577847
1258052.1085483 1.0 no_drnf0
 #GMSCOMMENT 3a14d79a-9bfa-4839-b4a9-7790357570f1 ARC 2 3110190.4
1257950.7 1.0 no_drnf1
 #GMSCOMMENT 3a14d79a-9bfa-4839-b4a9-7790357570f1 ARC 3 3109356.7354219
1257795.1494179 1.0 no_drnf2

 NUMBER OF FLOW-OBSERVATION DRAIN-CELL GROUPS.....:       3
   NUMBER OF CELLS IN DRAIN-CELL GROUPS...........:      92
   NUMBER OF DRAIN-CELL FLOWS.....................:       3
 DRAIN OBSERVATIONS WILL BE SAVED ON UNIT.........:      14

 OBSERVED DRAIN-CELL FLOW DATA
 -- TIME OFFSETS ARE MULTIPLIED BY:   1.0000

   GROUP NUMBER:      1   BOUNDARY TYPE: DRN   NUMBER OF CELLS IN GROUP:
51
   NUMBER OF FLOW OBSERVATIONS:      1

                                               OBSERVED
                    REFER.                    DRAIN FLOW
       OBSERVATION  STRESS    TIME     GAIN (-) OR
  OBS#    NAME      PERIOD   OFFSET     LOSS (+)
     1 no_drnf0         1    0.000       1.000
 Observation within a steady-state time step has been moved to the end of
the time step.

       LAYER  ROW  COLUMN    FACTOR
          1.   57.    67.     1.00
          1.   57.    66.     1.00
          1.   57.    65.     1.00
          1.   57.    64.     1.00
          1.   57.    63.     1.00
          1.   58.    63.     1.00
          1.   58.    62.     1.00
          1.   58.    61.     1.00
```

1.	58.	60.	1.00
1.	59.	60.	1.00
1.	59.	59.	1.00
1.	59.	58.	1.00
1.	59.	57.	1.00
1.	59.	56.	1.00
1.	60.	56.	1.00
1.	60.	55.	1.00
1.	60.	54.	1.00
1.	60.	53.	1.00
1.	60.	52.	1.00
1.	60.	51.	1.00
1.	60.	50.	1.00
1.	60.	49.	1.00
1.	60.	48.	1.00
1.	59.	48.	1.00
1.	59.	47.	1.00
1.	59.	46.	1.00
1.	58.	46.	1.00
1.	58.	45.	1.00
1.	58.	44.	1.00
1.	57.	44.	1.00
1.	57.	43.	1.00
1.	57.	42.	1.00
1.	56.	42.	1.00
1.	56.	41.	1.00
1.	56.	40.	1.00
1.	56.	39.	1.00
1.	56.	38.	1.00
1.	56.	37.	1.00
1.	56.	36.	1.00
1.	56.	35.	1.00
1.	56.	34.	1.00
1.	56.	33.	1.00
1.	55.	33.	1.00
1.	55.	32.	1.00
1.	55.	31.	1.00
1.	55.	30.	1.00
1.	54.	30.	1.00
1.	54.	29.	1.00
1.	54.	28.	1.00
1.	53.	28.	1.00
1.	53.	27.	1.00

GROUP NUMBER: 2 BOUNDARY TYPE: DRN NUMBER OF CELLS IN GROUP: 14
NUMBER OF FLOW OBSERVATIONS: 1

OBS#	OBSERVATION NAME	REFER. STRESS PERIOD	TIME OFFSET	OBSERVED DRAIN FLOW GAIN (-) OR LOSS (+)
2	no_drnf1	1	0.000	1.000

Observation within a steady-state time step has been moved to the end of the time step.

LAYER	ROW	COLUMN	FACTOR
1.	61.	110.	1.00
1.	61.	109.	1.00
1.	61.	108.	1.00
1.	61.	107.	1.00
1.	61.	106.	1.00
1.	61.	105.	1.00
1.	61.	104.	1.00
1.	61.	103.	1.00
1.	61.	102.	1.00
1.	61.	101.	1.00
1.	61.	100.	1.00
1.	61.	99.	1.00
1.	61.	98.	1.00
1.	61.	97.	1.00

GROUP NUMBER: 3 BOUNDARY TYPE: DRN NUMBER OF CELLS IN GROUP: 27
NUMBER OF FLOW OBSERVATIONS: 1

OBS#	OBSERVATION NAME	REFER. STRESS PERIOD	TIME OFFSET	OBSERVED DRAIN FLOW GAIN (-) OR LOSS (+)
3	no_drnf2	1	0.000	1.000

Observation within a steady-state time step has been moved to the end of the time step.

LAYER	ROW	COLUMN	FACTOR
1.	61.	97.	0.00
1.	61.	97.	1.00
1.	62.	97.	1.00
1.	63.	97.	1.00
1.	64.	97.	1.00
1.	64.	96.	1.00
1.	64.	95.	1.00
1.	64.	94.	1.00
1.	64.	93.	1.00
1.	64.	92.	1.00
1.	64.	91.	1.00
1.	64.	90.	1.00
1.	64.	89.	1.00
1.	64.	88.	1.00
1.	64.	87.	1.00
1.	64.	86.	1.00
1.	64.	85.	1.00
1.	64.	84.	1.00
1.	64.	83.	1.00
1.	64.	82.	1.00
1.	64.	81.	1.00
1.	64.	80.	1.00

APPENDIX B

```
          1.   64.    79.     1.00
          1.   64.    78.     1.00
          1.   63.    78.     1.00
          1.   63.    77.     1.00
          1.   62.    77.     1.00
1
                                      STRESS PERIOD NO.    1, LENGTH =   1.000000
                                      ----------------------------------------------
--

                                        NUMBER OF TIME STEPS =     1

                                         MULTIPLIER FOR DELT =     1.000

                                      INITIAL TIME STEP SIZE =   1.000000

 DRAIN NO.  LAYER   ROW   COL     DRAIN EL.  CONDUCTANCE         IFACE
CONDFACT        CELLGRP
 ---------------------------------------------------------------------------
----------------------------------------
      1      1     57    67       5056.          0.1104E+05       6.000
36.80           1.000
      2      1     57    66       5056.          0.1497E+05       6.000
49.89           1.000
      3      1     57    65       5056.          0.1495E+05       6.000
49.83           1.000
      4      1     57    64       5056.          0.1494E+05       6.000
49.81           1.000
      5      1     57    63       5056.          0.1556E+05       6.000
51.87           1.000
      6      1     58    63       5057.          0.1565E+05       6.000
52.15           1.000
      7      1     58    62       5057.          0.1495E+05       6.000
49.83           1.000
      8      1     58    61       5057.          0.1495E+05       6.000
49.83           1.000
      9      1     58    60       5057.          0.1518E+05       6.000
50.59           1.000
     10      1     59    60       5057.          0.1491E+05       6.000
49.70           1.000
     11      1     59    59       5057.          0.1498E+05       6.000
49.94           1.000
     12      1     59    58       5057.          0.1496E+05       6.000
49.85           1.000
     13      1     59    57       5057.          0.1495E+05       6.000
49.83           1.000
     14      1     59    56       5057.          0.1697E+05       6.000
56.56           1.000
     15      1     60    56       5057.          0.1376E+05       6.000
45.88           1.000
     16      1     60    55       5058.          0.1494E+05       6.000
49.80           1.000
     17      1     60    54       5058.          0.1497E+05       6.000
49.90           1.000
```

APPENDIX B

18	1	60	53	5058.	0.1495E+05	6.000
49.84		1.000				
19	1	60	52	5058.	0.1493E+05	6.000
49.77		1.000				
20	1	60	51	5058.	0.1493E+05	6.000
49.77		1.000				
21	1	60	50	5058.	0.1494E+05	6.000
49.80		1.000				
22	1	60	49	5058.	0.1494E+05	6.000
49.79		1.000				
23	1	60	48	5058.	0.1485E+05	6.000
49.51		1.000				
24	1	59	48	5058.	0.1440E+05	6.000
47.99		1.000				
25	1	59	47	5058.	0.1494E+05	6.000
49.79		1.000				
26	1	59	46	5059.	0.1546E+05	6.000
51.54		1.000				
27	1	58	46	5059.	0.1511E+05	6.000
50.36		1.000				
28	1	58	45	5059.	0.1501E+05	6.000
50.05		1.000				
29	1	58	44	5059.	0.1722E+05	6.000
57.41		1.000				
30	1	57	44	5059.	0.1525E+05	6.000
50.84		1.000				
31	1	57	43	5059.	0.1499E+05	6.000
49.97		1.000				
32	1	57	42	5059.	0.1559E+05	6.000
51.96		1.000				
33	1	56	42	5059.	0.1279E+05	6.000
42.63		1.000				
34	1	56	41	5059.	0.1505E+05	6.000
50.16		1.000				
35	1	56	40	5059.	0.1502E+05	6.000
50.08		1.000				
36	1	56	39	5060.	0.1494E+05	6.000
49.80		1.000				
37	1	56	38	5060.	0.1493E+05	6.000
49.78		1.000				
38	1	56	37	5060.	0.1494E+05	6.000
49.79		1.000				
39	1	56	36	5060.	0.1494E+05	6.000
49.79		1.000				
40	1	56	35	5060.	0.1494E+05	6.000
49.79		1.000				
41	1	56	34	5060.	0.1494E+05	6.000
49.79		1.000				
42	1	56	33	5060.	0.1684E+05	6.000
56.13		1.000				
43	1	55	33	5060.	0.1433E+05	6.000
47.78		1.000				
44	1	55	32	5060.	0.1499E+05	6.000
49.96		1.000				

APPENDIX B

45	1	55	31	5060.	0.1496E+05	6.000	49.87	1.000
46	1	55	30	5061.	0.1464E+05	6.000	48.79	1.000
47	1	54	30	5061.	0.1495E+05	6.000	49.82	1.000
48	1	54	29	5061.	0.1494E+05	6.000	49.79	1.000
49	1	54	28	5061.	0.1524E+05	6.000	50.80	1.000
50	1	53	28	5061.	0.1559E+05	6.000	51.98	1.000
51	1	53	27	5061.	6566.	6.000	21.89	1.000
52	1	61	110	5050.	6977.	6.000	46.51	2.000
53	1	61	109	5050.	7465.	6.000	49.77	2.000
54	1	61	108	5050.	7465.	6.000	49.77	2.000
55	1	61	107	5050.	7465.	6.000	49.77	2.000
56	1	61	106	5050.	7465.	6.000	49.77	2.000
57	1	61	105	5050.	7465.	6.000	49.77	2.000
58	1	61	104	5050.	7465.	6.000	49.77	2.000
59	1	61	103	5050.	7465.	6.000	49.77	2.000
60	1	61	102	5050.	7465.	6.000	49.77	2.000
61	1	61	101	5050.	7465.	6.000	49.77	2.000
62	1	61	100	5050.	7465.	6.000	49.77	2.000
63	1	61	99	5050.	7465.	6.000	49.77	2.000
64	1	61	98	5050.	7465.	6.000	49.77	2.000
65	1	61	97	5050.	104.7	6.000	0.6979	2.000
66	1	61	97	5045.	2833.	6.000	18.89	3.000
67	1	62	97	5045.	7448.	6.000	49.65	3.000
68	1	63	97	5046.	9618.	6.000	64.12	3.000
69	1	64	97	5046.	3006.	6.000	20.04	3.000
70	1	64	96	5046.	9258.	6.000	61.72	3.000
71	1	64	95	5046.	7466.	6.000	49.77	3.000

```
     72       1      64      94        5047.           7466.           6.000
49.77            3.000
     73       1      64      93        5047.           7466.           6.000
49.77            3.000
     74       1      64      92        5047.           7466.           6.000
49.77            3.000
     75       1      64      91        5048.           7466.           6.000
49.77            3.000
     76       1      64      90        5048.           7466.           6.000
49.77            3.000
     77       1      64      89        5048.           7466.           6.000
49.77            3.000
     78       1      64      88        5048.           7466.           6.000
49.77            3.000
     79       1      64      87        5049.           7466.           6.000
49.77            3.000
     80       1      64      86        5049.           7466.           6.000
49.77            3.000
     81       1      64      85        5049.           7466.           6.000
49.77            3.000
     82       1      64      84        5050.           7466.           6.000
49.77            3.000
     83       1      64      83        5050.           7466.           6.000
49.77            3.000
     84       1      64      82        5050.           7466.           6.000
49.77            3.000
     85       1      64      81        5050.           7466.           6.000
49.77            3.000
     86       1      64      80        5051.           7466.           6.000
49.77            3.000
     87       1      64      79        5051.           7466.           6.000
49.77            3.000
     88       1      64      78        5051.           6296.           6.000
41.97            3.000
     89       1      63      78        5052.           4106.           6.000
27.37            3.000
     90       1      63      77        5052.           6477.           6.000
43.18            3.000
     91       1      62      77        5052.           3950.           6.000
26.33            3.000

     91 DRAINS

 SOLVING FOR HEAD

 OUTPUT CONTROL FOR STRESS PERIOD    1   TIME STEP    1
    PRINT BUDGET
    SAVE HEAD FOR ALL LAYERS
    SAVE BUDGET
 UBDSV2 SAVING "   CONSTANT HEAD" ON UNIT  40 AT TIME STEP  1, STRESS
PERIOD   1
 UBDSV1 SAVING "FLOW RIGHT FACE " ON UNIT  40 AT TIME STEP  1, STRESS
PERIOD   1
```

APPENDIX B

```
 UBDSV1 SAVING "FLOW FRONT FACE " ON UNIT  40 AT TIME STEP  1, STRESS
PERIOD   1
 UBDSV4 SAVING "          DRAINS" ON UNIT  40 AT TIME STEP  1, STRESS
PERIOD   1
 UBDSV3 SAVING "        RECHARGE" ON UNIT  40 AT TIME STEP  1, STRESS
PERIOD   1

 SAVING SATURATED THICKNESS AND FLOW TERMS ON UNIT  333 FOR MT3DMS
 BY THE LINK-MT3DMS PACKAGE V7 AT TIME STEP    1, STRESS PERIOD    1


 HEADS AT DRAIN CELLS ARE BELOW THE BOTTOM OF THE DRAIN BED AT THE CELLS
LISTED
 BELOW.  THESE CONDITIONS DIMINISH THE IMPACT OF THE OBSERVATION ON
ESTIMATES OF
 ALL PARAMETERS EXCEPT THOSE THAT CONTROL THE HYDRAULIC CONDUCTIVITY OF
THE
 DRAIN BED.  (SEE TEXT FOR MORE INFORMATION).

 OBS#      1, ID no_drnf0    , TIME STEP     1
    LAYER   ROW  COLUMN
      1     57     67
      1     57     66
      1     57     65
      1     57     64
      1     57     63
      1     58     60
      1     59     56
      1     59     48
      1     58     46
      1     57     44
      1     56     42
      1     55     33
      1     54     30
      1     53     28
     14 OF THE     51 CELLS USED TO SIMULATE THE GAIN OR LOSS ARE
                      AFFECTED.

 OBS#      2, ID no_drnf1    , TIME STEP     1
    LAYER   ROW  COLUMN
      1     61    103
      1     61    102
      1     61    101
      1     61    100
      1     61     99
      1     61     98
      1     61     97
      7 OF THE     14 CELLS USED TO SIMULATE THE GAIN OR LOSS ARE
                      AFFECTED.

 OBS#      3, ID no_drnf2    , TIME STEP     1
    LAYER   ROW  COLUMN
      1     61     97
      1     63     78
```

APPENDIX B

```
      2 OF THE     27 CELLS USED TO SIMULATE THE GAIN OR LOSS ARE
                      AFFECTED.

 HEAD WILL BE SAVED ON UNIT    3 AT END OF TIME STEP    1, STRESS PERIOD
1
1
  VOLUMETRIC BUDGET FOR ENTIRE MODEL AT END OF TIME STEP    1, STRESS
PERIOD   1
  ----------------------------------------------------------------------
-------

     CUMULATIVE VOLUMES      L**3       RATES FOR THIS TIME STEP
L**3/T
     ------------------                 ------------------------

           IN:                                     IN:
           ---                                     ---
             STORAGE =           0.0000             STORAGE =
0.0000
       CONSTANT HEAD =       31629.7676       CONSTANT HEAD =
31629.7676
              DRAINS =           0.0000              DRAINS =
0.0000
            RECHARGE =       34295.9414            RECHARGE =
34295.9414

            TOTAL IN =       65925.7109            TOTAL IN =
65925.7109

          OUT:                                    OUT:
          ----                                    ----
             STORAGE =           0.0000             STORAGE =
0.0000
       CONSTANT HEAD =       45039.4570       CONSTANT HEAD =
45039.4570
              DRAINS =       20886.2637              DRAINS =
20886.2637
            RECHARGE =           0.0000            RECHARGE =
0.0000

           TOTAL OUT =       65925.7188           TOTAL OUT =
65925.7188

            IN - OUT =      -7.8125E-03            IN - OUT =      -
7.8125E-03

 PERCENT DISCREPANCY =          -0.00     PERCENT DISCREPANCY =
-0.00
```

APPENDIX B

```
        TIME SUMMARY AT END OF TIME STEP    1 IN STRESS PERIOD    1
                   SECONDS     MINUTES      HOURS       DAYS
YEARS
                   -----------------------------------------------------
------
   TIME STEP LENGTH  86400.      1440.0      24.000      1.0000
2.73785E-03
 STRESS PERIOD TIME  86400.      1440.0      24.000      1.0000
2.73785E-03
         TOTAL TIME  86400.      1440.0      24.000      1.0000
2.73785E-03
1

 DRAIN FLOW OBSERVATIONS
 OBSERVATION       OBSERVED           SIMULATED
   NAME              VALUE              VALUE             DIFFERENCE
 --------------------------------------------------------------------
 no_drnf0        1.0000000000       -8706.0351562       8707.0351562
 no_drnf1        1.0000000000       -1550.3986816       1551.3986816
 no_drnf2        1.0000000000       -10638.759766       10639.759766

 DRN FLOW SUM OF SQUARED DIFFERENCE:    1.91424E+08

 Run end date and time (yyyy/mm/dd hh:mm:ss): 2023/01/06 11:32:21
 Elapsed run time:  0.567 Seconds
```