0070

Canyon Fuel Company, LLC
Skyline Mines
HC 35 Box 380
Helper, Utah 84526
(435) 448-6463 Fax: (435) 448-2632

COPY

November 18, 2004

Pam Grubaugh-Littig
Permit Supervisor
Utah Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
Salt Lake City, Utah 84114-5801

C/007/0005

RE: Additional Information Regarding the HCI Ground Water Model, Canyon Fuel Company, LLC, Skyline Mine, C/007/005, Task ID #1752

Dear Ms. Grubaugh-Littig:

I am submitting additional data for the HCI Ground Water Model report as requested by Gregg Galecki of your staff. The additional data is in a format of a Technical Memorandum addressed to me from Roger Howell and Vladimir Ugorets of HCI. This memo addresses the request to investigate the potential maximum pool elevation and possible impacts to surface waters from residual drawdown of the ground water system after all mining ceases. Included are copies of corrected Figures 14 and15 and Tables 1, 2, and 3 of the June 2004 HCI Supplemental Report, Ground-water Flow Modeling of Skyline Mine and Surrounding Area, Carbon, Sanpete, and Emery Counties, Utah which is included in the M&RP as Appendix K of the July 2002 Addendum to the PHC. Also included are a minor clarification change to the PHC and an updated water monitoring stations location map. Finally, the November HCI technical memorandum should be included in Appendix K as an attachment to HCI's June 2004 Supplemental Report.

This information is being submitted with completed C1 and C2 forms. Pages of text changes include four copies with redline/strikethrough notation and seven clean copies. If you have any questions regarding this submittal, please call me at (435) 448-2669.

Sincerely,

Chris D. Hansen
Environmental Coordinator
Canyon Fuel Company, LLC

enclosures

File in:
☐ Confidential
☐ Shelf
☒ Expandable
Refer to Record No 0079 Date 11182004
In C/0070005, 2004, Incoming
For additional information

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APPLICAT N FOR COAL PERMIT PROCESS G

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Permit Change ☒ New Permit ☐ Renewal ☐ Exploration ☐ Bond Release ☐ Transfer ☐

Permittee: Canyon Fuel Company, LLC
Mine: Skyline Mine **Permit Number:** C/007/005
Title: HCI Model Modifications
Description, Include reason for application and timing required to implement:
Additional modifications to the M&RP as requested by DOGM regarding the HCI Ground Water Model.

Instructions: If you answer yes to any of the first eight (gray) questions, this application may require Public Notice publication.

☐ Yes ☒ No 1. Change in the size of the Permit Area? Acres: ____ Disturbed Area: ____ ☐ increase ☐ decrease.
☐ Yes ☒ No 2. Is the application submitted as a result of a Division Order? DO# ____
☐ Yes ☒ No 3. Does the application include operations outside a previously identified Cumulative Hydrologic Impact Area?
☐ Yes ☒ No 4. Does the application include operations in hydrologic basins other than as currently approved?
☐ Yes ☒ No 5. Does the application result from cancellation, reduction or increase of insurance or reclamation bond?
☐ Yes ☒ No 6. Does the application require or include public notice publication?
☐ Yes ☒ No 7. Does the application require or include ownership, control, right-of-entry, or compliance information?
☐ Yes ☒ No 8. Is proposed activity within 100 feet of a public road or cemetery or 300 feet of an occupied dwelling?
☐ Yes ☒ No 9. Is the application submitted as a result of a Violation? NOV # ____
☐ Yes ☒ No 10. Is the application submitted as a result of other laws or regulations or policies?
Explain: ____
☐ Yes ☒ No 11. Does the application affect the surface landowner or change the post mining land use?
☐ Yes ☒ No 12. Does the application require or include underground design or mine sequence and timing? (Modification of R2P2)
☐ Yes ☒ No 13. Does the application require or include collection and reporting of any baseline information?
☐ Yes ☒ No 14. Could the application have any effect on wildlife or vegetation outside the current disturbed area?
☐ Yes ☒ No 15. Does the application require or include soil removal, storage or placement?
☐ Yes ☒ No 16. Does the application require or include vegetation monitoring, removal or revegetation activities?
☐ Yes ☒ No 17. Does the application require or include construction, modification, or removal of surface facilities?
☒ Yes ☐ No 18. Does the application require or include water monitoring, sediment or drainage control measures?
☐ Yes ☒ No 19. Does the application require or include certified designs, maps or calculation?
☐ Yes ☒ No 20. Does the application require or include subsidence control or monitoring?
☐ Yes ☒ No 21. Have reclamation costs for bonding been provided?
☐ Yes ☒ No 22. Does the application involve a perennial stream, a stream buffer zone or discharges to a stream?
☐ Yes ☒ No 23. Does the application affect permits issued by other agencies or permits issued to other entities?

Please attach four (4) review copies of the application. If the mine is on or adjacent to Forest Service land please submit five (5) copies, thank you. (These numbers include a copy for the Price Field Office)

I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein.

JOHN BERSHER
Print Name

Sign Name, Position, Date: MINE MANAGER 11-16-04

Subscribed and sworn to before me this 17 day of NOVEMBER, 20 04

Vicky Sue Miller
Notary Public

My commission Expires: 1-5, 2008

Attest: State of UTAH } ss:
County of CARBON

VICKY SUE MILLER
NOTARY PUBLIC • STATE of UTAH
1776 KENILWORTH RD.
HELPER, UTAH 84526
COMM. EXPIRES 1-5-2008

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APPLICATIO FOR COAL PERMIT PROCE ING
Detailed Schedule Of Changes to the Mining And Reclamation Plan

COPY

Permittee: Canyon Fuel Company, LLC
Mine: Skyline Mine **Permit Number:** C/007/005
Title: HCI Model Modifications

Provide a detailed listing of all changes to the Mining and Reclamation Plan, which is required as a result of this proposed permit application. Individually list all maps and drawings that are added, replaced, or removed from the plan. Include changes to the table of contents, section of the plan, or other information as needed to specifically locate, identify and revise the existing Mining and Reclamation Plan. Include page, section and drawing number as part of the description.

			DESCRIPTION OF MAP, TEXT, OR MATERIAL TO BE CHANGED
☐ Add	☒ Replace	☐ Remove	Replace Page PHC A-29 of the Addendum to the Probable Hydrologic Consequences, July 2002
☒ Add	☐ Replace	☐ Remove	Add the November 2004 HCI Technical Memorandum to the HCI Supplemental Report in Appendix K of the Addendum to the Probable Hydrologic Consequences, July 2002
☐ Add	☒ Replace	☐ Remove	Replace Figures 14, 15, Tables 1, 2, and 3 of the HCI Supplemental Report in Appendix K of the Addendum to the Probable Hydrologic Consequences, July 2002
☐ Add	☒ Replace	☐ Remove	Replace Drawing 2.3.6-1 in the M&RP
☐ Add	☐ Replace	☐ Remove	
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Any other specific or special instruction required for insertion of this proposal into the Mining and Reclamation Plan.

11/13/02

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first class cold water fishery in Scofield Reservoir. Low lake levels in past years have resulted in increased water temperatures and deadly algal blooms. The added water discharged from the mine reduces the potential for algal blooms related to low lake levels.

As of October 2002, PacifiCorp has been discharging ground water from the James Canyon JC-1 well directly to Electric Lake (JC-2 has not operated as of October 2001). The rate of discharge from the well is typically between 3,700 and 4,200 gpm. The groundwater discharged from JC-1 is of the calcium-magnesium-bicarbonate chemical type with TDS concentrations ranging from 175 to 274 mg/l (Appendix A). Iron, both dissolved and total, concentration in the well water is less than 0.2 mg/l. Nitrogen and phosphorous compounds have not been detected in the well water above background levels. The chemical composition of groundwater from JC-1 is similar to that from Star Point Sandstone groundwaters encountered underground in the Skyline Mine, although both calcium and magnesium concentrations are slightly elevated relative to the Star Point groundwaters (Appendix G). Electric Lake water is chemically distinguishable from water in JC-1 based on the appreciably higher concentrations of magnesium, bicarbonate, and chloride in the JC-1 groundwater relative to Electric Lake water (Appendix G). ~~The quality of the water is similar to the water of James, Huntington, Swen's and Little Swen's Creeks, the major tributaries to Electric Lake. TDS concentrations of the well water range between 175 mg/l to 205 mg/l (Appendix A). TDS concentrations in the waters of the tributaries range from 143 mg/l to 274 mg/l (Division EDI, Skyline Mine). Iron, both dissolved and total, concentration in the well water is less than 0.2 mg/l, similar to or less than stream and ground water concentrations in the Electric Lake basin. Nitrogen and phosphorous compounds have not been detected in the well water above background levels. Since the JC-1 well discharges ground water only, it is reasonable to assume that the chemical composition of the water is similar to the waters discharged by the seeps and springs in the area that feed the tributaries of Electric Lake.~~

the effects of drought within the Price River drainage area but is also helping to maintain the first class cold water fishery in Scofield Reservoir. Low lake levels in past years have resulted in increased water temperatures and deadly algal blooms. The added water discharged from the mine reduces the potential for algal blooms related to low lake levels.

As of October 2002, PacifiCorp has been discharging ground water from the James Canyon JC-1 well directly to Electric Lake (JC-2 has not operated as of October 2001). The rate of discharge from the well is typically between 3,700 and 4,200 gpm. The groundwater discharged from JC-1 is of the calcium-magnesium-bicarbonate chemical type with TDS concentrations ranging from 175 to 274 mg/l (Appendix A). Iron, both dissolved and total, concentration in the well water is less than 0.2 mg/l. Nitrogen and phosphorous compounds have not been detected in the well water above background levels. The chemical composition of groundwater from JC-1 is similar to that from Star Point Sandstone groundwaters encountered underground in the Skyline Mine, although both calcium and magnesium concentrations are slightly elevated relative to the Star Point groundwaters (Appendix G). Electric Lake water is chemically distinguishable from water in JC-1 based on the appreciably higher concentrations of magnesium, bicarbonate, and chloride in the JC-1 groundwater relative to Electric Lake water (Appendix G).

The JC-3 well was permitted to discharge water from the mine workings to Electric Lake in July 2003 when PacifiCorp obtained a UPDES permit for the discharge. The pump in JC-3 is capable of producing at least 6,200 gpm. The water chemistry of the groundwater flowing into the 10 Left area of the mine has similar chemistry as the water described above. It is anticipated the chemistry will not significantly change during its short residence time within the mine works prior to being pumped to the surface. However, as the residency time of the water stored within the mine increases, the TDS and total iron concentrations will likely increase as soluble minerals within the coal and surrounding roof and floor rock go into solution. Samples of water were obtained from the 8 Left area, the upper end of the pool that feeds JC-3, before

HCI Technical Memorandum
November 11, 2004

Numerical Simulation of post Mining Conditions
Skyline Mine

Attachment to:

HCI Supplemental Report
Ground-water Flow Modeling of Skyline Mine and Surrounding Area,
Carbon, Sanpete, and Emery Counties, Utah

June 2004

HCI HYDROLOGIC COLORADO CONSULTANTS, INC.
HCITASCA an company

Hydrologic Consultants, Inc. of Colorado
143 Union Blvd., Ste. 525
Lakewood, Colorado 80228 USA
telephone: 303-969-8033 fax: 303-969-8357
e-mail: hcico@hcico.com http://www.hcitasca.com

TECHNICAL MEMORANDUM

TO: Chris Hansen, Canyon Fuel Company LLC **HCI-1787**

FROM: Roger Howell, HCI
Vladimir Ugorets, HCI

DATE: November 11, 2004

SUBJECT: Numerical Simulation of Post Mining Conditions, Skyline Mine

Comments received from the Utah Department of Geology and Mining (Galecki, 2004) regarding the most recent modelling of mine inflows at Skyline Mine (HCI, 2004) included a request to investigate the maximum pool elevation and possible impacts to surface streams from residual drawdown of the ground-water system after all mining ceases. This memorandum describes the results of steady-state simulations using the ground-water flow model described in HCI (2003 and 2004) to predict:

a) The maximum elevation of the pool level in underground mine workings,
b) Changes in ground-water levels compared to pre-mining conditions, and
c) Possible residual impacts to the surface-flow in Huntington Creek, Mud Creek, and Fish Creek basins.

SIMULATION OF POST-MINING CONDITIONS

A simulation of the post-mining water levels was completed by:

1) turning off the drain nodes representing the mine discharge,
2) turning off pumping node representing JC-1 pumping well, and
3) replacing mined-out elements with the hydraulic conductivity of coal (1 ft/day) by elements with very high hydraulic conductivity (10^6 ft/day) to simulate the voids being flooded.

The modeling was done in steady-state only, and therefore predicts the ultimate level that will be reached by the underground pool, but not the time required to reach the ultimate level. It should be noted that all 3 mining areas (Level 1, 2, and 3 Tract) are assumed connected laterally and vertically so that a single pool forms. All other hydraulic parameters and boundary conditions remain the same as in HCI (2003), including elements with the enhanced hydraulic conductivity that had been used in previous model simulations to represent subsidence and fracturing (gob) above mining workings.

RESULTS OF SIMULATION

Results of the post-mining simulation indicate that some time after all pumping from the mine and pumping from JC-1 are stopped:

a) The pool level within the underground mine workings will attain an elevation of about 8,475 ft, or 102 ft below the Eccles Canyon portal; the location of the post-mining steady-state beachline within Level 2 and Level 3 Tracts is shown in Figure 1,

b) Post-mining ground-water levels within the Level 1, 2, and 3 Tracts will differ from pre-mining conditions as a result of flooding of the mine workings and increased hydraulic conductivity within the GOB layer; general changes will include:

   Level 1 Tract – ground-water levels lowered by 20 to 160 ft,
   Level 2 Tract - ground-water levels lowered by 10 to 60 ft,
   Level 3 Tract - ground-water levels raised by 20 to 160 ft.

c) The interconnected mine workings will act as a large "short circuit" of the natural ground-water flow path, resulting in long-term changes in the rates of ground-water discharge to the major surface water bodies; details (shown in Table 1)include:

   Upper Huntington Creek plus Electric Lake – essentially unchanged,
   Huntington Creek Below Electric Lake – discharge decreased by 0.2 cfs (-90 gpm),
   Mud Creek Basin – discharge increased by 0.2 cfs (+90 gpm), and
   Fish Creek Basin – essentially unchanged.

DISCUSSION

The ultimate pool elevation in Levels 2 and 3 is strongly affected by connection with the upper workings in Level 1. The pool elevation could be significantly lowered by closing off the connection between the upper and lower workings.

Much of the impacts to surface streams predicted by the model result from the increased vertical hydraulic conductivity modeled in the gob layer above mined-out coals. A more exacting study of the impacts might take into account a gradual healing of the fractures within this gob zone over time.

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REFERENCES

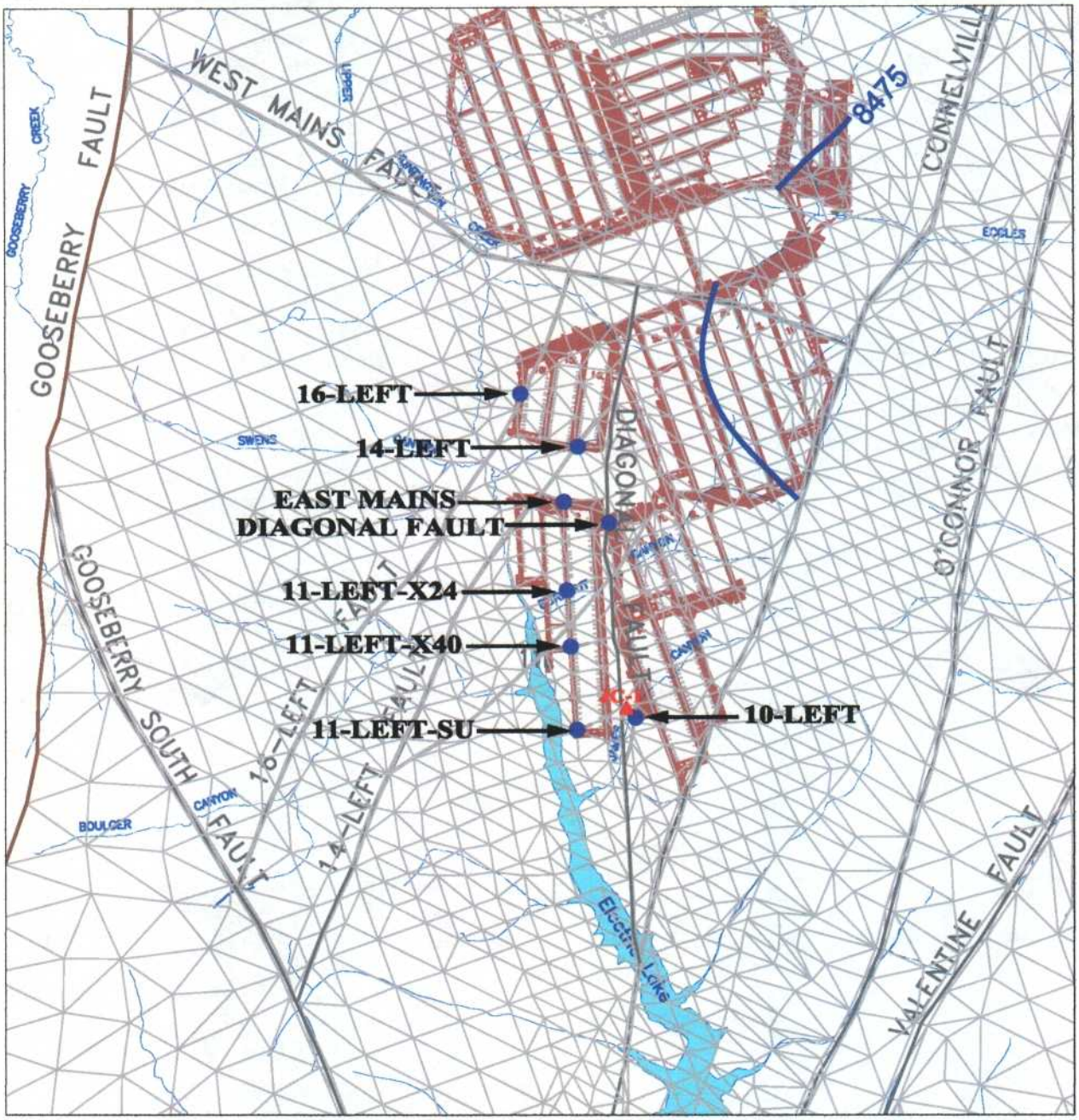
Galecki, Greg, 2004, Preliminary Appendix-K questions (HCI-2004): e-mail correspondence to Chris Hansen, Skyline Mine, September 1.

Hydrogeologic Consultants, Inc., 2003, Findings of ground-water flow modeling of Skyline Mine and surrounding area, Carbon, Sanpete, and Emery Counties, Utah: report prepared for Manning, Curtis, Bradshaw & Bednar LLC, September

Hydrogeologic Consultants, Inc., 2004, Ground-water flow modeling of Skyline Mine and surrounding are, Carbon, Sanpete, and Emery Counties, Utah: supplemental report prepared for Manning, Curtis, Bradshaw & Bednar LLC, June

Attachments: Figure 1 – Location of predicted pool level within Level 2 and 3 Tract.

Table 1 – Simulated ground-water budget for pre-mining and post-mining conditions.



0 5,000
Scale (ft)

EXPLANATION

- MAJOR GROUND-WATER INFLOW
- POST-MINING STEADY-STATE POOL LEVEL
- FAULT SIMULATED IN MODEL
- MODEL BOUNDARY
- JC-1 PUMPING WELL

JOB NO.	HCI-1787	DATE:	9/26/03
BY:	VIJ	DWG FILE:	POOLLVLS-NOV04
DRAWN:	SAC	PLOT FILE:	POOLLVLS-NOV04
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Location of Predicted Pool Level Within Level 2 and 3 Tract

FIGURE 1

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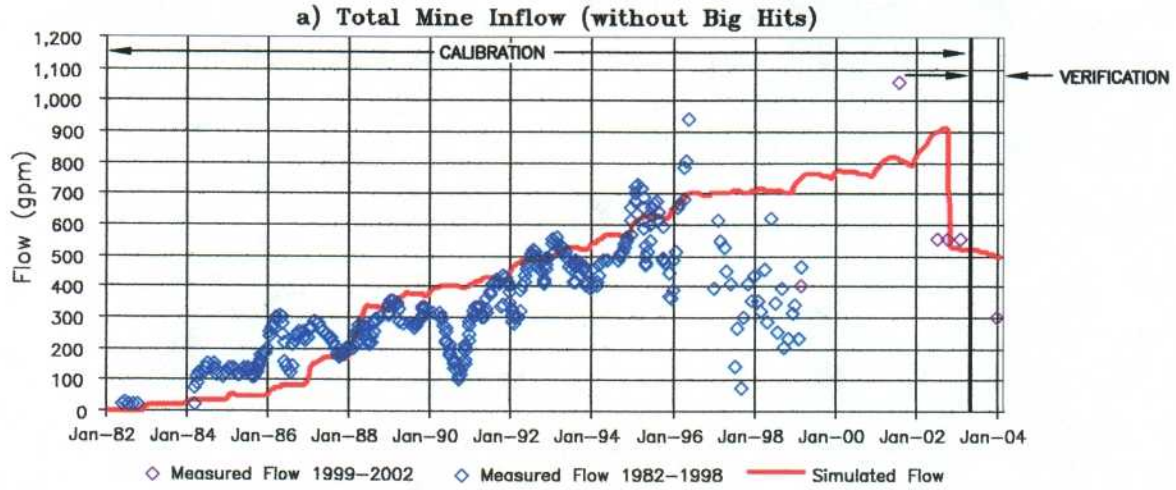
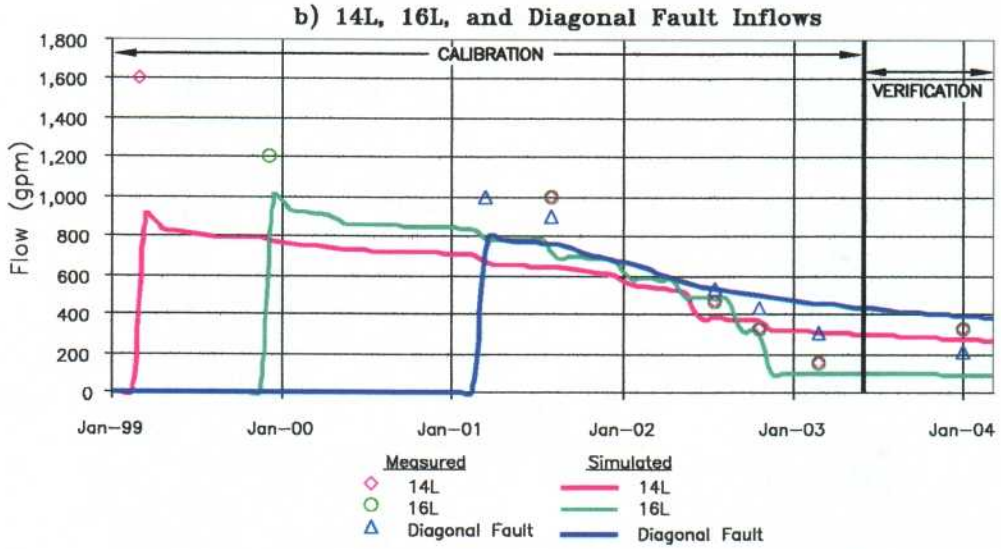
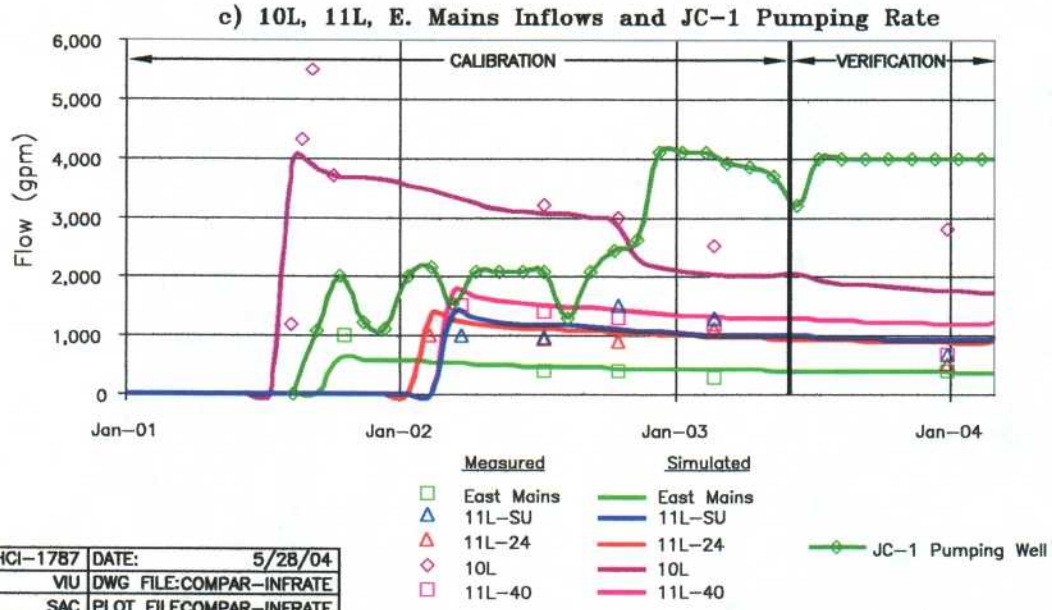
TABLE 1

Simulated Ground-Water Budgets for Pre-Mining and Post-Mining Conditions

Pre-Mining Conditions				
Inflow	**(cfs)**	**Outflow**	**(cfs)**	
Recharge from Precipitation	54.6	GW Boundary Outflow	0	
GW Boundary Inflow	0	GW Discharge to SW		
Recharge to GW from Electric Lake	0.1	a) Mud Creek	12.4	
GW Storage	0	b) Fish Creek	6.9	
		c) Upper Huntington Creek	9.4	
		d) Electric Lake	1.2	
		e) Huntington Creek below Electric Lake	9.5	
		f) Left Fork	15.3	
Total	54.7	Total	54.7	
Post-Mining Conditions				
Inflow	**(cfs)**	**Outfow**	**(cfs)**	**Change**
Recharge from Precipitation	54.6	GW Boundary Outflow	0	
GW Boundary Inflow	0	GW Discharge to SW		
Recharge to GW from Electric Lake	0.1	a) Mud Creek	12.6	0.2
GW Storage	0.0	b) Fish Creek	6.9	0.0
		c) Upper Huntington Creek	9.5	0.1
		d) Electric Lake	1.1	-0.1
		e) Huntington Creek below Electric Lake	9.4	-0.1
		f) Left Fork	15.2	-0.1
Total	54.7	Total	54.7	0.0







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BY:	VIU	DWG FILE:	COMPAR–INFRATE
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CHECKED:		PLOT DATE:	5/28/04

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Comparison of Modeled to Measured Inflow Rates to Skyline Mine

FIGURE 14

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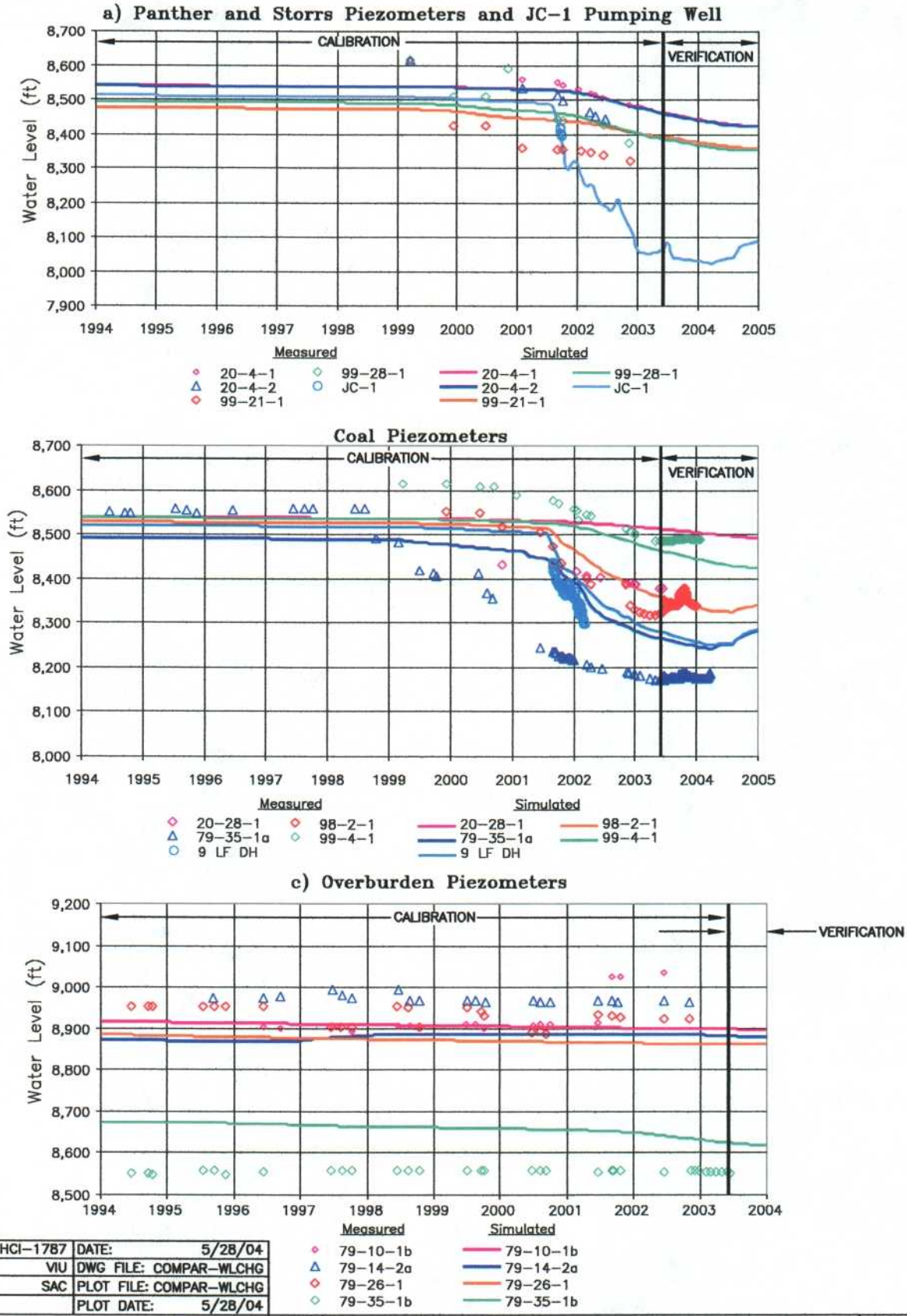

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CHECKED:		PLOT DATE:	5/28/04

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Comparison of Modeled to Measured Water Level Changes in Monitoring Wells: Verification through January 2004

FIGURE 15

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TABLE 1

Simulated Ground-Water Budgets for Pre-Mining, Current Mining, and End of Mining Conditions Without Flooding Mine

Pre-Mining Conditions					
Inflow Component	**Flow (cfs)**		**Outflow component**	**(cfs)**	
Recharge from Precipitation	54.6		GW Boundary Outflow	0	
GW Boundary Inflow	0		GW Discharge to SW		
Recharge to GW from Electric Lake	0.1		a) Mud Creek	12.4	
GW Storage	0		b) Fish Creek	6.9	
			c) Upper Huntington Creek and Other Creeks to Electric Lake	9.4	
			d) Electric Lake	1.2	
			e) Huntington Creek Below Electric Lake	9.5	
			f) Left Fork of Huntington Creek	15.3	
Total	54.7		Total	54.7	
Current Mining Conditions (April 30, 2003)					
Inflow Component	**Flow (cfs)**	**Change (cfs)**	**Outflow component**	**Flow (cfs)**	**Change (cfs)**
Recharge from Precipitation	54.6	0	GW Boundary Outflow	0	0
GW Boundary Inflow	0	0	GW Discharge to SW		
Recharge to GW from Electric Lake	0.2	0.1	a) Mud Creek	12.1	-0.3
GW Storage	25.1	25.1	b) Fish Creek	6.8	-0.1
			c) Upper Huntington Creek and Other Creeks to Electric Lake	9.4	0
			d) Electric Lake	1.1	-0.1
			e) Huntington Creek Below Electric Lake	9.4	-0.1
			f) Left Fork of Huntington Creek	15.3	0
			Subtotal	54.1	-0.6
			Pumping from JC-1	8.6	8.6
			Mine Inflow	17.2	17.2
Total	79.9	25.2	Total	79.9	25.2
Calculated impact to Electric Lake = change in recharge to GW from Electric Lake + change in GW discharge to Upper Huntington Creek and Electric Lake 0.1+0.1=0.2				0.2	
End of Mining Conditions (December 31, 2013)					
Inflow Component	**Flow (cfs)**	**Change (cfs)**	**Outflow component**	**Flow (cfs)**	**Change (cfs)**
Recharge from Precipitation	54.6	0	GW Boundary Outflow	0	0
GW Boundary Inflow	0	0	GW Discharge to SW		
Recharge to GW from Electric Lake	0.6	0.5	a) Mud Creek	10.6	-1.8
GW Storage	12.6	12.6	b) Fish Creek	6.6	-0.3
			c) Upper Huntington Creek and Other Creeks to Electric Lake	9.2	-0.2
			d) Electric Lake	0.9	-0.3
			e) Huntington Creek Below Electric Lake	9.0	-0.5
			f) Left Fork of Huntington Creek	14.8	-0.5
			Subtotal	51.1	-3.6
			Pumping from JC-1	8.4	8.4
			Mine Inflow	8.2	8.2
Total	67.8	13.1	Total	67.7	13.0
Calculated impact to Electric Lake = change in recharge to GW from Electric Lake + change in GW discharge to Upper Huntington Creek and Electric Lake 0.5+0.2 +0.3=1.0				1.0	

TABLE 2

Simulated Ground-Water Budgets for Pre-Mining, Current Mining, and End of Mining Conditions With Floding Mine to Pool Level of 8,290 ft

Pre-Mining Conditions					
Inflow Component	**Flow (cfs)**		**Outflow component**	**(cfs)**	
Recharge from Precipitation	54.6		GW Boundary Outflow	0	
GW Boundary Inflow	0		GW Discharge to SW		
Recharge to GW from Electric Lake	0.1		a) Mud Creek	12.4	
GW Storage	0		b) Fish Creek	6.9	
			c) Upper Huntington Creek and Other Creeks to Electric Lake	9.4	
			d) Electric Lake	1.2	
			e) Huntington Creek Below Electric Lake	9.5	
			f) Left Fork of Huntington Creek	15.3	
Total	54.7		Total	54.7	
Current Mining Conditions (April 30, 2003)					
Inflow Component	**Flow (cfs)**	**Change (cfs)**	**Outflow component**	**Flow (cfs)**	**Change (cfs)**
Recharge from Precipitation	54.6	0	GW Boundary Outflow	0	0
GW Boundary Inflow	0	0	GW Discharge to SW		
Recharge to GW from Electric Lake	0.2	0.1	a) Mud Creek	12.1	-0.3
GW Storage	23.6	23.6	b) Fish Creek	6.8	-0.1
			c) Upper Huntington Creek and Other Creeks to Electric Lake	9.4	0
			d) Electric Lake	1.1	-0.1
			e) Huntington Creek Below Electric Lake	9.4	-0.1
			f) Left Fork of Huntington Creek	15.3	0
			Subtotal	54.1	-0.6
			Pumping from JC-1	8.6	8.6
			Mine Inflow	15.7	15.7
Total	78.4	23.7	Total	78.4	23.7
Calculated impact to Electric Lake = change in recharge to GW from Electric Lake + change in GW discharge to Upper Huntington Creek and Electric Lake 0.1+0.1=0.2				0.2	
End of Mining Conditions (December 31, 2013)					
Inflow Component	**Flow (cfs)**	**Change (cfs)**	**Outflow component**	**Flow (cfs)**	**Change (cfs)**
Recharge from Precipitation	54.6	0	GW Boundary Outflow	0	0
GW Boundary Inflow	0	0	GW Discharge to SW		
Recharge to GW from Electric Lake	0.4	0.3	a) Mud Creek	11.0	-1.4
GW Storage	6.3	6.3	b) Fish Creek	6.7	-0.2
			c) Upper Huntington Creek and Other Creeks to Electric Lake	9.2	-0.2
			d) Electric Lake	1.1	-0.1
			e) Huntington Creek Below Electric Lake	9.2	-0.3
			f) Left Fork of Huntington Creek	14.9	-0.4
			Subtotal	52.1	-2.6
			Pumping from JC-1	8.9	8.9
			Mine Inflow	0.3	0.3
Total	61.3	6.6	Total	61.3	6.6
Calculated impact to Electric Lake = change in recharge to GW from Electric Lake + change in GW discharge to Upper Huntington Creek and Electric Lake 0.3+0.1+0.2=0.6				0.6	

TABLE 3

Simulated Ground-Water Budgets for Pre-Mining, Current Mining, and End of Mining Conditions With Floding Mine to Pool Level of 8,130 ft

Pre-Mining Conditions			
Inflow Component	**Flow (cfs)**	**Outflow component**	**(cfs)**
Recharge from Precipitation	54.6	GW Boundary Outflow	0
GW Boundary Inflow	0	GW Discharge to SW	
Recharge to GW from Electric Lake	0.1	a) Mud Creek	12.4
GW Storage	0	b) Fish Creek	6.9
		c) Upper Huntington Creek and Other Creeks to Electric Lake	9.4
		d) Electric Lake	1.2
		e) Huntington Creek Below Electric Lake	9.5
		f) Left Fork of Huntington Creek	15.3
Total	54.7	Total	54.7

Current Mining Conditions (April 30, 2003)					
Inflow Component	**Flow (cfs)**	**Change (cfs)**	**Outflow component**	**Flow (cfs)**	**Change (cfs)**
Recharge from Precipitation	54.6	0	GW Boundary Outflow	0	0
GW Boundary Inflow	0	0	GW Discharge to SW		
Recharge to GW from Electric Lake	0.2	0.1	a) Mud Creek	12.1	-0.3
GW Storage	23.6	23.6	b) Fish Creek	6.8	-0.1
			c) Upper Huntington Creek and Other Creeks to Electric Lake	9.4	0
			d) Electric Lake	1.1	-0.1
			e) Huntington Creek Below Electric Lake	9.4	-0.1
			f) Left Fork of Huntington Creek	15.3	0
			Subtotal	54.1	-0.6
			Pumping from JC-1	8.6	8.6
			Mine Inflow	15.7	15.7
Total	78.4	23.7	Total	78.4	23.7
Calculated impact to Electric Lake = change in recharge to GW from Electric Lake + change in GW discharge to Upper Huntington Creek and Electric Lake 0.1 + 0.1 = 0.2				0.2	

End of Mining Conditions (December 31, 2013)					
Inflow Component	**Flow (cfs)**	**Change (cfs)**	**Outflow component**	**Flow (cfs)**	**Change (cfs)**
Recharge from Precipitation	54.6	0	GW Boundary Outflow	0	0
GW Boundary Inflow	0	0	GW Discharge to SW		
Recharge to GW from Electric Lake	0.5	0.4	a) Mud Creek	10.7	-1.7
GW Storage	10.0	10.0	b) Fish Creek	6.7	-0.2
			c) Upper Huntington Creek and Other Creeks to Electric Lake	9.2	-0.2
			d) Electric Lake	0.9	-0.3
			e) Huntington Creek Below Electric Lake	9.1	-0.4
			f) Left Fork of Huntington Creek	14.9	-0.4
			Subtotal	51.5	-3.2
			Pumping from JC-1	8.9	8.9
			Mine Inflow	4.7	4.7
Total	65.1	10.4	Total	65.1	10.4
Calculated impact to Electric Lake = change in recharge to GW from Electric Lake + change in GW discharge to Upper Huntington Creek and Electric Lake 0.2+0.3+0.4=0.9				0.9	