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COMMISSIONERS
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GARY PIERCE

IN THE MATTER OF THE APPLICATION OF NORTHERN ARIZONA ENERGY, LLC, IN CONFORMANCE WITH THE REQUIREMENTS OF ARIZONA REVISED STATUTES 40-360.03 AND 40-360.06, FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AUTHORIZING CONSTRUCTION OF A 175 MW NATURAL GAS-FIRED, SIMPLE CYCLE GENERATING FACILITY AND ASSOCIATED TRANSMISSION LINE INTERCONNECTING THE GENERATING FACILITY TO THE ADJACENT WESTERN AREA POWER ADMINISTRATION GRIFFITH SWITCHYARD, ALL LOCATED IN MOHAVE COUNTY APPROXIMATELY 9 MILES SOUTHWEST OF KINGMAN, ARIZONA.

DOCKET NO. L-00000FF-07-0134-00133

NOTICE OF FILING

Arizona Corporation Commission
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Applicant, Northern Arizona Energy, LLC, hereby provides notice that it is filing herewith the following attached materials that will be used at the September 17 and 18, 2007 hearings:

A. Response 18 Update to Supplemental Information Package (one page).

B. Power Point Outline of Additional Testimony to be presented by Applicant (21 pages).

RESPECTFULLY SUBMITTED this 12th day of September, 2007.

MOYES STOREY, LTD.

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Original and Twenty-Eight (28) copies of the foregoing filed this 12th day of September 2007 with:

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Electronic copies of the foregoing were sent Via email this 12th day of September 2007 to:

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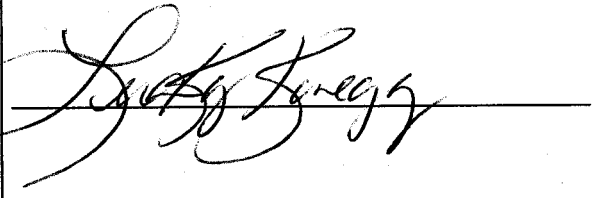


Northern Arizona Energy Project
Case No. 00133

Supplemental Information Package
Response 18 Update

18. Provide the capacity factor for the Griffith Energy Project over the prior twelve months.

Response 18 - Updated

During May 2006 through July 2006, the Griffith Energy Project was unavailable due to mechanical issues related to the steam turbine.

The monthly Capacity Factors for August 2006 through September 2007 were as follows:

Month	Capacity Factor
Aug 06	73.7%
Sept 06	67.7%
Oct 06	65.2%
Nov 06	45.1%
Dec 06	39.3%
Jan 07	27.2%
Feb 07	13.5%
Mar 07	0%
April 07	2.0%
May 07	40.2%
June 07	78.0%
July 07	78.2%
Aug 07	76.1%
Sept 07 (estimated)	~78%

Arizona Power Plant and Transmission Line Siting Committee

Public Hearing for the Northern Arizona Energy Project (NAEP)

Applicant Testimony

September 17-18, 2007

[redacted]

Presentation Overview

Opening Remarks	Jay Moyes
Status of Other Permits	Randy Schroeder
Electric Interconnection	Ali Amirali
Water Supply – Commercial	Dana Diller
Water Supply - Environmental	Steve Noel

Opening Remarks

Supplemental Filings and Procedural Matters

- Supplemental Package filed June 22, 2007
  - Draft Air Permit
  - Responses to May 1-2 Hearing Questions
  - Southwest Ground-water Consultants Report

- System Impact Study filed July 25, 2007

- Other Filings
  - Draft Environmental Assessment
  - Supplemental Information Package update
    - Response 18

Status of Other Permits

Status of Other Permits

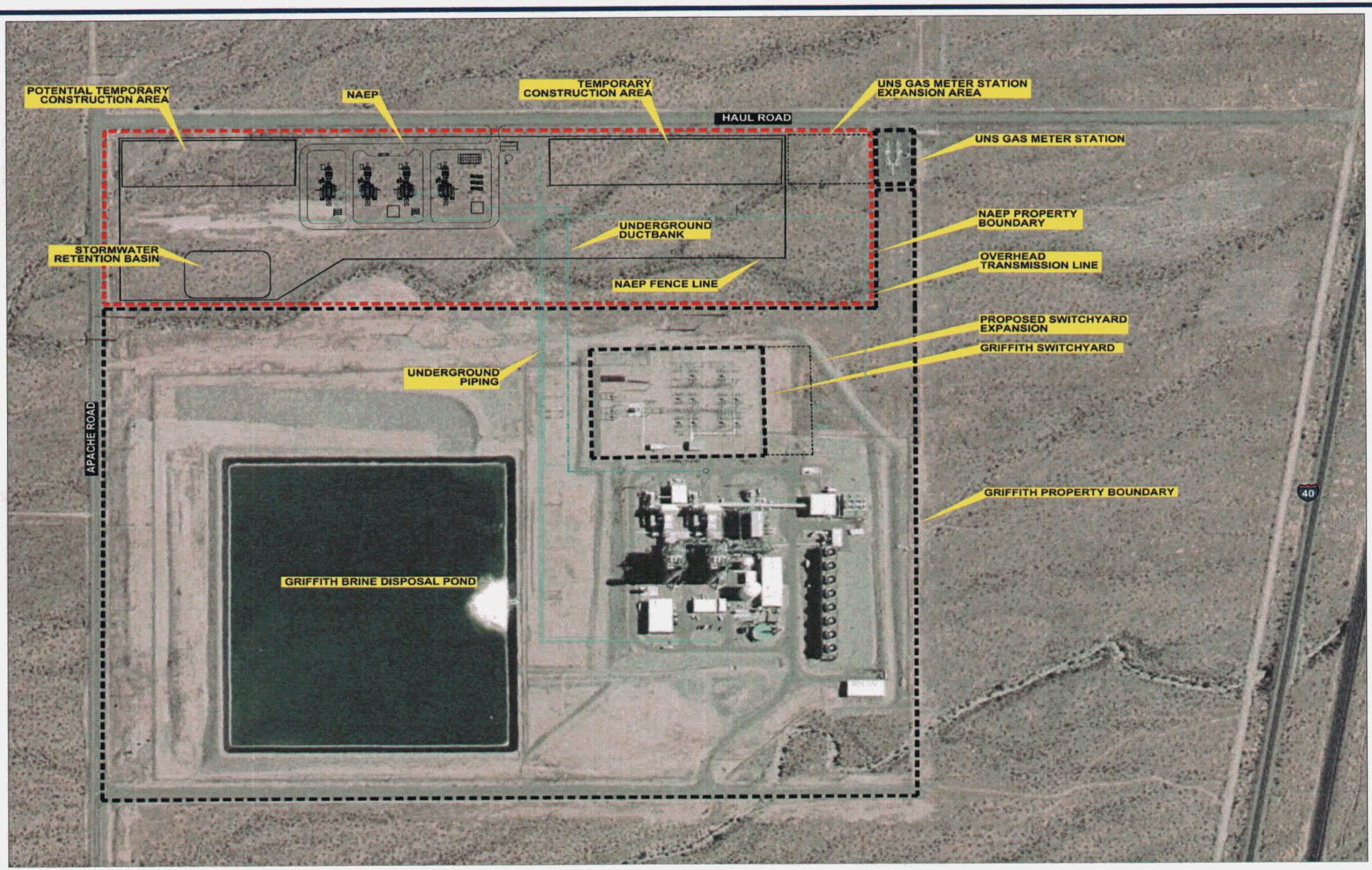
- **Air Quality Permits (Title V and Title IV)**
  - Draft Air Permit issued for public review on June 22, 2007
  - Public Hearing conducted by ADEQ in Kingman, AZ on July 25, 2007
    - No public comment received by ADEQ
  - Issued to EPA Region IX review on August 1, 2007
    - 45 day review period ends on September 15, 2007

- **Federal NEPA Environmental Assessment (EA)**
  - Draft EA released for comment
  - Remaining process and expected schedule

- **Griffith Aquifer Protection Permit Amendment**
  - ADEQ has completed amendment process

Electrical Interconnection

Aerial View of Project Site and Related Infrastructure



Electrical Interconnection

- Interconnect with Western 230 kV transmission system at the existing Griffith Switchyard located adjacent to the Project Property

- Interconnecting facilities consist of approximately twelve (12) structures (100 to 120 foot tubular steel poles) supporting conductor that connects the generator step up transformers (GSU) to the Griffith Switchyard and are all located within Project Site or adjacent Griffith property

- The transmission line will be approximately 2,657 feet long (located on Project Site and adjacent Griffith property)

- Approximately 1 acre expansion of Griffith Switchyard (within Griffith property) to add a new breaker-and-a-half bay consisting of three (3) new 230kV circuit breakers.

Large Scale Generation Interconnection Process

Interconnection Process with Western Area Power Administration (Western)

- Interconnection application filed with Western and deemed complete on September 28, 2006.
- WAPA conducted an Interconnection System Impact Study (per agreement dated December 4, 2006) to evaluate the Project as an energy resource. No firm transmission service request was made.
- System Impact Study was finalized and issued on July 25, 2007
    - Proposed final SIS was provided to ACC Staff on July 2, 2007 for advance review
- Facilities Study Agreement is in progress

System Impact Study Overview

- The System Impact Study (SIS) simulated
  - Power flow analysis
  - Post-transient power flow analysis
  - Transient stability analysis
  - Short circuit analysis
- WECC Reliability Criteria and NERC Planning Standards were employed
- Scenarios were developed to evaluate the impacts of the project on the transmission system under a variety of operating conditions
- All analyses were conducted under N-0, N-1, N-1-1 and N-2 conditions

System Impact Study Results

- Short Circuit Analysis – No Impacts
- Stability Analysis – No Impacts
- Power Flow Analysis Impact Results (All Cases)

Operating Condition	N-0	N-1	N-1-1	N-2
Liberty PST ***"by-passed"*** **(standard operating condition)**	None	None	2 contingencies	2 contingencies
Liberty PST flowing 450 MW ***southbound***	None	None	Not studied	Not studied
Liberty PST flowing 450 MW ***northbound***	None	2 contingencies (see mitigation below)	2 contingencies	2 contingencies

- Two N-1 contingencies with Liberty PST flowing 450 MW northbound cause overload on Western Davis – McConnico 230kV line
  - Outage of Peacock-Mead 345 kV line
  - Outage of Mead 345/230 kV transformer
- Contingencies to be mitigated with implementation of Western and WECC approved remedial action scheme (RAS) for generation limits
- With Liberty PST flowing 450 MW northbound and N-1 contingency, maximum generation curtailment is 75 MW

Liberty Phase Shifter Operation

- Standard transmission system configuration requires Liberty PST to be bypassed
- The device is required to preserve the contractual East of River rating
- Its primary use has diminished with the construction and operation of the Navajo Transmission System
- Infrequent historical operation of Liberty PST was primarily to enable transfer of Mojave energy southbound for SRP
  - Mojave currently not in operation (likely permanent shutdown)
  - Review of the past 9 month of Western operations log indicated that the Liberty PST was inserted only *once* to control flows on the transmission system.
- The transmission system impacts are *only observed* with 450 MW northbound flows on the Liberty PST when NAEP is in operation

Low Probability Outage Events

- ***Contingencies that identified impacts associated with NAEP interconnection are low probability events.***

- ***Probability of Liberty PST flowing 450 MW south-to-north and simultaneous N-1 contingency of the 345 kV Peacock-Mead line or 345/230 kV transformer under the worst load condition is extremely low.***

- ***Identified N-1-1 and N-2 events are not common mode failures***

- ***N-1-1 conditions allow opportunity for operator intervention***

Low Probability of Outage Events (cont'd)

The outage of a 345 kV line or a 345/230 kV transformer is a low probability event

Actual outage data provided by Western

	Total Number of years	Number of outages	Outages/Year
Peacock-Mead 345 kV line	7	5	0.7143
Mead 230/345 kV transformer	16	0 See Note 1	0.0000

Note 1: Western's search of the historic outage information did not indicated any unplanned outages of this transmformer

Industry data for transmission lne outages

Annual Line outage rate	per circuit			
	momentary		sustained	
	WECC	ECAR	WECC	ECAR
345kV	1.48	0.65	1.63	0.32

Industry data for transformer outages

Transformer outage rate	per device	
	WECC	MAPP
345/230kV Transformer	0.22	0.33

Probability Analysis

- *Occurrence of simultaneous outage of (1) Peacock – Mead 345 kV transmission line or (2) Mead 345/230 kV transformer plus the Liberty PST operational at 450 MW northbound is a very low probability.*

- **Using historic outage data provided by Western and Industry Averages:**
  - Annual probability of operation of Liberty PST (any direction) = (A) = 0.159817%
  - Annual probability of outage of Mead 345/230 kV transformer = (B) = 0.020091%
  - Annual probability of outage of Peacock-Mead 345 kV line = (C) = 0.065232%

- **Calculating Joint Probabilities**
  - Probability of Liberty PST operating and the outage of Mead transformer=A*B= 0.000032%
  - Probability of Liberty PST operating and the outage of Peacock-Mead line=A*C= 0.000104%

- **Total probability**
  - Annual probability Liberty PST operating and the outage of Mead Transformer OR Liberty PST operating and the outage of Peacock – Mead line = **(D) = 0.000136%**

Note: ***The probability of generation tripping at NAEP for either of these outage is even lower than the total probability number listed above because probability of Liberty PST operating and flowing power northbound when NAEP is on-line is MUCH SMALLER as compared to "D"***

Conclusion

- ***Studies indicated that no transmission system upgrades are required for the interconnection of NAEP to the Western transmission grid.***

- ***Operational solutions (such as operating procedures, flow based limits, generation tripping, etc) would be utilized to mitigate the potential transmission system impacts for low probability contingency events.***

- ***Operational solutions will be developed in operational studies conducted by Western, will satisfy Western and WECC reliability criteria, and will be in accordance with NERC Planning Standards.***

Water Supply - Commercial

Water Supply - Commercial

- Agreement reached with Mohave County on NAEP water supply from existing Mohave County water system.
- NAEP will be allocated 450 gpm contract capacity of the existing Griffith 4500 gpm contract capacity.
- On September 4, 2007, the Mohave County Board of Supervisors voted 3-0 to approve the agreements and the agreements have been subsequently executed by the parties.

Water Supply - Environmental

Water Supply - Environmental

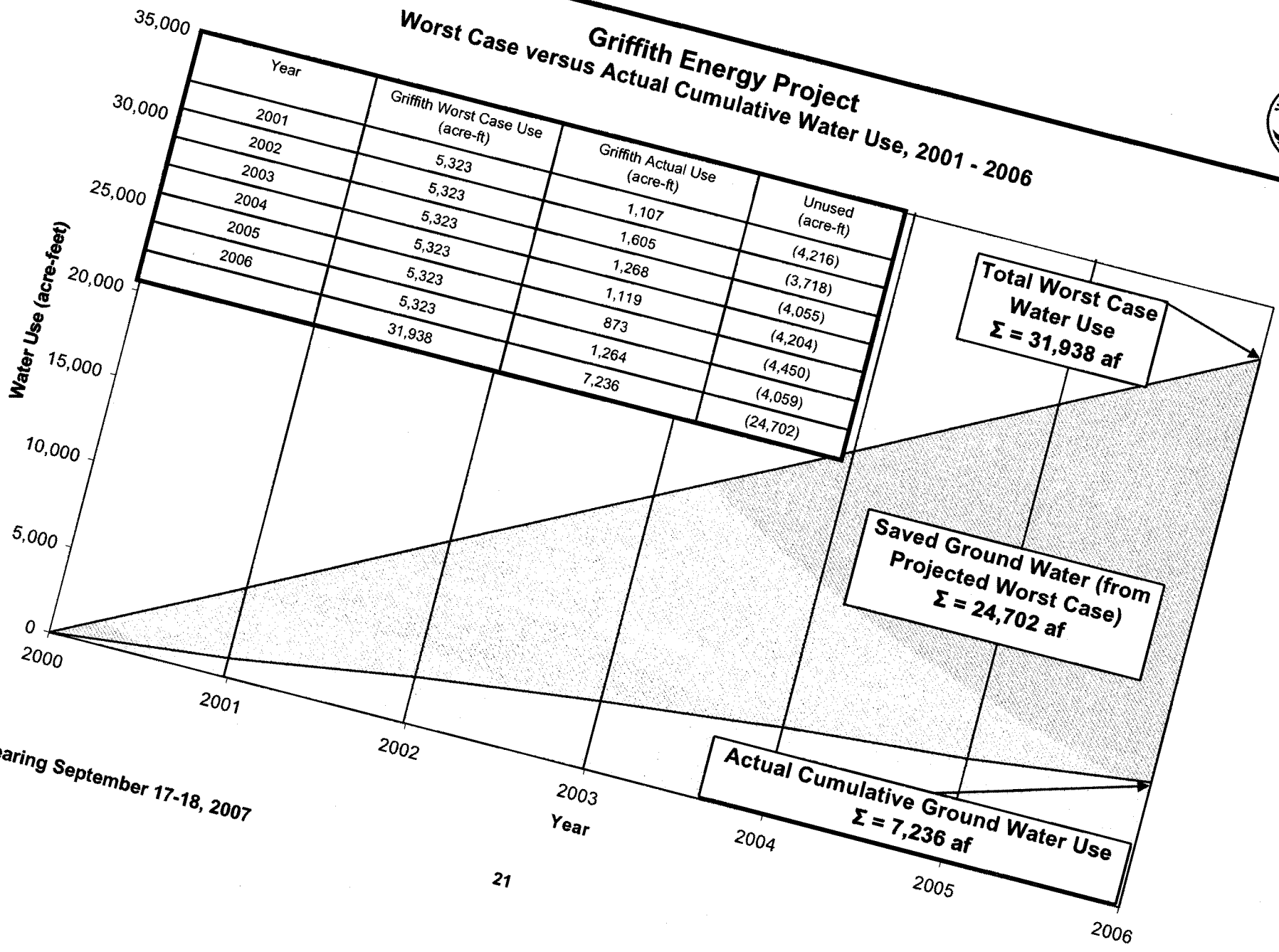
- **Evaluated two annual water use cases:**
  - Expected case at 2500 operating hours: 160 acre-ft
  - Worst case at 5000 operating hours: 268 acre-ft

- **Approach to Aquifer Impact Analysis**
  - Saturated thickness and yield
  - Projected uses and pumped volumes

- **NAEP Aquifer Impact (Worst Case assumptions)**
  - Maximum projected drawdown of 15 feet after 40 years at the well field
  - Maximum pumping requirement is 10,720 acre-ft over 40 years
  - Maximum cumulative NAEP requirement is less than the 24,702 acre-ft of water savings experienced in the Mohave County water system from 2001 to 2006.

- **Finding of "insignificant impact" supported by ADWR**

Water Supply - Environmental

Griffith Energy Project
Worst Case versus Actual Cumulative Water Use, 2001 - 2006

Year	Griffith Worst Case Use (acre-ft)	Griffith Actual Use (acre-ft)	Unused (acre-ft)
2001	5,323	1,107	(4,216)
2002	5,323	1,605	(3,718)
2003	5,323	1,268	(4,055)
2004	5,323	1,119	(4,204)
2005	5,323	873	(4,450)
2006	5,323	1,264	(4,059)
	31,938	7,236	(24,702)